

# **MaxReader**

## **Windows Interface Users Guide**

**MaxReader Development Kit**  
**MaxArias Gen2 Reader Platform**



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### Installation

Create a new folder in a directory on your computer's hard drive. Copy both MaxArias.exe and commg.dll to this directory. These files can be located in the SW directory found on the CD-ROM supplied with the MaxReader kit.

### USB FTDI driver Installation

Your computer needs to install the FTDI USB driver to communicate with the MaxReader board. Typically Windows will automatically install the FTDI USB driver. If the driver has been installed correctly, the MaxReader board will emit a short rising chirp when first plugged in to your computer. In the event that the FTDI driver does not install correctly, manual installation of the driver is required. For Windows, please follow the following directions to manually install the FTDI USB driver:

1. Open Device Manager.
2. In the Device Manager window there will be a device under "Other Devices" with a yellow warning symbol (Figure 1) to indicate a problem (i.e. no driver installed). The description next to this device will depend on the device attached. When loading the drivers, this warning symbol maybe under "Human Interface Devices" and not under "Other Devices."
3. Right click on the other devices (TTL232R in this example) to bring up the menu as shown in Figure 2.

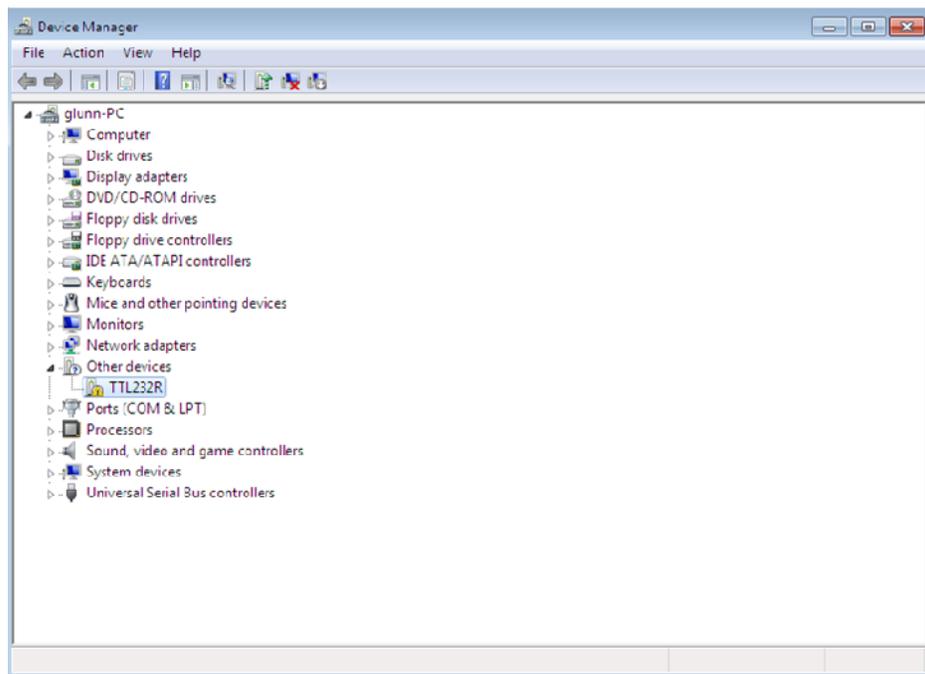


Figure 1

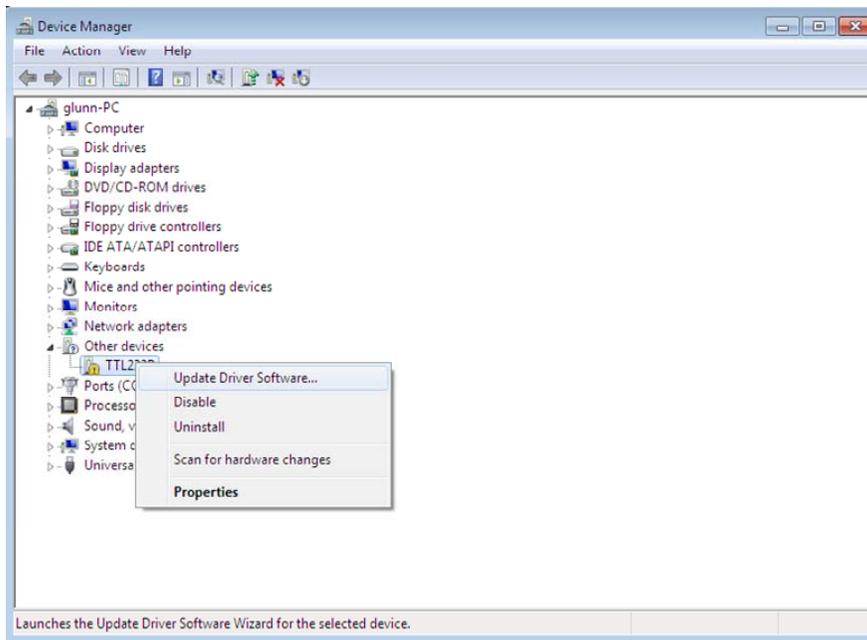


Figure 2

Select "Update Driver Software" shown in Figure 2.

This will then display the option for an automatic search or a manual search (Figure 3). Select the second option to browse manually, which will bring up the window in Figure 4.

