

Evaluates: MAXQ Microcontrollers

General Description

Features

The MAXQ[®] USB-to-JTAG/1-Wire[®] adapter is a convenient way to interface either the JTAG or 1-Wire port on MAXQ microcontrollers to a PC. The EV kit can be used with compatible software tools running on a host PC to load and debug code on programmable MAXQ microcontrollers. The EV kit contains the MAXQ USB-to-JTAG/1-Wire adapter, an interface cable, and a USB Mini-B cable.

EV Kit Contents

MAXQ USB-to-JTAG/1-Wire Adapter (inside enclosure)

Ordering Information appears at end of data sheet.

- Keyed 10-Pin Interface Ribbon Cable
- USB Mini-B Cable

- Easily Load and Debug Code
- Interface Provides In-Application Debugging Features
 - ♦ Step-by-Step Execution Tracing
 - ♦ Breakpointing by Code Address, Data Memory Address, or Register Access
 - \diamond Data Memory View and Edit
- Supports Logic Levels from 1.1V to 3.6V
- Supports JTAG and 1-Wire Protocols
- Each Adapter Has Its Own Unique Serial ID, Allowing Multiple Adapters to be Connected Without COM Port Conflicts
- Has In-Field Upgradable Capability if Firmware Needs to be Upgraded
- Enclosure Protects from Shorts and ESD

DESIGNATION	QTY	DESCRIPTION
C1, C3, C6, C8–C11, C15, C16, C18	10	0.1µF, 16V ceramic X7R capacitors (0603) ECJ-1VB1C104K
C2, C4, C7, C14, C17	5	1.0μF, 16V ceramic X7R capacitors (0603) GCM188R71C105KA64D
C5	1	10µF, 6.3V ceramic X7R capacitor (0805) JMK212B7106KG-T
C12, C13	2	18pF, 50V ceramic NP0 capacitors (0402) GRM1555C1H180JZ01D
CN1	1	USB receptacle (Mini-B)
DS1	1	3mm yellow LED WP132XYD
DS2	1	3mm bi-color LED (red/green) 3BC-3-CA-F
F1	1	PTC resettable fuse MF-FSMF035

Component List

DESIGNATION	QTY	DESCRIPTION
FB1	1	2000 Ω ferrite bead HZ1206C202R-10
P1	1	10-pin 0.1in pitch right-angle male shrouded box header SBH11-PBPC-D05-RA-BK
P2	1	10-position side male shrouded connector header SM10B-SRSS-TB(LF)(SN)
Q1, Q2	2	20V, 2.4A p-channel MOSFETs (SSOT3) FDN304PCT-ND
Q3	1	25V, 220mA n-channel MOSFET (SOT23) FDV301NCT-ND
R1, R2, R13	3	0Ω resistors ERJ-2GE0R00X
R3–R5, R9	4	47kΩ resistors CRCW060347K0FKEA
R6, R14, R16	3	1kΩ resistors CRCW06031K00FKEA

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DESIGNATION	QTY	DESCRIPTION
R7, R8	2	150 $Ω$ resistors CRCW0603150RFKEA
R10, R15	2	200Ω resistors CRCW0603200RFKEA
R11, R12	2	10kΩ resistors CRCW060310K0FKEA
SW1	1	3-pin SPST slide switch
U1	1	500mA, 3.3V LDO linear regulator (8 μΜΑΧ®) Maxim MAX1806EUA33+

Component List (continued)

DESIGNATION	QTY	DESCRIPTION
U2, U3	2	4-bit signal translators FXL4TD245BQX
U4	1	16-bit RISC microcontroller with USB SIE (64 LQFP) Maxim MAXQ622G-0000+
U5	1	Dual high-speed differential ESD-protection IC (6 SOT23) Maxim MAX3207EAUT+
Y1	1	12MHz crystal ABM3-12.000MHZ-D2Y-T



Figure 1. MAXQ USB-to-JTAG/1-Wire Adapter

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Detailed Description

Note: In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the EV kit software. Text in **bold and underlined** refers to items from the Windows operating system.

