

## Software Manual

— For —

## MadgeTech 4 Data Logger Software



1 A A	1. A.
Introd	uction

ntroduction	7
About MadgeTech, Inc	8

9

23

## Software Overview

Getting Started	10
System Requirements	10
Software Installation: Installing the MadgeTech 4 Standard Software	10
Installing the USB Interface Drivers	12
Starting the Software	12
Shutting Down the Software	13
Shut Down: File Menu	13
Shut Down: X Button	13
Shut Down: Keyboard Shortcut	13
Uninstalling the Software	13
Software Menus and Navigation	14
The File Menu	15
The Options Menu	16
The Device Menu	17
The Report Menu	18
Screen Navigation	19
File Database	19
Channels Panel	19
Connected Devices	19
Files	19
Rearranging Panels	20
Restoring Default Windows	21
The Help Menu	22

## Working With Devices

Battery Warning
Connecting and Disconnecting a Device
Start a Device
Custom Start
Immediate Start
Manual and Delay Start
Quick Start
Real Time Start
Batch Start
Stop a Device
Manual Stop
Automatic Stop
Readings Stop Method
Downloading Data
Download Data from a Device
Automatically Display Reports of Data that have just been Downloaded30
Download While Recording
Reset a Device

Workflows	
Adding a Workflow	
Changing a Workflow	32
Disabling a Workflow	
Duplicating a Workflow	
Manually Running a Workflow	
Deleting a Workflow	
Calibration	
Gain and Offset Values	
High and Low Values	
Calibrating a Device	
Software Alarm Rules	
Alarm Rules	
Adding an Alarm Rule	
Changing an Alarm Rule	
Enable or Disable an Alarm Rule	
Removing an Alarm Rule	
Dismissing an Alarm Rule Notification	
Alarm Acknowledgement	
Stopping Repeated Notifications for an Alarm Rule with a No Readings Condition	
Adding a Comment Template for Software Alarm Rules	
Device Properties	
General Settings: Properties of a Specific Device	
Checking the Power Status of a Device	
Changing the Thermocouple Type of a Device	40
Add, Change, or Clear the Password of a Device	40
Setting the Password of a Device	40
Changing the Password of a Device	41
Clearing the Password of a Device	41
Saving a Device Template	41
Channel Settings	
Changing the Channel Name of a Device	
Calibration Settings	43
Device Alarm Rules	43
Changing the Device Alarm Rules	43
Clearing an Active Device Alarm or Alarm Warning on a Device	43
Trigger Settings	44
Change the Trigger Settings of a Device	44
Engineering Units	45
Adding an Engineering Unit	45
Adding an Engineering Unit Using the Engineering Unit Wizard	45
Changing the Engineering Unit of a Device	46
Removing an Engineering Unit	49
Display Settings	49
Managing Wireless Devices	
Claiming a Wireless Device to the Network	50
Removing a Wireless Device	50

Changing the Communication Channel of a Wireless Device	5
Physically Locate a Claimed Wireless Device	5
Janaging Data Folders and Penorts	5
Data Data, Folders and Reports	
CSV Eilos	
Eoldorg	F
Create a New Folder	J
Create a New Folder	
Move a Folder	
Managing Poports	E
Greating a New Plank Pepert	
Creating a New Blank Report.	
Opening a Report from Another Report	
Openning a Report	
Saving a Report	
Closing a Report	
Changing How a Report Title is Generated	
Renaming a Report	
Exporting a Report to Microsoft Excel <sup>®</sup>	
Printing a Report	
Adding a Dataset to a Report	
Organizing Channels	5
Setting the Default Channel Grouping	
Math Channels	
Changing a Math Channel in a Report	6
Removing a Math Channel from a Report	6
Changing the Display Unit of a Channel in a Report	6
Removing a Channel from a Report	6
Selecting All Channels of the Same Type in a Report	6
Renaming a Channel in a Report	6
Viewing Device Properties of a Channel in a Report	6
Viewing the Properties of a Report	6
Optional Sterilization Data in Report Properties	6
Moving a Dataset or Report to another Folder	6
Deleting a Report	6
Recovering a Dataset or Report from a Recycle Bin	6
Permanently Delete a Dataset or Report from a Recycle Bin	6
Graph Reports	6
Annotations	6
Adding an Annotation to a Graph	6
Adding an Annotation to a Reading in a Graph	6
Creating a Timeslice with a Graph	ε
Cooling Flags	6
Managing the Cooling Flags of a Graph	6
Setting the Default Cooling Flags	
Value Lines	F
Time Markers	ے د

Automatically Scroll a Graph during Real Time Recording	67
Showing or Hiding the Time Zone on the Horizontal Axis of Graphs	68
Locking the Vertical Scale of a Graph	68
Setting the Vertical or Horizontal Scale of a Graph	68
Moving a Vertical Axis of a Graph	68
Independently Set the Scale Units of a Graph	69
Setting the Units and Colors Used to Display Readings	69
Clearing Unit Preferences	69
Graph Line Preferences and Background Color	69
Changing the Background Color of a Graph	69
Setting the Default Graph Background Color	70
Changing the Color of a Line in a Graph	70
Line Thickness	70
Changing the Thickness of a Line in a Graph	70
Setting the Default Line Thickness	70
Changing the Application Color Scheme	71
Setting the Default Language	71
Data Table Reports	72
Statistics Reports	73
Adding a Statistic	73
Setting Default Statistics	73
Changing the Properties of a Statistic	73
Removing a Statistic	73
Time to Threshold Statistic	74
Sterilization Data	74

## Using MadgeTech Cloud Services

Logging into a Cloud Services Account7	5
Logging out of a Cloud Services Account	5
Enabling Cloud Monitoring for a Device	5
Disabling Cloud Monitoring for a Device	5
Viewing and Monitoring Cloud Data7	6

75

83

## Maintenance

laintenance	
Battery Replacement	
Calibration of Data Loggers	79
RMA Instructions	80
Software and Firmware Updates	
Updating the MadgeTech Software	
Firmware Upgrade for Data Loggers	
Firmware Upgrade for Interface Cables and Transceivers	

## Troubleshooting

0	
Why are my Devices not Appearing?	
Is this Device Supported?	
Interface Cables	
Check that the Software Recognizes the Interface Cable	
Check that Windows Recognizes the Interface Cable	

Ensure that the USB end of the Interface Cable is Securely Connected to the Computer	86
Reference	
Interface Cable Types	87
Installing the Interface Cable Drivers	88
Battery Change Procedure	88
Thermocouple Types	88
Real Time Recording with Wireless Devices	89
Start and Stop Methods	90
Start methods	90
Stop methods	90
General	
What is the Difference between a Dataset and a Report?	91
How can a Composite Graph be Generated?	91
How are Engineering Units Specified between Software based and Portable Engineering Units?	91
A CSV File Failed to Import	91
How is a Collection of Reports Saved?	91
Resetting the Screen Layout	91
Retrieving the Version Number of the Software and Other Components	92
Error Messages	
"Configuration Update Timed Out"	93
Resources and Documentation	

## Warranty

-	
Terms and Conditions	96
Limited Warranty	
Limitations	
Software Licensing Agreement	

## **Contact Information**

99

95

## Introduction

Compact, accurate and affordable; MadgeTech data loggers can measure and record data at many user-specified intervals. The MadgeTech 4 Data Logging Software requires no programming skills and enables the user to effortlessly select a reading interval, specify the device's ID and initiate the start of data collection. For immediate use of a data logger, customers can refer to the specific data logger documentation such as the **Product Information Card** or **Product User Guide** that comes standard with any data logger purchase.

In addition, all data can be saved in a format easily read by exporting the data to a Microsoft Excel<sup>®</sup> spreadsheet. MadgeTech produces data loggers that are accurate, low-cost, easy-to-use products that integrate easily into the user's working environment. To better understand a customer's needs and to accommodate any requests, MadgeTech welcomes and appreciates any feedback.

Thank you for choosing MadgeTech for all of your data logging needs.



# **Since 1996**

## About MadgeTech, Inc.

MadgeTech, Inc. is a global company based in New England and founded on old-fashioned principles, customer service, quality and trust. MadgeTech's President, Norman Carlson, started the company in 1996 and charted the growth of the product lines and services while maintaining those solid core principles.

Our can-do team of engineers and technical staff consistently incorporate new and innovative ideas into our data loggers. In short, we push the envelope, raising the bar in innovation and quality. Our competitors have praised us by adopting many of our ideas as their own. Over time, MadgeTech has become the industry standard in the data logger market.

MadgeTech continuously develops new, cutting-edge products, creating solutions for our customers around the world in industries across the board. Our growing network of distributors has expanded our presence to markets far beyond our home headquarters in New Hampshire; our products are now sold in over 70 countries around the world.

Our employees are committed to quality and customer satisfaction. Behind the full range of MadgeTech's products and services is the cumulative expertise of experienced engineers, manufacturing and electronic professionals and technicians. Our knowledgeable sales team can offer technical advice to assist in selecting the right product for each application, as well as providing after-sales support.

MadgeTech is dedicated to providing customers with reliable, affordable products, hassle-free ordering and excellent service, saving customers time and money. It is our goal to earn your trust in meeting your needs and providing innovative solutions. The products and services that bear the MadgeTech name come with quality assurance and the best support in the industry today.



## **Software Overview**

Each class of logger has a unique device type and identifies itself when queried by the host computer. Therefore, only one software package and manual are required for all MadgeTech data loggers. In certain instances where differences occur, this manual will answer potential questions and provide clarification.

The MadgeTech 4 Data Logger Software is designed to streamline the process of downloading data and reviewing it. The software automatically configures itself specifically to each class of logger by reading the device type with the ability to change engineering units (*dependent upon specific data logger models*), conforming to the needs of its user.



## **Getting Started**

## System Requirements

MadgeTech 4 Data Logging Software requires an IBM or compatible PC with the following:

- PC-compatible Pentium(R)-class system
- Windows XP SP3 or later
- Color SVGA monitor (1024 x 768 resolution)
- 2GB (or more) RAM
- At least 30MB free hard disk space (for installation)
- CD-ROM (for installation media)
- Available 9 pin male serial (COM) port (for serial logger interface cable)
- Available USB port (for USB logger interface cable)

(Note: Although the software is designed to work with the Windows Operating Systems listed above, MadgeTech cannot guarantee operation on OS's no longer supported by Microsoft Support Life Cycle Policy.)

## Software Installation: Installing the MadgeTech 4 Standard Software

MadgeTech 4 Standard Software can be downloaded from the MadgeTech website or installed from the provided MadgeTech flash drive.

#### To install the MadgeTech software from a flash drive:

- 1. To begin installation, insert the flash drive labeled MadgeTech Data Logger Software Version 4.X.X into an available USB port. After a few moments an AutoPlay box will open. (shown right)
- 2. In the **AutoPlay** box, click **Open folder to view files** to view the contents of the flash drive.
- 3. In the case that the **AutoPlay** is disabled, manually browse to the MadgeTech flash drive by clicking on the **Start** button or **Windows Icon**, navigate to **Computer** and double click the drive, **MadgeTech**, to see the contents.

Double-click the **autorun.exe** (*application*) to launch the **MadgeTech 4 Installer Options**.



Organize • 📑 Og	pen	Share with . Burn New f	older	ii • 🗇 🍕
🚖 Favorites	1	Name	Date modified	Туре
E Desktop	11	Documentation	9/17/2013 1:16 PM	File folder
Downloads		DotNet	9/17/2013 1:16 PM	File folder
3 Recent Places		🍓 MIT4	9/17/2013 1:16 PM	File folder
SkyDrive		MTWireless	9/17/2013 1:16 PM	File folder
		Pocket	9/17/2013 1:16 PM	File folder
Libraries		🍶 Support	9/17/2013 1:16 PM	File folder
Documents		🗼 Tibbo	9/17/2013 1:17 PM	File folder
Music	U.	🔒 USB	9/17/2013 1:17 PM	File folder
Pictures		🗼 V2.07.1	9/17/2013 1:17 PM	File folder
Subversion		🔺 autorun.exe	9/9/2013 8:54 AM	Application
Videos		autorun.inf	9/9/2013 8:54 AM	Setup Informatio
🖷 Computer			-	

Autorun.exe file located on the MadgeTech USB drive



The MadgeTech installer options screen (shown right) will launch.

Choose the **MadgeTech Software** option to install the MadgeTech 4 Standard Data Logging Software.

Choose the **Drivers and Third Party Tools** option to install drivers and software for use with USB interface cables and accessories.

The **MadgeTech Legacy Software Options** offers installer options for older operating systems.

Click **MadgeTech Software** to open the **Install MadgeTech Software** options page. (*shown right*)

The MadgeTech 4 Software requires the **.Net 4.0 Framework** to be installed on the intended PC. The Windows 8 and Windows 10 operating system comes with the **4.5 .Net Framework** already installed. If the **.Net 4.0 Framework** has not been installed on the PC, click the **Install .Net 4.0 Framework** option and walk through the wizard installation steps.

(Note: If the .Net 4.0 Framework has already been installed and you attempt to run the Install .Net 4.0 Framework, a window asking to Repair or Remove the .Net 4.0 Framework will appear. It is recommended to select the Cancel button when this page appears.)

After the **.Net 4.0 Framework** installation has been confirmed, click the **Install MadgeTech Software** option. Select English when prompted for a language selection, then the Installation Wizard will walk through the installation steps to install the software.

The following are examples of the installation windows:

记 MadgeTech 4 Setup	j를 MadgeTech 4 Setup		[날] MadgeTech 4 Setup	×
Welcome to the MadgeTech 4 Setup Wizard	Installing MadgeTech 4		Completed the MadgeTech 4 Setup Wizard	
The Setup Wizard will install MadgeTech 4 on your computer. Click Next to continue or Cancel to exit the Setup Wizard.	Please wait while the Setup Wizard installs MadgeTech 4.		Click the Finish button to exit the Setup Wizard.	
	Status: Generating script operations for action:			
			☑ Launch MadgeTech 4	
			View release notes	
Back Next Cancel	Back	ext Cancel	Back	Cancel

When the **Installation Complete** screen appears, click **Finish** to exit the wizard and return to the autorun, then **Exit** at the bottom to close the autorun. The **MadgeTech 4 Standard Software** is now installed on your PC.







## Installing the USB Interface Drivers

The USB interface drivers can easily be installed on the PC if they are not already available and running.

From the **MadgeTech Installer Options** page, click **Drivers and Third Party Tools** to open the **MadgeTech Device Drivers and Third Party Tools** page. (*shown right*)

The **Install USB Interface Drivers** options will install Windows device drivers for the **MadgeTech USB interface cable**.

(Note: The Install Tibbo Software (Ethernet Device Server) option will install Tibbo Software for the DS202 serial device server. Installing the Tibbo software would be required with the use of an IFC110 and the MadgeTech 2 software.)

Click Install USB Interface Drivers from the install screen.



The following dialog box will appear when the USB interface drivers have been successfully installed. (see below)

3	🖞 Datalogger Interface Driver Installer	<b>X</b>		
	Silicon Laboratories Datalogger Interface	Driver Version 3.2	Success Installation completed successfully	X
	C:\Program Files (x86)\MTI-USB\Patalogger Interface Change Install Location Install	Cancel	ОК	

## **Starting the Software**

To begin, launch the software by simply double clicking the desktop icon, clicking the icon in the **Quick Launch** toolbar, or clicking the icon in the MadgeTech folder within **All Programs** in the **Start Menu**. Once the software is open, the user can make any and all preference changes that are necessary. For more detailed information on the software options, please refer to page 23 of this manual.

Ford     Repart       Opening     Quark Start     Image: Control Start       Partial Transmission     Image: Control Start       Deater Start     Image: Control Start	Help
Carter & Star Bar Daniel Star	
Custom Stop Download Reset Workflows Chable Cloud Divable Cloud View Download Manage Aterm Properties Engineering Claim Release Loate Start Detect Start Control Control Control Aterms Information Vireless	
Control Alarms Information Wireless	
File Database + 0 Connected devices	~ 9
Search P Search by: No preference      Only show claimed wireless devices	Refresh
Port Device ID Model Serial No. Status Readings Readings Interval Battery Level Revision Start Time	Cloud L
Lample Latisets No devices are connected	<u>^</u>
A per reports     Deleted Reports	
Tests	
Connected devices Files	
all Unitable Graph X	
Channets v 0	
no openações	
90540 AM 92220 AM 94000 AM 95540 AM 95540 AM 95540 AM 95540 AM 9502014 6520 2014 6520 AM	
-04.00 -04.00 -04.00 -04.00	
0 Notifications	6/30/2014 9:06:21 AM



## **Shutting Down the Software**

There are a few different ways to shut down the software.

## Shut Down: File Menu

If the current report has been saved, shutting down the software by using the **File** menu will keep the report settings set during that session. If the current report has unsaved report settings or dataset, the software will prompt the user to save before shutting down.

### To shut down the software using the file menu:

- 1. Click the File tab.
- 2. Click the Exit Application button in the bottom right corner of the menu.

## Shut Down: X Button

If the current report has been saved, shutting down the software by clicking the X button will keep the report settings set during that session. If the current report has unsaved report settings or dataset, the software will prompt the user to save before shutting down.

#### To shut down the software using the X button:

1. Click the X button in the top right hand corner of the software screen.

## Shut Down: Keyboard Shortcut

#### To shut down the software using the keyboard shortcut:

- 1. Simultaneously press Alt+F4 on the keyboard.
- 2. If the current report has unsaved report settings or dataset, the software will prompt the user to save before shutting down.

## Uninstalling the Software

Uninstalling the MadgeTech 4 Standard Software is easy and can be done through the operating system on the user's computer.

#### To uninstall the MadgeTech software:

- 1. Click the Start menu.
- 2. Navigate to and select Control Panel.
- 3. Navigate to and select **Programs and Features** to display a list of programs currently installed. (*shown right*)

Use the scroll bar to locate **MadgeTech 4** in the list. Then right-click the program within the list and select **Uninstall**. A message will appear. *(shown right)* 

Click **Yes** to uninstall the software. Click **No** to keep the software and cancel the action.