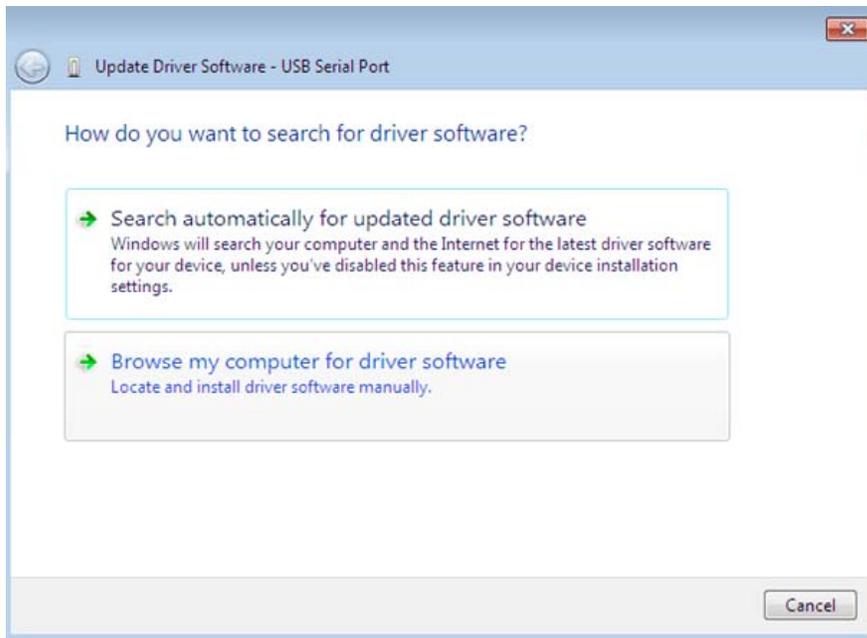


Figure 3

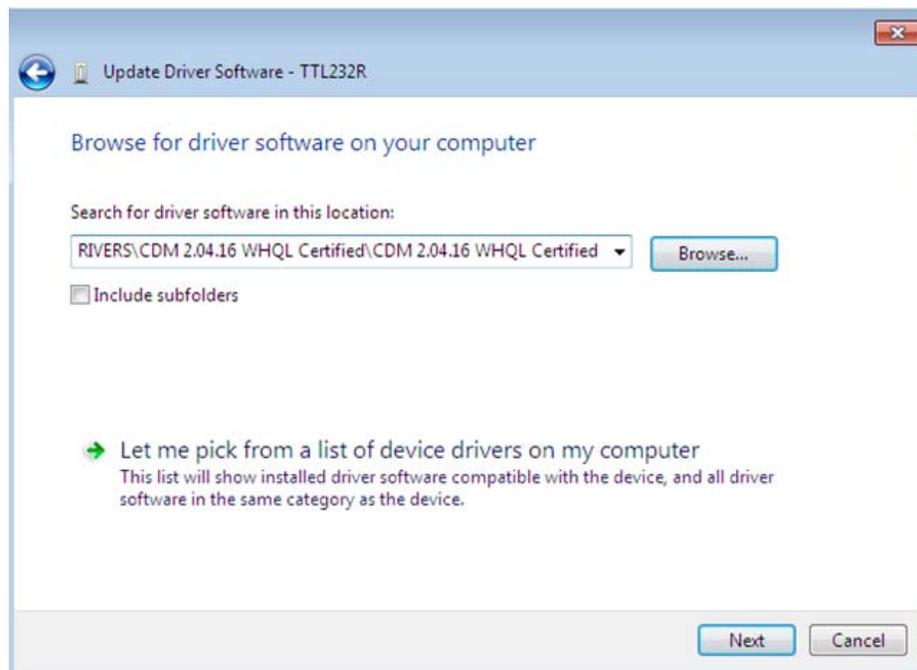
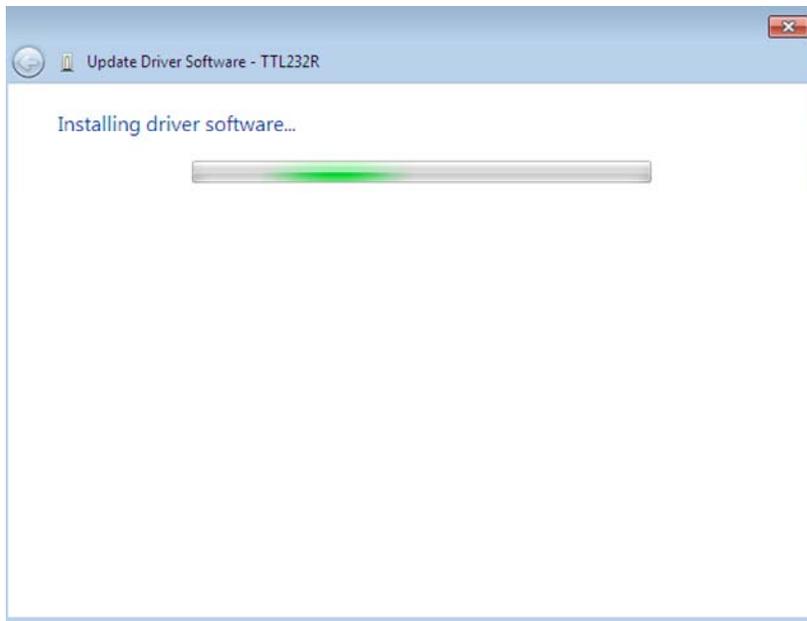


Figure 4

In the address box type the exact location of the drivers located in the folder on the installation CD (typically D:\SW\Drivers\Windows\). This may be on