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MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

General Description

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

Ordering Information appears at end of data sheet.

Features

- ◆ 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
 - ✧ 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

Component List

| 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 NPO 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 |

| DESIGNATION | QTY | DESCRIPTION |
|--------------|-----|---|
| FB1 | 1 | 2000Ω 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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For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at www.maximintegrated.com.

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

Component List (continued)

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

| 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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MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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 (\overline{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 www.maximintegrated.com/evkit under MAXQUSBTAGOW EVKIT Software. Programming and debugging tools can be found at www.maximintegrated.com/products/microcontrollers/development_toos.cfm.

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

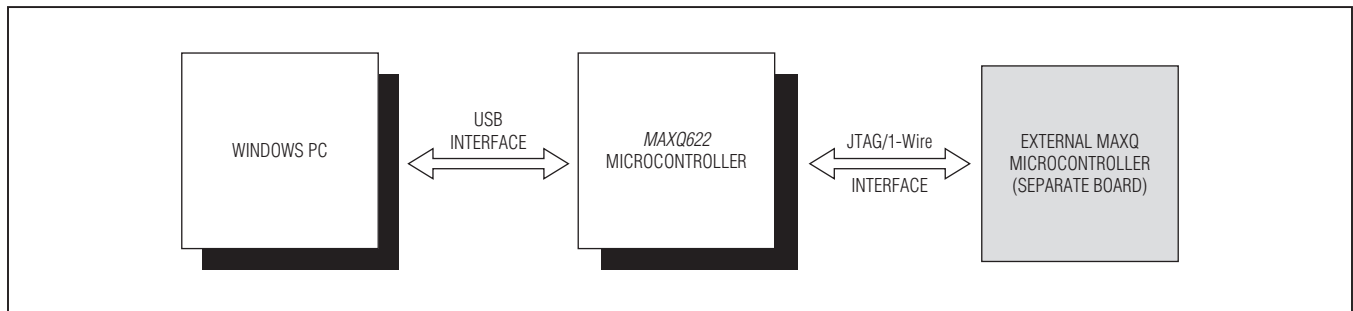


Figure 2. MAXQ USB-to-JTAG/1-Wire Adapter Communications Interface

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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 **Device Manager** in the control panel under **System and Security** → **System** under the **Hardware** tab.
- Look for the adapter under **Ports (COM & LPT)**. It should show up as **MAXQ622 USB-to-JTAG/OWL Dongle**. Right-click and select the option **Update Driver...**

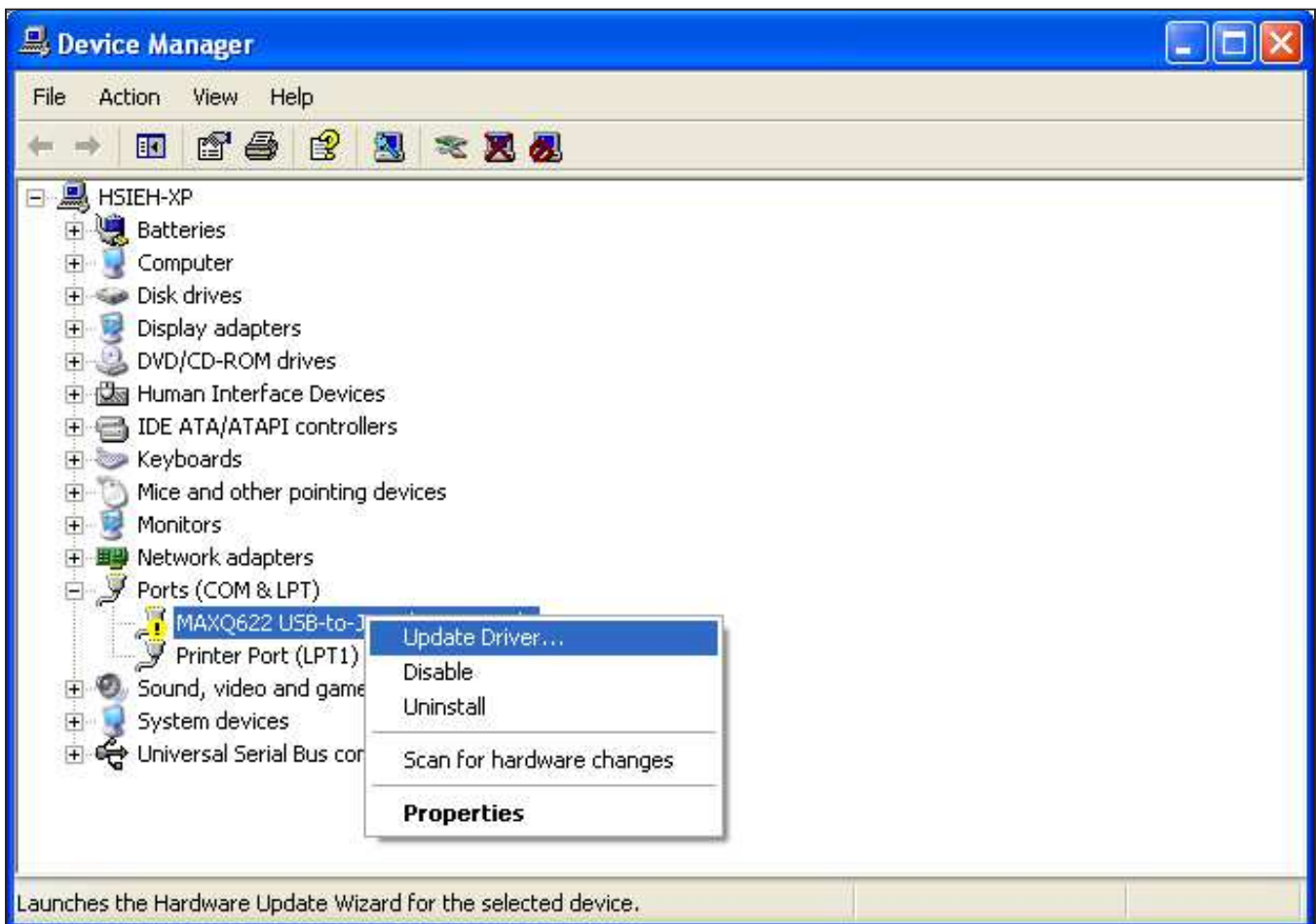


Figure 3. Installing the Driver Through the Device Manager on XP

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

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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

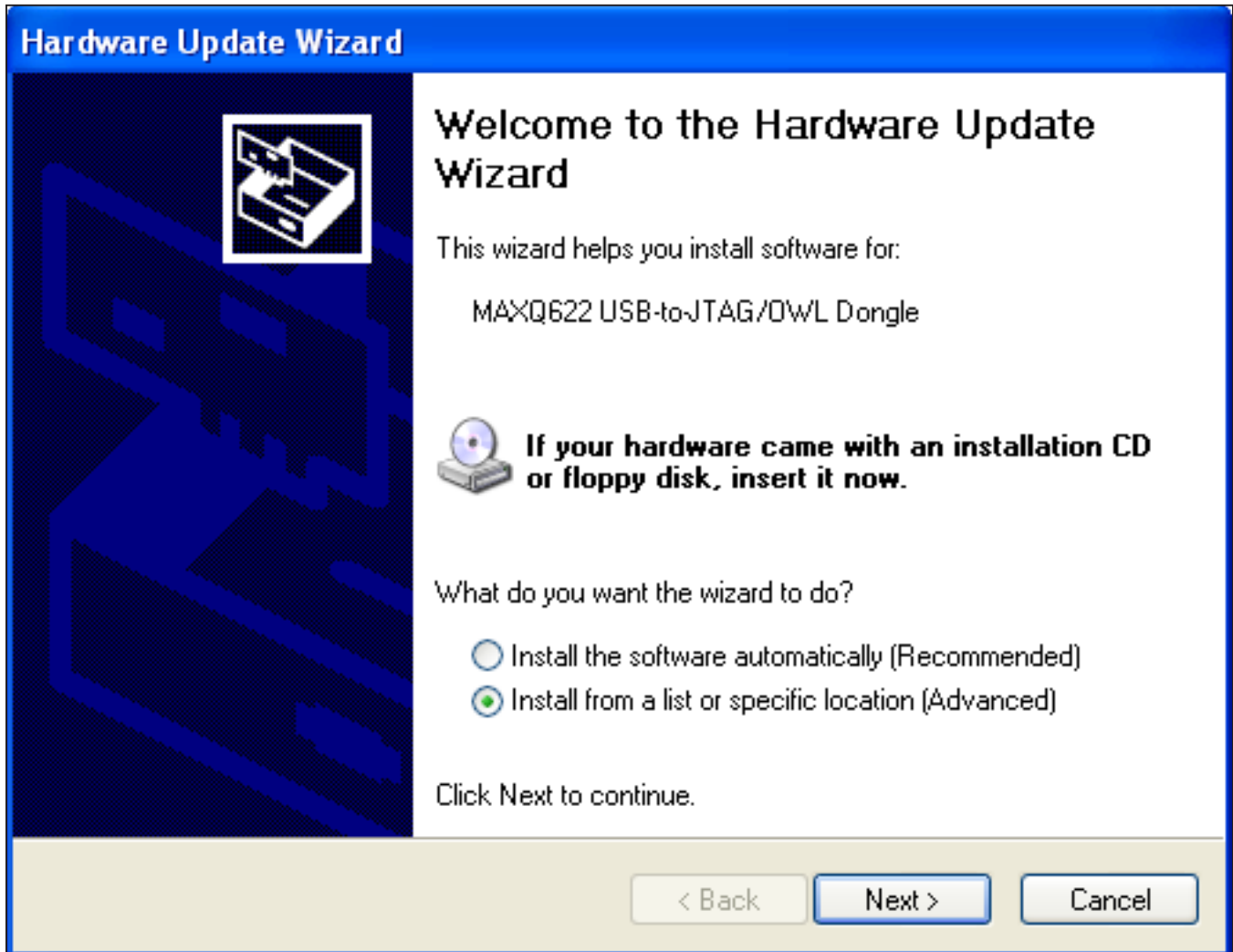


Figure 4. Hardware Update Wizard—Install from a Specific Location

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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