	1	_
File	Device	Report
Opt <u>i</u> ons	E <u>x</u> it Ap	plication



Control Panel Home	Uninstall or change a program				
View installed updates	To uninstall a program, select it from the list and th	en click Uninstall, Change, or Repair.			
Turn Windows features on or					
off	Organize 👻				
Install a program from the network	Name	Publisher	Installed On	Size	Version
	Adobe Acrobat X Pro - English, Français, Deutsch	Adobe Systems	9/18/2013	3.39 GB	10.1.8
	Adobe AIR	Adobe Systems Inc.	6/3/2013		2.5.1.17730
	Adobe Community Help	Adobe Systems Incorporated.	6/3/2013		3.4.980
	Adobe Content Viewer	Adobe Systems Incorporated	6/3/2013		1.4.0
	Adobe Creative Suite 5.5 Design Premium	Adobe Systems Incorporated	6/3/2013	6.83 GB	5.5
	Adobe Flash Player 11 ActiveX	Adobe Systems Incorporated	3/20/2013	6.00 MB	11.5.502.135
	Adobe Flash Player 11 Plugin	Adobe Systems Incorporated	9/12/2013	6.00 MB	11.8.800.168
	Adobe Reader X (10.1.8) MUI	Adobe Systems Incorporated	10/10/2013	480 MB	10.1.8
	Adobe Widget Browser	Adobe Systems Incorporated.	6/3/2013		2.0 Build 230
	BarTender 10.0	Seagull Scientific	7/1/2013		10.0.2868
	Cisco EAP-FAST Module	Cisco Systems, Inc.	3/20/2013	1.55 MB	2.2.14
	Cisco LEAP Module	Cisco Systems, Inc.	3/20/2013	644 KB	1.0.19
	Cisco PEAP Module	Cisco Systems, Inc.	3/20/2013	1.23 MB	1.1.6
	Datalogger Interface (Driver Removal)	Silicon Laboratories	6/3/2013		
	Sa Dell Support Center	Dell Inc.	3/20/2013	128 MB	3.1.5907.16
	Dell WLAN and Bluetooth Client Installation	Dell Inc.	3/20/2013		9.0
	E FileZilla Client 3.7.3	Tim Kosse	10/11/2013	17.6 MB	3.7.3
	😨 Google Chrome	Google Inc.	10/7/2013		30.0.1599.69
	😰 Intel® Control Center	Intel Corporation	3/20/2013	1.46 MB	1.2.1.1007
	M Intel® HD Graphics Driver	Intel Corporation	3/20/2013	74.2 MB	8.15.10.2712
	Management Engine Components	Intel Corporation	3/20/2013	20.4 MB	8.0.1.1399
	Rapid Storage Technology	Intel Corporation	3/20/2013	18.4 MB	11.1.0.1006
	El Intel® Trusted Connect Service Client	Intel Corporation	3/20/2013	10.6 MB	1.23.219.2
	M Intel® USB 3.0 eXtensible Host Controller Driver	Intel Corporation	3/20/2013	18.4 MB	1.0.5.235



Programs and Features	
Are you sure you want to uninstall MadgeTe	ech 4?
In the future, do not show me this dialog box	Yes No



## Software Menus and Navigation

Each section of the software will be explained briefly in the following pages. Please refer to the software help menu for more information or troubleshooting. More detailed information is also available on pages 23-74 of this manual.





## The File Menu

Within the first upper left tab titled File, there are many different options that appear. Below is a brief description of every item. For more detailed information on the File tab, please refer to page 52 of this manual.

- New: Creates a new blank report.
- **Open**: Opens a report saved outside the software.
- Save: Saves the file to the file database.
- Save To: Saves reports as an MTFF file.
- Import Files: Imports files from locations outside of the software.
- Import Folder: Imports folders from locations outside of the software.
- Print: Prints the selected open report.
- Close: Closes the selected open report.
- Recent Documents: The side bar will show any recent documents that have been opened or saved.
- Options: Many software settings and defaults can be managed and edited here.
- Exit Application: Closes the software.

New     Recent Documents       Image: Save     Image: Save       Image: Save Too     Image: Save	File					
Open   Save   Save To   Import Eiles   Import Folders	$\sim$	<u>N</u> ew	ŀ	Recent Documents		
Save       Save To       Import Eiles       Import Folders		<u>O</u> pen				
Save To  Save To  Import Eiles  Import Folders		<u>S</u> ave				
Import <u>Files</u> Import Fol <u>d</u> ers		S <u>a</u> ve To	F			
Import Fol <u>d</u> ers		Import <u>F</u> iles				
	1	Import Fol <u>d</u> ers				
Erint +	S	<u>P</u> rint	F			
Close	1	<u>C</u> lose				
Options Exit Application					Opt <u>i</u> ons	Exit Application

File Tab



## **The Options Menu**

The **Options** button, located at the bottom right section of the **File** tab, offers a variety of options that affect the appearance and default settings of the software.

- Device: Change device settings of a logger in regards to calibration notifications and importing engineering units from the currently connected devices.
- Display: Edit the default settings when the software opens.
  - Page display allows the user to choose what measurement the page display can be: Inches, Millimeters or Centimeters.
  - Viewing data allows the user to edit the time format and channel grouping.
  - Cooling flags allows the user to choose the default cooling flags that can be displayed.
  - The Layout section allows the user to edit the ability to minimize to the system tray, the overall software color scheme, and resetting the screen layout.
- File: Change how files are imported and where the preferences and file database are located.
- Graph: Change the default graph properties.
- Units: Change the default colors for the various unit types.
- Address Book: Manage the contacts within the software.
- Email Settings: Manage the server address, port and email authentication settings.
- Communications: Configure and display detected interfaces.
- Reporting: Change the software problem and usage reporting preferences.
- Wireless: Configure the timeouts of wireless timeouts.
- Interop: Software built using the Windows Communication Foundation (*WCF*) can retrieve real time readings from data loggers connected to the MadgeTech 4 software.
- Cloud: Login and manage MadgeTech Services Cloud account.

Options	<u> </u>
Device	Change device settings
Display	oninge derive betingu
File	Calibration
Reports	Display popup notification when a device nears its next calibration date
Alarms	Number of days before notifying: 7
Units	Engineering Units
Address Book	Automatically import engineering units from connected devices
Email settings	
Communication	
Reporting	
Wireless	
Interop	
Cloud	
About	OK Cancel



## The Device Menu

The **Device tab**, located at the top of the menu bar, contains all of the features for managing devices. Within this tab are four different sections: **Control**, **Alarms**, **Information**, and **Wireless**. Below is a list of commands and options found in the device menu. Details for each can be found in the **Working with Devices** chapter on page 23 of this manual.





## The Report Menu

The Report tab, located at the top of the menu bar, contains all of the features and options for managing reports. Within this tab are five different sections: Graph, Data Table, Statistics, Channels & Readings, and Report Options. Below is a list of commands and options found in the report menu. Details for each can be found in Managing Data, Folders and Reports chapter on page 52 of this manual.





Axis Positions - Change which side of the graph each axis is positioned.





Time Markers - Allows graphs to be displayed with cycle duration properties.

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18

## **Screen Navigation**

The MadgeTech 4 software offers a display with nearly limitless report capabilities and customization features. Users now have the opportunity to arrange the display screen to suit specific needs such as size, placement, and information accessibility.

## **File Database**

• The File Database panel contains several different folders where reports can be saved or deleted. Users can also create new folders to help organize datasets and reports.

### **Channels Panel**

• The Channels panel displays the different panels within the current open report. If no report is open, the panel will be blank.

### **Connected Devices**

 The Connected Devices panel displays a list of devices that are connected to the PC or available through wireless transmission. A device in this panel must be selected in order to enable any device specific features.

#### **Files**

• The Files panel displays the contents of the folder selected in the File Database panel.

Users can toggle between the Files panel and Connected Devices panel depending on their intended use of the software at that time.

On each of the panels header bar there is a **downward pointing arrow** icon and a pin icon. Clicking on the pin icon will cause the panel to auto hide and become a tab in the left margin. To view the contents when the panel is hidden, hover the mouse over the hidden panel's header. A context menu is available with the following options:

- Float: This allows the selected panel to Float and can be moved anywhere on the screen. A panel can also float by clicking on its header, holding and dragging it anywhere on the screen, then releasing it. (shown below)
- **Dock**: This option locks the selected panel in its original position.
- **Dock As Document:** This option adds a panel to the report tab group.
- Auto Hide: This option hides the panel so only the header is visible.
- Close: This option closes the panel.



Floating Datasets Panel



Device ID	Model	Serial No.	
1	RFPulse	RFPulse2000A	
	1	1 RFPulse	1 RFPulse RFPulse2000A

Connected Devices Panel

Datasets					
Search	P Searc	h by: No prefere	nce	•	
Device ID	Model	Serial No.	Last Calibration	Readings	
RFPulse	RFPulse2000A	W00273	Never	19	9/1
QT	QuadTemp	A00063	Never	2	10/1
RFVOLT	RFVolt2000A	T00272	9/18/2013	72	10/
RFVOLT	RFVolt2000A	T00272	9/18/2013	72	10/
RFPulse	RFPulse2000A	W00273	Never	19	9/1
Front Door	Therm.A.Lert	X00395	1/31/2012	155	7/29
QuadTC	QuadTemp	A00000	Never	1000	6/1
OctTC	OctTemp	A00000	Never	1000	6/1
OctV	OctVolt	A00000	Never	1000	6/1
Connected device	s Files				

Files Panel



allow the panel to be hidden

show a variety of options



Hovering over a hidden panel will display the contents of that panel. Note: the pin icon now points to the left.



## **Rearranging Panels**

In addition to the hiding and floating panel options, panels can also be manually rearranged to meet user preferences.

### To rearrange a panel:

- 1. Click and hold the header of the panel.
- 2. Move the mouse in the direction of where the panel's new location will be. A highlighted blue section will move with the mouse to act as a preview for the panel. Continue to move the mouse until the following screen appears.



Optional Placement of the panels

Move the mouse to the desired option, then release the mouse. The top option will place the selected panel above the panel in which the image appeared in. The right option will place the selected panel to the right of that panel, the left option will place the selected panel to the left of that panel, the bottom option will place the selected panel below that panel, and the center option will place the selected panel below that panel, and the center option will place the selected panel below are sample screens of the steps to rearrange the **Channels** panel. Now the **Channels** panel is above the chart window instead of to the left as it was originally.





## **Restoring Default Windows**

The software has an easy way to restore the panels of the software to the default screen layout.

#### To restore default windows:

- 1. Click the File tab and then click Options.
- 2. Click the **Display** tab.
- 3. Scroll to the bottom and select **Reset screen layout**. The software will display a prompt to confirm the request. Select **Yes**.
- 4. It will return to the options panel, select **OK** to apply the changes. Any unsaved data will also be prompted by the software to be saved.
- 5. If the report is open and has not been saved, the reset screen layout will not be applied.



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Reset layout?	
Are you sure you want to reset the screen layo The layout will reset when the Options dialog a couple seconds.	out? is closed, and the process may take
	Yes No

## The Help Menu

The MadgeTech 4 software offers a comprehensive help menu to answer any questions encountered while using the MadgeTech software. Users have the ability to search directly using key words or utilize the pre-formulated categories to navigate and find a solution to the problem at hand.

- Using the contents portion of the help menu, there are various sections that cover the most common topics.
  - MadgeTech 4 Help
  - Working with devices
  - Managing reports
  - Managing folders
  - Working with data
  - Using MadgeTech Cloud Services
  - Appearance
  - Troubleshooting
- The index portion of the help menu allows searching for one word.



• The search option of the help menu allows the user to insert a question or phrase.

For more details about the help section, refer to Managing Data, Folders and Reports, Maintenance, and Troubleshooting sections of the manual.



## **Working With Devices**

In the MadgeTech 4 Software, data can be viewed in graphical or tabular formats as well as summary and statistics views, which are available for further analysis. The software features exporting to Microsoft **Excel**<sup>®</sup>, data annotation, digital calibration and more. By transitioning information seamlessly from MadgeTech 2 to MadgeTech 4 (*CSV files only*), users can view their data like never before.

## **Battery Warning**

Most MadgeTech data loggers are equipped with batteries that are user replaceable. There are a select few that **must** be sent back to MadgeTech for replacement. Please refer to the specific data logger's **Product Information Card** or **Product User Guide** for battery warnings and replacement information. Documentation can always be located on the MadgeTech website under the specific product.



## **Connecting and Disconnecting a Device**

Each data logger must be connected to the PC to allow communication with the device. The MadgeTech wireless data logger series can communicate wirelessly using a MadgeTech transceiver. (*sold separately*)

The following steps should be used for connecting and disconnecting data loggers using the appropriate interface cable for that device.

#### To connect a device:

- 1. Plug the interface cable into an available COM or USB port on the computer.
- 2. Plug the stereo jack end of the interface cable into the device, or insert the data logger into the interface docking station. (*Note: The connection from the interface cable to the data logger varies depending on the interface cable and data logger being used.*)
- 3. Once the data logger is connected to the PC, it will appear in the **Connected devices** panel.

### To disconnect a device:

1. Unplug the stereo plug end of the interface cable from the data logger, or remove the data logger from the interface docking station. (*Note: Do not disconnect the data logger while device settings are being applied.*)

For more detailed instructions about using wireless data logger, please refer to page 50 of this manual.



## **Start a Device**

When starting a device to record data, several options and start methods are available. Start settings can be specified before deploying the device. Choose **Custom Start** to select or modify logging options or the devices can be started using the current settings by selecting either **Real Time Start** or **Batch Start**. The **Real Time Start** option allows the devices to report readings back to the central PC instantly. The **Batch Start** option allows devices of the same model to be programmed with the same custom start settings.

Multiple devices can be selected by holding the **Ctrl** or **Shift key**, selecting additional devices, or pressing the arrow keys. However, the devices selected must all be the same model in order for the start options to become available.

## Custom Start

When starting a device using custom settings, the user can specify when the device starts by choosing to start immediately or having a delayed start and then a reading interval, which will vary depending on the device and application. Additional options, such as the stop method and enabling memory wraparound, *(overwriting the internal memory when the reading capacity is reached)* are available depending on the properties of the selected device. *(shown right)* 

## **Immediate Start**

#### To start a device using custom settings for an immediate start:

- 1. In the **Connected devices** panel, select the device to start. The device should be highlighted.
- 2. On the **Device** tab, in the **Control** group, click **Custom Start**. Users can also right-click on the device and select **Start**, then **Custom Start** in the context menu.
- 3. Specify all desired settings.
- 4. Click Start.
- 5. When the device has been started, the status in the Connected devices panel will read Running.

## **Manual and Delay Start**

Depending on the device, the user can manually start a data logger or perform a delayed start using the **Custom Start** option.

#### Manual Start

A data logger with the manual start function needs to be programmed in order for a Manual Start to be performed.

#### To manually start a device:

- 1. In the Connected devices panel, select the device. Confirm that the intended device is highlighted.
- 2. On the **Device** tab, in the **Control** group, click **Custom Start**. Users can also right-click on the device and select **Start**, and then **Custom Start** in the context menu.
- 3. Under the Start method section within the Start device screen, select the Manual radio button.
- 4. Choose any additional necessary start settings (such as reading interval, memory wraparound, stop method, etc.).
- 5. Click the Start button. The Start device box will close and the status column in the Connected devices panel will read, Waiting for manual start.
- 6. To begin recording, please refer to the manual start method in the product information card provided with the device.





#### **Delay Start**

When using the **Delay Start** method, the user can decide when the data logger will begin recording by setting a time in the **Custom Start** window. This method does not require the user to be present to start the device, as it will automatically start at the selected time.

### To Delay Start a device:

- 1. In the Connected devices panel, select the intended device. Confirm that the intended device is highlighted.
- 2. On the **Device** tab, in the **Control** group, click **Custom Start**. Users can also right-click on the device and select **Start**, and then **Custom Start** in the context menu.
- 3. Under the Start method section within the Start device screen, select the Delay radio button.
- 4. Click the dropdown menu beside the **Delay** radio button and choose the intended start date and time.
- 5. Choose any other necessary start settings (such as reading interval, memory wraparound, stop method, etc.)
- 6. Click the **Start** button.
- 7. The status column in the **Connected devices** panel will read **Waiting to start**.
- 8. Once the selected start time has passed, click the **Refresh Devices** button if the device does not appear. (*Note: A wireless device will update on its own, otherwise the duration of the refresh will be long.*)
- 9. The status column in the Connected devices panel will read Running.

## <u>Quick Start</u>

When a device is started using the **Quick Start** option, it will start immediately using the most recent **Custom Start** settings. It is important to make sure that the selected devices are properly configured **before** using **Quick Start**.

### To Quick Start a device:

- 1. In the **Connected Devices** panel, select the intended device. Confirm that the intended device is highlighted.
- 2. On the **Device** tab, in the **Control** group, click **Quick Start**. Users can also right-click on the device and select **Start**, then **Quick Start** in the context menu.
- 3. When the device has properly been started, its status in the Connected devices panel will read Running.

## Real Time Start

When a device is started in **Real Time**, reading data is transferred directly to the software in the form of a dataset and stored in the software's internal database. The data can be viewed as a report at any time and will automatically update as new readings are received.

Wireless and non-wireless devices function differently when started in **Real Time**. For more information on using a wireless device in real time please refer to **Reference: Real Time Recording with Wireless Devices** on page 89 in this manual.

#### To start a device in Real Time:

- 1. In the **Connected devices** panel, select the intended device. Confirm that the intended device is highlighted.
- 2. On the **Device** tab, in the **Control** group, click **Real Time Start**. Users can also right-click on the device and select **Start**, and then **Real Time Start** in the context menu.
- 3. Specify device start and stop preferences, as well as the reading interval in the **Parameters** tab. **Alarm rules** can be configured in the **Alarm Rules** tab. (shown right) (Note: For more information about adding, changing or removing alarm rules, please refer to page 36 in this manual.)
- 4. Click Start button.
- 5. If **Display a graph when Real Time logging begins** is checked in the **Display** tab of the **Options** dialog, a graph will automatically appear containing the real time data of the devices selected.
- 6. When the device has properly been started its status in the **Connected devices** panel will read **Real Time**.





#### A device can also be started in Real Time when it is already running:

Under certain conditions a device can be started in **Real Time** when it is already running, if it is not a wireless device. The device must be physically plugged into the computer, wraparound must be disabled and the reading interval must be 2 seconds or slower.

- 1. In the Connected devices panel, select the Running device requiring a Real Time start option. Its status will read Running.
- 2. In the Device tab, in the Control group, click Real Time Start. (Note: The status will now read Real Time.)
- 3. In order to stop the device, **Stop** must be clicked twice.

## Batch Start

When using the **Batch Start** option, one device is programmed and will specify the settings that other similar devices will use. Selecting multiple devices before beginning a batch start is not required. (*Note: Only devices of the same model and firmware can be Batch Started together.*)

A **Batch Start** is useful when a user has many duplicate or same model devices that need to be started with the same settings. The **Batch Start** option allows the user to start all of the devices with the push of one button, instead of individually changing the settings and starting each device individually, saving valuable time and effort.

The **Batch Start** will have the same start device settings screen as the **Custom Start** option. Additionally, after the **Start** button is clicked, a **Batch Start Log** dialog box will appear to inform the user when each device is starting and when it actually has been started. (*shown right*)

#### To begin a Batch Start:

- 1. In the **Connected devices** panel, select the intended device to be used as a basis for the **Batch Start**.
- 2. On the **Device** tab, in the **Control** group, click **Batch Start**. Users can also rightclick on the device and select **Start**, then **Batch Start** in the context menu.
- 3. Configure settings and start the device that is plugged in by clicking Start.
- 4. Remove the first data logger from the docking station, then place the next data logger into the docking station. When the devices have properly been started their status in the **Connected devices** panel will read **Running**. Repeat this step until all of the intended devices have been started.



Any devices plugged into the PC that are the same model as the device used to configure the **Batch Start** will automatically start. Each device shown as **Started** or **Waiting to Start** can then be unplugged.

The device will begin recording data once it has been started. Depending on the stop method selected, the device will continue to collect data until manually stopped, it reaches memory capacity or it has reached the stop parameters chosen by the user. Once the device has been stopped, the data collected can be downloaded into a dataset and used to generate any type of report.



## **Stop a Device**

When devices are currently recording data, running in **Real Time**, or waiting to start, users can choose to stop recording. Devices that are stopped will no longer record data until configured to start again. The stop methods available will vary by model, but can include: **Manual Stop**, **Automatic Stop**, and **Readings Stop**. These stop methods are designated when the device is started.

Multiple devices can be selected to stop by holding the **Ctrl** or **Shift key** and either selecting additional devices or pressing the arrow keys. All of the devices that have been selected will be highlighted in the **Connected devices** panel.

