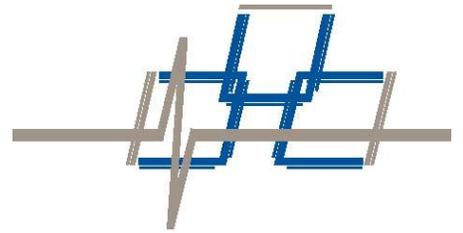


Microwave Defender MDTEST PC Software and USB Interface

Application Note



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1 Introduction

1.1 Description

MDTEST is the setup and maintenance utility software for the Digital Microwave Defender. It provides all the tools necessary to set up the parameters of each detector: a visual oscilloscope display mode, a tuning mode, a mode for observing previously recorded events, and a mode for reviewing the alarm history. MDTEST offers the most precise and reliable solution for tuning the MD5xxx series Microwave security system.

The purpose of this application note is to describe the functional capabilities of the MDTEST software.

1.2 MDTEST Package Contents

The MDTEST package provides the USB to RS-485 converter with cable accessories to enable communications from any compatible PC to the Digital Microwave Defender Rx receiver.



Figure 1: MDTEST package contents: RS-485 to USB Converter, USB cable, and RS-485 cable.

The MDTEST software itself is available for download from the Fiber SenSys website.

1.3 PC Requirements

The following are the minimum system requirements for operating MDTEST software:

- Windows XP with Service Pack 3, Windows Vista with Service Pack 2, Windows 7 with Service Pack 1, or Windows 8
- CPU: 2.8GHz Intel Pentium 4 or 2.0 GHz Dual Core or faster
- Media Storage: 50 MB free space (recommend 1 GB to store Monitor & History)
- Available USB Port

2 Installation and Configuration

This Application Note requires both the Microwave Defender Rx and Tx units to be set up, powered, and operational per the MD5xxx Installation Manual.

2.1 Software Installation

To access the MDTEST application, please go to the Fiber SenSys website and download the MDTEST software ZIP file. This file contains the MDTEST Application and Microwave Defender system drivers. The website url is: www.fibersensys.com .

Download the MDTEST + Driver ZIP file to your computer. Double-click on the ZIP file to observe the contents of the ZIP file, which should be a folder named something like “MDTest vxxxxxx Download Rev x”. Double-click on this folder to locate the setup application.

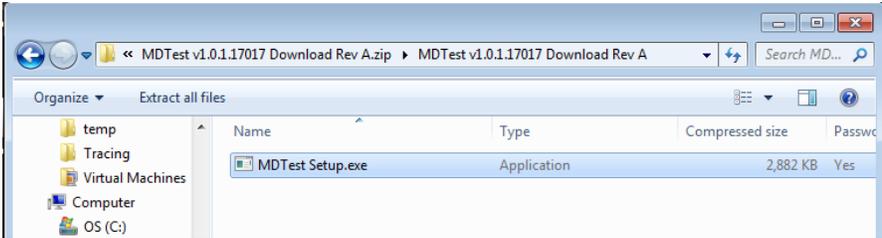


Figure 2

In order to copy or run the setup application, you will need to know the download’s password. To obtain the password, contact your Fiber SenSys sales representative or FSI technical support. Visit <http://www.fibersensys.com/contact-us> for more information.



Figure 3

After you have entered the password, the setup application should begin. For most users, the default values in the setup application will be acceptable. The rest of this section will provide a detailed description of the purpose of each step in the setup process.



Figure 4

Click "Next" to continue.

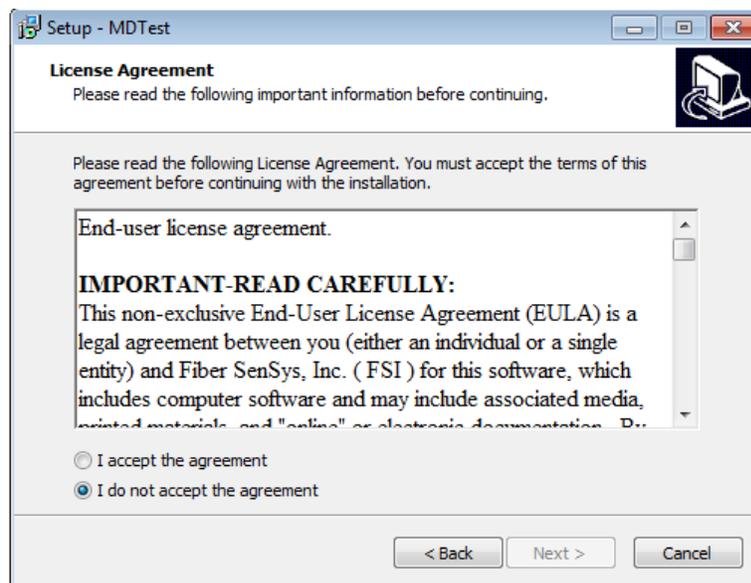


Figure 5

The setup application will require you to read and accept the license agreement. To proceed, you must accept the agreement and click "Next".