the CD or in a folder on the host computer. It will not necessarily reside in the exact location shown in Figure 4. The drivers can be saved to any location the user chooses. Updated FTDI drivers can be downloaded from:

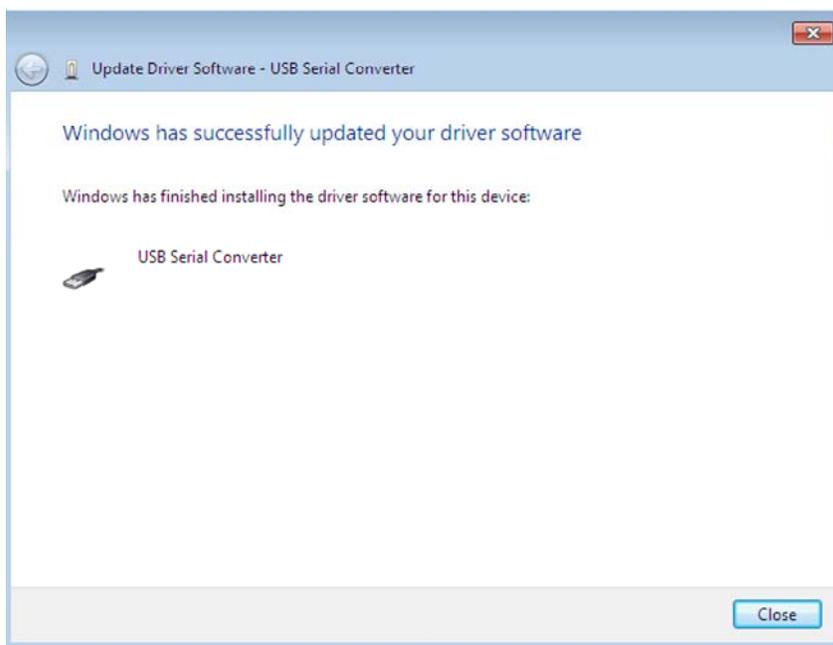
<http://www.ftdichip.com/Drivers/VCP.htm>