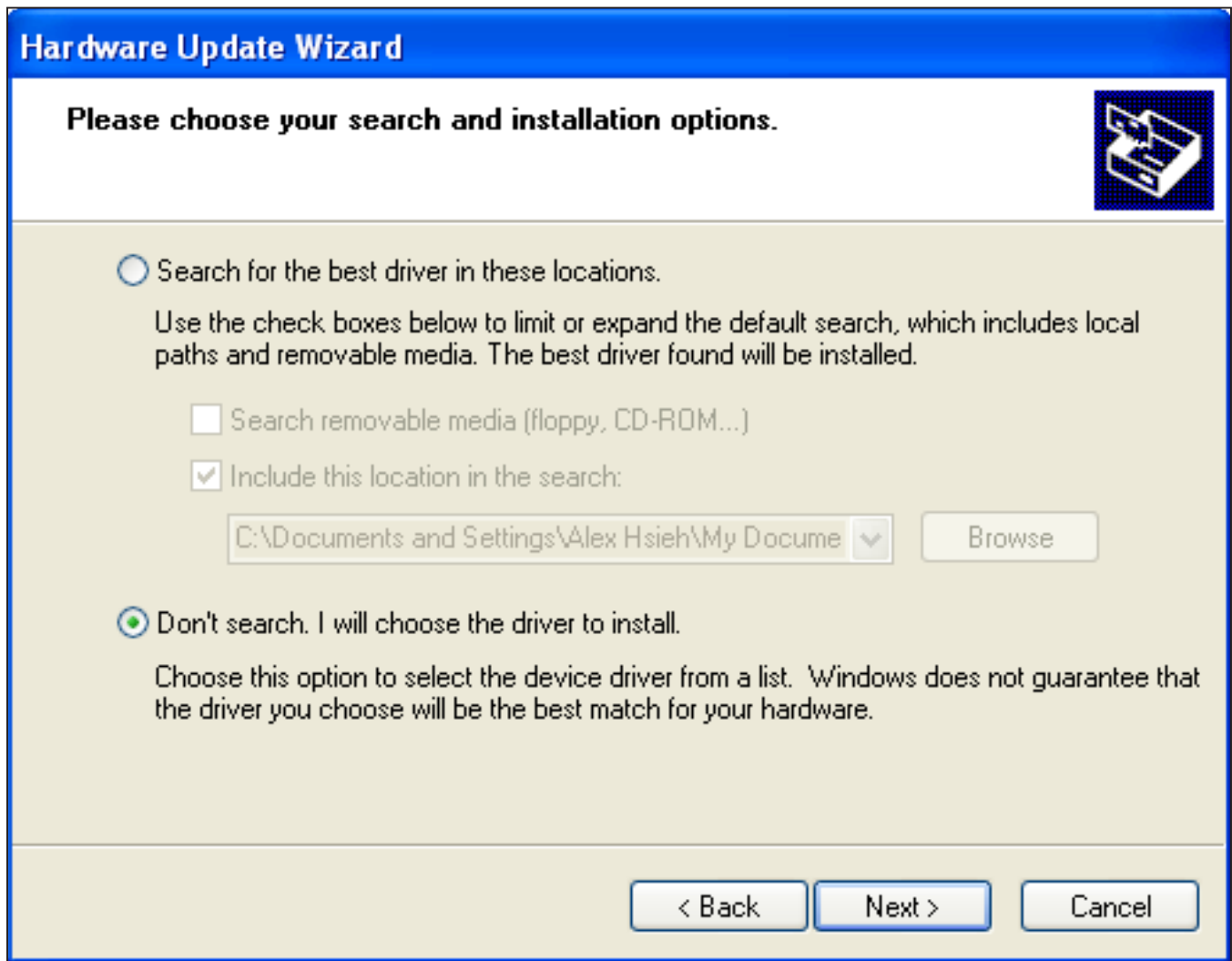


Figure 5. Hardware Update Wizard—Choose the Driver to Install

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

- Click **Have Disk...** to select the INF file.

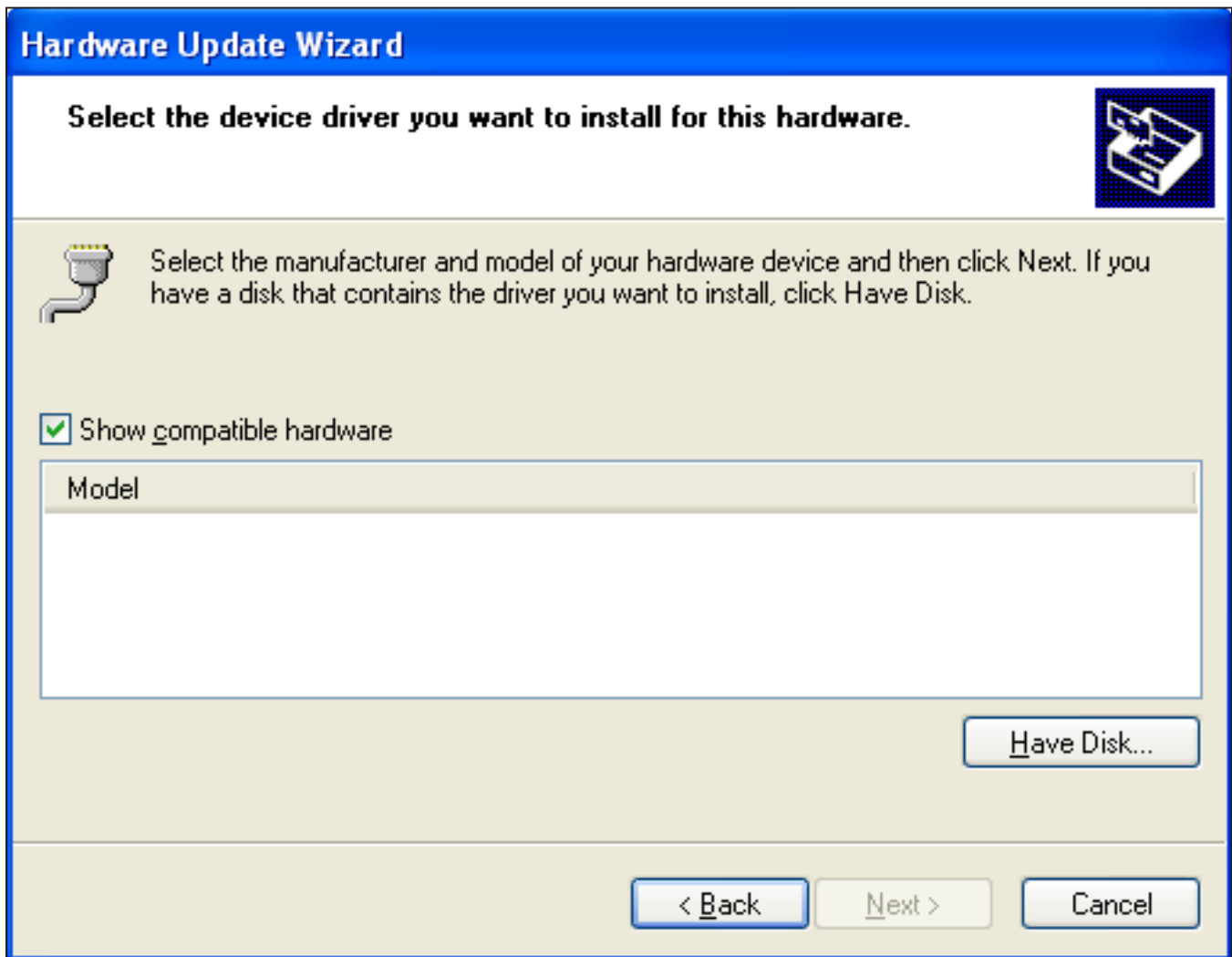


Figure 6. Hardware Update Wizard—Select Device Driver

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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