## Manual Stop

The **Manual stop** option is convenient and easy to set up. There is no information that needs to be entered in comparison to the **Automatic** or **Readings Stop** methods. **Manual stop** is always available even when other stop methods are selected at startup.

#### To configure Manual Stop during startup:

1. In the Custom Start box, select the Manual radio button under the Stop Method section.

#### To manually stop a device:

- 1. In the **Connected devices** panel, select the intended device to stop.
- 2. On the **Device** tab, in the **Control** group, click **Stop**. Users can also right-click on the device and select **Stop** in the context menu. (*Note: With 101A data loggers, the Manual Stop option can enable a pushbutton stop if the Manual Start option is also selected.*)

If a device is both recording data and running in **Real Time**, **Stop** must be clicked twice in order to stop the device. Clicking **Stop** once will only stop the **Real Time** recording, selecting **Stop** the second time will stop the data from recording.

## Automatic Stop

The **Automatic Stop** method is time dependent. Users can set a future point in time, to stop a logger from recording. The user does not need to manually stop the device, as it will stop automatically.

#### To configure the Automatic Stop method:

- 1. In the Custom Start box, select the Automatic radio button under the Stop Method section.
- 2. In the dropdown menu next to the Automatic radio button, select the time when the device should stop recording.
- 3. To confirm the device has stopped recording, click the **Refresh Devices** button in the **Connected devices** panel. Now the status column in the **Connected devices** panel will read **Stopped**.

## **Readings Stop Method**

The **Readings Stop** method is dependent on the number of readings the device records. For example, if the duration of 20 is entered into the readings text box, the device will stop recording once it records 20 readings.

#### To configure the Readings Stop Method:

- 1. In the Custom devices box, select the Readings radio button under the Stop Method section.
- 2. In the text box next to the **Readings radio** button, enter the number of readings the data logger should record before stopping.
- 3. To confirm the number of readings have been recorded, click the Refresh Devices button in the Connected devices panel.
- 4. Now the status column in the **Connected devices** panel will read **Stopped** and the number of readings listed in the **Readings** column will match what was entered in the Start device box.



## **Downloading Data**

When the data logger is recording data, it stores the readings in its internal memory. To view the data, it must be downloaded from the device and viewed as a graph, a data table, or statistics report in the MadgeTech software. Downloaded data will remain stored on the device until the device is reset or restarted. (*Note: The MadgeTech Software will not download the same data more than once.*)

## Download Data from a Device

#### To download data from a device:

- 1. In the Connected devices panel, select the intended device to download data from.
- 2. On the **Device** tab, in the **Control** group, click **Download**. Users can also right-click the device and select **Download** in the context menu.

## Automatically Display Reports of Data that have just been Downloaded

The user can also choose to have reports automatically appear to display data that have just been downloaded.

### To configure the appearance of reports:

- 1. Click the File tab, then click Options.
- 2. From the **Options** screen, click **Display**.
- 3. In the **Viewing Data** section, select the check box next to each report type the user wants to automatically open when data is downloaded from a device.

## **Download While Recording**

Certain devices have the ability to download data in the software while recording. The reading interval must be 2 seconds or slower, and the memory wraparound must be disabled.

#### To download data while the device is still recording:

- 1. In the **Connected devices** panel, select the intended device to download data from. Confirm the intended device has been selected by making sure the device is highlighted.
- 2. On the **Device** tab, in the **Control** group, click **Download**. To the right is an example of the following dialog box that will appear, asking to stop the device from recording.
- 3. Click **Yes** to stop the data logger and download the data. Click **No** to download the data and have the data logger continue to record. Click **Cancel** to neither stop the device nor download any data.



Sto	op before downloading?
	One or more devices are currently running. Would you like to stop recording before downloading the data?
	Yes No Cancel



## **Reset a Device**

When the data stored in a device is no longer needed or resetting the status of alarms and triggers is required, the device can be reset. If the device is currently recording, it will stop before resetting. Once a device is reset, the stored reading data cannot be recovered, so always confirm that all data is downloaded and saved before resetting the device.

### To reset a device:

- 1. In the Connected devices panel, select the intended device to reset.
- 2. On the **Device** tab, in the **Control** group, click **Reset**. Users can also right-click the device and select **Reset** in the context menu.



## Workflows

The Workflows feature allows the user to automate tasks to efficiently download data, create reports and more. A Workflow is a saved set of instructions that tell the software to perform tasks when specified conditions are met. Workflows can be scheduled to run at specific dates and times or when specific data loggers are connected to the PC. (*Note: The MadgeTech Software must be running for a scheduled Workflow to execute.*)

## Adding a Workflow

#### To add a workflow to the software:

- 1. On the **Device** tab, in the **Control** group, click the **Workflows** icon.
- 2. Select New on the right hand side of the window, and do the following:
  - a. Enter a name in the Name box
  - b. Select the conditions that need to be met before the actions occur.
  - c. Select which actions will occur.
- 3. Click Ok.

## **Changing a Workflow**

#### To change a workflow in the software:

- 1. On the Device tab, in the Control group, click the Workflows icon.
- 2. Select the intended workflow to change. (*Note: A workflow must be disabled before it can be edited*)
- 3. Click **Properties** and change the workflow to fit the desired preferences.
- 4. Click Ok.

### **Disabling a Workflow**

#### To toggle whether a workflow is enabled or disabled in the software:

- 1. On the **Device** tab, in the **Control** group, click the **Workflows** icon.
- 2. Select the intended workflow to enable or disable.
- 3. Click **Enable** or **Disable**, depending on the current status of the workflow.

## **Duplicating a Workflow**

#### To duplicate a workflow:

- 1. On the Device tab, in the Control group, click the Workflows icon.
- 2. Select the intended workflow to duplicate.
- 3. Click Duplicate. In the box that appears, change the workflow settings to fit desired preferences.
- 4. Click Ok.

#### Manually Running a Workflow

When a workflow needs to be performed prior to meeting the condition requirements that were set, a workflow can be run manually.

#### To manually run a workflow in the software:

- 1. On the Device tab, in the Control group, click the Workflows icon.
- 2. Select the intended workflow to manually run. (Note: A workflow must be enabled and not already running before it can be manually run.)
- 3. Click Run.

#### **Deleting a Workflow**

#### To delete a workflow:

- 1. On the **Device** tab, in the **Control** group, click the **Workflows** icon.
- 2. Select the intended workflow to remove and select Delete.



		<b>×</b>
Name: HiTemp140 Work	flow	
Perform actions when any o	of the following conditions are met:	
Any HiTemp140	At a time     5:33 PM every 1 day(s) starting 8/14/2014	•
		+
When conditions are met, d	lo the following:	_
When conditions are met, d Create reports	to the following: Save graph, data table, statistics view to database	•
When conditions are met, d Create reports	Io the following: Save graph, data table, statistics view to database	• +
When conditions are met, d Create reports - Download data Quick start device	to the following: Save graph, data table, statistics view to database	•
When conditions are met, d Create reports Download data Quick start device Real time start device	to the following: Save graph, data table, statistics view to database	•
When conditions are met, d Create reports Download data Quick start device Real time start device Send email	to the following: Save graph, data table, statistics view to database	•
When conditions are met, d Create reports Download data Quick start device Real time start device Send email Stop device	to the following: Save graph, data table, statistics view to database	• • •
When conditions are met, d Create reports • Download data Quick start device Real time start device Stop device Create reports	to the following: Save graph, data table, statistics view to database	• + - - -



## Calibration

MadgeTech data loggers must be calibrated annually (*at minimum*). MadgeTech offers custom calibration services or the ability to calibrate the device through the software. Most data loggers can be calibrated through the software, however depending on the application, it is recommended that the devices be serviced by the MadgeTech Calibration Lab.

Calibration parameters, as well as the last calibration date, are stored within the device's non-volatile memory and can be accessed through the software. The software also allows the device to maintain calibration while being used on any computer. Most data loggers can be effectively calibrated using a single point to correct an offset. In some cases two points may be used to correct for gain and offset errors. (*Note: In most cases a very stable environment and accurate reference are required to perform an accurate calibration. MadgeTech cannot guarantee the accuracy of any device calibrated outside of MadgeTech.*)

There are two methods to input the calibration data into the device. First is the **Gain and Offset** option, which allows the user to enter a gain and offset directly when calibrating. Second, the **High and Low Values** option. The calculation used for calibration is x=(y-b)/m.

The values these letters represent are seen below:

- x=calibrated value
- y=original device measurement
- b=offset
- m=gain

Another way of visualizing this calculation is:

• Calibrated value= (reading-offset)/gain

## Gain and Offset Values

The default gain of 1 and offset of 0 do not affect the readings the device takes. The device should be set to the default gain of 1 and offset of 0 before taking measurements used for a calibration adjustment.

## High and Low Values

The alternative to entering gain and offset values directly is letting the software calculate them by entering device readings at two reference points using the **High and Low Values** option. These reference points are called **High** and **Low** because devices are generally tested at a low-range and a high-range value.

*Example:* A user wants to calibrate a HiTemp150. The **low** setting the user decides to use is 50 °C and the **high** setting the user decides to use is 150 °C. These values are the reference values. At a stable environmental temperature of 50 °C, the device readings are 50.17 °C. At 150 °C the device is reporting 149.98 °C. The device readings for this example would be 50.17 and 149.98.

Using the above data, the user would fill in the following information on the calibration screen, assuming a unit of °C:

## Low

- Reference value: 50
- Device reading: 50.17

#### High

- Reference value: 150
- Device readings: 149.98

Using these values, the software calculates the gain and offset values and writes them to the device. The gain and offset values will be subtracted or added to each reading downloaded from the device, and the data will be correct without any further manipulation.



## **Calibrating a Device**

Devices need to be calibrated on a regular basis to ensure readings are accurate. If device sensor information or other specifications are provided with the logger, the user can calibrate a device themselves. Devices can also be sent back to the MadgeTech Calibration Lab for calibration as well for custom and certified calibrations.

For a user to calibrate a device with the software:

- 1. In the **Connected devices** panel, select the intended device to calibrate.
- 2. On the Device tab, in the Information group, click Properties. Users can also right-click on the selected device and click Properties in the context menu.
- 3. Click the Calibration tab. (shown right) (Note: If the Calibration tab is missing, the device does not need to be calibrated. Recording the current values is recommended, so the original calibration values can be restored if desired.)
- 4. Click the Calibrate button.

A series of Calibrate a device windows will appear. If the device has more than one channel, select the intended channels to calibrate. (shown right)

Next, decide how to input the calibration data. Refer to the explanations previously outlined in this section to choose the appropriate option.

If the High and Low values option is selected, the following screens will appear:

(Note: Depending on the device, the number of screens and units shown will be different based on the different channels the devices have.)

Calibrate a device	
Select channels to calibrate	
✓ Temperature ✓ Humidity	
Select All Unselect All	
	Next Cancel

Select the intended channels to calibrate. If there is more than one, select all that apply.

-20

G Calibrate a devic

Degrees Celsius (°C) 🔹



do you want to input your calibration data?
High and low values
Gain and offset

Select the input of the calibration data: High/Low Values or Gain/Offset.





When the **Confirm Calibration Settings** screen appears, click **Write** and the following message will be displayed:

<b>(</b>	Calibrate a device							
	Confirm calibration settings							
	Ensure the information be	ow is correct, th	en click Write. Reference	Device				
	Temperature							
	Low: High:		-20 °C 60 °C	-20 °C 60 °C				
	Humidity							
	Low: High:		0 % RH 95 % RH	0 % RH 95 % RH				
	Enter a calibration date:	2/17/2014			15			
				Write	Cancel			

If the **Gain and offset** option is selected, the following screens will appear: (Note: Depending on the device, the number of screens and units shown will be different because of the different channels each device has.)



When the Confirm calibration settings screen appears, click Write and the following message will appear:

G Calibrate a device		<b>×</b>
Confirm calibration	settings	
Temperature		
Gain: 1	Offset: 0 °C	
Humidity		
Gain: 1	Offset: 0 % RH	
Enter a calibration date:	2/17/2014	15
		Write Cancel



## Software Alarm Rules

There are two types of alarm settings: **Software Alarm Rules** and **Device Alarm Rules**. To find out more information on alarms that can be modified through the device, please see page 43 of this manual.

## Alarm Rules

When a device is started in real time, **Software Alarm rules** can be set to notify individuals when certain conditions are met. This option is only available when a data logger is communicating with the software and started in **Real Time**.

The **Alarm Rules** option allows the high and low thresholds to be set, and high and low warning thresholds can be set if the device has this feature. A visual alarm notification will be triggered within the software when the alarm parameters are exceeded. **Alarm rules** can also be configured to send email notifications *(or text messages via email)* if the email server settings have been configured.

## Adding an Alarm Rule

#### To add an Alarm Rule:

- 1. On the **Device** tab, in the **Alarms** group, click **Manage Rules**. The **Real Time Alarm Settings** screen will appear.
- 2. Click the **New** button. The **Alarm Rule** box will appear, complete one of the following steps:
  - a. Enter a name in the **Rule name** box.
  - b. Select whether notifications will be sent when All conditions are met or Any condition is met.
  - c. Select the conditions to meet before notifications occur.
  - ${\sf d.} \ {\sf Select which notifications will occur.}$
  - e. Select whether notifications will only occur once or on a regular basis.
  - f. If notifications need to be received by email or text message, click **Email settings** and make sure the correct information has been entered. (*Note: If the email settings are incorrect, email and text message notifications will not be received.*)
- 3. Click the **OK** button. The **Ok** button will be disabled if the **Rule name** box is empty.

## **Changing an Alarm Rule**

## To change an Alarm Rule:

- 1. On the Device tab, in the Alarms group, click Manage Rules.
- 2. Click the alarm rule to change.
- 3. Click the Edit button.
- 4. Change the alarm rule settings to fit application preferences.
- 5. Click the **OK** button.

## Enable or Disable an Alarm Rule

## To enable or disable an Alarm Rule:

- 1. On the Device tab, in the Alarms group, click Manage Rules.
- 2. Click the icon in the Enabled column for the rule specified to toggle.
- 3. An **Enabled rule** will notify the user based on the conditions the user specified. A **Disabled rule** will not notify the user when its conditions are met. The order of alarms can be rearranged by selecting an alarm and using the **Move Up** or **Move Down** buttons.



An example of a Real Time Alarm Settings box

rform actions when: All conditions are met O An 200246 RFRHTemp2000A	y condition is met	• above	• 0 •C	• for 1	NOUITS +
Then conditions are met, do the	following:				
Show on-screen notification	v				•

An example of an Alarm Rule box.


### **Removing an Alarm Rule**

#### To remove an Alarm Rule:

- 1. On the Device tab, in the Alarms group, click Manage Rules.
- 2. Click the alarm rule to change.
- 3. Click the Delete button. To delete all the alarm rules, click the Delete All button.

### **Dismissing an Alarm Rule Notification**

If a notification is received that an alarm rule has triggered, users can choose to dismiss the alarm.

#### To dismiss an Alarm Rule notification:

- 1. On the Device tab, in the Alarms group, click Alarm Log.
- 2. Click the notification that needs to be dismissed.
- 3. Click the **Dismiss** button.
- 4. To dismiss all the notifications, click the Dismiss All button. (shown right)

### Alarm Acknowledgement

When logging data in real time and an alarm notification appears, users can choose to acknowledge it. This will allow the user to specify an action in response to the alarm and add comments. Pre-defined comment templates can also be configured for consistency and workflow efficiency.

#### To acknowledge a software alarm:

- 1. Start the data logger in real time and keep the report open. When an alarm is triggered while recording data, in the **Device** tab, select the **Alarm Log** button.
- 2. In the Alarm Log dialog box, choose the alarm from the list displayed and select Acknowledge. Enter a title for the action, add an additional comment or select a comment template for re-occurring alarm triggers if desired.
- 3. Select **Ok**. An annotation will now appear on the graph report highlighting where the alarm was triggered and display the added comment.
- 4. If there is more than one alarm, users can select multiple alarms by holding down the CTRL key and then select Acknowledge all. Selecting Acknowledge all will apply the same response to all selected alarms. To apply different responses to multiple alarms, they must be selected individually.

## Stopping Repeated Notifications for an Alarm Rule with a No Readings Condition

When setting up an alarm rule to continually notify when a device stops reporting readings, then the device becomes disconnected, users can choose to ignore further notifications until the device reconnects.

#### To stop repeated notifications for an Alarm Rule with a no readings condition:

- 1. On the Device tab, in the Alarms group, click Manage Rules.
- 2. Select the checkbox next to Ignore dismissed no readings notifications until the device reconnects.
- 3. Alternatively, the alarm rule that is sending the notifications can be disabled. However, disabling the alarm rule also means that the user will not receive notifications if any other device meets its conditions.









### Adding a Comment Template for Software Alarm Rules

Adding a standard comment template within the software will decrease time spent typing the same comment repeatedly and allow users to manage and track response options when an alarm is triggered.

#### Adding a comment template for software alarm rules:

- 1. Click the File tab, then click Options.
- 2. From the **Options** screen, click **Alarms**.
- 3. To create a new template click **New**. The **Template name** and **Comments** fields can now be edited. Insert the desired template name and enter the comments you would like to appear, then select **Ok**.
- 4. The list of pre-defined templates will be available to the user and displayed in the **Alarm Log** window when **Acknowledge** is selected.

Device Display	Configure pre-defined com	ments when adknowledging alarms.	
File Reports	Increased Thermostat		
Alarms Units Address Book	New Delete		
Email settings Communication Reporting Wireless	Template name: Comments:	Increased Thermostat Increased the plant thermostat to counteract the low temperatures.	
Interop Cloud			



# **Device Properties**

The **Device Properties** box is where all of the device information and settings are located, and where changes to those settings can be made. The following general information (*varies by model and usage*) can be found in the device properties:

- Revision
- Device ID
- Start date
- Last set stop date
- Time Zone last started
- Readings
- Battery level
- Reading interval
- Memory Wraparound status
- Thermocouple type
- Password
- Environmental Range

RFRHTEMP Properties RFRHTemp2000A 700246 Genera Revision: 3.1.D Channel Device ID: RFRHTEMP 1/15/2014 2:02:59 PM EST Start date: Calibration Last set stop date: Not set Time zone last started: EST Alarm Readings: 3814 Battery level: 100% (10.40v Wireles: Reading interval: 1 Second Display Wraparound: On Operating range -20 °C ~ 60 °C (-4 °F ~ 140 °F) New Template- 🔹 Save Print... OK Cancel

An example of the device properties box.

Other device specific settings such as Calibration, Channels, Power, Wireless

**Information**, and **Alarm and Trigger settings** can be viewed or changed by accessing the **Device Properties**. The **Properties** feature can be found on the **Device** tab in the **Information** group. **Device properties** can be viewed but not changed for devices that are currently recording or running in **Real Time**. (shown above)

### **General Settings: Properties of a Specific Device**

#### To view the properties of a specific device:

- 1. In the Connected devices panel, select the intended device to view the properties.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.

Many of the device properties require a reset before applying any of the changes made to the settings. Ensure that any data that needs to be saved is downloaded and stored before resetting the device.

### Checking the Power Status of a Device

Information about the power status of each device can be found in the **Device Properties** box. The **Power** tab will provide information such as the battery level, external power sources (*varies by model*), and if or when the device was last reset.