After entering the desired address, select “NEXT” to start the installation. This will bring up the window in Figure 5.



*Figure 5*

If the drivers have been loaded successfully, you will see the following screen (Figure 6):



*Figure 6*

You may also need to update the current drivers by right clicking on "TTL232R" under "Other Devices" or under "Human Interface Devices." Once you have located "TTL232R, click "Update Driver Software" in the drop down menu. You will now see "USB Serial Port (COM3)" under "Ports (COM & LPT) displayed in Figure 7. In this example, the USB Serial Port appears on COM3. Depending on the

host computer, the USB Serial Port may appear on a different COM port. This should be verified in the Device Manager.

At this point, you should be finished with the driver installation.

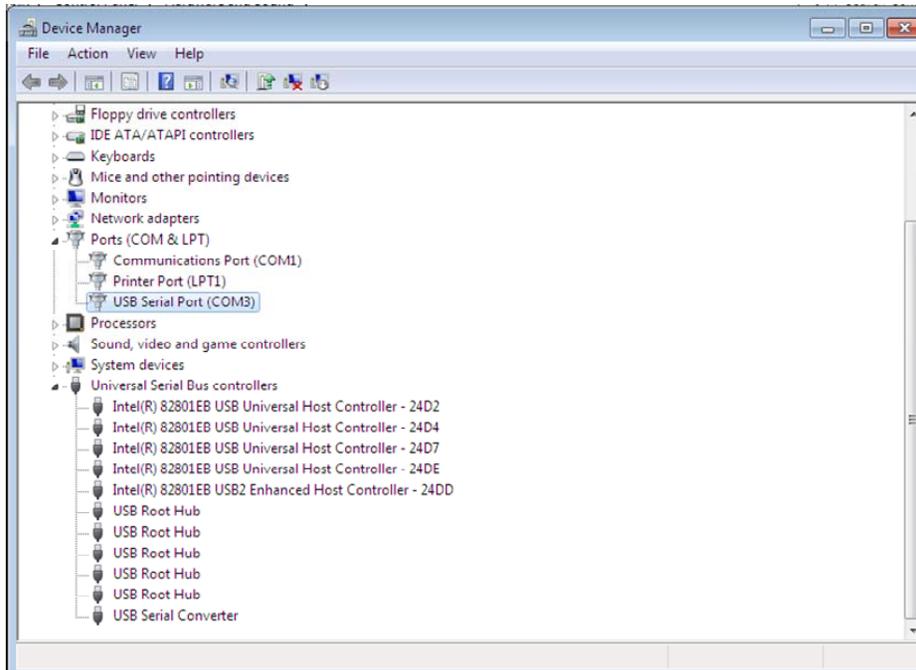


Figure 7

### Startup

1. Connect the MaxReader to the host computer using a USB cable.
2. Double click the MaxArias.exe icon. The window in Figure 8 will appear.
3. If the drivers have been installed correctly, MaxReader will emit a short rising tone. When the USB interface is disconnected MaxReader will emit a short falling tone.