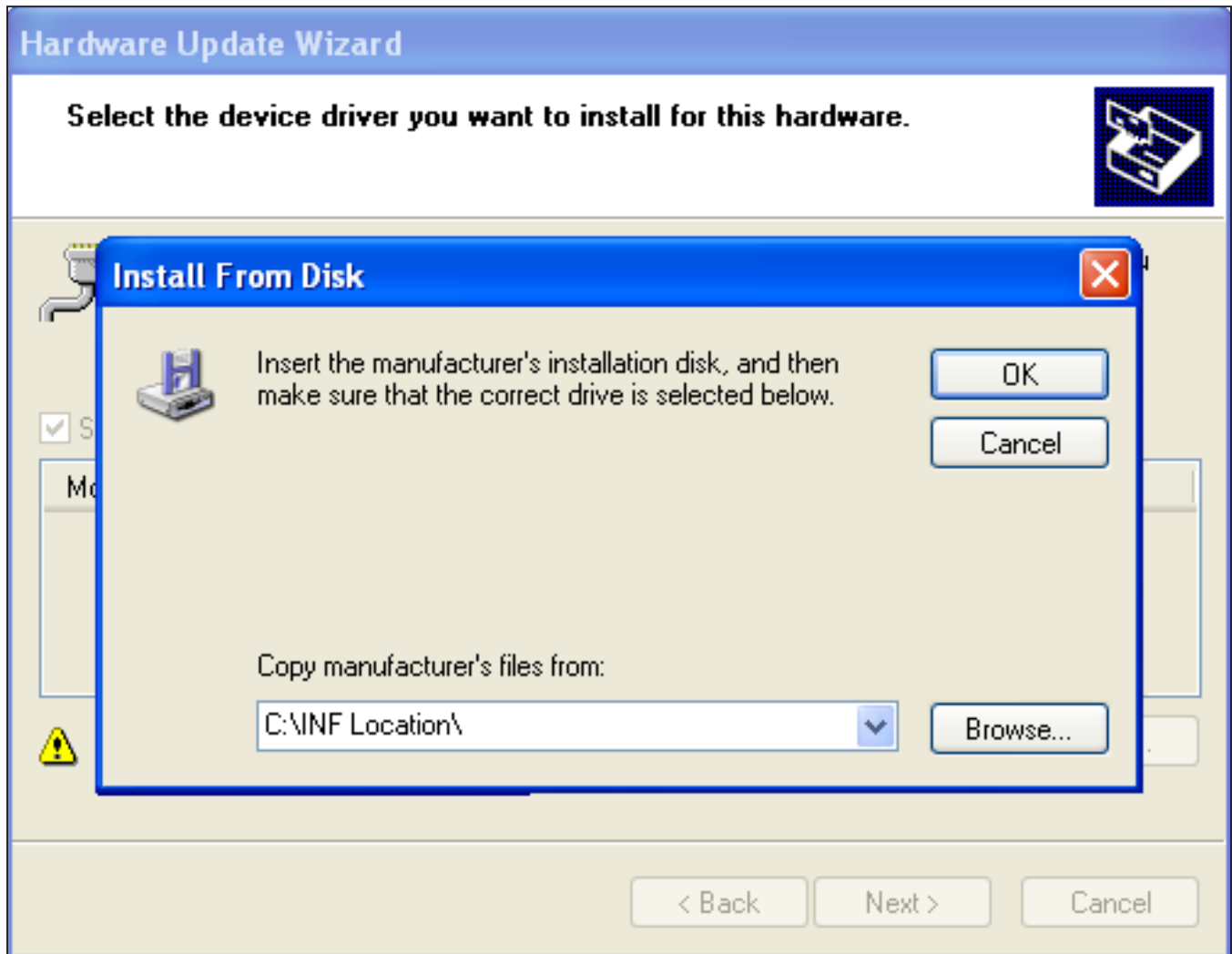


Figure 7. Hardware Update Wizard—Install from Disk

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

- A hardware installation warning pops up. Click **Continue Anyway**.

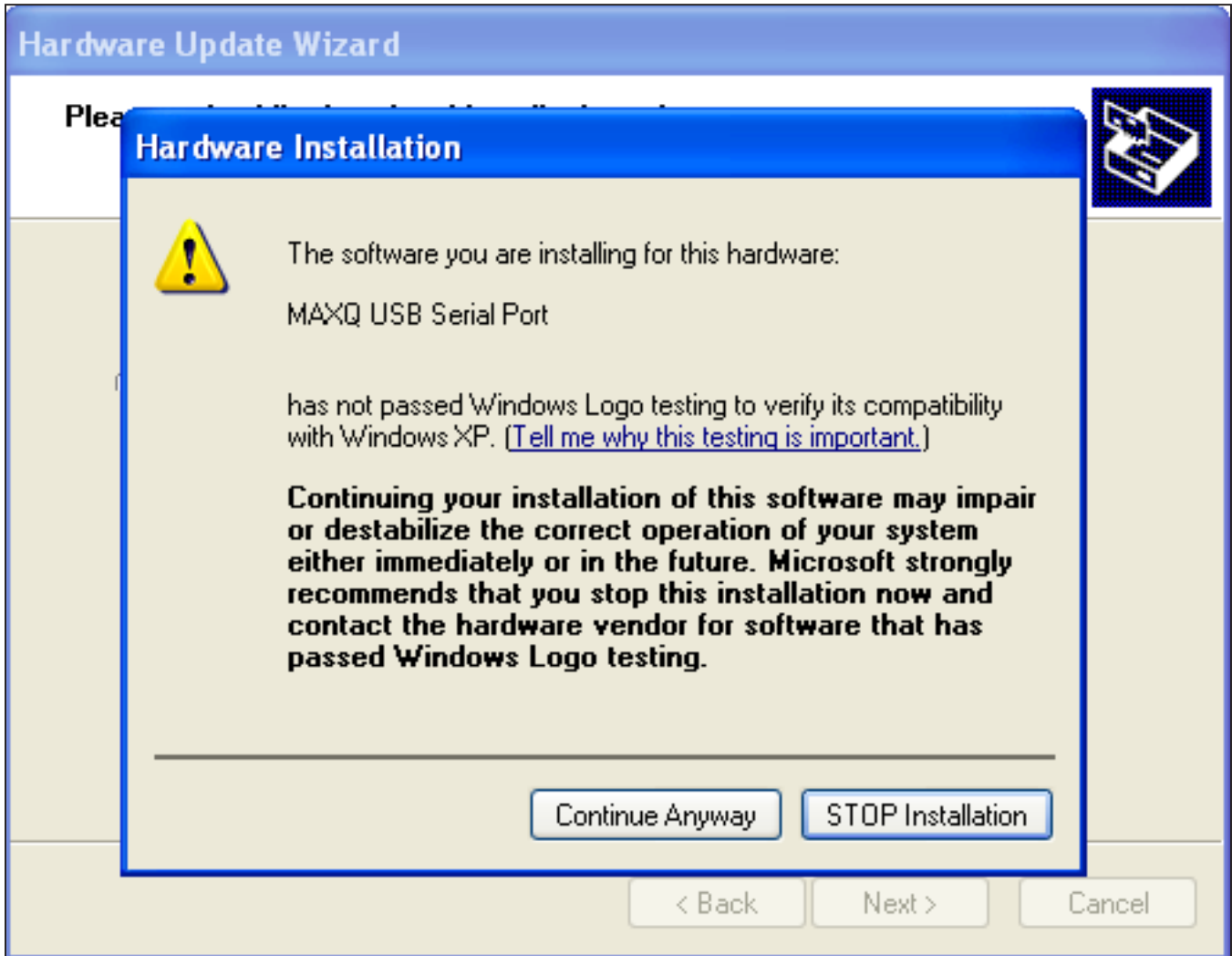


Figure 8. Hardware Update Wizard—Hardware Installation

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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