The MAXQ USB-to-JTAG/1-Wire Adapter is designed to operate as a USB-to-JTAG or USB-to-1-Wire adapter between programming/debugging tools on the host PC (such as MAX-IDE, MTK, or IAR Embedded Workbench[®] IDE) and a programmable MAXQ microcontroller. The MAXQ622 acts as a USB-to-UART converter and allows the host PC to communicate with the MAXQ622 over a virtual COM port. The MAXQ622 receives commands and data from the PC and handles the task of either driving the four JTAG communication lines (TCK, TMS, TDO, and TDI) or driving the 1-Wire communication line (RST) that connect to another MAXQ microcontroller on a separate EV kit board.

The adapter has two connectors. The first of these is a standard mini-B USB connector that is used to connect the adapter to a USB port on the host PC. The adapter is powered directly over the USB cable. The second connector is the standard 10-pin JTAG interface used by all MAXQ microcontroller EV kits, allowing the adapter to be connected to another MAXQ microcontroller using a 2x5-pin header and 10-pin ribbon cable.

The driver software can be downloaded at <u>www.</u> <u>maximintegrated.com/evkit</u> under MAXQUSBJTAGOW EVKIT Software. Programming and debugging tools can be found at <u>www.maximintegrated.com/products/</u> <u>microcontrollers/development_toos.cfm</u>.

For more information on the adapter, refer to the MAXQ USB-to-JTAG/1-Wire Adapter: User's Guide.



Figure 2. MAXQ USB-to-JTAG/1-Wire Adapter Communications Interface

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Installing the Drivers for Windows XP®

- Download the required driver software. Unzip the driver package (maxusbjtagow.INF) into a working directory.
- Connect the adapter to the PC with the USB cable.
- Open <u>Device Manager</u> in the control panel under <u>System and Security</u> → <u>System</u> under the Hardware tab.
- Look for the adapter under <u>Ports (COM & LPT)</u>. It should show up as MAXQ622 USB-to-JTAG/OWL Dongle. Rightclick and select the option Update Driver...

🚇 Device Manager		
File Action View Help		
	2 🛪 🔀 👼	
HSIEH-XP HSIEH-XP Computer Disk drives Display adapters DVD/CD-ROM drives Human Interface Device HUMAN Interface Device HUMAN INTERFACE NEWORK adapters Network adapters Network adapters Ports (COM & LPT) MAXQ622 USB-to-J Printer Port (LPT1) Sound, video and game System devices HUMAN INTERFACE System devices HUMAN INTERFACE Universal Serial Bus cor	ers devices Update Driver Disable Uninstall Scan for hardware changes Properties	
Launches the Hardware Update Wiza	ard for the selected device.	

Figure 3. Installing the Driver Through the Device Manager on XP

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Select Install from a list or specific location (Advanced) and click Next.



Figure 4. Hardware Update Wizard—Install from a Specific Location

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• Select Don't search. I will choose the driver to install and click Next.

Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM)
Include this location in the search:
C:\Documents and Settings\Alex Hsieh\My Docume 🗸 🛛 Browse
On't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back Next > Cancel

Figure 5. Hardware Update Wizard—Choose the Driver to Install

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• Click Have Disk ... to select the INF file.

Hardwa	re Update Wizard
Sele	ct the device driver you want to install for this hardware.
Ţ	Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
🗹 Shov	v <u>c</u> ompatible hardware
Mode	I
	<u>H</u> ave Disk
	< <u>B</u> ack <u>N</u> ext > Cancel

Figure 6. Hardware Update Wizard—Select Device Driver

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• Click **Browse...**, then select the INF file, **maxusbjtagow.INF**. Click **OK**, then **Next**.

Hard	ware Upd	ate Wizard
Se	elect the d	evice driver you want to install for this hardware.
5	Install F	rom Disk 🛛 🔀
I∎ Ma		Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below. Cancel
		Copy manufacturer's files from:
⚠		C:\INF Location\ Browse
		< Back Next > Cancel

Figure 7. Hardware Update Wizard—Install from Disk

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• A hardware installation warning pops up. Click Continue Anyway.