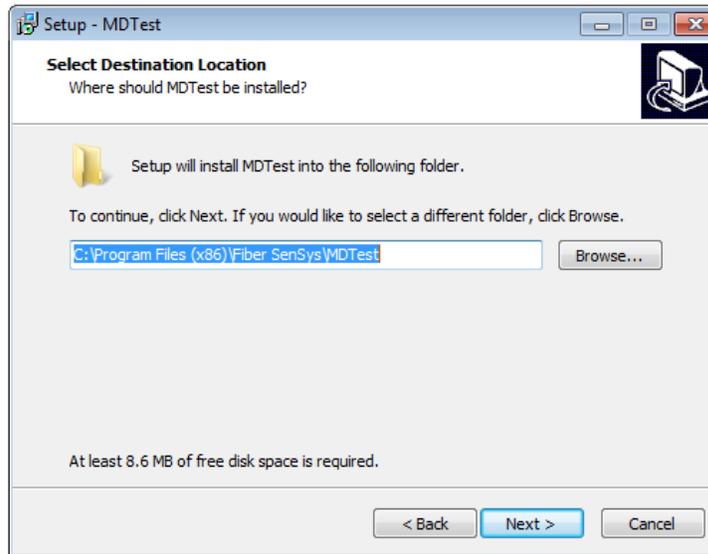


Figure 6

Either use the suggested destination folder or browse for one you might prefer. Click “Next” when ready and proceed to Figure 7.

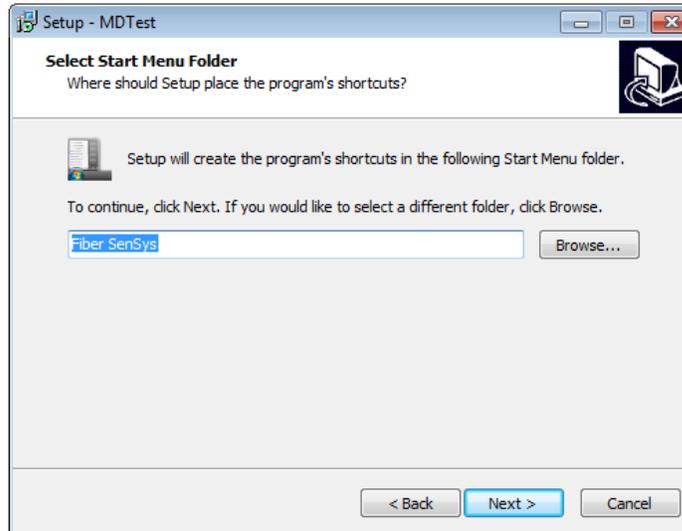


Figure 7

By default, the setup application will use or create a “Fiber SenSys” folder under “All Programs”. If you would like to install MDTEST into a different folder, type the folder’s name or select “Browse...”. Then click “Next” to proceed to Figure 8.

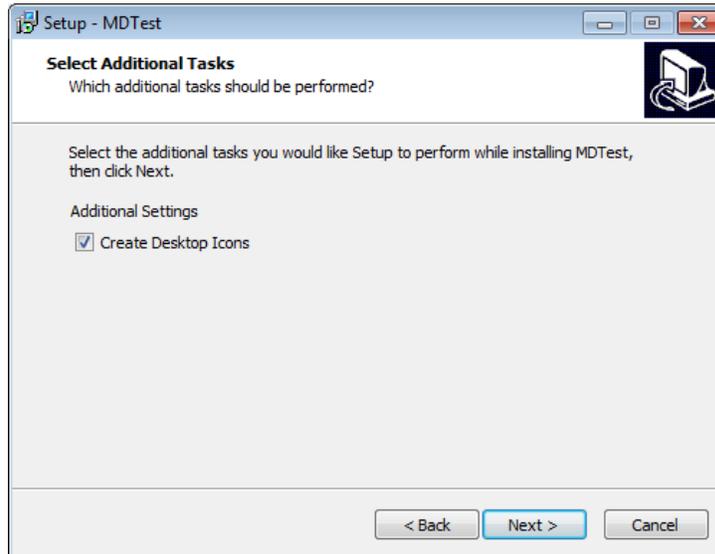


Figure 8

By default, the setup application will create a shortcut icon on the desktop for starting the MDTEST application. If you would prefer not to have the icon created, uncheck the “Create Desktop Icons box”. When you are ready, click “Next” to proceed.