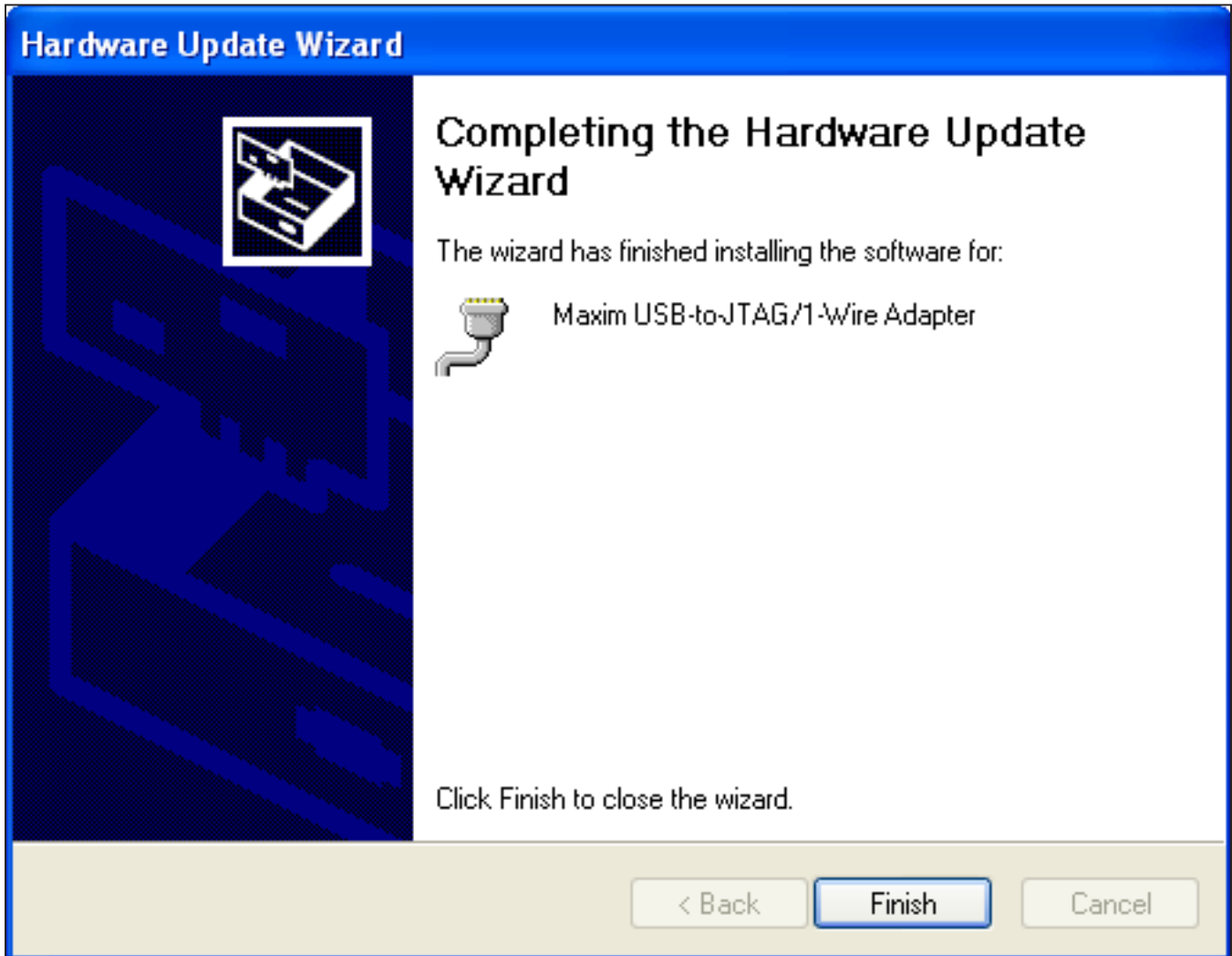


Figure 9. Hardware Update Wizard—Completing the Hardware Update Wizard

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

- Now, in the **Device Manager**, the adapter should appear under **Ports (COM & LPT)** as **Maxim USB-to-JTAG/1-Wire Adapter (COM4)**, where x is the port number.

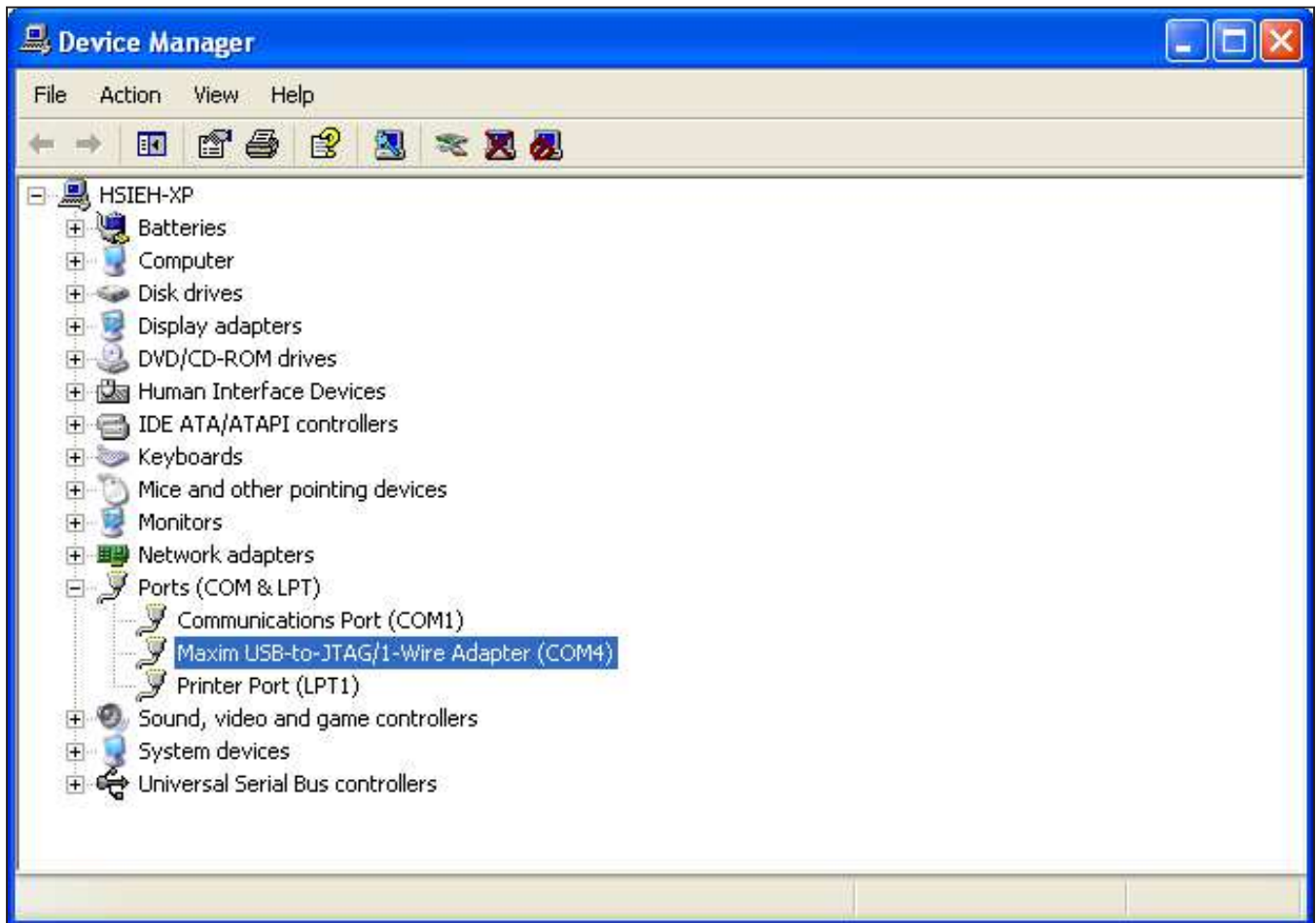


Figure 10. Device Manager After Successful Installation

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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 **Ports (COM & LPT)**. It should show up as **MAXQ622 USB-to-JTAG/OWL Dongle**. Right-click and select the option **Update Driver Software...**

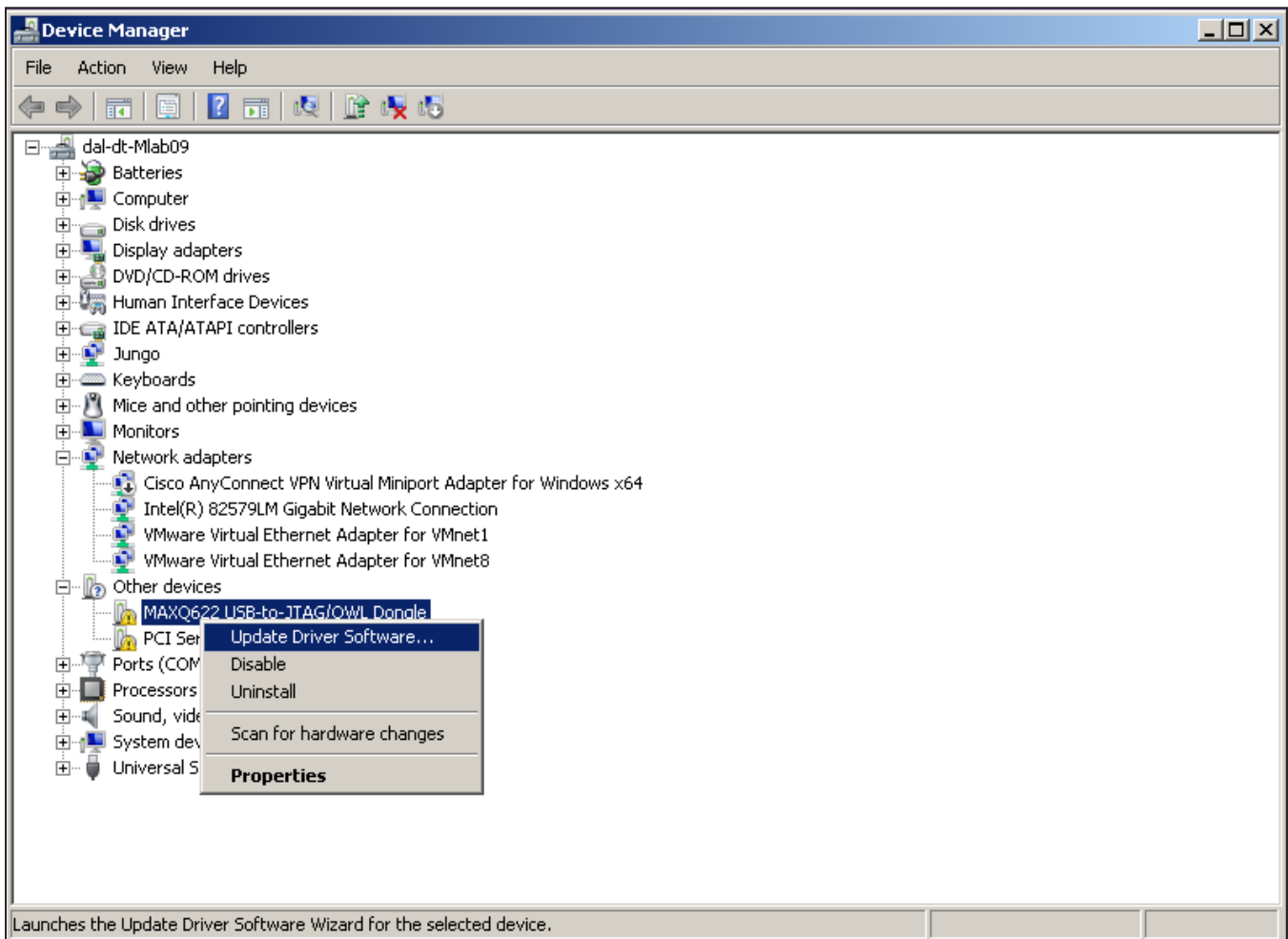


Figure 11. Installing the Driver Through the Device Manager on Windows 7

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

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

- Click the **Browse my computer for driver software**.