Hardwa	are Update Wizard	
Plea	Hardware Installation	
ſ	The software you are installing for this hardware: MAXQ USB Serial Port has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.	
	Continue Anyway STOP Installation	
	< Back Next > Ca	incel

Figure 8. Hardware Update Wizard—Hardware Installation

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• After the Windows OS completes installing the software, click Finish to close the Hardware Update Wizard.



Figure 9. Hardware Update Wizard—Completing the Hardware Update Wizard

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• Now, in the <u>Device Manager</u>, the adapter should appear under <u>Ports (COM & LPT)</u> as <u>Maxim USB-to-JTAG/1-Wire</u> <u>Adapter (COMx)</u>, where x is the port number.

Bevice Manager	
File Action View Help	
\leftarrow \rightarrow \square	
HSIEH-XP Batteries Computer Disk drives DVD/CD-ROM drives Human Interface Devices Human Interface Devices IDE ATA/ATAPI controllers Keyboards Mice and other pointing devices Monitors Network adapters Ports (COM & LPT) Communications Port (COM1) Maxim USB-to-JTAG/1-Wire Adapter (COM4) Printer Port (LPT1) Sound, video and game controllers System devices Universal Serial Bus controllers	

Figure 10. Device Manager After Successful Installation

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Installing the Drivers for Windows[®] 7

- Download the required driver software. Unzip the driver package (maxusbjtagow.INF) into a working directory
- Connect the adapter to the PC with the USB cable
- Open Device Manager in the control panel under System and Security
- Look for the adapter under <u>Ports (COM & LPT)</u>. It should show up as MAXQ622 USB-to-JTAG/OWL Dongle. Rightclick and select the option Update Driver Software...

📇 Device Manager	_ D ×
File Action View Help	
🖃 🚔 dal-dt-Mlab09	
🗄 🦢 🌌 Batteries	
Disk drives	
E Display adapters	
E Human Interface Devices	
E - Constant - Constan	
🗄 📲 Mice and other pointing devices	
🗄 📲 Monitors	
🖻 👰 Network adapters	
Cisco AnyConnect VPN Virtual Miniport Adapter for Windows x64	
Intel(R) 82579LM Gigabit Network Connection	
VMware Virtual Ethernet Adapter for VMnet1	
Max Des ISB-to-ITAG/OWL Donde	
PCI Ser Update Driver Software	
Ports (COM Disable	
🗄 🛄 Processors Uninstall	
Sound, vide	
E System dev	
😟 🖷 🛡 Universal S Properties	
Launches the Update Driver Software Wizard for the selected device.	

Figure 11. Installing the Driver Through the Device Manager on Windows 7

Windows is a registered trademark and registered service mark of Microsoft Corporation.

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• Click the Browse my computer for driver software.

Device Mana	iger		<u>- </u>
File Action \	View	Help	
	E		
🖃 🚔 dal-dt-Mla	ab09		
E Batt	🧊 Up	date Driver Software - MAXQ622 USB-to-JTAG/OWL Dongle	
E Disk (\bigcirc	Update Driver Software - MAXQ622 USB-to-JTAG/OWL Dongle	
E Sp DVC E M Hum E IDE		How do you want to search for driver software?	
t∃¥ Juhi ⊕ Key ⊕¥ Mice ⊕¥ Mor ⊡¥ Netv		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.	
b oth		Browse my computer for driver software Locate and install driver software manually.	
⊕¶ Port ⊕¶ Proc ⊕¶ Sou ⊕¶ Sysi ⊕¶ Univ			
		Cancel	

Figure 12. Update Driver Software—Search for Driver Software

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• Select Let me pick from a list of device drivers on my computer.

🚔 Device Manager	
File Action View Help	
🖻 🚔 dal-dt-Mlab09	
🖶 🥪 Batt 🧊 Update Driver Software - MAXQ622 USB-to-JTAG/	DWL Dongle
Disk 😋 🚊 Update Driver Software - MAXQ622 USB-to	JTAG/OWL Dongle
Disc Disc	
E → Jun E → Key E → Key	
Mice C:\Users\pcadmin\Documents Mor	Browse
P Metri I Include subfolders	
Let me pick from a list of device drivers on This list will show installed driver software compain This list will show installed driver software compain the same category as the device.	n my computer tible with the device, and all driver software in
E - ↓ Unix	
	Next Cancel

Figure 13. Update Driver Software—Browse for Driver Software

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• Select **Ports (COM & LPT)** as the device type.

