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.







📸 Device Manager
File Action View Help
a 🚔 glunn-PC
P - 1 € Computer
p To Disk unves
b
B H Floopy disk drives
> 🚽 Floppy drive controllers
- Carl IDE ATA/ATAPI controllers
- Keyboards
-B Mice and other pointing devices
p Monitors
Network adapters
A - Mo Other devices
Date CC Update Driver Software
Processo Disable
5-4 Sound, v Uninstall
b - ∰ System c b - ∰ Universa Scan for hardware changes
Properties
Launches the Update Driver Software Wizard for the selected device.



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.

ŀ	lov	v do you want to search for driver software?	
	•	Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.	
	+	Browse my computer for driver software Locate and install driver software manually.	

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.



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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



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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.

🚔 Device Manager	- • •
File Action View Help	
Floppy drive controllers Get ATA/ATAPI controllers	^
Protection adapted Protection adapted Printer Port (LPTI) Printer Port (LPTI) USB Serial Port (COM3) Processors Sound, video and game controllers	
p → m System devices a → Universal Serial Bus controllers → Intel(R) 82801EB USB Universal Host Controller - 24D2 → Intel(R) 82801EB USB Universal Host Controller - 24D4 → Intel(R) 82801EB USB Universal Host Controller - 24D7 → Intel(R) 82801EB USB Universal Host Controller - 24DE → Intel(R) 82801EB USB Universal Host Controller - 24DE → Intel(R) 82801EB USB2 Enhanced Host Controller - 24DD → USB Root Hub → USB Root Hub	E
USB Root Hub USB Serial Converter	•

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.

Setup	Action		Data			
	60 STOP	Scanfif	Address	Wite Data	Read Data	~
		Debowell	0.0000	0.00000	000000	7
Wante Memory	(Contraction)	Show all	0x0001	0,00000	000000	
Bead Memory Speaker	Clear	Lisearch	0.0002	0200000	000000	
			0x0003	0400000	000000	
Throttle	Overse Chatiat		0x0004	0.00000	000000	
	Query Statist	ics.	0x0005	0.000000	000000	
CARGE ENGINEERS (0/0		0x0006	0.000000	000000	
Addressing	0/0		0x0007	B60000C	860000	
Addressing	Tag(s) Detect	nd:	0x0008	0.00000	0600000	
Start Address 06	rag(s) berech	ou.	0x0009	0.000000	060000	
Share & data and the			A000+0	060000	000000	
Stop Address			0x0008	0.60000	000000	
			0.0000	0.00000	000000	
Data Source			0.0000	0.00000	840004	
			0×000E	0.0000X	0.00000	
OUse Address	Write Statistic	Ne .	0x000F	0.00000	060000	
Random	write Statistic	.5	0x0010	8,00000	060000	
The first much			0x0011	0,00000	000000	
C. Fuo (.bdexo).			0x0012	Eleccock	ENODOOK	
	1	77	C 000013	-000004	00000	, e
Velcome to BamBam Malaring teader			March .			19
enderny roduer Ready						
0						9

Figure 8



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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
 - o 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
 - o 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
 - \circ 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.

Setup	Action	Data		
Query Continuous	60 STOP ScanRF	Address	Write Data	Read Data
Write Momony 160kbpc		0x0000	0xxxxx	0x00000
		0x0001	0xXXXX	0x00000
🗌 Read Memory 🛛 Speaker	<i>Clear</i> search	0x0002	0x00000	0x00000
		0x0003	0x00000	000000
Throttle	Query Statistics:	0x0004	0x00000	000000
_	Query Statistics.	0x0005	0x20000	0x00000
a ka ka ka ka Ka Y	128/261 %49	0x0006	0xXXXX	0x00000
A data and a second second	TEOLET 1045	0x0007	0xXXXXX	0xXXXX
Addressing	Tag(s) Detected	0x0008	0xXXXX	0xXXXX
Start Address 10	rag(s) Detected.	0x0009	0x00000	0x00000
	3400_100120023003400450056D6C_D3A4	0x000A	0x000x	0x00000
Stop Address OF	3400_100120023003400450052DAC_0724	0x000B	0x00000	0x00000
		0x000C	0xXXXxx0	0x00000
Data Causa		0x000D	0xXXXX	0xXXXX
Data Source		0x000E	0xXXXX	0xXXXX
O Use Address		0x000F	0x00000	0x00000
Bandom	Write Statistics	0x0010	0x000x	0x00000
Random		0x0011	0,00000	0x00000
File (.td, .exe):		0x0012	0xXXXX	0x00000
		0x0013	0xXXXXX	0x00000
		<		>
√elcome to BannBam Wialaing reader teady Start Address set to 010				
¢				2

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 been written with random data. Locations 0x0014 to 0x0020 have previously been written with the address.