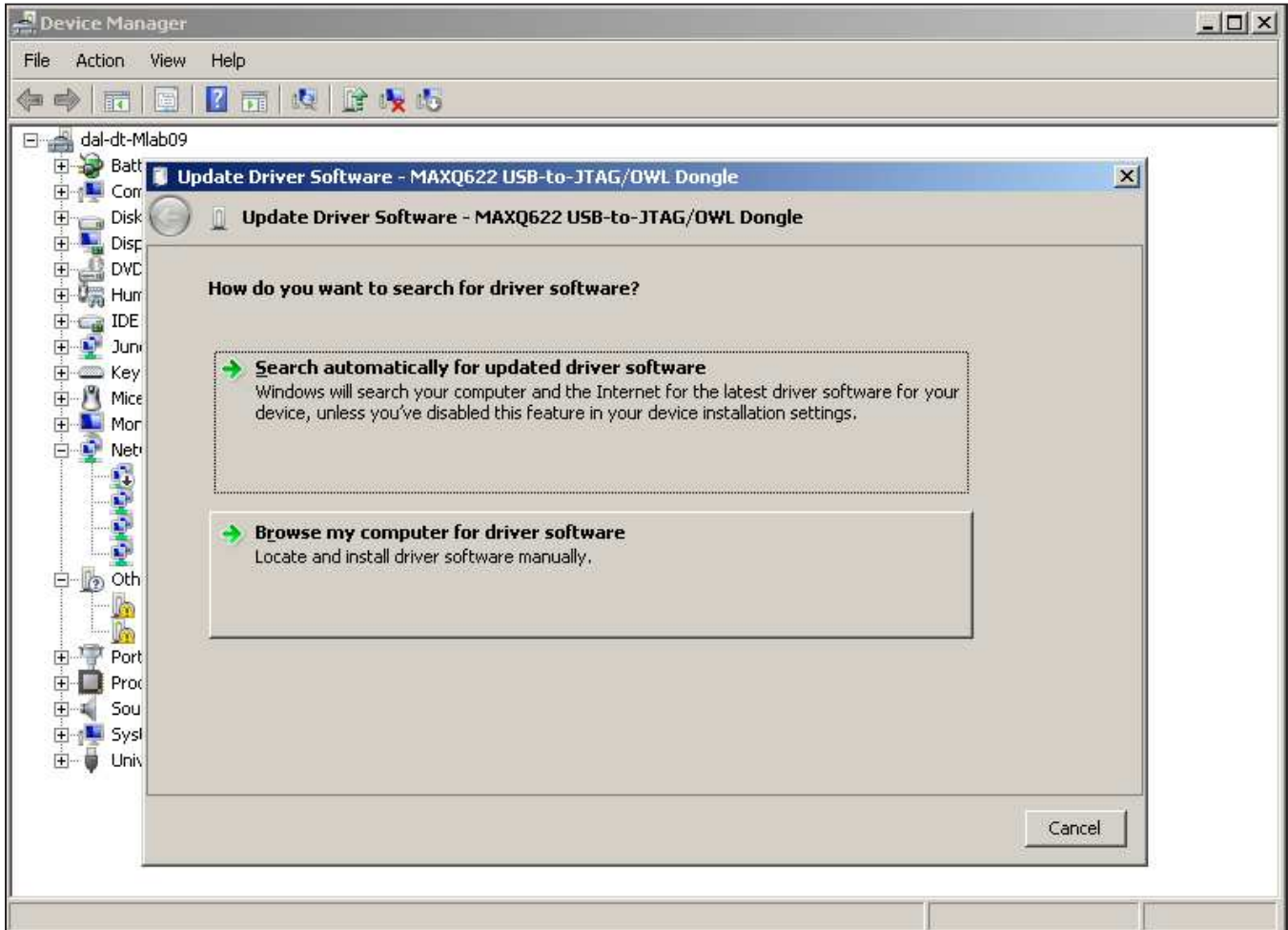


Figure 12. Update Driver Software—Search for Driver Software

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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