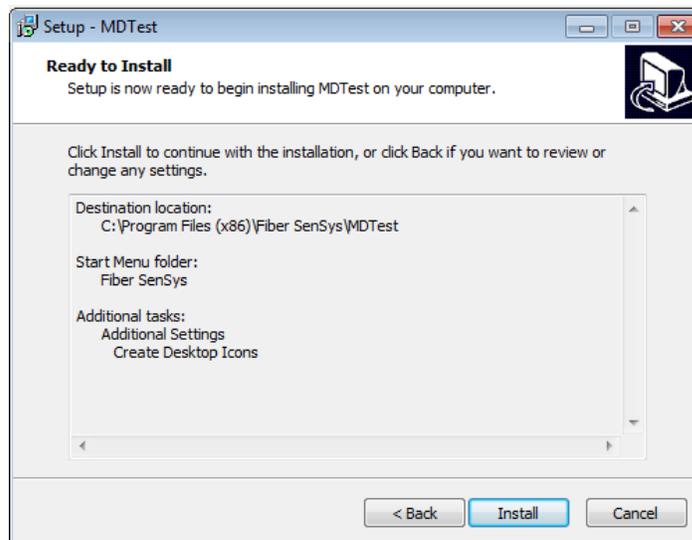


Figure 9

This panel summarizes the operations that will be performed during installation. If you would like to change any settings, use the “Back” button to revisit previous changes. When you are ready for the installation, click “Install”. The setup program will install both the MDTEST application and the system driver for the USB to RS-485 converter.

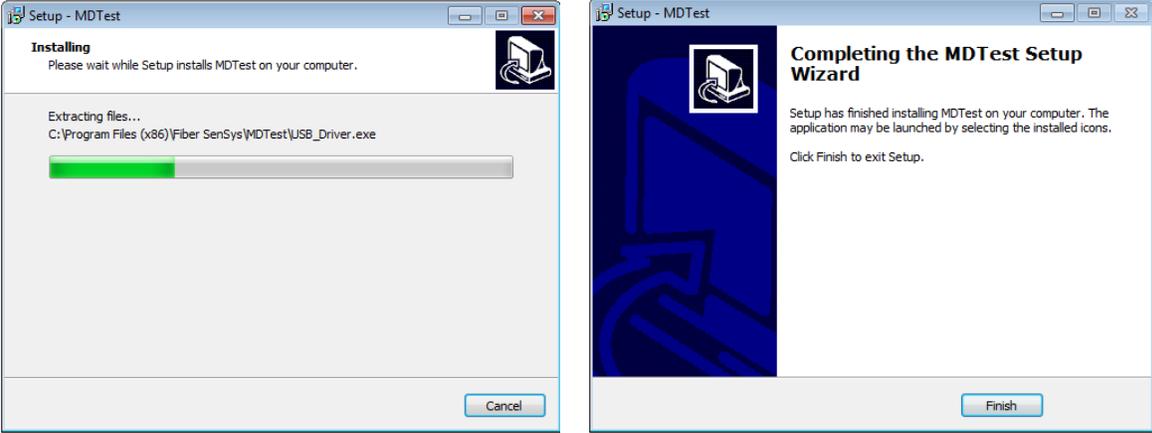


Figure 10

Click the “Finish” button to complete the Installation process.

2.2 Connect the Microwave Defender

This section will describe how to connect the PC running MDTEST to a Microwave Defender device. Although MDTEST may be connected to either transmitter (Tx) or receiver (Rx) devices, only connections to the Rx devices are required to tune and monitor the system.

First, connect the RS-485 to USB converter to the PC using the USB cable. The green power (PW) LED on the converter should be illuminated. Next, you will need to locate the Microwave Defender Rx device and remove the green plastic radome cover to access the device’s circuit board. Connect the RS-485 field serial ribbon cable from the USB converter’s black 10 pin connector to the Microwave Defender Rx connector number J5 (See Figure 11).

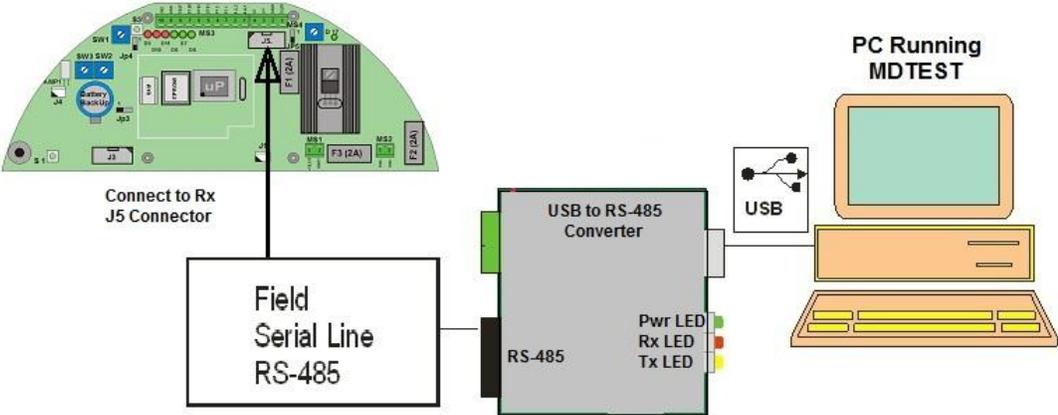


Figure 11: RS-485 to USB connections to PC

2.3 Determining the COM Port

The MDTEST software requires you to know the COM port used by the RS-485 to USB converter. You must first install the MDTEST software, which will install the drivers for the RS-485 to USB converter. See section 2.1 for instructions on installing the software.