#### To view the power status information of a device:

- 1. In the **Connected devices** panel, select the intended device to view power properties.
- 2. In the Device tab, Information group, click Properties.
- 3. Select the **Power** tab. In the **Power** tab, all of the power properavailable can be viewed for the selected device. (*shown right*)

	RFRHTemp200	00A	Z00246
General Channels Calibration Power Alarm Wireless Display	Battery level: External power: Since last started, the Stopped: Waining to start: Logging:	94% (9.05v) Present device was reset while: No No No No	

An example of the power tab in the device properties box.



### Changing the Thermocouple Type of a Device

A thermocouple is made of two dissimilar conductors that are connected. When heated, they produce a voltage that can be correlated back to temperature. There are different thermocouple types that refer to the contrasting metal combinations. Each thermocouple type has a specific environment in which it can operate. If a device has a thermocouple, the type of thermocouple used for recording can be changed. The thermocouple type of the device must match the probe type or the recorded data will not be accurate.

### To change the thermocouple type of a device:

- 1. In the **Connected devices** panel, select the intended device that requires changing.
- 2. On the Device tab, in the Information group, click Properties. Users can also right-click on the device and select Properties in the context menu.
- 3. On the General tab, change the Thermocouple type in the dropdown. If the Thermocouple type dropdown is missing, the device does not have a thermocouple.
- 4. Click Apply.

Thermocouple	Range (°C)	Resolution	Accuracy
J	-210 to +760	0.1 °C	±0.5 °C
К	-270 to +1370	0.1 °C	±0.5 °C
Т	-270 to +400	0.1 °C	±0.5 °C
E	-270 to +980	0.1 °C	±0.5 °C
R	-50 to +1760	0.5 °C	±2 °C
S	-50 to +1760	0.5 °C	±2 °C
В	+50 to +1820	0.5 °C	±2 °C
Ν	-270 to +1300	0.1 °C	±0.5 °C

#### Below is a reference chart to the Thermocouple types:

### Add, Change, or Clear the Password of a Device

A password of a device that supports password capabilities can be set to protect it from being altered by unauthorized users. If the device does not have password capabilities, no password information will be displayed on the Device Properties screen.

### Setting the Password of a Device

Setting the password of a device is easy and simple. To the right is an example of the Properties box with no password set.

### To set the password of a device:

- 1. In the Connected devices panel, select the intended device to choose a password.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. On the General tab, click the Set password button.
- 4. Enter and confirm the password in the box that appears, and then click OK. Below is an example of the box.
- 5. The software will display the message below when the password has been successfully written.

Password - MultiChannel	(P02673)	
Password:		Password successful
	OK Cancel	





An example box of creating a password.



Now that a password is set for the selected device, all users will be required to enter the correct password before performing any tasks with the protected data logger. *(shown right)* 

### Changing the Password of a Device

At any time, users are able to change the password of a device that has currently has a password.

### To change the password of a device:

- 1. In the **Connected devices** panel, select the intended device to change the password.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and click **Properties** in the context menu.
- 3. On the General tab, click the Change password button.
- 4. Enter the old password and confirm a new password in the box that appears, and then click OK.
- 5. The following message will appear when a new password has been successfully written.

02673)
OK Cancel



MultiChannel Properties

General

Calibration

Power

Alarm

Trigger

Engineering Unit

New Template-

Revision:

Device ID:

Start date:

Readings:

Battery level:

Wraparound: Password:

Reading interval:

Operating range:

Last set stop date:

Time zone last started: EST

3.1.B

Not set

MultiChannel 2/17/2014 10:49:04 AM EDT

100% (3.31v)

Set Change Clear

-40 °C ~ 80 °C (-40 °F ~ 176 °F)

Print... OK Cancel

5 seconds

Off

### Clearing the Password of a Device

The password that is set on a device can be cleared at any time.

### To clear the password of a device:

- 1. In the Connected devices panel, select the intended device to clear the password.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. On the General tab, click the Clear password button. A Password box will appear.
- 4. Enter the correct password and click OK.
- 5. The following message will appear when the password has been successfully cleared:

Password - MultiChanr	el (P02673)	
Enter password:	OK Cancel	Password cleared
		ОК

### Saving a Device Template

Users can save commonly used device property settings as templates that can be applied to other data loggers of the same model for future, repeated use.

### To save a device template:

- 1. In the Connected devices panel, select any device.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. Enter in all desired properties for the device. In the dropdown located at the bottom left of the **Properties** box, choose **New Template**.
- 4. Select Save and a box will prompt to name the device template. Enter a name and select OK.





# **Channel Settings**

Channel settings in the **Device Properties** box refer to the renaming of channels. This feature is only available with the QuadTemp, OctTemp, QuadTemp2000 and OctTemp2000 data loggers and the CTL2000. There are two channel types for the QuadTemp and OctTemp data loggers, **Thermocouple** and **Ambient**. The setting to enable data recording is always inactive for the **Ambient** channel and cannot be selected because it works in conjunction with the corresponding thermocouple channel. (*Note: Disabling a thermocouple channel will also disable the corresponding ambient channel.*)

### Changing the Channel Name of a Device

#### To change the channel name of a device:

- 1. In the **Connected devices** panel, select the intended device to change the name of the thermocouple channel.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. On the **Channel** tab, click the **Use custom name** checkbox to change the name of the thermocouple. Below are examples of the Channels tab, with default settings and custom settings. (*Note: Only the thermocouple channel name can be changed.*) If there is no option to use a custom name, the device does not have the option to rename a thermocouple channel.







An example of the Use custom name checkbox selected and a desired thermocouple name applied.



# **Calibration Settings**

To edit the calibration settings please refer to the Calibration section on page 33 of this manual.

### **Device Alarm Rules**

There are two types of alarm settings: **Software Alarm Rules** and **Device Alarm Rules**. To find out more information on alarms that can be modified in the software, please see page 36 of this manual.

### **Changing the Device Alarm Rules**

To change the Alarm Settings of a device:

- 1. In the Connected devices panel, select the intended device to change the alarm settings.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. Click the Alarm tab. If the Alarm tab is missing, the device does not have any alarm settings.

### Configure the Alarm Settings:

- 1. The **High and Low** settings indicate reading thresholds at which the alarm becomes active.
- 2. The **Warn high and Warn low** settings indicate reading thresholds at which the alarm warning becomes active.
- 3. The **Delay** setting indicates how long to wait before the alarm becomes active after passing an alarm threshold.
- 4. The **Use cumulative alarm delay** checkbox indicates whether or not the alarm delay should reset when reading values fall back within the alarm threshold. *(shown right)* (*Note: Available settings vary per model.)*
- 5. Click the Apply button.

### Clearing an Active Device Alarm or Alarm Warning on a Device

### To clear an active device alarm or alarm warning on a device:

- 1. In the Connected devices panel, select the intended device's alarm to change.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. Click the Alarm button. If the Alarm tab is missing, the device does not have any alarm settings.
- 4. In the Alarm tab, do any of the following:
  - a. Click the Clear alarm button to clear the alarm so it is no longer active.
  - b. Click the Clear warning to clear the alarm warning so it is no longer active.

	PRHTemp10	1A			V000
General	Alarm status: Cl	ear Clear ala	arm		
Channels	Enable alarm	settings			
Calibration	High: 18	7	mbar		
Power	Low: 18	7	mbar		
Alarm	Delay: 0 d	d, 0 h, 0 m, 0 s			
Trigger	Use cumulati	ve alarm delay	?		
				Alarm	



# **Trigger Settings**

Trigger settings can be configured to allow a device to automatically begin and stop recording data when certain reading thresholds are reached. The trigger capabilities of a device may vary. To change the trigger settings of a device, please refer to the steps below.

### Change the Trigger Settings of a Device

### To change the Trigger Settings:

- 1. In the **Connected devices** panel, select the intended device to change the settings.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. Click Trigger. If the Trigger tab is missing, the device does not have any trigger settings.
- 4. Configure the Trigger settings.
  - a. Window Mode
    - After a device is started, recording begins when a reading is below the Low setpoint value or above the High setpoint value. If either trigger is disabled, the respective setpoint value is ignored. Disabling both the high and low triggers causes all readings to be recorded. This applies to devices that support the disabling of both triggers.
    - The **Trigger sample count** indicates how many readings each trigger sample should contain. When the indicated number of readings is recorded within the current sample, recording ends until a setpoint value is exceeded again. If the **Fill memory on first trigger** checkbox is checked, the sample count is set to the maximum number of readings the device can record.
  - b. Two Point Mode
    - The Start range indicates when recording begins. A reading must be above the **Start high** setpoint value or below the **Start low** setpoint value to begin recording. The Stop range indicates when recording ends. A reading must be above the **Stop low** setpoint value or below the **Stop high** setpoint value to end recording.
    - When recording ends, any reading outside the Start range will cause recording to start again.
  - c. Tri-axial Recorders
    - Recording begins when a reading from any axis exceeds the setpoint value of the axis in either the positive or negative direction.
- 5. Click Apply. The following images are Trigger screen examples:

MultiChannel Prop	erties	<b>x</b>	📧 MultiChannel Properties	×
	Volt101A - 24V	N83349	Volt101A - 24V	N83349
General Channels Calibration Power Alarm Trigger Engineering Unit	Trigger Mode       Two Point         © Window       Two Point         Enable high trigger       24       V         High setpoint       24       V         Ø Enable low trigger       4.4565       V         Fill memory on first trigger       Trigger sample count       1		General Channels       Trigger Mode Window       Two Point         Calibration Power Alarm       Enable high trigger Start high setpoint       24       V         Trigger       Stop high setpoint       -8       V         Engineering Unit       Engineering Unit       Stop low setpoint       6.604       V	itart Stop
-New Lemplate-	Save Print OK Cancel	Apply	-New Template-  Save Print OK Cance	Apply



# **Engineering Units**

**Engineering units** display readings in a user selected custom unit of measurement. **Engineering units** that are stored for use with reports can be added, changed, or removed. There are two types of **Engineering unit** levels: **Software** and **Device**. Users are able to create or change the engineering units in both the software level and device level. The user can manipulate the software level engineering units whenever the software is running, but the device level editing is only available when the connected device supports the desired engineering units.

The options that are available for creating or changing engineering units include **Gain and Offset** and **High and Low values** for specified conversions. Specification sheets are often available and provide conversions and/or gain and offset values for the sensor being used.

#### Software Level

This MadgeTech software feature allows the customization of **Engineering units**. **Software level units** (saved in the software specific to the user's PC, not the device) and functions are the same as non-customized units. The software level's engineering units are located on the **Device** tab in the **Information** group. When using the software level engineering units feature with a supported device, users can create a unit and apply it to a device.

#### **Device Level**

This feature is only available when the connected device supports engineering units. The device level engineering units feature is located in the **Engineering Unit** tab in the **Properties** screen.

There are two methods available for adding an engineering unit: Manually, and using the Engineering Unit Wizard.

### Adding an Engineering Unit

#### Adding an Engineering Unit manually:

- 1. On the Device tab, in the Information group, click Engineering Units.
- 2. Click the Add button.
- 3. Enter engineering unit information.
- 4. Click the Save changes button.
- 5. Now the new engineering unit will be saved. (*shown right*) (*Note: Adding an Engineering Unit will require a device reset, which erases all stored data.*)

### Adding an Engineering Unit Using the Engineering Unit Wizard

#### Adding an Engineering Unit using the Engineering Unit Wizard:

- 1. On the Device tab, in the Information group, click Engineering Units.
- 2. Click the Wizard button.
- 3. Complete the wizard steps. Below are examples of the **Engineering Unit** wizard.

Unit (U)	Name:	Unit			
	Reference unit:	Pulses (Puls	es)	•	
	For rate conversi	ons, use the l	ngineering	Unit Wiza	rd.
	Destination unit:	(Custom) 🔹			•
	Description:	Description: Miles per Hour			
	Label:	mph			
	Low scale point:	0	Pulses =	0	mph
	High scale point:	1	Pulses =	1	mph
	Gain: 1				
	Offset: 0	mph			
Add Delete					Save
Minard					Class

An example of entering a	n engineering	unit manually
--------------------------	---------------	---------------

Create or Apply Engineering Unit	Create or Apply Engineering Unit	Create or Apply Engineering Unit
Getting Started Before you begin, you must have Information on the sensor used for the unit -A datasheet containing unit information Click Next to continue.	Do you want to apply an engineering unit?	Wizard Complete Click Close to exit the wizard.

### Changing the Engineering Unit of a Device

The engineering unit of a device can be changed to automatically display readings in a custom unit when downloading data. There are two methods available for changing the engineering unit; the **Properties** screen, and using the **Engineering Unit Wizard**.

Changing Engineering Units: properties screen (Note: Only data loggers that support engineering units can perform this task)

- 1. In the Connected devices panel, select the intended device to change engineering units.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. Click the Engineering Unit tab. If the Engineering Unit tab is missing, the device cannot use an engineering unit.
- 4. Make sure the check box next to Enable engineering unit for this device is selected.
- 5. Select a Unit.
- 6. Click the Apply button. Now the selected device will display readings in the user selected unit.

#### Changing the Engineering Units: Engineering Unit Wizard

- 1. On the Device tab, in the Information group, click Engineering Units.
- 2. Click Wizard.
- 3. Click the Next button, and then Yes, apply to a device.
- 4. Select a unit from the list, or configure an alternative unit.
- 5. Complete the wizard. Below is an example of the engineering unit screen and engineering unit wizard screen.

			P	
ngineering Units		<u> </u>		<b>×</b>
	Name:		Create or Apply Engineering Unit	
	Reference unit:			
	Destination unit:	¥	Getting Started	
	Description:		Before you begin, you must have: -Information on the sensor used for the unit	
	Label:		-A datasheet containing unit information	
			Click Next to continue.	
	Low scale point: 0 = 0			
	High scale point: 1 – 1			
	Gain: 1			
	Offset: 0			
Add Delete		Save changes		
Wizard		Close		Next Cancel
			K.	
		X	A DESCRIPTION OF THE OWNER.	<b></b>
Create or Apply	Engineering Unit	Cre	ate or Apply Engineering Unit	
Citate on Apply	Engineering one			
Do you want t	o apply an engineering unit?	Appl	ly to Device	
		Select	a connected device:	
→ Yes, appl	y to a device	N833	49 Volt101A	
No, just of	create a unit			
		All re	adings will be cleared before applying engineering unit.	
	Next Canc	el	Next	Cancel

6. At the **Select unit** screen, choose a different engineering unit that has already been created, it will be located in the **Select unit** list box.





7. At the **Confirm Unit Settings** screen, click **Write**, and the following message will appear. (*Note: Keep in mind that when a device is reset, all of the stored data is lost.*)

G Create or Apply Engin	eering Unit	
Confirm unit settin	ngs	
Ensure the information b	below is correct, then click Write.	
		Confirm reset
Unit	Reference unit: Volts	
0 V = 0 U	1 V = 1 U	The device will be reset before the engineering unit is written. Are you sure you want to continue?
		Yes No
	Write	Cancel

8. From the **Select unit** screen, new units can be created by clicking the **Create a new unit** option. The following wizard screens will appear:

G Create or Apply Engineering Unit	
Select unit Current engineering unit used: , (.) Unit (U) N83349 (.)	
→ Create a new unit	

9. When the **Select measurement** screen appears, input the unit data. Refer to the explanations about the two options in the calibration section to choose the appropriate option.

Create or Apply Engineering Unit	Create or Apply Engineering Unit	Create or Apply Engineering Unit
Select measurement Temperature Pressure (absolute) Pressure (absolute) Rainfall Water Level Valeocity Strain Mess Force Energy Power Troque Co22 pH	Select destination unit Degrees Celsius (°C) Degrees Faintenhet (°F) Kelvin, (°R) Degrees Rankine (°R)	How do you want to input your unit data?  High and low values  Gain and offset
Net Cancel	My unit isn't listed      Net     Cancel	Net Cancel



10. When the High and low option is selected, the following screens will appear:

Create or Apply Engineering Unit	Create or Apply Engineering Unit	Create or Apply Engineering Unit
How do you want to input your unit data?  High and low values	Define unit scale Reference unit Volts (V)	Confirm unit settings Ensure the information below is correct, then click Write.
→ Gain and offset	Reference value     Device reading       Low:     0     V/       Image: View of the second secon	Degrees Celsius Reference unit: Volts 0 V = 0 °C 1 V = 1 °C
Next Cancel	Next Cancel	Write Cancel

11. At the **Confirm unit settings** screen, click **Write**, and the following message will appear. (*Note: Keep in mind that when a device is reset, all of the stored data is lost.*)

Confirm reset	
The device will be reset before the engineer want to continue?	ring unit is written. Are you sure you
	Yes No

12. When the Gain and offset option is selected from the screen below, the Confirm unit setting screen will appear.



13. Click Write, and the following message will appear to confirm a reset of the device. (*Note: Keep in mind that when a device is reset, all of the stored data is lost.*)

Confirm reset
The device will be reset before the engineering unit is written. Are you sure you want to continue?
Yes No



### **Removing an Engineering Unit**

Engineering units can be removed at any time.

#### To remove an Engineering Unit:

- 1. On the Device tab, in the Information group, click Engineering Units.
- 2. Select an engineering unit to remove.
- 3. Click the **Delete** button.
- 4. The following message will appear. (shown right)
- 5. Clicking **Yes** will delete the engineering unit, clicking **No** will keep the engineering unit.

### **Display Settings**

MadgeTech offers a variety of data loggers that are equipped with an LCD screen. The **Display settings** refer to the physical display on the device itself.

### To change the display setting of a device:

- 1. In the Connected devices panel, select the intended device to change the display settings.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click on the device and select **Properties** in the context menu.
- 3. Click the Display tab. If the Display tab is missing, the device does not have any display settings.
- 4. Configure the display settings. The number and type of settings displayed may vary depending on the device model. The following are examples of settings that might be available:
  - **Display mode** indicates when the device display should appear.
  - Display auto off interval indicates when the device display should automatically shut off.
  - Update mode indicates when the device display should update. If Custom is selected, the Display update interval indicates how often the display should update.
  - Channel size indicates the text size of channel names on the device display.
  - Backlight mode indicates when the backlight should be on.
  - Pixel mode indicates whether the device display uses inverted colors.
  - Enable LEDs setting indicates whether the device LEDs should activate.
  - Enable buzzer setting indicates whether the device buzzer should be triggered.
- 5. Click Apply.





# **Managing Wireless Devices**

Managing wireless devices is simple through the use of the MadgeTech software. All MadgeTech wireless data loggers require the use of an interface cable or wireless transceiver to transmit the data back to the software.

### **Claiming a Wireless Device to the Network**

The RFC1000 transceiver connects to the computer and provides the wireless network access for the data loggers. The RFC1000 may pick up signals from nearby wireless devices other than the target data logger. To avoid this problem, users can add wireless devices to the specific network by claiming them. Multiple RFC1000s may be used to extend the range of the network.

#### To add a wireless device to the network:

- 1. In the **Connected devices** panel, ensure that the **Only show claimed wireless devices** checkbox is unchecked. All wireless devices that the RFC1000 is picking signals up from will be displayed in the **Connected devices** panel.
- 2. Select the intended device to claim.
- 3. On the **Device** tab, in the **Wireless** group, click **Claim**.
- 4. Now the selected device will be a part of the connected devices panel and users are able to record data/change device settings.

Unless **Only show claimed wireless devices** is selected in the **Connected devices** panel, the list of wireless devices will remain in the **Connected devices** panel and the claimed device will remain highlighted. Once the **Only show claimed wireless devices** checkbox is checked, only the claimed wireless devices will be displayed in the **Connected devices** panel.