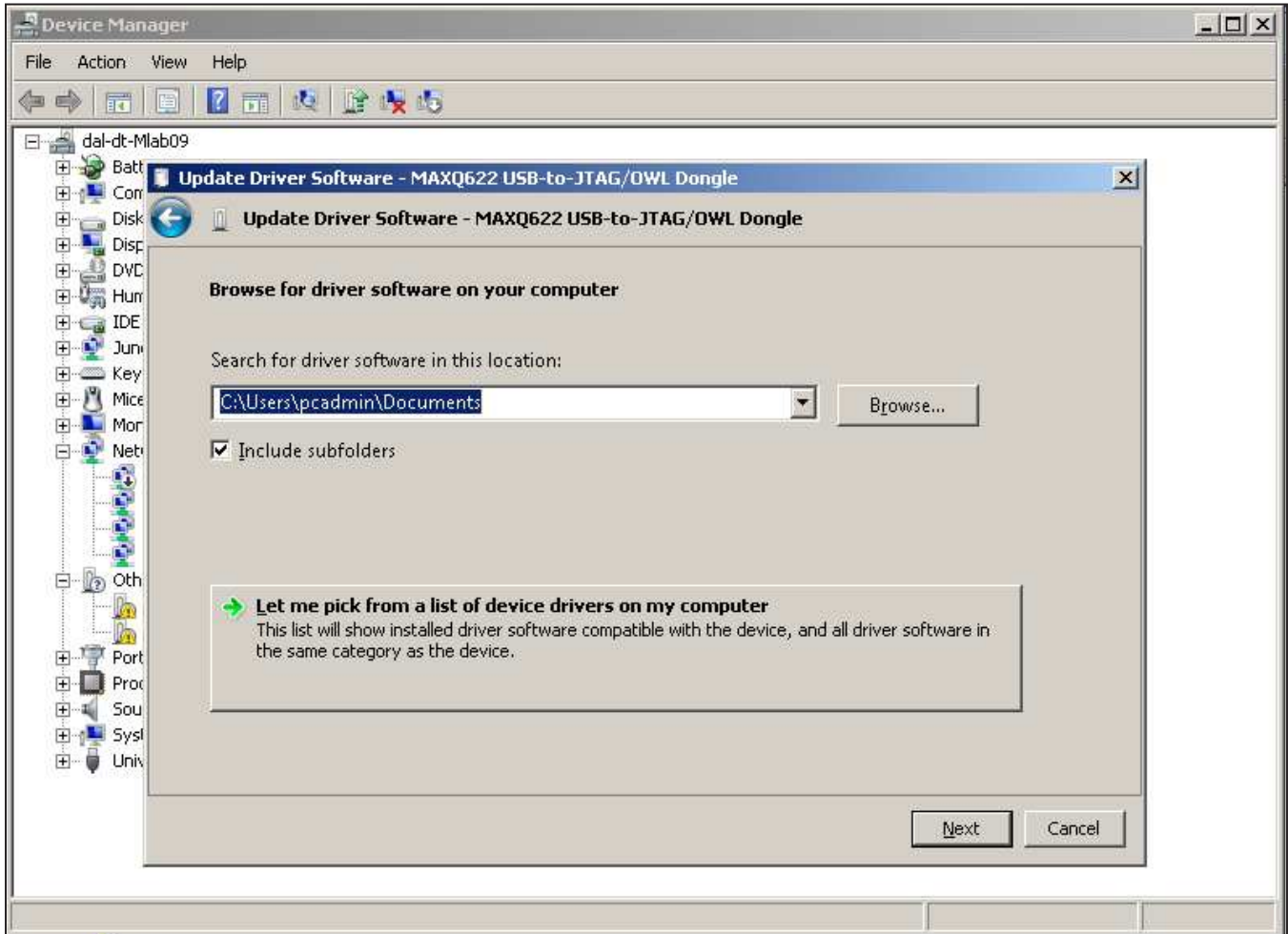


Figure 13. Update Driver Software—Browse for Driver Software

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

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

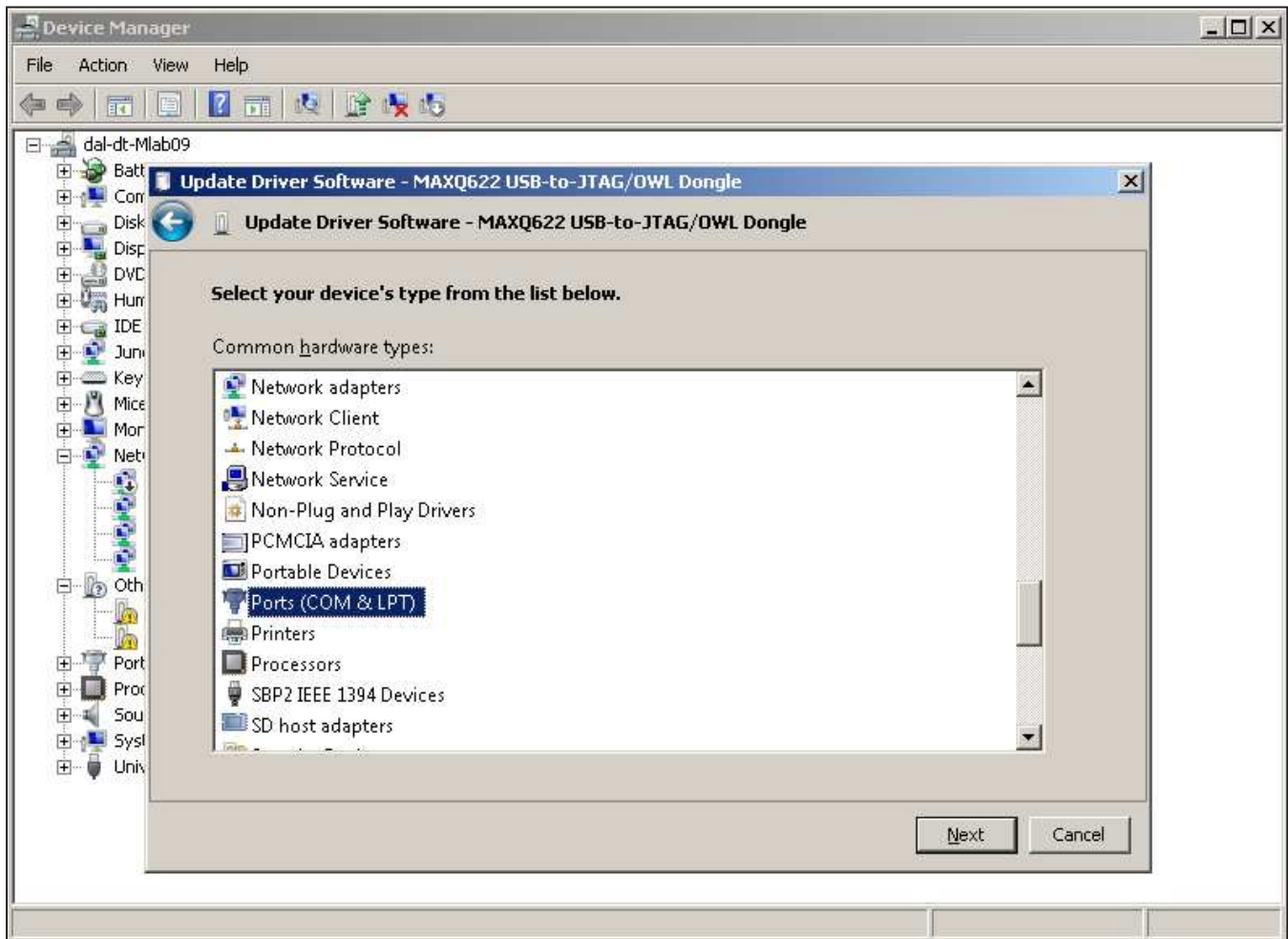


Figure 14. Update Driver Software—Select Device Type

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

- In the next window, select **Have Disk...** and select the INF file, **maxusbjtagow.INF**. Click **OK** then **Next**.

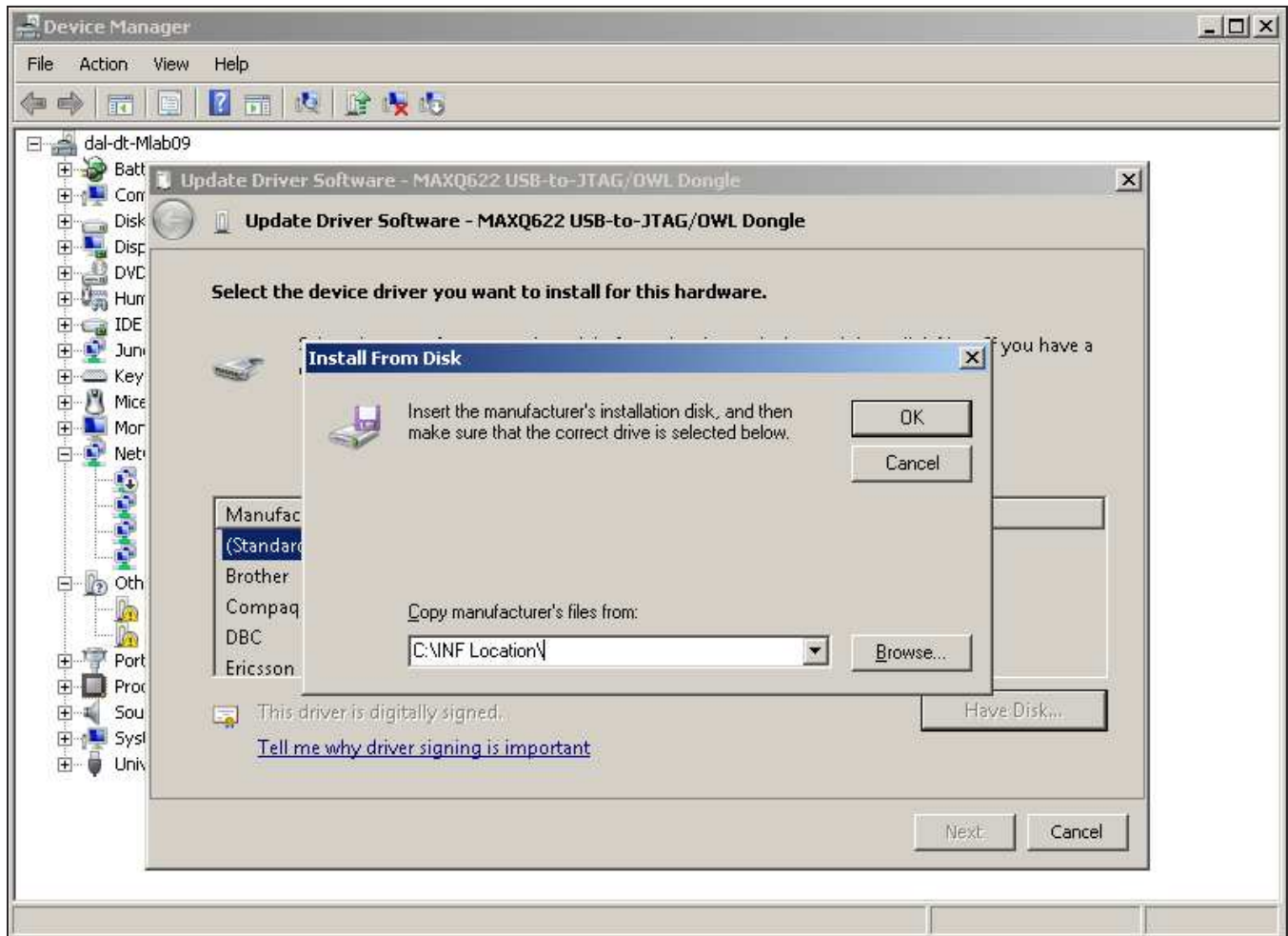


Figure 15. Update Driver Software—Install From Disk

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

- While installing the driver software, **Windows Security** warns about the driver not being signed. Click **Install this driver software anyway**.