The Device Manager software, built into Windows, is used to determine the COM port. To start Device Manager under Windows 7, click on the Start button, type “device manager”, and press Enter. Device Manager is also available under the Control Panel on all versions of Windows.

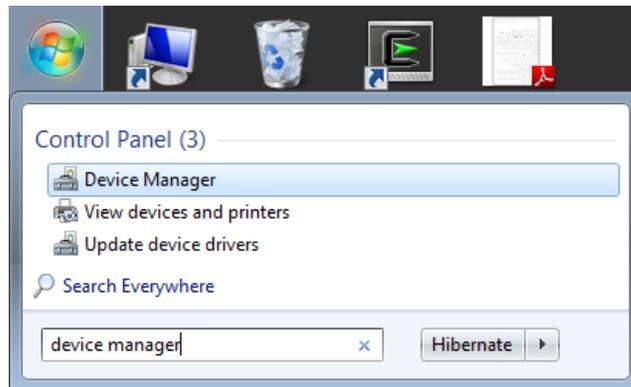


Figure 12: Starting Device Manager on Windows 7

Once Device Manager is started, locate the “Ports (COM & LPT)” entry. If the triangle to the left of the icon is pointing right and not filled in, then the individual COM ports will not be visible. In this case, you will need to click on the triangle to view the COM ports. See Figure 13 to see an example with two COM ports visible.

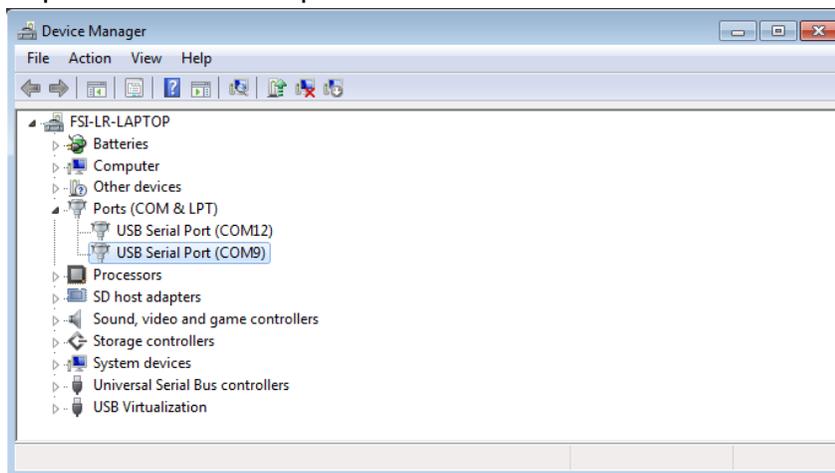


Figure 13: Device Manager with COM ports visible

Once the COM ports are visible, you can determine the COM port for the RS-485 to USB converter by removing the converter's USB cable and noting which COM port is removed from the list in Device Manager. You will want to write down the number of the COM port for later use. Then plug the USB cable back in to allow communications with the device.

3 Using MDTEST for the first time

3.1 Starting MDTEST

The MDTEST software can be started using the Desktop shortcut or by clicking on the Start button and selecting "All Programs", then "Fiber SenSys", then "MDTest". A startup window will display momentarily while the main application is started.



Figure 14: The startup window for MDTEST

3.2 Creating Installations and Groups

After the application starts, you will need to create an "installation" and a "group". These are like folders for organizing Microwave Defender devices: devices can only be created in groups, and groups can only be created in installations. To begin, click on the arrow next to the "page" icon and select "Add Installation". Name your installation something like "My Installation".

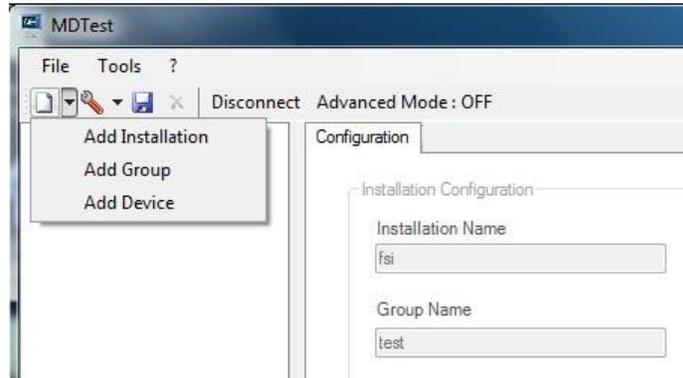


Figure 15: Adding an initial Installation and Group

Next, click on the arrow again and select “Add Group”. Name your group something like “My Group”. In the future, you can create and organize installations and groups to suit your needs.