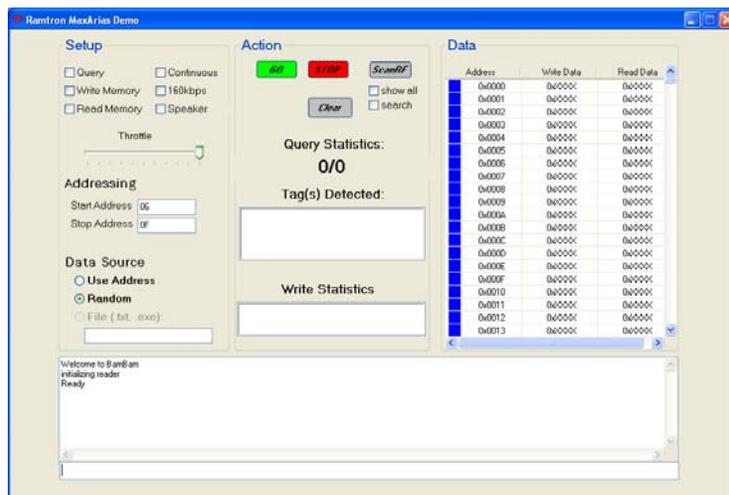
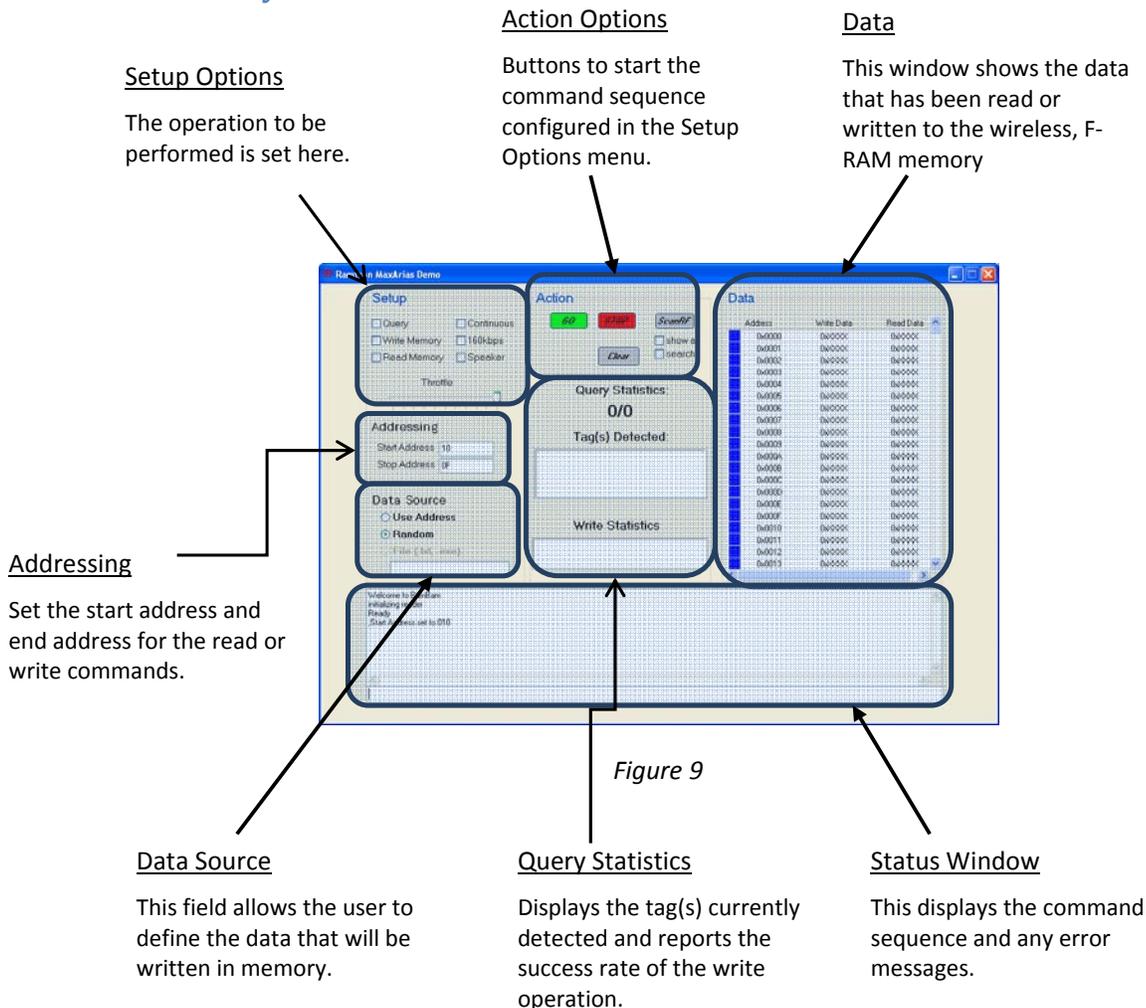


Figure 8

## Window Layout



## Setup Options

These options determine the type of operation executed when “Go” is pressed.