Seidp	Action	n		Data			
Query C	Continuous	O STOP	ScanRF	Address	Write Data	Read Data	
Write Memory	60kbns		show all	0x000F	0x00000	0xxxxx	1
	oonopo			0x0010	0xXXXX	0x3F41	
Read Memory S	peaker	Llear	- search	0x0011	0.0000	0xFABD	
				0x0012	0xxxxx	0xF00A	
Throttle		Query Static	tion	0x0013	0x000x	0x72D3	
-		Query Statis	105.	0x0014	0x00000	0x0014	
	a a d	129/262	%49	0x0015	0x00000	0x0015	
Addressing				0x0016	0x>>>>>	0x0016	
Addressing		Tag(s) Deter	cted:	0x0017	0*****	0x0017	
Start Address 10				0x0018	0x0000	0x0018	
Stop Address 20	3400 10	012002300340045005	5D5C_D344	0x0019	0x00000	0x0019	
otop Address 20	5400_10	012002300340043000	2040_0724	0x001A	0x00000	0x001A	
				0x0018	0,00000	UXUU1B	
Data Source				0x0010	000000	0x001C	
				0x001D	080000	0x0010	
Use Address		Write Statist	ics	0x001E	0.000	0x001E	
Random	1	inite otdisi		0,0020	0.000	0x001F	
O File (tyt. eve):				0x0020	0,000	0x0020	
OT 110 (.0.0. 0.00).				0x0021	000000	0,0000	
				0x0022	umm	00000	

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.

Setup	Action	Data		
Query Continuous	GO STOP ScanRF	Address	Write Data	Read Data 🔥
Write Memory 160kbns	Show all	0x000F	0xxxxxx	0x0000
		0x0010	0x0010	0x3F41
Read Memory 🗹 Speaker	Liear	0x0011	0x0011	0xFABD
		0x0012	0x0012	0xF00A
Throttle	Query Statistics	0x0013	0x0013	0x72D3
·	Query Statistics.	0x0014	0x0014	0x0014
The second s	129/263 %49	0x0015	0x0015	0x0015
Addroseind	1201200 1010	0x0016	0x0016	0x0016
Addressing	Tag(s) Detected	0x0017	0x0017	0x0017
Start Address 10	rag(s) bottotta:	0x0018	0x0018	0x0018
Step Address 20	3400_100120023003400450056D6C_D3A4	0x0019	0x0019	0x0019
Stop Address 20	3400_100120023003400430032DAC_0724	0x001A	0x001A	0x001A
		0x001B	0x001B	0x001B
Data Source	(0x001C	0x001C	0x001C
		0x001D	0x001D	0x001D
Ose Address	Write Statistics	UxUU1E	UXUU1E	UXUU1E
🔿 Random	ffille Statistics	UXUUIF	UXUUTE	UXUUTE
O File (ht ave);	Write Error	0x0020	UXUU2U	0x0020
O File (.oc, .exe).		0x0021	0.0000	0.00000
	J	0x0022	080000	080000
(electric to Dep Dep	<u>.</u>			
uitaizang reader ready Start Address set to 010 Stop Address set to 020				

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.

Setup	Action		Data		
Query Continuous	GO STOP St	canRF	Address	Write Data	Read Data 🔥
Write Memory 160kbns		chow all	0x000F	0xXXXX	0xXXXX =
		anowan	0x0010	0x1A5F	0x3F41
Read Memory Speaker	Liear	search	0x0011	0xF14E	0xFABD
			0x0012	0xE940	0xF00A
Throttle	Quary Statistics		0x0013	0xB401	0x72D3
	Query Statistics	-	0x0014	0xDE1B	0x0014
ana ana ana ara 👔 👘	130/264 %4	9	0x0015	0x2051	0x0015
Addropping	100/204 /04	~	0x0016	0x7C3B	0x0016
Addressing	Tag(s) Detected	-	0x0017	0x3C1B	0x0017
Start Address 10	rag(s) Beteeted		0x0018	0x5D42	0x0018
Rhan Addama and	3400_100120023003400450056D6C	D3A4	0x0019	0x3307	0x0019
Stop Address 20	3400_100120023003400450052DAC_0724	.0724	0x001A	0x6BA8	0x001A
			0x001B	0x8A6E	0x001B
Data Source			0x001C	0x6C84	0x001C
Data Source			0x001D	0xB2A7	0x001D
O Use Address			0x001E	0x0585	0x001E
Bandom	write Statistics		0x001F	0xC15D	0x001F
	Write Error		0x0020	0xF0C8	0x0020
O File (.bd, .exe):			0x0021	0,0000	0*****
			0x0022	0x00000	0xXXXX 👱
					>
Velcome to bambam tivilaring reader ieady SatrAddress set to 010 Stop Address set to 020					~



Support

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