3.3 Communications settings

The communications settings must be initialized before MDTEST can communicate with a device. To initialize the settings, first click on menu bar “Tools”, then click on “Options”. This will bring up the Options dialog window.

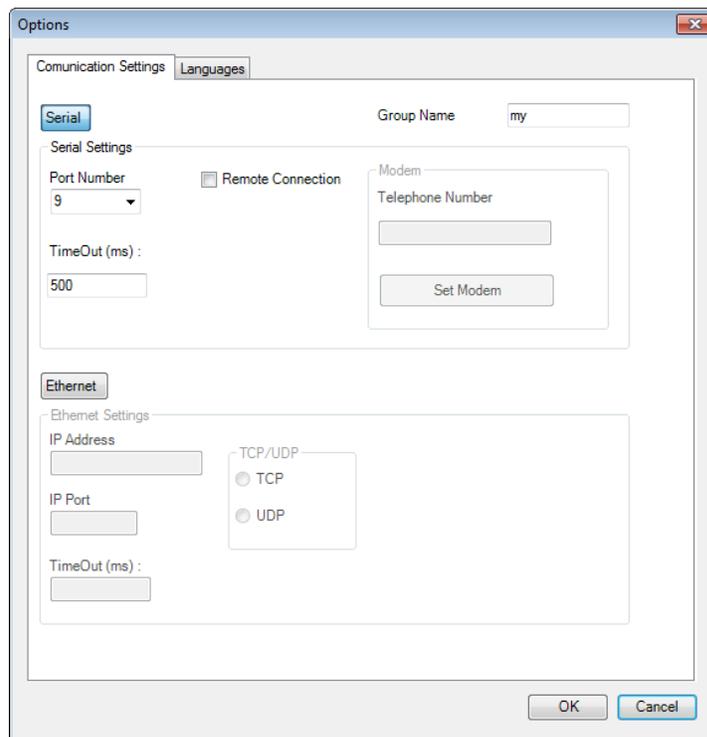


Figure 16: The Options dialog window

If needed, click on the “Communication Settings” tab and select “Serial”.

This window is where you will select the COM port that you identified in section 2.3 ([Determining the COM Port](#)). To do this, click on the arrow below “Port Number” and select the number of the COM port. If this number is not correct, you will not be able to communicate with the Microwave Defender device.

Leave “Timeout” set to 500ms. Click “Ok” to save the changes.

Note: Fiber SenSys does not currently support the “Remote Connection” and “Ethernet” connection features.

3.4 Connecting to a Microwave Defender Rx device for the first time

Connecting to a new device consists of three steps: identifying the device’s barrier number, adding the device to MDTEST, and connecting to the device.

Identifying the device’s barrier number

The barrier number is the number that was assigned to the device using the procedure in Section 4.1.2 step (o) of [MD5xxx Analog and Digital Microwave Defender](#).

To read this number, you will need access inside the device’s radome. Change SW1 to position 8 then adjust SW2 and SW3 until LEDs D9 and D10 are on. The value of SW3 indicates the tens value of the barrier number and the value of SW2 indicates the ones value of the barrier number.

For example, if SW3 is two and SW2 is one, then the barrier number is 21.

Adding a device to MDTEST

To add a new device, first select the group in which the device should appear. Then click on the arrow next to the “page” icon and select “Add Device”. This will bring up a window for adding the device.

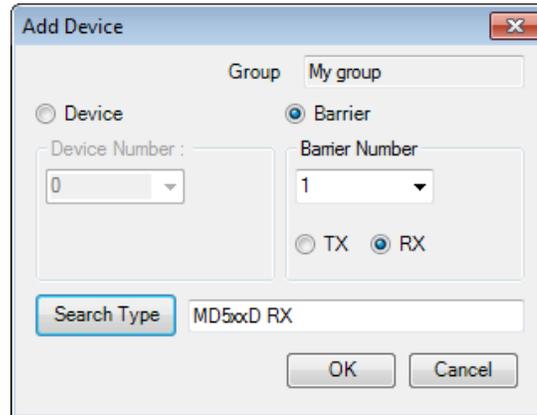


Figure 17: Adding a new device

To identify the device, select the “Barrier” button, the appropriate barrier number, and the “RX” button. Press “Search Type” to confirm communications with the device. This should report the device type. If not, then communications are not occurring properly. The most common problems are with the cable itself, the communications settings (see Section 3.3) or the device’s barrier number.

If the device was identified, click “OK” to add the device.

Connecting to the device

To connect to a device, first select that device in the tree on the left. Then press the “Connect” button.



Figure 18: Connecting to a device

A new window will appear requesting the password for the device. The password functionality is designed to protect against remote changes to the device. Once someone has physical access to the device, the password can be recovered by removing the radome and pressing the “Password Recovery” button. The password will appear in the text box. If you already know the password, you can enter it manually.