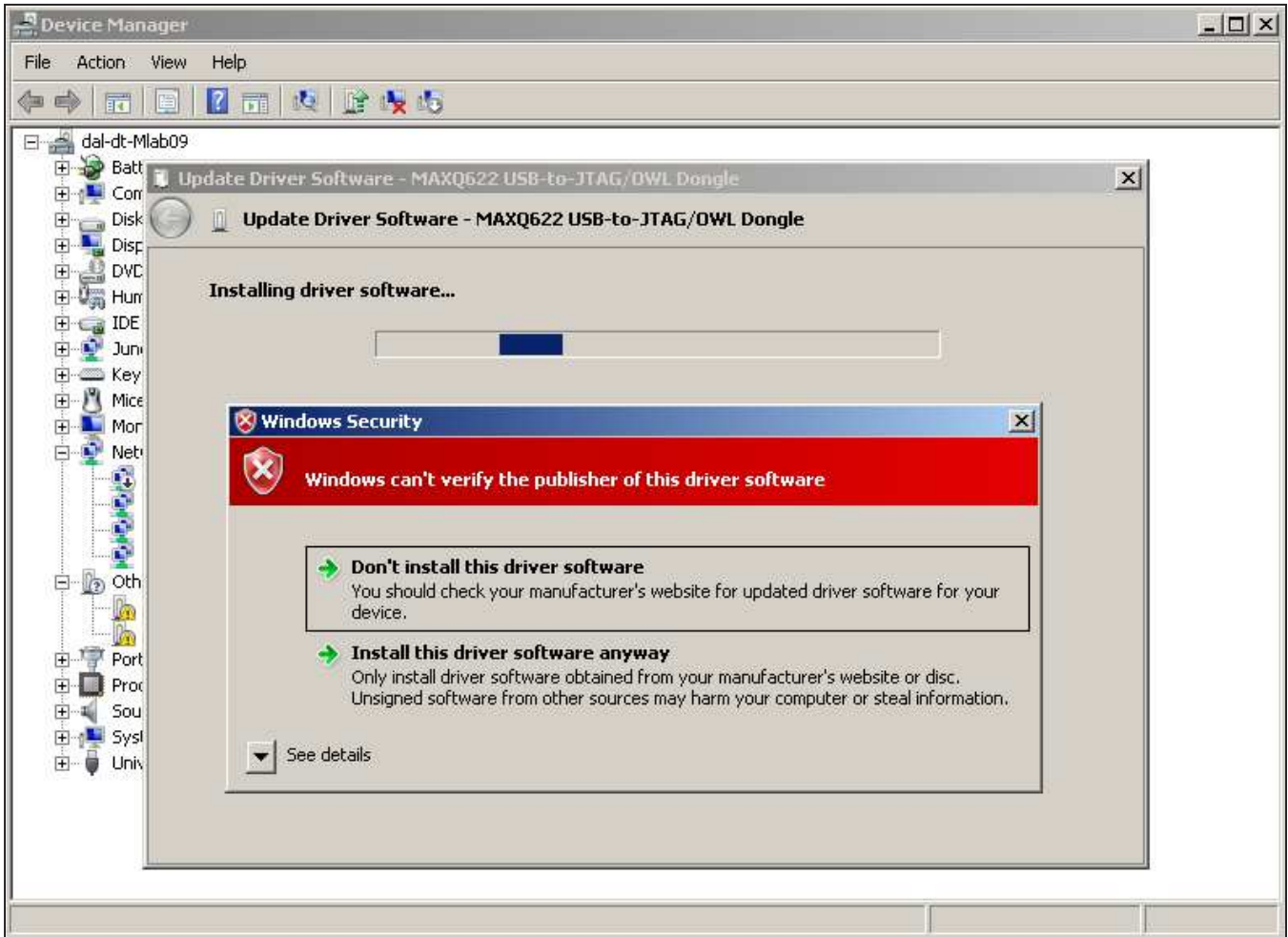


Figure 16. Update Driver Software—Bypassing Windows Security

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

- After Windows completes software installation, click **Close**.

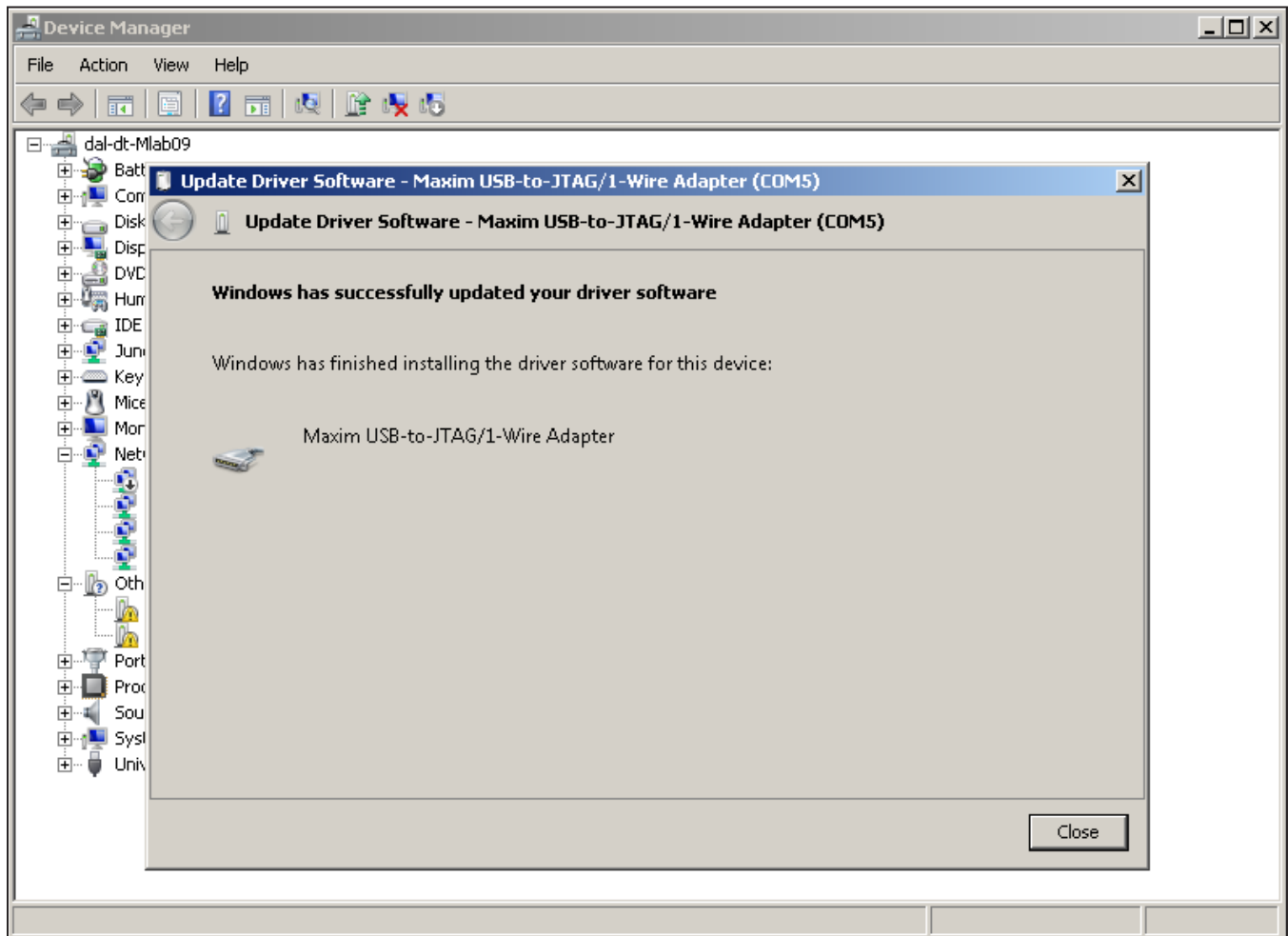


Figure 17. Update Driver Software—Update Done

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

- Now, in the **Device Manager**, the adapter should appear under **Ports (COM & LPT)** as **Maxim USB-to-JTAG/1-Wire Adapter (COM5)**, where x is the port number.