- Query
  - Performs a Gen2 Query to determine if a tag is within range of the MaxReader antenna. If a tag is discovered during the Query process, the tag’s 96-bit Electronic Product Code (EPC) will be displayed in the “Tag(s) Detected” Window of the Query Statistics area in Figure 9.
- Write Memory
  - Writes data to user defined memory locations.
- Read Memory
  - Reads the memory locations defined by the user. This can be as small as a single, 16-bit word or the entire memory contents of the tag in 16-bit blocks.
- Continuous
  - If checked, the operation in the “Setup” will be performed continuously until the “Stop” button is pressed.

- 160kbps
  - Check this option to perform writes at 160Kbps data rate. This command increases the Tag to Reader link frequency from the default value of 40Kbps.
- Speaker/Buzzer
  - Check this option to enable the speaker/buzzer on the MaxReader. When this is enabled, the onboard buzzer will emit a short, high pitched tone every time a tag responds with a successfully Query command from the MaxReader.

### Action Options

Decide what you want MaxReader to do.

- Go
  - Performs the operation selected in the “Setup” window. If “Continuous” has not been selected in the “Setup” window, this operation will be performed only once. If “Continuous” is selected, on the other hand, the operation will be repeated until “Stop” is pressed in the “Action” window.
- Stop
  - Stops all operations. Only necessary if the “Continuous” operation has been selected.
- ScanRF
  - This scans the 50 RF channels available and gathers statistics about the performance of each individual channel.
- Clear
  - Click this button to clear the Tag(s) detected in the “Query Statistics” window. This command also clears the write statistics window.
- Show All
  - When Scan RF is started, it does one of two operations, Show All or Search. Show All scans all 50 channels and then opens a window with the data.
- Search
  - When Scan RF is started, it does one of two operations. Show All or Search. Search starts at the lowest frequency bin and does 10 attempted queries and logs the results. If 3 channels are found with 100% hit rate the center channel is set as default and all further operations with the transponder are done at that frequency.

### Addressing

Where MaxReader will be directed to read or write data from/to a wireless memory location.

- Start Address
  - Sets the address where reading or writing will commence.
- End Address
  - Sets the address where reading or writing will finish

### Data Source

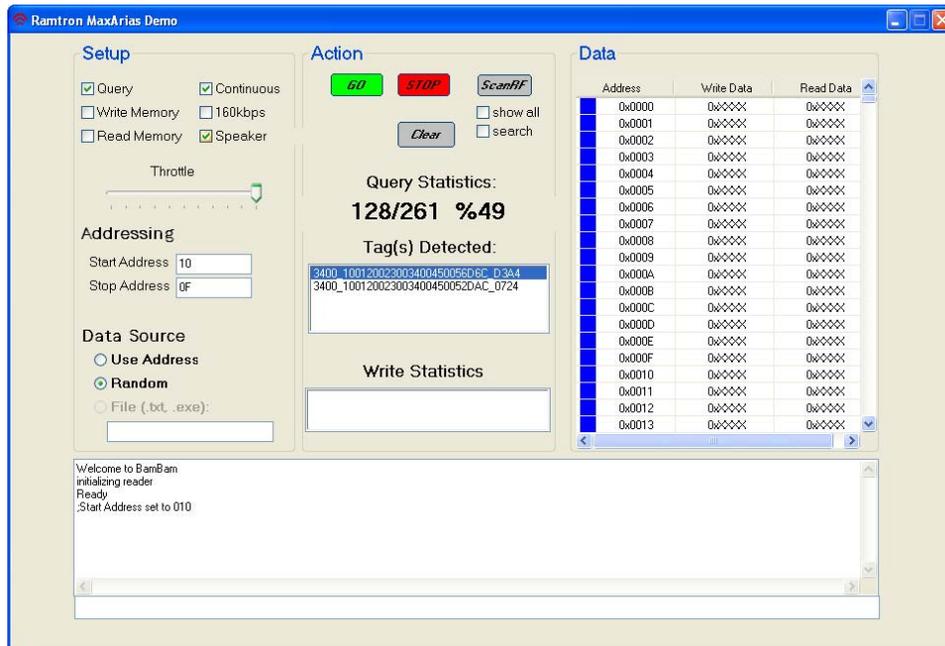
Defines where the MaxReader receives its data to write to a tag's memory.