Search	Q	Search by:	No preference	2	<ul> <li>Only show claimed wirel</li> </ul>	ess devi
Port	Devic	e ID	Model	Serial No.	Status	Re
No devices are co	nnected					

### **Removing a Wireless Device**

When a user no longer needs access to a wireless device, the device may be released.

#### To release a wireless device:

- 1. In the Connected devices panel, select the intended device to release.
- 2. On the **Device** tab, in the **Wireless** group, click **Release**.
- 3. Now the wireless device will no longer be claimed.

### **Changing the Communication Channel of a Wireless Device**

To change the frequency at which a wireless device communicates, the user can change the wireless channel. (Note: After changing the wireless channel, communication with the device will be lost until all connected RFC1000s are configured to use the same channel.)

### To change the channel of a wireless device:

- 1. In the Connected devices panel, select the intended device to change.
- 2. On the **Device** tab, in the **Information** group, click **Properties**. Users can also right-click the device and select **Properties** in the context menu.
- 3. Click the Wireless tab. If the Wireless tab is missing, the device does not have any wireless settings.
- 4. Change the value in the Wireless Channel dropdown menu to the desired setting.
- 5. Click the Apply button. (Note: To change the selected wireless channel on the RFC1000 transceivers, please refer to the RFC1000 product documentation.)



# **Physically Locate a Claimed Wireless Device**

Certain wireless devices can produce a repeated tone to help locate them.

#### To locate a claimed wireless device in network:

- 1. In the **Connected devices** panel, select the intended device(*s*) to locate.
- 2. On the **Device** tab, in the **Wireless** group, click **Locate**. Users can also right-click on the device and select **Locate** in the context menu.
- 3. The selected device will sound with the repeated tone for a few moments and then it will stop. This action can be repeated as many times as necessary in order to locate the device(s). If the **Locate** button is disabled, one or more of the selected devices do not have this feature.





# Managing Data, Folders and Reports

When utilizing the MadgeTech 4 software, users have the ability to manipulate the data, folders and reports to streamline analysis. This chapter provides assistance in achieving optimum organization by outlining steps to create, move, delete or recover folders and reports. This section will also highlight ways to manage reports and datasets.



# Data

MadgeTech data loggers can collect a variety of information, and the goal is to make working with the recorded data as seamless as possible. There are many ways within the software to organize data to accommodate the user. All of those processes will be outlined in this section.

## **CSV Files**

The MadgeTech 4 software has the ability to import a CSV file that was saved in MadgeTech 2. Not all CSV files can be imported. For more information see A CSV File Failed to Import on page 91 of this manual.

### To import a CSV file:

- 1. Click the File tab, then click Import Files.
- 2. In the screen that appears, select the intended files to be imported, then click **Open**.

### To import a folder containing CVS files:

- 1. Click the File tab, then click Import Folders.
- 2. In the screen that appears, select the intended folders to be imported, and then click Select Folder.

### To customize the CSV import settings:

- 1. Click the File tab, then click Options.
- 2. Click the File button.
- 3. Under the Importing header, complete one of the following steps:
  - a. Check Include subfolders to also import CSV files in all subfolders, when selecting a folder in the Import Folders option.
  - b. In the dropdown menu next to When importing folders, select the storage method to use when importing folders.

# Folders

All of the folders can be found in the **File Database** panel. The folders are available for organization of reports and datasets. Folders can be created, renamed, moved to different locations, and deleted.

# Create a New Folder

### To create a new folder:

- 1. In the Files Database panel, select the location to contain the new folder.
- 2. Right-click in the location and select New Folder.

### Rename a Folder

### To rename a folder:

- 1. In the File Database select the intended folder to rename.
- 2. Complete one of the following steps:
  - a. Click on the name of the folder, enter a new name, and press Enter.
    - b. Right-click on the folder and select **Rename Folder** in the context menu. Enter a new name and press **Enter**.

## Move a Folder

To move a folder:

- 1. In the File Database panel, select the intended folder to move.
- 2. Hold and drag the folder into a different folder.

# <u>Delete a Folder</u>

### To delete a folder:

- 1. In the File Database panel, select the intended folder to delete.
- 2. Complete one of the following steps:
  - a. Press the Delete key.
  - b. Right-click the folder and select Delete Folder.
  - c. Hold and drag the folder to the appropriate recycle bin.



# **Managing Reports**

**Reports** can be generated in the form of a **Graph**, **Data table**, or **Statistics view** and will be displayed in the chart window. All **saved**, **example**, and **deleted** reports (*as long as they haven't been permanently deleted*) will be located in one of the folders in the **File Database** panel. There are many ways to create and manipulate types of reports to fit the user's need, which will be detailed in this section.

### Creating a New Blank Report

Users can create a blank graph, data table, or statistics view when creating a new report.

### To create a blank report:

- 1. Click the File tab, then hover or click the expander arrow next to New.
- 2. Select the type of report to create. Users can also click the **Generate** button located in the **Graph**, **Data Table**, and **Statistics** groups of the **Report** tab. (*Note: A report is automatically generated when double-clicking on a dataset in the Files panel.*)

### **Generating a Report from Another Report**

To view the data of a report in a different format, users can generate a new report using the same data. The reports are then linked, which means that any changes applied to one report are also applied to other reports that are using the same data. To create a new report using the same data as the selected report without linking them, users will need to create a blank report and add the data manually.

### To generate a report from another report:

- 1. Open the original report or select the tab or window that contains it.
- 2. On the **Report** tab, complete one of the following steps:
  - a. In the **Graph** group, click **Generate** to create a new graph report based on the data of the selected report.
  - b. In the **Data Table** group, click **Generate** to create new data table report based on the data of the selected report.
  - c. In the Statistics group, click Generate to create a new statistics view based on the data of the selected report.

### **Opening a Report**

There are two locations available from which a report can be opened: the internal database or from a file on the user's computer.

### To open a report from the database:

- 1. On the File Database panel, click the folder that contains the report.
- 2. In the **Files** list, double-click the name of the report to open it. Users can also right-click on the report and select **Open report** in the context menu.

### To open a report from a file:

- 1. Click the File tab, and then click Open. This will display the Open dialog box.
- 2. The keyboard shortcut to display the **Open** dialog box is **Ctrl+O**. (*shown right*).
- 3. In the Navigation pane, browse to the Folder, Drive, Removable media (such as flash drive, CD, or DVD), or Internet location that contains the file.
- 4. Select the file, and the click **Open**.

The **Recent Documents** list is available from the **File** tab and can be used to open recent reports. Reports can also be opened through **Windows Explorer** by double clicking the icon. If the software is not running, it will be started and the report will be displayed.





# Saving a Report

A report can be saved to a file or to the internal database. By default, new reports are saved to the **Reports** folder of the internal database. A report that has already been saved will be saved to its previous save location.

### To save a report:

- 1. Click the tab or window containing the report to save.
- 2. Click the **File** tab, then click **Save**. The keyboard shortcut to save a report is **Ctrl+S**. New unsaved reports will now be saved to the internal database.

### To save a report to a file:

- 1. Click the tab or window containing the report to save.
- 2. Click the File tab, and then click Save To. (shown right)
- 3. Select **Save To** and click **File**. The keyboard shortcut to open the Save As dialog box is **ALT+F+A**.
- 4. In the File name box, enter a name for the file.
- 5. Click Save. The report will now be saved to the selected destination.

### To save a report to the internal database:

- 1. Click the tab or window containing the report to save.
- 2. Click the File tab, Save To and click File database. (shown right)
- 3. The report will now be saved and located in the **Datasets** folder within the **File Database** panel.

# **Closing a Report**

To close a window containing a report, use either the File menu or the report window.

### To close a report:

- 1. To close a report from the file menu, with the report window selected, click the File tab, and then choose Close.
- 2. To close a report from the chart window, on the **Report** header, click the **X**.

### **Changing How a Report Title is Generated**

By default, a new report uses a generic title until it is renamed. Users can change what appears in the title so reports can be recognized.

### To change how a report title is generated:

- 1. Click the **File** tab, and then click the **Options** button located at the bottom of the menu.
- 2. Click the Reports tab.
- 3. Select a Title generation method:
  - a. None uses a generic title for new reports.
  - b. Prompt asks for a title for new reports.
  - c. Automatic creates a title for new reports based on the selectable options under Include the following in automatic title generation. Users can choose to check any and/or all of the following options in this section: (shown below)
    - Model (Device Type)
    - Serial Number
    - Device ID
    - Download Time

Title generation:	Prompt •	
Include the follow	Prompt e generation:	
Model	Automatic	
Device ID		
Download Tir	ne	
Graph style		
Restances dealers		
background color:		
Line thickness:	1 🗘	
Default statistics		
-		
Choose which statis	tics are displayed by default: Default statistics	

$\sim$	New	×	Recent Documents	
0	<u>O</u> pen			
	Save			
	S <u>a</u> ve To	F		
1	Import <u>F</u> iles			
7	Import Fol <u>d</u> ers			
	Print	F		
7	<u>C</u> lose			
			Options	Exit Application



## Renaming a Report

Renaming a report changes the title of the report. There are two ways to rename a report. A report stored in the internal database can be renamed without opening it. The report must be closed before it can be renamed in the database.

#### To rename a report in the database:

- 1. In the File Database panel, select the folder that contains the report to rename.
- 2. In the File list panel, select the report to rename.
- 3. Click on the name of the report in the Title column twice. The current title will now be highlighted and can be edited.
- 4. Be careful not to double-click on the report, which will open the selected report.
- 5. Enter a new name for the report.
- 6. Press the Enter key. The report will now have a new name and will retain that name until it is renamed again.

#### Renaming an Open Report

A report can also be renamed while it is opened. The report must be saved after it has been renamed in order for the new name to be applied once the report is closed.

#### To rename an open report:

- 1. Double-click the tab containing the report to rename. The current title will now be highlighted and can be edited.
- 2. If the report is in a floating window, right-click the title bar of the report window and select Rename in the context menu.
- 3. Enter a new name for the report.
- 4. Press the Enter key, or click OK if using the right-click method.

## Exporting a Report to Microsoft Excel®

To see report data in a spreadsheet, users can export reports to **Microsoft Excel**<sup>®</sup>. (*Note: Only Microsoft Excel*<sup>®</sup> 2003 and later are supported.)

#### Export All Data to Microsoft Excel®

If multiple versions of Microsoft Excel<sup>®</sup> are installed, the version that was most recently installed will be used to display the data. All of the data included in the report can be exported to Microsoft Excel<sup>®</sup>, or only a selected portion of the data if desired. If there are more than 1 million readings to export, Microsoft Excel<sup>®</sup> will display the data spanning multiple sheets within a workbook as necessary.

### To export all data to Microsoft Excel®:

- 1. Select the tab or window containing the report to export data from.
- 2. On the **Report** tab, in the **Report Options** group, click **Export to Excel**<sup>®</sup>, then click **Export All Data To Excel**<sup>®</sup>.
- 3. The Display Chart message will appear before Microsoft Excel® opens:
  - Click Yes: A chart and spreadsheet will open and be located in the Chart and Data tabs respectively.
  - Click No: Only a spreadsheet will open, it will be located in the Data tab.
  - Click **Cancel**: The command will be canceled and no data will be exported to Microsoft Excel<sup>®</sup>. (*Note: The title of the graph does not carry over to the Microsoft Excel*<sup>®</sup> *display chart.*)

	<b>X</b>
Would you like a chart to be displayed?	
Yes No	Cancel



### Exporting Graph Timeslice Data to Microsoft Excel®

Graph data can be selected using a timeslice in order to export only selected data.

#### To export graph Timeslice data to Microsoft Excel®:

- 1. Select the tab or window containing the report to export.
- 2. Select the data to export by creating a **Timeslice**. (*Note: The Timeslice icon is located on the Report tab in the Graph group. For more information on creating a timeslice, turn to Create a Timeslice with a Graph on page 64 in this manual.*)
- 3. On the **Report** tab, in the **Report Options** group, click the expander button below **Export to Excel**<sup>®</sup>, and then click **Export Selected Data to Excel**<sup>®</sup>.
- 4. The Display Chart message will appear before Microsoft Excel® opens
  - Click Yes: A chart and spreadsheet will open and be located in the Chart and Data tabs respectively.
  - Click No: Only a spreadsheet will open, located in the Data tab.
  - Click **Cancel**: The command will be canceled and no data will be exported to Microsoft Excel<sup>®</sup>. (*Note: The title of the graph carries over to the Microsoft Excel*<sup>®</sup> *display chart.*)

### Printing a Report

There are a few different methods available to print reports that will be discussed in this section. There is also a print preview option available in order to preview what is planned to print before performing the actual print command.

#### Viewing a Print Preview of a Report

The print preview option allows users to preview what the actual printed report will resemble.

#### To view a print preview of a report:

- 1. Open or click the tab or window containing the report.
- 2. Click the File tab, then choose Print and then click Print Preview. The keyboard shortcut to display the print preview dialog box is Ctrl+F2.

In the print preview screen, under the **Print Preview** tab, **Margins**, **Page orientation**, **Page size**, and **Zoom** of the report can all be adjusted. The user can also print directly from the print preview screen by clicking the **Print** icon in the **Print** group on the **Print Preview** tab.

### Printing a Report without Using the Print Screen

Using the **Quick Print** option allows users to print a report without using the print screen. The report will automatically print to the PC's default printer and will print with the previously selected settings. When **Quick Print** has been selected there will not be an opportunity to change any print settings in the print dialog box because it will not appear.

### To print a report without using the print screen:

- 1. Open or click the tab or window containing the report to print.
- 2. Click the File tab and then hover or click the arrow button next to print, then select Quick Print.

# Adding a Dataset to a Report

When a user wants to display additional data within the same view, a dataset can be added to a report.

### To add a dataset to a report:

- 1. Open a report or select the tab or window containing the report.
- 2. In the **Files Database** panel, select the folder that contains the required dataset. The user can select multiple datasets by holding the **Ctrl** or **Shift key** and either selecting additional datasets or using the arrow keys.
- 3. Right-click the dataset and click Add to current report. Datasets can also be dragged into the report window.



# **Organizing Channels**

In the MadgeTech 4 software, users can customize how channels are organized within the Channels panel.

#### To change how channels are organized in a report:

- 1. Select a report to customize.
- 2. On the **Report** tab, in the **Channels & Readings** group, click **Channel Grouping** and select one of the following options:
  - Serial Number
  - Device ID
  - Device Name

## Setting the Default Channel Grouping

Setting a default channel grouping means that all new reports will use that channels organization setting.

#### To set the default channel grouping:

- 1. Click the File tab and then click Options.
- 2. Click the **Display** tab.
- 3. Click the **Group channels by** dropdown menu and select one of the following options: (*shown right*)
  - Serial Number
  - Device ID
  - Device Name

# Math Channels

Math channels allow data to be displayed as a calculation of other channels, such as an average or sum. Users are able to Add, Change, and Remove math channels.

#### To add a Math Channel to a report:

- 1. Click the tab or window containing the report to add a math channel to.
- 2. On the **Report** tab, in the **Channels & Readings** group, click **Math Channels**. A **Manage math channels** box will open. (*shown right*). Users can also right-click on a channel in the **Channels** panel and select **Math Channels** in the context menu.
- 3. Click the Add button. A Manage math channels box will appear. A list of available math channels will appear in the Math Channels box.
- 4. Select a channel from the list that appears and click the **OK** button. When a channel is selected, its description is shown to the right of the channel title under **Channel Properties**.
- 5. Click the **Close** button. The new math channel will now be displayed under the **Channels** panel and in the open report to which it was added.

Channel Grouping *	
$\checkmark$	Serial Number
	Device ID
	Device Name

Device	Change display options.
Display	5 1 5 1
File	Page display
Reports	Show page measurements in units of: Inches
Alarms	Viewing data
Units Address Book	Time format: Use system settings 🔹
Email settings	Group channels by: Serial number
Communication	Display an empty Device ID ts
Reporting	Display a graph w(Device name     S     Display time zone on the horizontal axis of graphs
Wireless	Display Alarms column when creating data table reports
Interop	When generating a report, open in a separate window (maximum of 4)
Cloud	When downloading data from multiple selected devices, display a single report
	Display the following when data is downloaded from a device:
	✓ Graph
	Data table
	Statistics

An example of the Options box and the Display tab.



An example of the Manage math channel box.



### Changing a Math Channel in a Report

### To change a Math Channel in a report:

- 1. Click the tab or window containing a report with a math channel.
- 2. On the **Report** tab, in the **Channels & Readings** group, click **Math Channels**. Users can also right-click on a channel in the **Channels** panel and click **Math Channels** in the context menu.
- 3. Click the math channel to be changed. Make the applicable property edits to the selected math channel.
- 4. The user can make changes to the math channel properties in the right side of the box. *(shown right)*

### Removing a Math Channel from a Report

### To remove a Math Channel from a report:

- 1. Click the tab or window containing the report to remove a math channel.
- 2. On the **Report** tab, in the **Channels & Readings** group, click **Math Channels**. Users can also right-click on a channel in the **Channels** panel and select **Math Channels** in the context menu.
- 3. Select the intended math channel to remove.
- 4. Click **Remove**. The selected math channel will no longer be listed under the **Channels** panel or shown on any reports.
- 5. Click Close.

## Changing the Display Unit of a Channel in a Report

The display unit of a channel can be changed in order to modify how the readings are displayed.

### To change the display unit of a channel in a report:

- 1. In the **Channels** panel, select the intended channel to change the display unit.
- 2. Multiple channels can be selected in the **Channels** panel by holding the **Ctrl** or **Shift key** and either selecting additional channels or using the up and down arrow keys.
- 3. On the **Report** tab, in the **Channels & Readings** group, click the **Unit** dropdown menu. Select a specific unit from the available list. The selected channel will now be displayed in the selected unit in any report.

### Removing a Channel from a Report

When data is no longer needed from a channel, it can be removed from the report. However, if a report only contains one channel, that channel cannot be removed.

### To remove a channel from a report:

- 1. In the Channels panel, select the intended channel to remove.
- 2. Multiple channels can be selected by holding the **Ctrl** or **Shift key** and either selecting additional channels or using the up and down arrow keys.
- 3. On the **Report** tab, in the **Channels & Readings** group, click **Remove Channel**. Users can also right-click on the intended channel and select **Remove Channel** in the context menu.
- 4. To add the channel again, re-add the dataset containing the channel to the report.

Math Channels Absolute Value Channel	Absolute Value Channel The absolute value of all channels, defined as so Channels to use in this math channel:	qrt(a^2 + b^2 + c^2 + )
	Z00246	
	Temperature	
	Humidity	
	Select li	ke channels Clear All
	Select lii Channel Options Averaging Strategy:	ke channels Clear All
Add Remove	Select ii Channel Options Averaging Strategy: © Last value	ke channels Clear All

An example of the Manage math channels box properties



# Selecting All Channels of the Same Type in a Report

When a report contains multiple channels of the same type, the user can choose to automatically select them all.

#### To select all channels of the same type in a report:

- 1. In the Channels panel, select the intended channel with the desired type.
- 2. Right-click the selected channel and select Select Like Channels in the context menu.
- 3. This step can be applied to multiple channels by holding the **Ctrl key** and selecting a channel of another type before right-clicking.

## Renaming a Channel in a Report

A channel can be renamed in a report to help distinguish it from other similarly named channels. Naming channels is beneficial to keep things organized.

### To rename a channel in a report:

- 1. In the Channels panel, select the intended channel to rename.
- 2. Click the channel name text. Users can also right-click the channel and select Rename in the context menu.
- 3. Enter a new name for the channel.
- 4. Press the Enter key.