🚽 Device Manage	з г	
File Action Vie	w Help	
	🔽 📷 💐 😭 🍢 🞼	
🖃 🛁 dal-dt-MlabC	9	
E - P Batt	Update Driver Software - MAXQ622 USB-to-JTAG/OWL Dongle	
🕀 📄 🔂 Disk 🤇	🔋 📋 Update Driver Software - MAXQ622 USB-to-JTAG/OWL Dongle	
🗄 📲 Disp 🚬		
DVD → Hun	Select your device's type from the list below.	
🗄 📲 Juni	Common <u>h</u> ardware types:	
E Mice	🔮 Network adapters	
	Network Client	
🖻 👰 Neti	Network Protocol	
	Network Service	
	Non-Plug and Play Drivers	
🖻 🖳 🚺 Oth	Ports (COM & LPT)	
	Rep Printers	
🕂 🖓 Port	Processors	
🗄 🛄 Proc	🟺 SBP2 IEEE 1394 Devices	
E - Sou	SD host adapters	
	Next Cancel	

Figure 14. Update Driver Software—Select Device Type

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• In the next window, select <u>Have Disk...</u> and select the INF file, maxusbjtagow.INF. Click OK then <u>Next</u>.

📕 Device Manager	
File Action View Help	
문- 🚑 dal-dt-Mlab09	
🗈 😼 Batt 🗊 Update Driver Software - MAXQ622 USB-to-JTAG/OWL Dongle	×
E Disk Disk Update Driver Software - MAX0622 USB-to-JTAG/OWL Dongle	
	_
DVC	
Dur June June June June June June June June	
Mice Insert the manufacturer's installation disk, and then	
make sure that the correct drive is selected below.	
Manufac Manufac	
(Standard	
Den Brother Brother	
Compaq <u>C</u> opy manufacturer's files from:	
DBC C:\INF Location\ Browse	
🗄 🗐 Sou 📑 This driver is digitally signed. Have Disk	
E Syst Tell me why driver signing is important	
Mext Cancel	1
	-

Figure 15. Update Driver Software—Install From Disk

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• While installing the driver software, <u>Windows Security</u> warns about the driver not being signed. Click <u>Install this</u> <u>driver software anyway</u>.

- Device Manager	
File Action View Help	
e- 🚔 dal-dt-Mlab09	
Batt J Update Driver Software - MAXQ622 USB-to-JTAG/OWL Dongle	×
🗄 👝 Disk 🎧 👖 Update Driver Software - MAXQ622 USB-to-JTAG/OWL Dongle	
Hun Installing driver software	
Mor Windows Security	
Windows can't verify the publisher of this driver software	
The second secon	
device.	
Port → Install this driver software anyway	
Proc Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.	
Elenando Solo Internando Interna Internando Internando Interna Internando Internando In	
Unix See details	
,	,

Figure 16. Update Driver Software—Bypassing Windows Security

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• After Windows completes software installation, click Close.



Figure 17. Update Driver Software—Update Done

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• Now, in the <u>Device Manager</u>, the adapter should appear under <u>Ports (COM & LPT</u>) as <u>Maxim USB-to-JTAG/1-</u> <u>Wire Adapter (COMx)</u>, where x is the port number.



Figure 18. Device Manager After Installation on Windows 7



Figure 19. MAXQ USB-to-JTAG/1-Wire Adapter EV Kit Schematic (Sheet 1 of 3)



Figure 20. MAXQ USB-to-JTAG/1-Wire Adapter EV Kit Schematic (Sheet 2 of 3)



Figure 21. MAXQ USB-to-JTAG/1-Wire Adapter EV Kit Schematic (Sheet 3 of 3)

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Ordering Information

PART	TYPE
MAXQUSBJTAGOW-KIT#	Adapter

#Denotes a RoHS-compliant device that may include lead that is exempt under the RoHS requirements.

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Revision History

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REVISION	REVISION	DESCRIPTION	PAGES
NUMBER	DATE		CHANGED
0	11/12	Initial release	—

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