- Use Address
  - This field specifies the 16-bit data by the user that will be written to a memory location
- Random
  - The write data, in this case, is random and not user defined.
- File
  - Not implemented yet.

## Example Operations

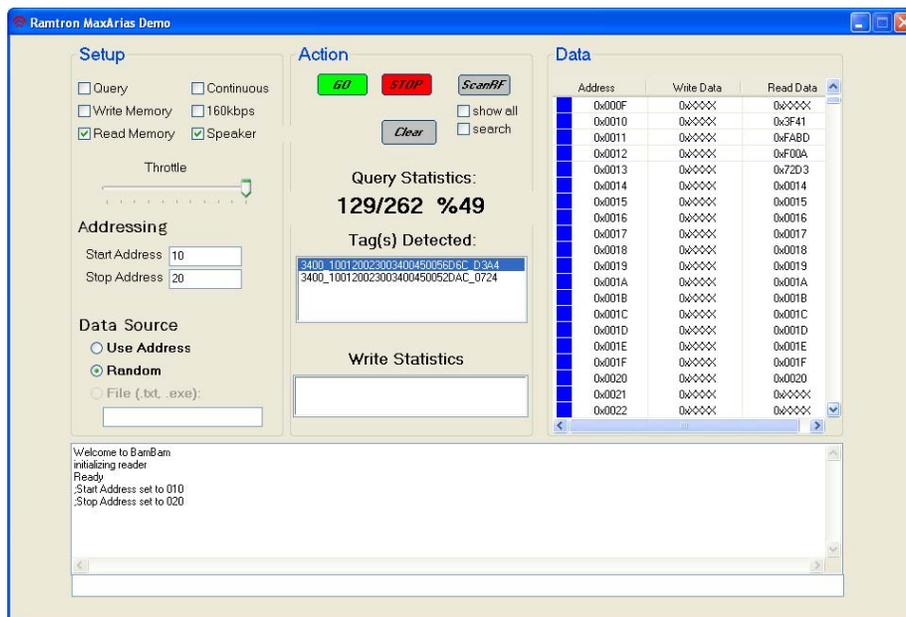
### Example #1, Simple Query:

In this example MaxReader has been setup to continuously perform Gen2 queries with the speaker on. Note that the MaxReader has detected 2 tags and they have been successfully read 49% of the time. The start address has been changed to 0x10.