# Viewing Device Properties of a Channel in a Report

To see more information about the device associated with a channel, view the device properties. **Device properties** cannot be viewed if the selected channels are associated with different devices.

### To view the device properties of a channel in a report:

- 1. In the **Channels** panel, click a channel to select.
- If the report is a graph, users can also click the channel line.
- 2. On the Report tab, in the Channels & Readings group, click Device Properties.

### Viewing the Properties of a Report

Viewing the properties of a report allows users to see more information about the report. Report properties can also be printed.

### To view the properties of a report:

- 1. Click the tab or window containing the intended report.
- 2. On the Report tab, in the Report Options group, click Report Properties.
- 3. The **Created by** and **Last modified by** fields are based on the name of the computer user account that was logged in at the time of report creation or modification. *(shown right)*

Untitled Report	X	
Report Properties		
Title:	Untitled Report	
Created by:	Test User	
Created Date:	2/17/2014 10:10:15 AM	
Last modified by:	Test User	
Modified Date:	2/17/2014 10:10:16 AM	
Start Time:	12/19/2013 3:59:46 PM	
End Time:	12/19/2013 3:59:54 PM	
Devices:	1	
Channels:	2	
Datapoints:	10	
Print	Close	





### **Optional Sterilization Data in Report Properties**

To view F0 and A0 sterilization data in report **Properties**, it can be added through the **Add/Remove** icon in the **Statistics** group, located in the **Report** tab.

### To set sterilization properties of a report:

- 4. Open or click the tab or window containing the statistics report.
- 5. On the Report tab, in the Statistics group, click the Add/Remove icon. A Manage statistics box will appear.
- 6. Click the Add button. An Add statistic box will appear.
- 7. Add either A0 and/or F0. Scroll down to the bottom of the options box to the right of the **Current Statistics** choices. There will be a check box to **Display sterilization data in report properties**, make sure this is selected and hit **Close**.
- 8. On the **Report** tab, in the **Statistics** group, select **Report Properties**. The sterilization data for the report will now be displayed.

### Moving a Dataset or Report to another Folder

For optimal organization, reports and datasets can be moved to any folder.

#### To move a dataset or report to another folder:

- 1. In the File Database panel, select the intended folder that contains the dataset or report to move.
- 2. Within the selected folder, choose the dataset or report to move. The user can select multiple datasets or reports by holding the **Ctrl** or **Shift key** and either selecting additional datasets or using the arrow keys.
- 3. Complete one of the following steps:
  - a. Right-click on the dataset or report and select Move to folder in the context menu, then select the destination folder.
  - b. Hold and drag the dataset or report into a different folder.

### **Deleting a Report**

Reports and datasets can be deleted at any time. Deleted datasets and reports are moved to the **Deleted Reports** folder and are able to be recovered. Once a report or dataset is deleted from the **Deleted Reports** folder, it is permanently deleted and cannot be recovered.

#### To delete a dataset or report:

- 1. In the File Database panel, select the intended folder containing the dataset or report to be deleted.
- 2. In the **Files** list, select the relevant report or dataset to delete. To select multiple reports, hold the **Ctrl** or **Shift key** and either selecting additional datasets, or use arrow keys.
- 3. Complete one of the following steps:
  - a. Press the Delete key.
  - b. Right-click the dataset or report and select Delete.
  - c. Drag the dataset or report to the recycle bin.



# Recovering a Dataset or Report from a Recycle Bin

Deleted datasets and reports are sent to the software Recycle Bins within the **File Database** panel. This allows users to recover them as long as they haven't been permanently deleted.

### To recover a dataset or report from the software recycle bin:

- 1. In the File Database panel, select the appropriate recycle bin, depending on whether a dataset or report is being recovered.
- 2. In the Files list, select the intended report or dataset to recover.
- 3. Select multiple datasets or reports by holding the **Ctrl** or **Shift key** and either selecting additional datasets or using the arrow keys.
- 4. Complete one of the following steps:
  - a. Right-click on the dataset or report and select **Restore** in the context menu.
  - b. Drag the dataset or report into a different folder.
  - c. All of the contents of a recycle bin can be restored by right-clicking the recycle bin and clicking **Restore Deleted Items** in the context menu.

# Permanently Delete a Dataset or Report from a Recycle Bin

Users can permanently delete datasets and reports from the internal database one at a time or empty a recycle bin to delete all of its contents at once.

### To permanently delete a dataset or report from the software recycle bin:

- 1. In the Files Database panel, select the appropriate recycle bin, depending on whether a dataset or report is being deleted.
- 2. In the Files list panel, select the intended report or dataset to permanently delete.
- 3. Select multiple reports by holding the **Ctrl** or **Shift key** and either selecting additional datasets, or using the arrow keys.
- 4. Complete one of the following steps:
  - a. Press the **Delete key**.
  - b. Right-click on the dataset or report and select Delete.
  - c. The entire contents of a recycle bin can be permanently deleted by right-clicking the recycle bin and selecting **Empty Deleted Items** in the context menu.



# **Graph Reports**

## Annotations

An annotation provides additional information about a graph or reading. Annotations can contain general information about the graph or information about a specific reading. An annotation can be titled by double clicking on its header and changing the text. Annotations in locked graphs cannot be altered. (*Note: Annotations are visible when a graph report is printed but not visible when the report is exported to Microsoft Excel*®).

### Adding an Annotation to a Graph

A graph annotation is not associated with a reading. Users can add multiple annotations. (shown below)

### To add an annotation to a graph report:

- 1. Select the graph report requiring the annotation.
- 2. On the **Report** tab, in the **Channels & Readings** group, click the **Add Annotation** dropdown, and then select **Add Annotation to Graph**. Users can also right-click on the graph report and select **Add graph annotation** in the context menu.
- 3. Annotations added to a graph report can be toggled on and off for visibility purposes by clicking the pin icon on the top right of the annotation.

### Adding an Annotation to a Reading in a Graph

Users can annotate a specific graph point to provide reading-specific information. Only one annotation can be added to each reading. (*shown right*)

### To add an annotation to a reading in a graph:

- 1. Click the point on a graph to annotate.
- 2. On the **Report** tab, in the **Channels & Reading** group, click **Add Annotation**, and then select **Add Annotation to Selected Point**. Users can also right-click on the graph and select **Annotate selected point** in the context menu.
- 3. Annotations added to a reading in a graph report, can be toggled on and off for visibility purposes by clicking the pin icon on the top right of the annotation.

# Creating a Timeslice with a Graph

To see data based on a portion of a graph, a **Timeslice** can be created. This will allow data tables and statistic reports to be viewed with only the timeslice data present.

### To create a timeslice with a graph:

- 1. Open or click the tab or window containing the graph of which to create a timeslice.
- 2. On the Report tab, in the Graph group, click Timeslice.
- 3. Select the check box next to **Enable Timeslice**.
- 4. The size of the highlighted area can be adjusted by doing one of the following:
  - a. Drag an outer edge of the Timeslice.
  - b. Change the Start or End value.
  - c. Drag the timeslice to move the highlighted area.
  - d. Choose Select all to highlight all the data on a graph.



An example of a Graph annotation.



An example of a Reading-specific annotation.



# **Cooling Flags**

**Cooling flags** are automatic reading annotations that specify when certain temperature thresholds are met. Users can set the default cooling flags, as well as manage cooling flags that have already been created.

### Managing the Cooling Flags of a Graph

Managing the cooling flags of a graph allows the user to freely adapt the graph to meet requirements and simplify the search for changes in the data regarding the variations of temperature.

### To manage the cooling flags of a graph:

- 1. Select the intended graph to manage the cooling flags.
- 2. On the **Report** tab, in the **Graph** group, click the **Cooling Flags** icon.
- 3. Do any of the following:
  - a. Check or Uncheck the **Display cooling flags** checkbox to toggle when the cooling flags are displayed.
  - b. Configure the names and thresholds of the cooling flags to display. The number of flags to display can be adjusted with the **Add** and **Remove** buttons.
- 4. Set the cooling flags to be the default for all new graphs by clicking **Set as default**.

### Setting the Default Cooling Flags

Setting default cooling flags means that all new graphs will automatically use the cooling flags chosen.

### To set the default cooling flags:

- 1. Click the File tab, and then click Options.
- 2. Click the **Display** tab.
- 3. Click the Set Cooling Flags button and set the intended cooling flags, click OK. (shown right)

Device	Display an empty graph when the software starts			
Display	Display a graph when real time recording begins			
cispidy	Display time zone on the horizontal axis of graphs			
File	Display Alarms column when creating data table reports			
Reports	When generating a report, open in a separate window (maximum of 4)			
Alarms	When downloading data from multiple selected devices, display a single report			
Unite	Display the following when data is downloaded from a device:			
onics	✓ Graph			
Address Book	Data table			
Email settings	Ctatistics			
Communication	Cooling Flags			
Reporting				
Wirelerr	Choose the defoult cooling flags that can be displayed. Cooling flags			
Interon	Layout			
ci	Minimize to purtees trav			
Cioud				
	Color scheme: Office Silver •			
	Reset window size and layout to original positions: Reset screen layout			
	1 and 1 and 1			

Cooling flags	X
Display cooling fla	ags
Degrees Celsius (°C)	•
Name	Threshold
Flag1	50 °C
Add Ren	nove
	OK Cancel



# Value Lines

A Value Line is a visual horizontal line on a graph report representing a specific calculation or user selected value within the recorded data. There are 5 options for Value Line types; Minimum, Maximum, Average, Mean Kinetic Temperature (*MKT*) or Fixed Value.

A Fixed Value line represents a specific value on a graph report that is selected by the user and can be changed at any time. Minimum, maximum, average or MKT values are calculations based on the recorded data for that parameter. Existing Value Lines will automatically be converted when the graph unit changes. For example, the value line with an initial value of 0 °C will automatically recalculate to +32 °F when the user changes the units from Celsius to Fahrenheit. When a unit conversion is not possible, the line will not be displayed. Value Lines are saved along with a graph report and are available to the user when that report is reopened. (*Note: When recording data in real time, calculated value lines will automatically recalculate to reflect the new data.*)

### To add a value line to a graph:

- 1. Open or click the tab or window containing the graph report of which to add a value line.
- 2. On the **Report** tab, in the **Graph** group, click the **Value Lines** icon. Users can also right-click on the graph report and hover over **Value lines** and select **Add value line** in the context menu.
- 3. Select a line type in the dialog that appears and click **OK**.

### To change a value line in a graph:

- 1. Open or click the tab or window of the graph report with Value Lines to be edited.
- 2. On the **Report** tab, in the **Graph** group, click the **Value Lines** icon. Users can also right-click on the graph report and hover over **Value lines** and select **Manage value lines** in the context menu.
- 3. Select the value line to be changed from the left pane, then make the applicable property modifications and click Close. (*Note:* Users can toggle the visibility of value lines by right-clicking on the graph report, clicking Value lines, then clicking a line in the list. Up to six value lines can appear in the context menu.)

### To remove a value line from a graph:

- 1. Open or click the tab or window of the graph report with Value Lines to be removed.
- 2. On the **Report** tab, in the **Graph** group, click the **Value Lines** icon. Users can also right-click on the graph report and hover over **Value lines** and select **Manage value lines** in the context menu.
- 3. Select the value line to be deleted from the left pane and click **Remove**.

Value lines	Line Properties	
Avg (42.28 °C)	Display line	
	Label: Avg	
	Label position: Top	
	Inickness: 2 v	
	Use default color	
	Color:	
	Channels:	
	A00003	
	Temperature	
	Humidity	
Add Demon	Sel	ect like channels Clear all
Remove	e de la companya de la	
		Close



### Time Markers

A Time Marker is a visual representation of a specific time within the recorded data. It appears as a vertical line on a graph report or a colored row in a data table. Time markers are organized into collections. Modifications to the properties of a collection will apply settings to all Time Markers within that collection.

### To add a time marker in a graph or data table:

- 1. Open or click the tab or window containing the report to add a time marker.
- 2. On the **Report** tab, in the **Channels & Readings** group, click the **Time Markers** icon.
- 3. Click Add. Users can also right-click on a graph report and hover over **Time markers** and select Add time marker in the context menu. (*Note: To add a time marker to a data table, right-clicking is not an option. Use the Time Markers icon in the Channels & Readings group on the Report tab.*)
- 4. Select the desired properties and click Close.

### To change a time marker in a graph or data table:

- 1. Open or click the tab or window containing the report to change a time marker.
- 2. On the **Report** tab, in the **Channels & Readings** group, click the **Time Markers** icon. Users can also right-click on a graph report and hover over **Time markers** and select **Manage time markers** in the context menu. (*shown right*) (*Note: To add a time marker to a data table, right-clicking is not an option. Use the Time Markers icon in the Channels & Readings group on the Report tab.*)
- 3. Click the time marker to change, then make the applicable property modifications and click **Close**. (Note: Users can toggle the visibility of time marker collections by right-clicking on the graph, clicking Time markers, then clicking an item in the list. Up to six collections can appear in the context menu.)

### To remove a time marker in a graph or data table:

- 4. Open or click the tab or window containing the report to remove a time marker.
- 5. On the **Report** tab, in the **Channels & Readings** group, click the **Time Markers** icon. Users can also right-click on the graph report and hover over **Time markers** and select **Manage time markers** in the context menu. (*shown right*) (*Note: To remove a time marker in a data table, right-clicking is not an option. Use the Time Markers icon in the Channels & Readings group on the Report tab.*)
- 6. Click the time marker collection to remove, or when in a time marker collection, click the time marker to delete then select **Remove**.

# Automatically Scroll a Graph during Real Time Recording

When a device is recording in real time, a graph displaying the data can be set to automatically scroll horizontally so the most recent readings are always displayed.

### To automatically scroll a graph during real time recording:

- 1. Select the intended graph report.
- 2. On the Report tab, in the Graph group, click Enable Autoscroll.

inciniove.	
	Close
	Annotate selected point
	Add graph annotation
T.	Cursor select
	Box zoom
	Horizontal zoom
	Vertical zoom
×	Fit to view
	Set scale
•	Toggle vertical scale lock
<b>~~</b>	Toggle autoscroll
	Value lines +

Properties

Display markers Allow dragging on grap

tart of Da

End of Day

Add

Add Remove

\$

6/26/2012 2:13:37 PM

6/27/2012 6:39:35 AM

Time markers



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# Showing or Hiding the Time Zone on the Horizontal Axis of Graphs

Users can choose to show or hide the time zone on the horizontal axis of graphs. This will display the time zone in which the current graph report was downloaded.

To show or hide the time zone on the horizontal axis of graphs:

- 1. Click the File tab, and then click Options.
- 2. Click Display, then Check or Uncheck the Display time zone on the horizontal axis of graphs checkbox, click OK.

## Locking the Vertical Scale of a Graph

The vertical scale of a graph can be locked to prevent any automatic adjusting from occurring when new data is added. Any values that lie outside the displayed range will not resize the graph view.

#### To lock the vertical scale of a graph:

- 1. Select the intended graph report.
- 2. On the Report tab, in the Graph group, click Lock Vertical Scale.
- 3. The Vertical scale will be locked and unable to be scrolled.

### Setting the Vertical or Horizontal Scale of a Graph

Users can set the value, unit, and time on the vertical or horizontal scale of a graph.

#### To set the vertical or horizontal scale of a graph:

- 1. Select the intended graph report to customize.
- 2. On the **Report** tab, in the **Graph** group, click **Set Scale**. The following **Set graph scale** box appears.
- 3. Complete one of the following steps:
  - a. Change the Time Scale values to determine how the horizontal axis should be displayed.
  - b. Change the Vertical Scale values to determine how the vertical axis should be displayed.
  - c. Change the Unit to convert the vertical axis and all associated channels to the selected unit.
- 4. Click OK.

### Moving a Vertical Axis of a Graph

#### To move a vertical axis to the left or right side of a graph:

- 1. Open the intended graph report, or select it if it is already open.
- 2. On the **Report** tab, in the **Graph** group, click **Axis Positions**. An **Axis Alignment** box will open. (*shown right*)
- 3. Complete one of the following steps:
  - a. To move an axis to the right side, select one or more axes in the list on the left, and then click the **Move right** button.
  - b. To move an axis to the left side, select one or more axes in the list on the right, and then click the **Move left** button.
  - c. Drag one or more axis to or from either list for desired display location.

Degrees Celsius (°C)		Relative Humidity (% RH)
▲ ▼	Move left Move right	



Set graph scale			<b>—</b> ×
Time scale Start time: End time:	6/26/2012 1:23:40 PN 6/27/2012 7:42:34 AN	Λ ▼ Λ ▼	
Vertical scale	2 re (°C)	Minimum value: Maximum value: Unit:	22.89 67.10
			OK Cancel

# Independently Set the Scale Units of a Graph

This feature allows users to independently edit the scale and position of individual channels within a graph report to optimize presentation. Scaling preferences are saved along with the graph and are applied when the report is reopened. (*Note: Exporting the graph to Microsoft Excel® will not retain the set scale modifications due to how Microsoft Excel® translates the data.*)

### To independently set the scale units of a graph:

- 1. Open the intended graph report, or select it if it is already open.
- 2. Hover over the vertical axis of a graph report and hold the **CTRL** key. Click and drag up or down to set the scaling of each channel separately.

# Setting the Units and Colors Used to Display Readings

Reading data is normally displayed in the units and colors defined by each channel of a device. Setting unit preferences means that any new data downloaded will initially display in the selected units. Existing data will remain unchanged, and users are also able to clear any preferences previously set.

### To set display units and colors:

- 1. Click the File tab, and then click Options.
- 2. Click the **Units** tab.
- 3. Select the unit options to use for new data by clicking the dropdown menus under the **Preferred Unit** column.
- 4. Select a preferred color to use for new data by clicking the colored square under the **Color** column. (*shown right*)

# **Clearing Unit Preferences**

All unit preferences can be cleared so that the original default units and colors are used.

### To clear unit preferences:

- 1. Click the File tab, and then click Options.
- 2. Click the Units tab.
- 3. Click the **Clear unit preferences** button.
- 4. The units and colors will be returned to the default.

# **Graph Line Preferences and Background Color**

### Changing the Background Color of a Graph

A graph's background color can be changed to customize how a graph is visually represented.

### To change the background color of a graph:

- 1. Select the intended graph to customize.
- 2. On the **Report** tab, in the **Graph** group, click **Background color** and select a color. (*shown right*) If the intended color is not present, click **More Colors...** and the following box will appear to customize a hue. (*shown below*)



Reportin Wineless Interop Cloud

An example of the Background color options.



An example of the Hue pallet to select more colors.



### Setting the Default Graph Background Color

Setting a default graph background color means that all new graphs will be visually represented in the selected color.

### To set the default graph background color:

- 1. Click the File tab, and then click Options.
- 2. Click the **Reports** tab.
- 3. Click the color square next to Background color, a Choose a color box will appear.
- 4. Select the desired color, and then click **OK**.
- 5. The default graph background color will now be the new selection, and all new graphs will appear with this color background.

### Changing the Color of a Line in a Graph

Along with changing the background color of a graph, users are also able to change the color of a specific line in a graph.

### To change the color of a line in a graph:

- 1. In the Channels panel, select the intended channel to change the color.
- 2. Multiple channels can be selected in the **Channels** panel by holding the **Ctrl** or **Shift key** and either selecting additional channels or using the up and down arrow keys.
- 3. On the **Report** tab, in the **Graph** group, click **Line Color** and select a color. The following color options are available. Above is an example of the **Background color** options.
- 4. If the intended color is not present, click **More Colors...** and the following box will appear to customize a hue. (*shown right*)
- 5. Now the selected channel will be displayed on the graph in the new selected color.