Figure 19: Entering & recovering the device password

Once the password is entered, press "OK". The password window should close and the "Connect" button in the main window should change to "Disconnect". If not, then communications are not occurring properly. The most common problems are with the cable itself, the communications settings (see Section 3.3) or the device's barrier number.

4 MDTEST Features

MDTEST has many functions for managing the Microwave Defender “fuzzy” devices. This section assumes familiarity with basic device configuration using the manual methods described in MD5xxx Analog and Digital Microwave Defender.

After connecting to a device, the main configuration window of MDTEST will be displayed.

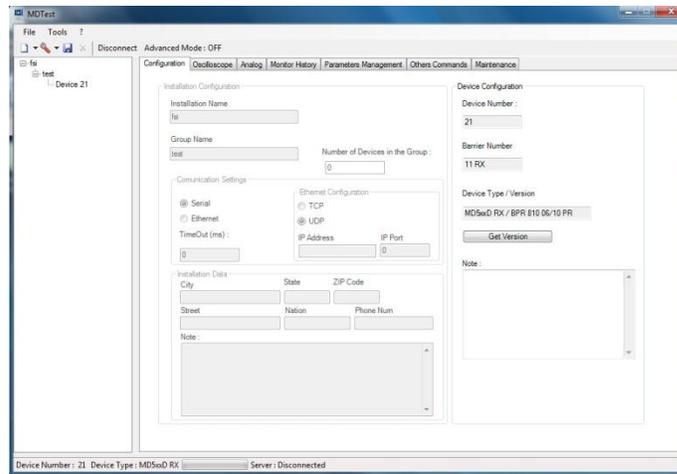


Figure 20: Main Window

4.1 Oscilloscope Mode

Using MDTEST you can use the Oscilloscope mode to view the device’s received signal and compare to the stored sensitivity settings. When the device is connected, click on the “Oscilloscope” tab to switch to Oscilloscope mode and then “Start” to activate.

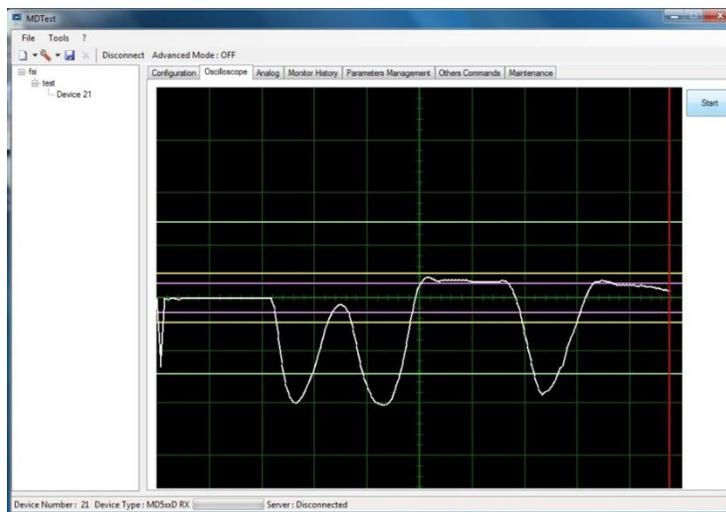


Figure 21: Oscilloscope mode

The MDTEST Oscilloscope mode displays a line that represents the received signal. In stable conditions the signal will be a flat line near the center. The example in Figure 21 shows a short period of quiescent signal followed by three intrusion movement conditions within the barrier. The vertical axis represents the instant value of the signal received and the horizontal axis represents the time from left to right on the graph.

The colored lines on the graph represent various settings, as described in the section about Analog Mode.

4.2 Analog Mode

The Analog mode is one of the most important parts for analyzing and managing the device's operation. When the device is connected, click on the "Oscilloscope" tab to switch to Oscilloscope mode and then "Start" to activate.