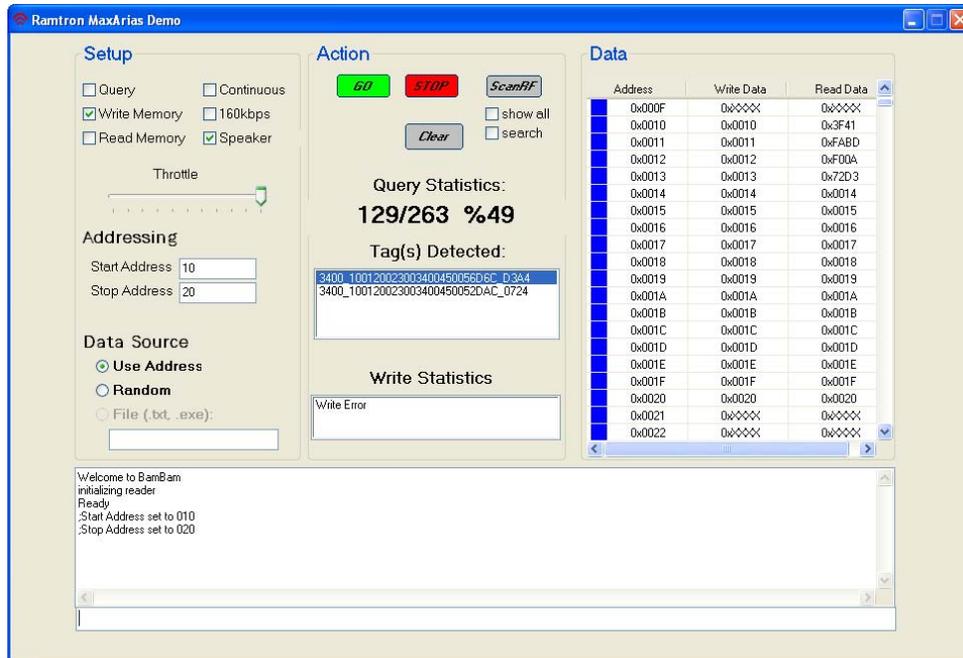
### Example #2, Simple Read:

In this next example, start address has been set to 0x0010 and the end address to 0x0020. These address locations of the first tag have been read and the data window shows the results. Locations 0x0010 to 0x0013 appear to have been previously written with random data. Locations 0x0014 to 0x0020 have previously been written with the address.



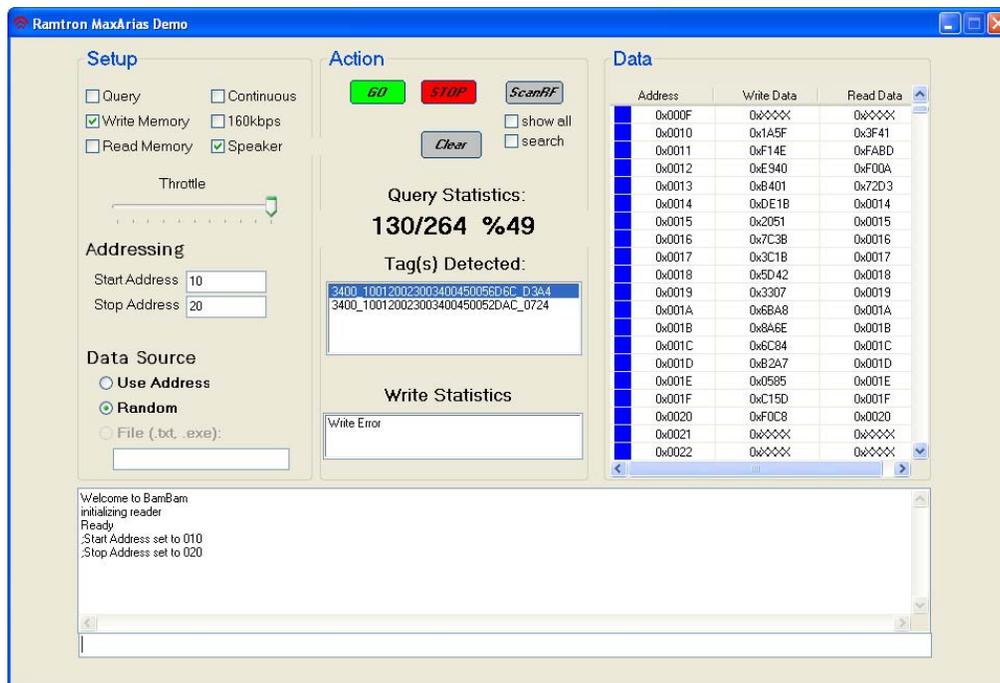
## Example #3, Simple Write:

Now that data has been read, in this next example data will be written. The same address range as above (0x0010 to 0x0020) has been written with the address. Note how the read data is displayed prior to the write data.



## Example #4, Random Write:

In this example the same start address and end address are used as in the previous example but in this case random data is written.



### Support

At Ramtron, we welcome your feedback. Please email your questions, comments and suggestions to: [maxarias@ramtron.com](mailto:maxarias@ramtron.com).