### **Line Thickness**

In addition to changing the color of a line in a graph, the thickness of a line in a graph can be changed in order to make it stand out more or less. This is helpful when there are many channels displayed on one graph.

### Changing the Thickness of a Line in a Graph

### To change the thickness of a line:

- 1. In the **Channels** panel, select the intended channel, or click the line in the graph.
- 2. Multiple channels can be selected in the **Channels** panel by holding the **Ctrl** or **Shift key** and either selecting additional channels or using the up and down arrow keys.
- 3. On the **Report** tab, in the **Graph** group, type or select a number between 0.5-20 in the Line thickness box.
- 4. The thickness of the selected line will change according to the chosen setting.

### Setting the Default Line Thickness

Setting a default line thickness means that all channels of a dataset added to a graph use the line thickness setting chosen.

### To set the default line thickness:

- 1. Click the File tab, and then click Options.
- 2. Click the **Reports** tab.
- 3. Choose the line thickness using the selector on the line thickness scale. (shown right)

Choose a color	×
R: 255	
G: 255	•
B: 255	
	OK Cancel

Line Thickness	1	* *
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Line Thickness 1	÷
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# **Changing the Application Color Scheme**

Appearance of the software can be changed by selecting a different color scheme.

#### To change the application color scheme:

- 1. Click the File tab, and then click Options.
- 2. Click the **Display** tab, and then select a theme from the dropdown menu next to **Color scheme** in the **Layout** section. The image to the right is an example screen of the **Options**, **Display** tab and **Layout** section.

# Setting the Default Language

Users can set the default language for the MadgeTech 4 Software.

#### To change the default language:

- 1. Click the File tab, and then click Options.
- 2. Click the **Display** tab, scroll down to the bottom where language is located. Select the default language from the dropdown menu and select **Ok**. (*Note: MadgeTech 4 currently supports English, Japanese, Finnish and Portuguese.*)





# **Data Table Reports**

Using a data table report allows the user to view the data and channels from the current graph or statistics report in a data table format. In addition, data table reports can also be exported to Microsoft Excel<sup>®</sup>. Users are also able to generate a blank data report if there is no current report open. For more information on how to generate a data table report, please refer to the **Create a New Blank Report** and **Generating a Report from Another Report** on page 55 of this manual.

Data table reports can also display Time Markers. Time Markers can be added while the data table report is open by clicking the Time Markers icon in the Report tab under the Channels & Readings group. For more information on how to add and edit Time Markers to a graph report or a data table report, please see page 67 of this manual.

Date	Time	Time Zone	Delta	A00003 Temperature (*C)	A00003 Humidity (% RH
Start of Day	6/26/2012 2:13:37	PM			
6/26/2012	2:13:37 PM	-04:00	-00:00:00	24.90	50.3
6/26/2012	2:14:37 PM	-04:00	+00:01:00	24.90	50.
6/26/2012	2:15:37 PM	-04:00	+00:02:00	24.90	50.
6/26/2012	2:16:37 PM	-04:00	+00:03:00	24.91	50.
6/26/2012	2:17:37 PM	-04:00	+00:04:00	24.91	50.
6/26/2012	2:18:37 PM	-04:00	+00:05:00	24.92	50.
6/26/2012	2:19:37 PM	-04:00	+00:06:00	24.91	50.
6/26/2012	2:20:37 PM	-04:00	+00:07:00	24.92	50.
6/26/2012	2:21:37 PM	-04:00	+00:08:00	24.92	50.
6/26/2012	2:22:37 PM	-04:00	+00:09:00	24.92	50.
6/26/2012	2:23:37 PM	-04:00	+00:10:00	24.92	50.
6/26/2012	2:24:37 PM	-04:00	+00:11:00	24.92	50.
6/26/2012	2:25:37 PM	-04:00	+00:12:00	24.93	50.
6/26/2012	2:26:37 PM	-04:00	+00:13:00	24.93	50.
6/26/2012	2:27:37 PM	-04:00	+00:14:00	24.93	50.
6/26/2012	2:28:37 PM	-04:00	+00:15:00	24.94	50.
6/26/2012	2:29:37 PM	-04:00	+00:16:00	24.94	50.
6/26/2012	2:30:37 PM	-04:00	+00:17:00	24.94	50.
6/26/2012	2:31:37 PM	-04:00	+00:18:00	24.94	50.
6/26/2012	2:32:37 PM	-04:00	+00:19:00	24.94	50.
6/26/2012	2:33:37 PM	-04:00	+00:20:00	24.94	50.
6/26/2012	2:34:37 PM	-04:00	+00:21:00	24.94	50.
6/26/2012	2:35:37 PM	-04:00	+00:22:00	24.95	50.
6/26/2012	2:36:37 PM	-04:00	+00:23:00	24.95	50.
6/26/2012	2,27,27 DM	04.00	.00.24.00	24.05	50.0

6/27/2012	6:11:37 AM	-04:00	+15:58:00	24.99	50.0
6/27/2012	6:12:37 AM	-04:00	+15:59:00	24.99	50.0
6/27/2012	6:13:37 AM	-04:00	+16:00:00	24.98	50.0
6/27/2012	6:14:37 AM	-04:00	+16:01:00	24.98	50.0
6/27/2012	6:15:37 AM	-04:00	+16:02:00	24.98	50.0
6/27/2012	6:16:37 AM	-04:00	+16:03:00	24.98	50.0
6/27/2012	6:17:37 AM	-04:00	+16:04:00	24.98	50.0
6/27/2012	6:18:37 AM	-04:00	+16:05:00	24.97	50.0
6/27/2012	6:19:37 AM	-04:00	+16:06:00	24.98	50.0
6/27/2012	6:20:37 AM	-04:00	+16:07:00	24.97	50.0
6/27/2012	6:21:37 AM	-04:00	+16:08:00	24.97	49.9
6/27/2012	6:22:37 AM	-04:00	+16:09:00	24.97	50.0
6/27/2012	6:23:37 AM	-04:00	+16:10:00	24.96	50.0
6/27/2012	6:24:37 AM	-04:00	+16:11:00	24.97	50.0
6/27/2012	6:25:37 AM	-04:00	+16:12:00	24.96	50.0
6/27/2012	6:26:37 AM	-04:00	+16:13:00	24.96	50.0
6/27/2012	6:27:37 AM	-04:00	+16:14:00	24.96	50.0
6/27/2012	6:28:37 AM	-04:00	+16:15:00	24.95	50.0
6/27/2012	6:29:37 AM	-04:00	+16:16:00	24.95	50.0
6/27/2012	6:30:37 AM	-04:00	+16:17:00	24.95	49.9
6/27/2012	6:31:37 AM	-04:00	+16:18:00	24.94	49.9
6/27/2012	6:32:37 AM	-04:00	+16:19:00	24.94	50.0
6/27/2012	6:33:37 AM	-04:00	+16:20:00	24.95	49.9
6/27/2012	6:34:37 AM	-04:00	+16:21:00	24.94	49.9
6/27/2012	6:35:37 AM	-04:00	+16:22:00	24.94	49.9
6/27/2012	6:36:37 AM	-04:00	+16:23:00	24.93	49.9
6/27/2012	6:37:37 AM	-04:00	+16:24:00	24.94	49.9
6/27/2012	6:38:37 AM	-04:00	+16:25:00	24.93	49.9
End of Day	6/27/2012 6:39:35 AM				
51 649					

An example of a Time Marker made in a Data Table Report to show the beginning of a time frame.

An example of a Time Marker in a Data Table Report to show the end of a time frame.


# **Statistics Reports**

When using a statistics report, statistic calculations can be added, changed, or removed from the report. This will provide optimal information about the report readings and the relationship between the readings.

## Adding a Statistic

#### To add a statistic:

- 1. Open or click the tab or window containing the statistics report.
- 2. On the **Report** tab, in the **Statistics** group, click **Add/Remove**. A **Manage statistics** box will appear. (*shown right*)
- 3. Click the Add button. An Add statistic box will appear.
- 4. Select the statistic to add, and then click the **OK** button. When a statistic is selected, the description is show to the right of the statistic title.
- 5. Click the Close button.
- 6. A new statistic will now be displayed in the selected statistics report.

## **Setting Default Statistics**

Setting the default statistics allows the user to select the statistics that appear by default when creating a report. Default statistic
are stored in the MadgeTech 4 Software preferences on the local PC being used and can be modified or deleted by other users with
access to the software.

#### To set default statistics:

- 1. Click the File tab, and then click Options.
- 2. Click the Reports tab, and then select Default Statistics.
- 3. From the **Default Statistics** box, select the desired statistics by either **Adding** or **Removing**. To change how they appear in order of importance, highlight the statistic and use the up and down arrows.

## **Changing the Properties of a Statistic**

#### To change the properties of a statistic:

- 1. Open or click the tab or window containing the statistics report to change.
- 2. On the Report tab, in the Statistics group, click Add/Remove.
- 3. Select the intended statistic to change the properties of from the Current Statistics list.
- 4. Enter the information into the appropriate section under the statistic title. If no parameters are listed, the selected statistic does not require additional information.
- 5. Click the Close button.

## **Removing a Statistic**

#### To remove a statistic:

- 1. Open or click the tab or window containing the statistics report.
- 2. On the Report tab, in the Statistics group, click Add/Remove.
- 3. Select the intended statistic to remove.
- 4. Click the Remove button.
- 5. Click the **Close** button.
- 6. The selected statistic will no longer be listed on the statistics report.





## Time to Threshold Statistic

The Threshold statistic option allows users to add statistics regarding the duration of time it took to reach a specific measurement, one value for ascending and one for descending. Multiple statistics can be added.

#### To add threshold statistics:

- 1. Open or click the tab or window containing the statistics report.
- 2. On the Report tab, in the Statistics group, click the Add/Remove icon. A Manage statistics box will appear.
- 3. Click the **Add** button at the bottom to display the **Add statistic** box.
- 4. Scroll down the list to Time to Threshold (ascending) or (descending), select and then click the Ok button to add either one.
- 5. Click the Close button. A new statistic will now be displayed in the selected statistics report.

## **Sterilization Data**

Optional F0 and A0 sterilization data can be added to a statistics report.

#### To add sterilization data to a statistics report:

- 1. Open or click the tab or window containing the statistics report.
- 2. On the Report tab, in the Statistics group, click the Add/Remove icon. A Manage statistics box will appear.
- 3. Click the Add button. An Add statistic box will appear.
- 4. Add either A0 and/or F0. Scroll down to the bottom of the options box to the right of the **Current Statistics** choices. There will be a check box to **Display sterilization data in report properties**, make sure this is selected and hit **Close**. Sterilization data will now be visible in the statistics report.



# Using MadgeTech Cloud Services

The MadgeTech Cloud Hosted data logging platform provides continuous logging and monitoring of temperature, pressure, and humidity data and more, while giving users instant access from any location. With MadgeTech Cloud Services, a wireless data logger system can securely transmit data in real time to be viewed on any internet or data enabled device such as a computer, tablet, or cell phone.

## Logging into a Cloud Services Account

#### To log into a cloud services account:

- 1. In the MadgeTech software, click the File tab, and then click Options.
- 2. Click the Cloud tab.
- 3. Enter the username and password, then click Log in.

## Logging out of a Cloud Services Account

#### To log out of a cloud services account:

- 1. In the MadgeTech software, click the File tab, and then click Options.
- 2. Click the **Cloud** tab.
- 3. Under the username and password, click Log out.

## **Enabling Cloud Monitoring for a Device**

### To enable cloud monitoring for a device:

- 1. In the MadgeTech software, select a device that is not currently cloud-enabled.
- 2. On the **Device** tab, in the **Control** group, click **Enable Cloud Monitoring**. Users can also right-click on the device and click **Enable Cloud Monitoring** in the context menu.
- 3. After cloud monitoring is successfully enabled, a cloud icon will appear in the Cloud column of the device list. If the device is running in real time, the icon will be colored, otherwise it will appear gray.

## **Disabling Cloud Monitoring for a Device**

### To disable cloud monitoring for a device:

- 1. In the MadgeTech software, select a device that is currently cloud-enabled.
- 2. On the **Device** tab, in the **Control** group, click **Disable Cloud Monitoring**. Users can also right-click on the device and click **Disable Cloud Monitoring** in the context menu.
- 3. After cloud monitoring is successfully disabled, a cloud icon will disappear in the Cloud column of the device list.





## Viewing and Monitoring Cloud Data

#### Options for viewing and monitoring cloud data:

- 1. From a mobile device or remote PC, navigate to http://cloud.madgetech.com. Type in the username and password and click Login.
- 2. From a mobile device, scan the QR code in the Cloud **Options** menu within the MadgeTech 4 Software.
- 3. In the MadgeTech 4 Software, on the **Device** tab, in the **Control** group, click **View Cloud Data**. Users can also right-click on a cloud enabled device and select **View Cloud Data** in the context menu.

## **Downloading Cloud Data**

### To download cloud from a device:

- 1. In the MadgeTech software, on the Device tab, in the Control group, click Download Cloud Data .
- 2. Do any of the following:
  - Click Select all to select all data from all loggers.
  - Select a Start time and End time, then click Update to select data within the time range.
  - Click a checkbox next to a logger to select or deselect it.
- 3. Click **OK** to download the selected data.



Scan the QR Code above using a mobile device to access your data. <u>cloud.madgetech.com</u>



## Maintenance

MadgeTech data loggers do not require a great deal of maintenance. Like most high-tech devices, they do require services in order to extend the life of the data logger. Information regarding **Battery Replacement**, **Return Merchandise Authorization**, **Calibration of Devices** as well as **Software** and **Firmware** updates will all be detailed in this section.



# **Battery Replacement**

Many MadgeTech data loggers contain a user-replaceable 3.6 volt or 3.0 volt lithium battery. Replacement batteries may be purchased from MadgeTech along with installation instructions. Before attempting to replace a battery, please refer to published specification sheets at <u>www.madgetech.com</u> for product specific documentation to ensure the device has a user-replaceable battery.

If the device does not have a user-replaceable battery, or the customer simply does not wish to replace the battery themselves, the device may be returned to MadgeTech for service. In this case, the customer should contact MadgeTech or visit www.madgetech.com/rma to generate a **Return Merchandise Authorization** (*RMA*) number and return the product as instructed by customer service. MadgeTech will replace the battery and return the data logger promptly.



# **Calibration of Data Loggers**

Most MadgeTech data loggers require calibration unless specifically stated in the Product Information Card, Product User Guide, or Specification Sheet. The MadgeTech 4 software will automatically inform the user when calibration is needed.

The MadgeTech Calibration Lab is staffed with highly trained technicians using advanced calibration equipment and processes. To send a data logger to MadgeTech for calibration services, please visit www.madgetech.com/rma to fill out a Return Merchandise Authorization (RMA) form. For more information about that process refer to RMA Instructions on page 80 of this manual.



An example of a Product Specification Sheet

An example of a Product Information Card

# **RMA Instructions**

To send a device back to MadgeTech, follow the instructions below to create a **Return Merchandise Authorization** (*RMA*) form on the MadgeTech website:

- 1. Visit www.madgetech.com, then under the Services tab select RMA Process.
- 2. When the web page opens, please sign in. If this is the first time, select <u>Click here</u> to register an account and create one. Once signed in, click on the **Make New RMA** button and fill in all the blank fields.
- 3. Complete the applicable fields on the form including customer **Billing and Shipping information**, even if they are the same. When all of the fields are complete, click **Generate RMA**.
- 4. Print out the confirmation page that follows containing the RMA number and MadgeTech's address for shipping. A Return Merchandise Authorization must be accompanied by a copy of the RMA paperwork and shipping is prepaid by the customer. The RMA number should be clearly marked on the outside of the package.
- 5. Please ship the package via UPS, FedEx, TNT, or DHL to the address listed on the confirmation page. USPS will not ship MadgeTech data loggers.
- 6. A notification email will be automatically sent when MadgeTech has received the RMA.

	ADGET		Ma	de in the USA	Call Us Toll Free: 1 (877) 671-2885	Search MadgeTech Log In   My C	elect Langua Cart   Checko
About Us	Products	Applications	Services	Software	Support	Press Room	Contact U
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DATA LOGGER     Wireless Data Log     Data Logger Syst	S ggers ems		Creat	te an Account	Forgot Your Passwo	ord?	Login

An example screenshot capture of the MadgeTech RMA new user sign up page.

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> Probes		« Back					Submit
Weather							

Screenshot capture of the Create an Account page.



# Software and Firmware Updates

Periodic updates to the latest, free standard software and device firmware are available on the MadgeTech website.

### Updating the MadgeTech Software

Updating the MadgeTech 4 Software using the MadgeTech website:

- 1. Navigate to the MadgeTech website and hover over the **Software** option on the top menu row, and select **Software & Drivers** from the list.
- 2. To install the latest MadgeTech 4 Standard software, click the **Download** button at the top of the page.
- 3. A pop-up screen will prompt to either open the .zip file or save it. It is recommended to open the file using the default settings, otherwise, double click on the file called **MTInstaller.msi**.
- Follow the installer prompts on the screen to complete the software installation.

(Note: If the installer presents the following set of options: Repair the software or Remove the software, this indicates that the latest version of MadgeTech 4 Software has already been installed. You can choose to cancel the installation, remove the existing installation or repair the software. Choosing Repair will ensure all files are present and up to date.)

## Firmware Upgrade for Data Loggers

#### Required before the upgrade:

- > A good battery installed in the device
- > Access to a computer with:
  - MadgeTech 4 Data Logger Software installed
  - The interface cable necessary for that device (with necessary drivers installed)
  - The appropriate firmware upgrade image file (*xxxx\_###.MTFirmwareImage*) for the device. (*found at* <u>madgetech.com/firmware</u>)

#### Upgrading the firmware on the data logger:

- 1. Once the correct firmware file is downloaded and saved to the computer, launch the MadgeTech software.
- 2. Connect the data logger to the PC using the USB interface cable or docking station for that device. For wireless data loggers, ensure that the wireless setting is set to **OFF** mode.
- 3. In the MadgeTech Software choose File > Options (shown right).
- 4. With the Options screen open, hold down the **Shift + Alt** keys at the same time and click **OK**.
- 5. A password dialog box will appear. Type **technicalsupport** in the password field then click **OK**.
- 6. Locate the device to be upgraded in the connected devices list, right-click the device and choose **Update Firmware** from the context menu.
- 7. A prompt will appear, saying that the firmware will be updated on the device and to keep the device plugged in, select **OK**.
- 8. Browse to the file that was downloaded in step 1 and click **Open**.
- 9. When the process is complete, a brief message will be displayed and the logger will be removed from the list until the software is restarted.
- 10. Quit and restart the MadgeTech Software.