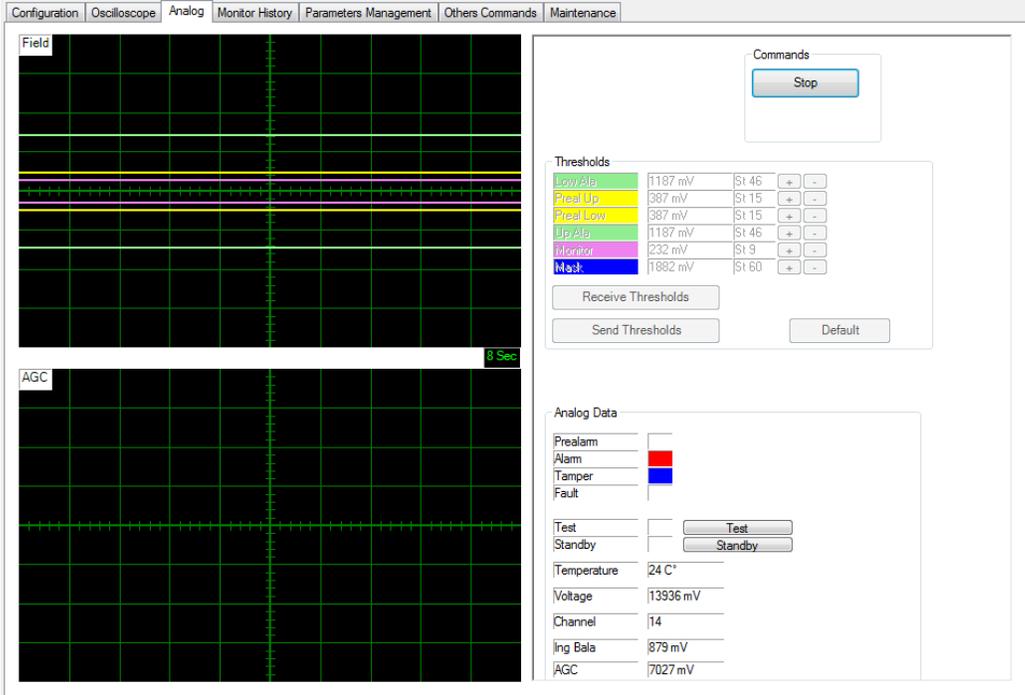


Figure 22: Analog Mode

Analog mode has graphs showing the field signal and the AGC value. Right of the field graph are the thresholds that can be set on the device, and right of the AGC graph are the values that can be sent by the detector. For example, in Figure 22, the device is indicating both an alarm and a tamper condition, a temperature of 24 C°, etc.

To alter the thresholds, click on the “Stop” button and change the threshold by clicking on the + or - buttons. Once the thresholds are set appropriately, click “Send Thresholds” to write the threshold values to the device.

4.3 Monitor & History Mode

Microwave Defender detectors store up to 100 Monitoring events and 256 History events. “Monitor” records 2.5 Seconds of each received signal. “History” records detector events (e.g. Intrusion Alarm, Set Date/Time, etc). When the device is connected, click on the “Monitor History” tab to enter Monitor & History Mode.

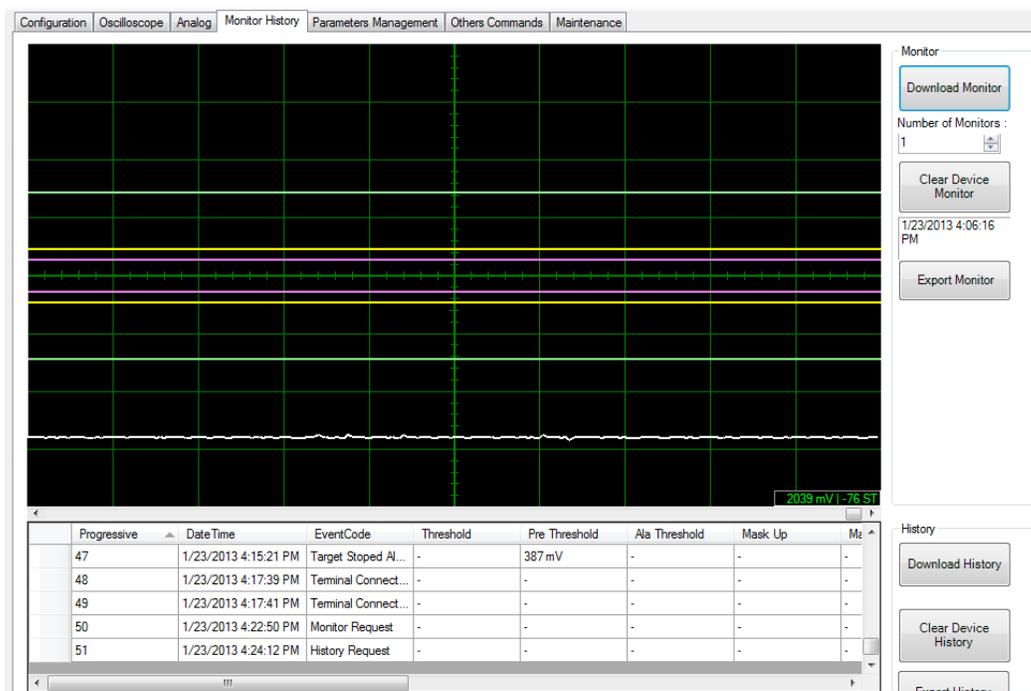


Figure 23: Monitor and History window

The top half of the window contains the Monitor portion and the bottom half contains the History portion. Begin by clicking on “Download History” to view the device’s event history. The history can be written to disk by clicking on the “Export History” button.

To view the monitored signal associated with an event, select the event and click on “Download Monitor”. The signal data can be written to disk by clicking on the “Export Monitor” button.

Note: the “Number of Monitors” feature is not compatible with the Microwave Defender devices and should be kept at 1.