Screenshot of the MadgeTech Data Logger Software download page. (http://www.madgetech.com/software-download)





### Firmware Upgrade for Interface Cables and Transceivers

## Required before the upgrade:

- Access to a computer with:
  - Microsoft .NET Framework 4.0 (or higher) installed
  - The Windows 8 and Windows 10 operating system comes with 4.5 .Net Framework already installed, however, if the .Net 4.0 Framework has not been installed on the PC, it can be downloaded at: http://www.microsoft.com/en-us/download/details.aspx?id=17851
  - The appropriate firmware upgrade .zip file for the device (found at madgetech.com/firmware)

#### Upgrading the firmware:

- 1. Download the correct firmware file and save it to the computer.
- 2. Launch the MadgeTech software.
- 3. Connect the interface cable or transceiver to the PC.
- 4. In the MadgeTech Software choose File > Options (shown right)
- 5. Navigate to the Communication tab on the left column.
- 6. In the Detected interfaces box, locate the interface cable or transceiver and select **Update**.
- 7. A prompt will appear, saying that the firmware will be updated on the device and to keep the device plugged in, select **OK**.
- 8. Browse to the file that was downloaded in step 1 and click **Open**.
- 9. Wait for the firmware upgrade process to complete.
- 10. Repeat these steps for each interface cable or transceiver that needs to be updated.
- 11. Once the process is complete, quit and restart the MadgeTech Software.

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# Troubleshooting

This section of the manual contains information that will help users answer questions to correct common connection missteps or other errors while using the software or devices.



# Why are my Devices not Appearing?

Sometimes a device connected to the computer does not appear in the **Connected devices** panel. This is often due to a minor connectivity issue. If a data logger does not show up in the **Connected devices** panel, or an error message is received while using a data logger, try the following:

- 1. Check that the interface cable is properly connected to the PC and the data logger.
- 2. Ensure that the battery in the data logger is not discharged. For best voltage accuracy, use a voltage meter or multi-meter connected to the battery of the device. Alternatively, try swapping out the battery of a device that is connecting successfully, if one is available.
- 3. Ensure that no other data logging software is running.
- 4. 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 as necessary.

# Is this Device Supported?

While many of the MadgeTech data loggers are supported in the MadgeTech 4 Software, there are a few that are not. The following is a list of all the devices that are **not** supported in the software:

- BTIF1000 (Discontinued)
- PRTemp101 (Discontinued)
- SVR101



# **Interface Cables**

Check that the software recognizes the interface cable. If a device is not appearing in the **Connected devices** panel, it may be that the interface cable is not properly connected. For assistance in identifying an interface cable type, see **Reference: Interface Cable Types** on page 87 of this manual.

## Check that the Software Recognizes the Interface Cable

#### To check that the software recognizes the interface cable:

- 1. In the software, click the File button, and then click Options.
- 2. In the **Options** window, click the **Communications tab**. (*shown right*)
- 3. The **Detected Interfaces** box will list all of the available communication interfaces. If an interface cable is listed, the software has correctly recognized it and is ready to be used.

## Check that Windows Recognizes the Interface Cable

Options	
Device Display	Change which interfaces are used to search for devices.
File	Interface selection
Reports Alarms	Search for devices using serial interfaces Search for devices using USB interfaces
Units	Detected interfaces
Address Book Email settings	IFC200: MTL_1105-20140519131358-882818
Communication	
Wireless	
Interop	
Cloud	
About	

If the software does not recognize the interface cable, there may be a problem with Windows or the USB drivers.

#### To check that Windows recognizes the interface cable:

- 1. On the Windows desktop, click **Start**, right-click **Computer** and choose **Properties**. **Windows+Break** can be selected as a keyboard shortcut.
- 2. Click Device Manager.
- 3. In the **Options** window, click **Communications**. Depending on the type of interface cable in use, choose one of the following steps accordingly:
- Interface cables that use MadgeTech drivers:

(old IFC200, IFC300, IFC400, RFC1000 - Please refer to corresponding images on the next page)

- 1. Click Universal Serial Bus Controllers.
- 2. Look for an entry for **Data Logger Interface**.
  - If the entry is present, and there are no warning messages or icons, then windows has correctly recognized the interface cable.
  - If the entry is not present, or has an exclamation point icon next to it, USB drivers may need to be installed.
- Interface cables that use Windows drivers:

(new IFC200/202 - Please refer to corresponding images on the next page)

- 1. Click Human Interface Devices.
- 2. Look for one or more entries listed as **HID-compliant device**. If there are no entries, Windows has not recognized the interface cable.
- 3. Right click the entry and choose **Properties**.
- 4. In the Properties window click the Details tab.
- 5. From the Property combination box, choose the Hardware ID's item.
- 6. Verify that the Hardware ID string HID/VID\_10C4&PID\_8748 is present.
  - If the entry is present, and there are no warning messages or icons, then windows has correctly recognized the interface cable.
  - If the entry is not present, or has an exclamation point icon next to it, USB drivers may need to be installed.



## Ensure that the USB end of the Interface Cable is Securely Connected to the Computer

#### To ensure that the USB end of the interface cable is securely connected to the computer:

- 1. Identify the type of interface cable being used.
- 2. Locate the **USB-A** plug of the interface cable.
- 3. If the interface cable is connected to the PC, unplug it.
- 4. Wait ten seconds, and then reinsert it.
- 5. Check to make sure that the blue LED is lit, indicating a successful connection.



# Reference

## Interface Cable Types

MadgeTech offers several different types of interface cables. To learn more about each interface cable and the products that are compatible with them, please visit: <u>www.madgetech.com/data-loggers/accessories/interface-cables.html</u> or the product page for the specific device.



IFC406

RFC1000

RFC1000-CE

RFC1000-IP69K

USB-1



USB101



## Installing the Interface Cable Drivers

- 1. Identify the type of interface cable.
- 2. For assistance in identifying the interface cable type, see Interface Cable Types on the previous page.
- 3. If the interface cable is one of the following types, drivers must be installed for it:
  - IFC200 (box style)
    - IFC300
    - IFC400
    - IFC406
    - RFC1000
- 4. Navigate to the download page of the MadgeTech website.
- 5. Click Download USB Drivers.
- 6. Save the zip file to the computer, open it and click the file **preinstaller.exe** and follow the steps of the installer.

## **Battery Change Procedure**

Some data loggers have user-replaceable batteries, while others **must** be serviced by MadgeTech. For more information about batteries and safety instructions, see the specific logger's **Product Information Card** or **Product User Guide** provided with the device or visit <u>www.madgetech.com</u>.

## **Thermocouple Types**

Refer to the chart below for the specifications of the different thermocouples.

Thermocouple	Range (°C)	Resolution	Accuracy	
J	-210 to +760	0.1 °C	±0.5 °C	
К	-270 to +1370	0.1 °C	±0.5 °C	
Т	-270 to +400	0.1 °C	±0.5 °C	
E	-270 to +980	0.1 °C	±0.5 °C	
R	-50 to +1760	0.5 °C	±2 °C	
S	-50 to +1760	0.5 °C	±2 °C	
B +50 to +1820		0.5 °C	±2 °C	
N -270 to +1300		0.1 °C	±0.5 °C	



## **Real Time Recording with Wireless Devices**

The 2000A Wireless, RFOT and the Therm A-Lert series have the ability to turn the wireless feature on and off with a transmit switch or wireless button. Below are steps to troubleshoot these devices when recording in real time. For more information, see the specific logger's **Product Information Card, Quick Start Guide** or **Product User Guide** provided with the device or visit www. madgetech.com.

When a wireless device that has its transmit switch set to the on position is started in real time:

- The reading interval of the device will change in the Connected devices panel.
- Readings transmitted to the software are also recorded to device memory. This automatic behavior is similar to starting a device, then starting the device in **Real Time** mode.
- The device caches a number of readings. If device communication is interrupted, the missing readings may be backfilled.

When a wireless device that is plugged in and has its transmit switch set to the off position (or a non-wireless device) is started in real time:

- The reading interval of the device will not change in the **Connected devices** panel. The dataset created when the device is started will display the correct reading interval.
- Readings transmitted to the software are not recorded to the device memory. If device communication is interrupted, the missing readings are not backfilled.
- The device can be started, and then started in **Real Time** mode. The data may not be identical due to different start times and reading intervals.





## Start and Stop Methods

When starting a device, users can specify when the device starts and stops recording data. Some start and stop methods may not be available, depending on device features and whether the device is being started in real time.

### **Start methods**

- Now specifies that the device should immediately start recording after clicking the Start button.
- Delay start allows users to select a start time. When the selected time is reached, the device will automatically start recording.
- Manual start allows for starting the device using a pushbutton. The Delay timespan specifies how long the device should wait to start recording after the pushbutton is activated.

### **Stop methods**

- Manual stop specifies that the device should immediately stop recording after clicking the Stop button.
- Automatic stop allows users to specify a stop time. When the selected time is reached, the device will automatically stop recording.
- **Readings** stop method allows users to specify a number of readings to record. The device will automatically stop recording when the reading count is reached.



# General

## What is the Difference between a Dataset and a Report?

- A Dataset is the data downloaded from a device. This data cannot be altered.
- A Report is what is displayed when a dataset is opened: a visual representation of the data that can be changed as necessary. Any changes to the report, such as removing channels or using the timeslice feature, are not applied to the underlying datasets. Available report types are graph, data table, and statistics view.

## How can a Composite Graph be Generated?

A **Composite graph** can be created by adding multiple datasets to any open graph. For more information on composite graphs, turn to **Adding a Dataset to a Report** on page 58 in this manual.

## How are Engineering Units Specified between Software based and Portable Engineering Units?

Only portable engineering units are supported. This is to ensure that engineering units will be recognized from any location without needing to transfer software settings.

## A CSV File Failed to Import

A CSV file might fail to import if it:

- Already exists in the software's file database
- Was saved in Microsoft Excel®
- Has been edited after being saved in MadgeTech 2
- Was exported
- Is empty
- Has no readings
- Was saved in a version of MadgeTech software earlier than 2.02

## How is a Collection of Reports Saved?

Report collections are currently not supported but will be installed in a future release.

## **Resetting the Screen Layout**

To restore all windows to their original positions, reset the screen layout.

#### To reset the screen layout:

- 1. Click the File button, and then click Options.
- 2. Click Display.
- 3. Click the Reset screen layout button.



## **Retrieving the Version Number of the Software and Other Components**

Users can check which version of the software is installed and obtain information about other software components.

#### To get the version number of the software as well as other components:

- 1. Click the **File** button, and then click **Options**.
- 2. Click the About button.
- 3. The following information is available in the **About** window:
  - Version is the software version.
  - **DLL version** is the version of the software component that allows device communication.
  - **USB driver version** is the version of the driver that detects USB-based device communication cables.
  - USB file version is the version of the software component that allows communication between the software and USB-based device communication cables.
  - The contact information of the company
  - Registered user
  - There is a button available to view the legal notice. (shown right)

About			×
	Versi	on:	4.2.1.0
	DLL	version:	1.2.5.0
	USB	driver version	: 3.02.00.00
	USB	file version:	3.02.00.00
MadgeTech, Inc.	Phone:	(603) 456-20	11
6 Warner Road	Fax:	(603) 456-20	12
Warner, NH 03278	Web:	http://www.	.madgetech.com
USA	Email:	info@madg	etech.com
View legal notice			ОК



# **Error Messages**

Error messages could potentially appear when using the MadgeTech software. To resolve any error message that is not listed here, please contact Customer Support through the Contact page found on page 99 of this manual.

## "Configuration Update Timed Out"

The **Configuration update timed out** message means that the software sent a request to the data logger but did not receive a response.

#### The following suggestions may help solve the problem:

- 1. First, attempt to retry the operation. Due to the ultra-low power nature of the data logger, some communications may be missed and will need to be retried.
- 2. Check that the device is properly connected to the interface cable. For more information, see **Why are my Devices not Appearing?** on page 84 of this manual.
- 3. Restart the software.



# **Resources and Documentation**

MadgeTech offers a wide variety of different online tools, to help customers choose the right data loggers and understand the MadgeTech 4 software. Please visit one of the resources below:

## Brochures & Catalogs

All of the MadgeTech Brochures and Catalogs for product selection and reference.

## Product Documentation

All of the MadgeTech product documentation: Data Sheets, User Guides, Manuals and more.

## Video Tutorials

MadgeTech 4 Software video tutorials.

## Knowledge Base

Articles on frequently asked questions.

Ask an Expert

Email ask an expert for specific questions or if the question can not be found on the Knowledge Base.

## MadgeTech YouTube

Product release videos and MadgeTech 4 Software video tutorials.



## Warranty

Products manufactured by MadgeTech, Inc., are warranted against defective material and workmanship for a period of one year, starting from the date of shipment. In the event that a MadgeTech product is found to be defective, MadgeTech will repair or replace the product at its sole discretion. Such repair or replacement shall be the sole remedy of this warranty.

This warranty extends only to the original purchasing customer and does not apply to any unit, which in our sole judgement, has been subjected to:

Operating or environmental conditions in excess of our written specifications or recommendations: Damage, misuse or neglect; Improper installation, repair or alteration.

This warranty excludes batteries.

Except as to title, this is our only warranty for the products. MadgeTech, Inc. expressly disclaims all other warranties, guarantees or remedies whether expressed or implied or statutory including any implied warranty of merchantability or fitness for a particular purpose. We also disclaim any implied warranty arising out of trade usage or out of a course dealing or course of performance. We do not guarantee the integrity of data or warranty that the products will operate uninterrupted or error-free. MadgeTech data loggers and their associated software have been thoroughly tested and the documentation reviewed. However, MadgeTech does not warrant the performance of its products, or that the products or their associated software will operate as described in this manual.



## **Terms and Conditions**

All products furnished by MadgeTech, Inc. ("*Seller*") shall be in accordance with the following terms and conditions unless otherwise stated in writing:

These Terms and Conditions (*"Terms and Conditions"*) govern (*a*) all sales quotations and sales of components, equipment, parts, and other products (*"Product"*) from, and (*b*) all service proposals and provisions of services by Seller to the buyer of the Products (*"Buyer"*). These Terms and Conditions shall take precedence over any terms and conditions which appear on Buyer's order or other form or any other writing or electronic transmission from Buyer. Any terms or conditions on any of Buyer's forms, recordings, electronic transmissions, or orders that are different from or in addition to these Terms and Conditions are specifically rejected. Any modification to these Terms and Conditions must be agreed to and executed in writing by Seller. Seller's failure to object to provisions contained in any communication from Buyer shall not be construed as a waiver of these Terms and Conditions or as an acceptance of any such provision. Trade custom, trade usage and past performance are superseded by these terms and conditions and shall not be used to interpret these terms and conditions. In the event that Product includes software, the software is licensed to Buyer in object code form only in accordance with Seller's standard Software License Terms that are included below.

## Limited Warranty.

A. Seller Manufactured Products and Seller Provided Services. Seller warrants to Buyer that (i) Seller manufactured Software (as defined in Section 23 below) shall execute the programming instructions provided by Seller, and (ii) Seller manufactured Product and consumables and Seller provided services shall be free from material defects in material and workmanship under normal uses and care, in each case until the expiration of the applicable warranty period specified below. Seller manufactured Product is warranted for the shorter of twelve (12) months from the date of initial installation or fifteen (15) months from the date of shipment by Seller. Seller manufactured consumables and Software, and Seller provided services are warranted for a period of ninety (90) days from the date of shipment or completion, as applicable. If Buyer discovers any warranty defect and notifies Seller thereof in writing during the applicable warranty period, Seller shall, at its option, promptly correct any defects that are found by Seller, or repair or replace F.O.B. point of manufacture that portion of the Seller manufactured Products, consumables or Software found by Seller to be defective, or refund the price of the defective portion of the Seller manufactured Products, consumables or Software, or of the defective portion of the Seller provided services. All replacements or repairs necessitated by inadequate maintenance, normal wear and usage, unsuitable power sources, unsuitable environmental conditions, accident, misuse, improper installation, modification, repair, storage or handling, or any other cause not the fault of Seller are not covered by this limited warranty, and shall be at Buyer's expense. Seller shall not be obligated to pay any costs or charges incurred by Buyer or any other party except as may be agreed upon in writing in advance by an authorized representative of Seller. All costs of dismantling, re-installation and freight, and the time and expenses of Seller's personnel for site travel and diagnosis under this limited warranty shall be borne by Buyer unless accepted in writing by Seller. Seller manufactured Products, consumables and Software, and Seller provided services, repaired, replaced or corrected during the applicable warranty period shall be in warranty for the greater of the remainder of the applicable original warranty period or ninety (90) days. THE FOREGOING STATES THE SOLE AND EXCLUSIVE WARRANTY AND LIABILITY OF SELLER. FOR BREACH OF WARRANTY AND IS IN LIEU OF ALL OTHER REPRESENTATIONS, WARRANTIES AND COVENANTS, EXPRESSED OR IMPLIED, IN REGARD THERETO. EXCEPT FOR THE EXPRESS LIMITED WARRANTY SET FORTH IN THIS SECTION, SELLER DOES NOT MAKE AND HEREBY DISCLAIMS ANY AND ALL OTHER REPRESENTATIONS AND WARRANTIES OF ANY KIND WHATSOEVER, WHETHER EXPRESSED, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OR ACCURACY, ADEQUACY OR COMPLETENESS OF DATA MEASUREMENT, WITH RESPECT TO ANY OF THE SELLER MANUFACTURED PRODUCTS, CONSUMABLES OR SOFTWARE, OR ANY OF THE SELLER PROVIDED SERVICES. Any drawings submitted with the Products are only to show the general style, arrangement, and approximate dimensions of the Products.



B. Equipment, Consumables, Software and Services Manufactured or Provided by Others. SELLER DOES NOT MAKE, AND HEREBY DISCLAIMS, ANY AND ALL REPRESENTATIONS AND WARRANTIES OF ANY KIND WHATSOEVER, WHETHER EXPRESSED, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY PARTICULAR PURPOSE, NONINFRINGEMENT OR ACCURACY, ADEQUACY OR COMPLETENESS OF DATA MEASUREMENT, WITH RESPECT TO ANY EQUIPMENT, COMPONENTS, PARTS, CONSUMABLES, SOFTWARE OR SERVICES SOLD TO BUYER BY SELLER THAT ARE NOT MANUFACTURED OR PROVIDED BY SELLER. Seller shall assign the manufacturer's or service provider's warranty applicable to such equipment, components, parts, consumables, Software and services to the extent permitted, to Buyer. Seller will provide Buyer with available warranty information.

## Limitations.

IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL SELLER'S LIABILITY EXCEED THE PRICE ACTUALLY PAID BY BUYER TO SELLER FOR THE SPECIFIC PRODUCTS, CONSUMABLES AND/OR SOFTWARE MANUFACTURED, AND/OR SERVICES PROVIDED, BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. SELLER SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE FOR ANY LOSS OF REVENUE, LOSS OF PROFITS OR ANY INCIDENTAL, INDIRECT, SPECIAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, WHETHER OR NOT FORESEEABLE. NO ACTION, REGARDLESS OF FORM, ARISING OUT OF ANY TRANSACTION GOVERNED BY THESE TERMS AND CONDITIONS, MAY BE BROUGHT BY EITHER PARTY MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION HAS ACCRUED. The foregoing allocation of risk and limitation of liability has been agreed to by the parties and forms the basis of their willingness to enter into any accepted order.

## Software Licensing Agreement.

#### SOFTWARE

MadgeTech Data Logger Software

#### LICENSE

MadgeTech, Inc. ("MadgeTech") grants you a non-exclusive license to use the software listed in the section above ("software") if you follow all restrictions in all sections of this agreement.

### TITLE

Title, ownership rights, and intellectual property rights in the software shall remain with MadgeTech. This software is protected by copyright laws and treaties.

#### SCOPE OF GRANT

#### You may:

- 1. Install and use the software on any number of computers;
- 2. Allow any number of users to make use of the software (each user must run an individual instance of the software);
- 3. Use the software over a network;
- 4. Make a copy of the software for archival purposes, if required.

#### You may not:

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