4.4 Parameter Management Mode

In addition to the Analog Mode for managing thresholds, there are a variety of other parameters that can be set on the device. While there are other mode in which some these parameters can be adjusted, this mode brings the set of parameters together for management as a group. When the device is connected, click on the “Parameters Management” tab to enter Parameter Management Mode.

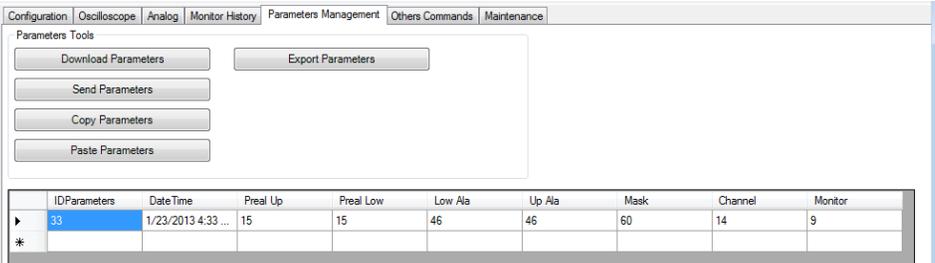


Figure 24: Parameter Management mode

Each row in the table shows a particular parameter set. The following operations are available using the buttons:

Name	Result
Download Parameters	Adds a new parameter set to the table from the device
Send Parameters	Writes the selected parameter set to the device
Copy Parameters	Copies the selected parameter set to the Windows clipboard
Paste Parameters	Adds a new parameter set to the table from the Windows clipboard
Export Parameters	Writes the selected parameter set to a file

4.5 Other Commands Mode

To adjust the device password or clock, use the Other Commands mode. When the device is connected, click on the “Other Commands” tab to enter Other Commands Mode.

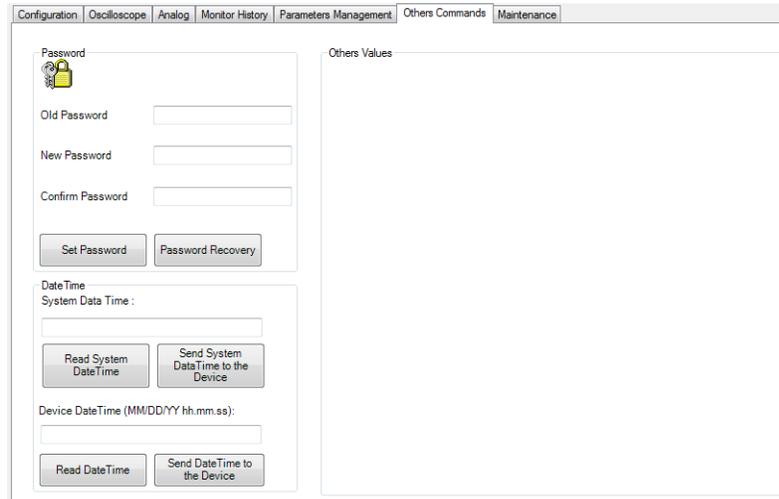


Figure 25: Other Commands mode

To change the device password, you will need to enter the current password and two copies of the new password. Once you have entered this information, press “Set Password” to write the new password to the device. If you do not recall the current password, you can use the password recovery mechanism by removing the device’s radome cover and pressing “Password Recovery”.

To change the clock on the device, you can set the time in one of two ways:

- To synchronize the device’s clock with the clock of the computer running MDTEST, press “Send System DateTime to the Device”
- To set the device’s clock to a specific time, enter the time into “Device DateTime” and press “Send DateTime to the Device”. You will need to enter the data in the following format: MM/DD/YY hh:mm:ss¹.

After writing the clock time to the device, or to determine the current clock time on the device, press “Read DateTime”. To determine the current clock time on the computer running MDTEST, press “Read System DateTime”.

4.6 Device Databases

MDTEST stores all data in a database. Each new device is added to a database and data associated with those devices can grow over time. When the database becomes too large, slow-down problems may occur. Therefore, if the size of the database is more the 200 MB,

¹ The DateTime format MM/DD/YY hh:mm:ss values mean the following: MM is the number of the month (0-12), DD is the day of the month (0-31), YY is the last two digits of the year (0-99), hh is the number of hours (0 – 23) that have already occurred in that day, mm is the number of minutes in the hour (0-59), and ss is the number of seconds in the minute (0-59).

MDTEST creates a new database file that retains the structure of the original database while removing older data. When it does this, MDTEST also creates a file in the backup folder that retains the original data, so that it available for later analysis.

While this operation is automatic, the following manual data operations are available:

Name	Result
New	Archive the current database and create a new one.
Open	Open selected database until closure of the application.
Save with Name	Save current database in specified location.
Reset Database	Deletes database content but not the structure (systems, devices).
Clean device data	Deletes all data relating to the connected device (Monitor and History).

Please visit www.FiberSenSys.com
To view additional product literature, tech tips and more



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