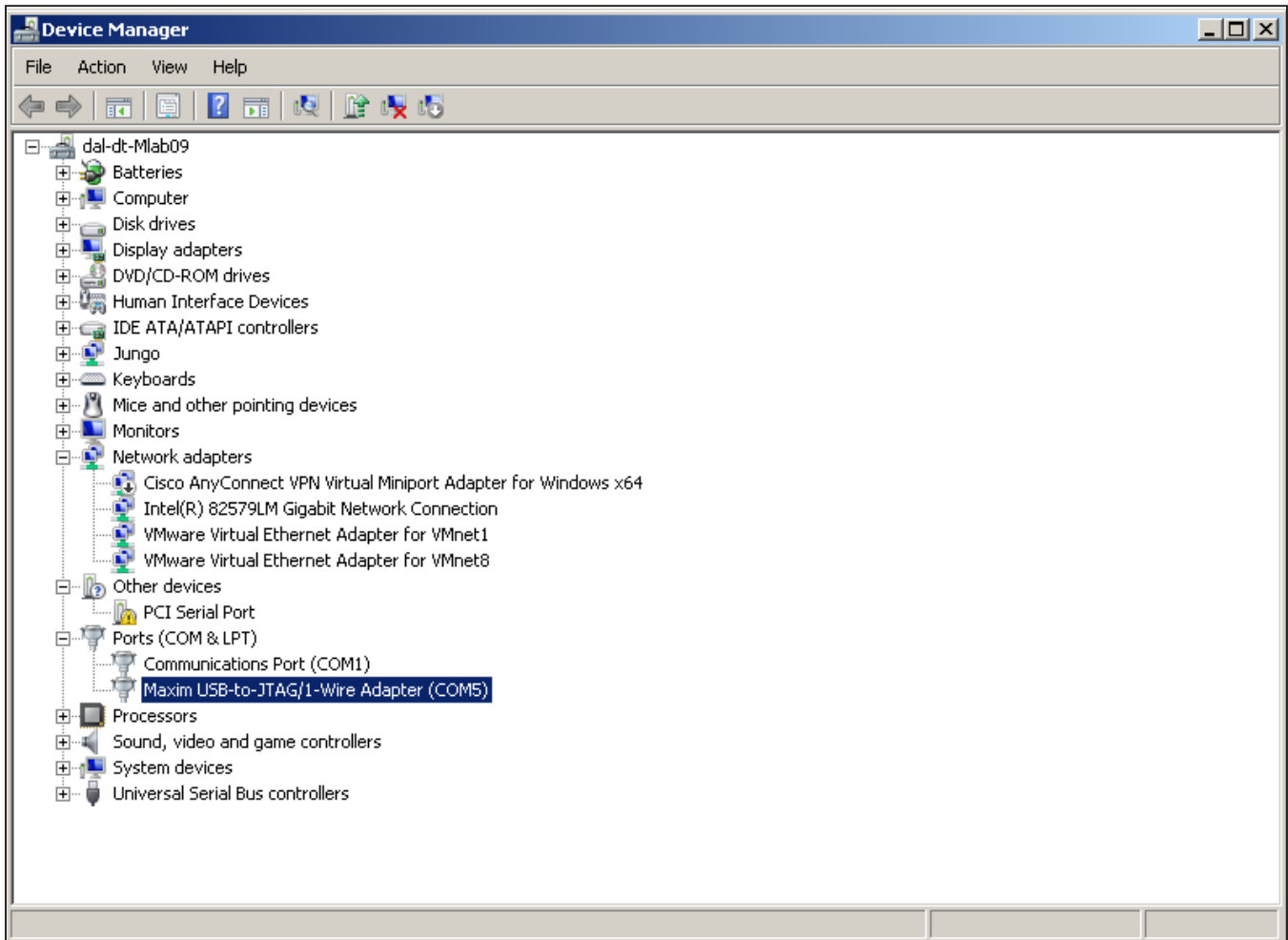


Figure 18. Device Manager After Installation on Windows 7

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

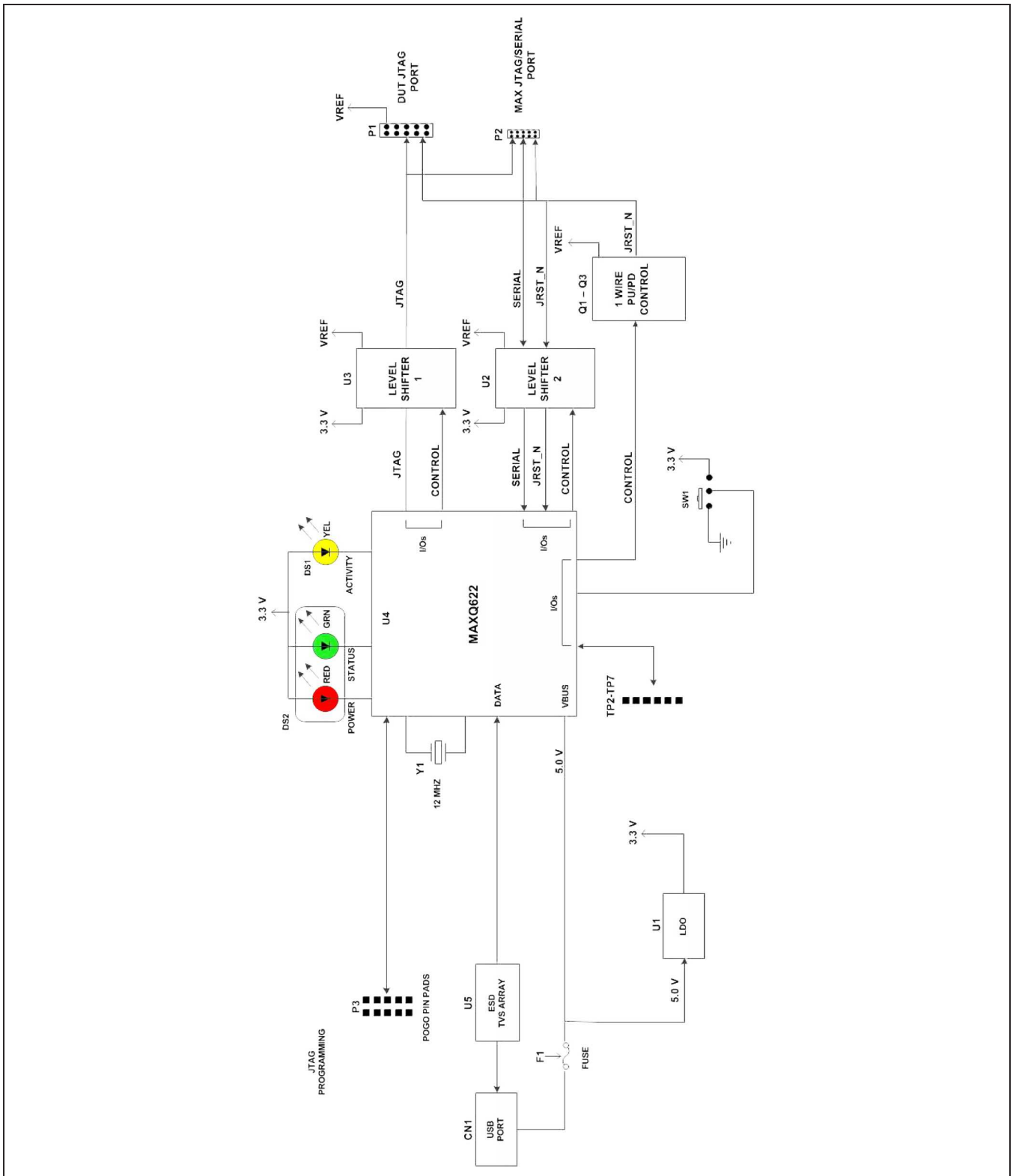


Figure 19. MAXQ USB-to-JTAG/1-Wire Adapter EV Kit Schematic (Sheet 1 of 3)

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

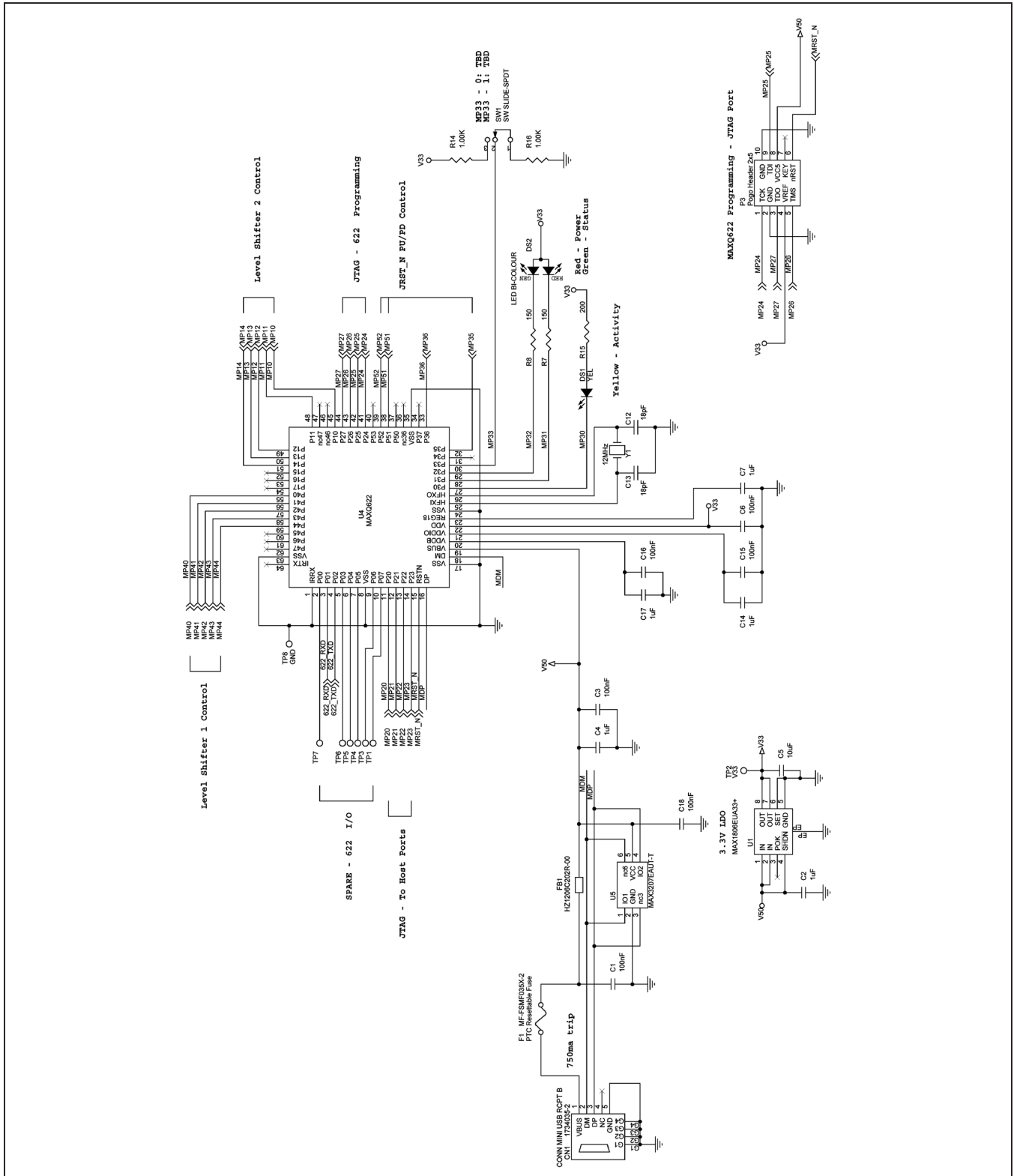


Figure 20. MAXQ USB-to-JTAG/1-Wire Adapter EV Kit Schematic (Sheet 2 of 3)

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

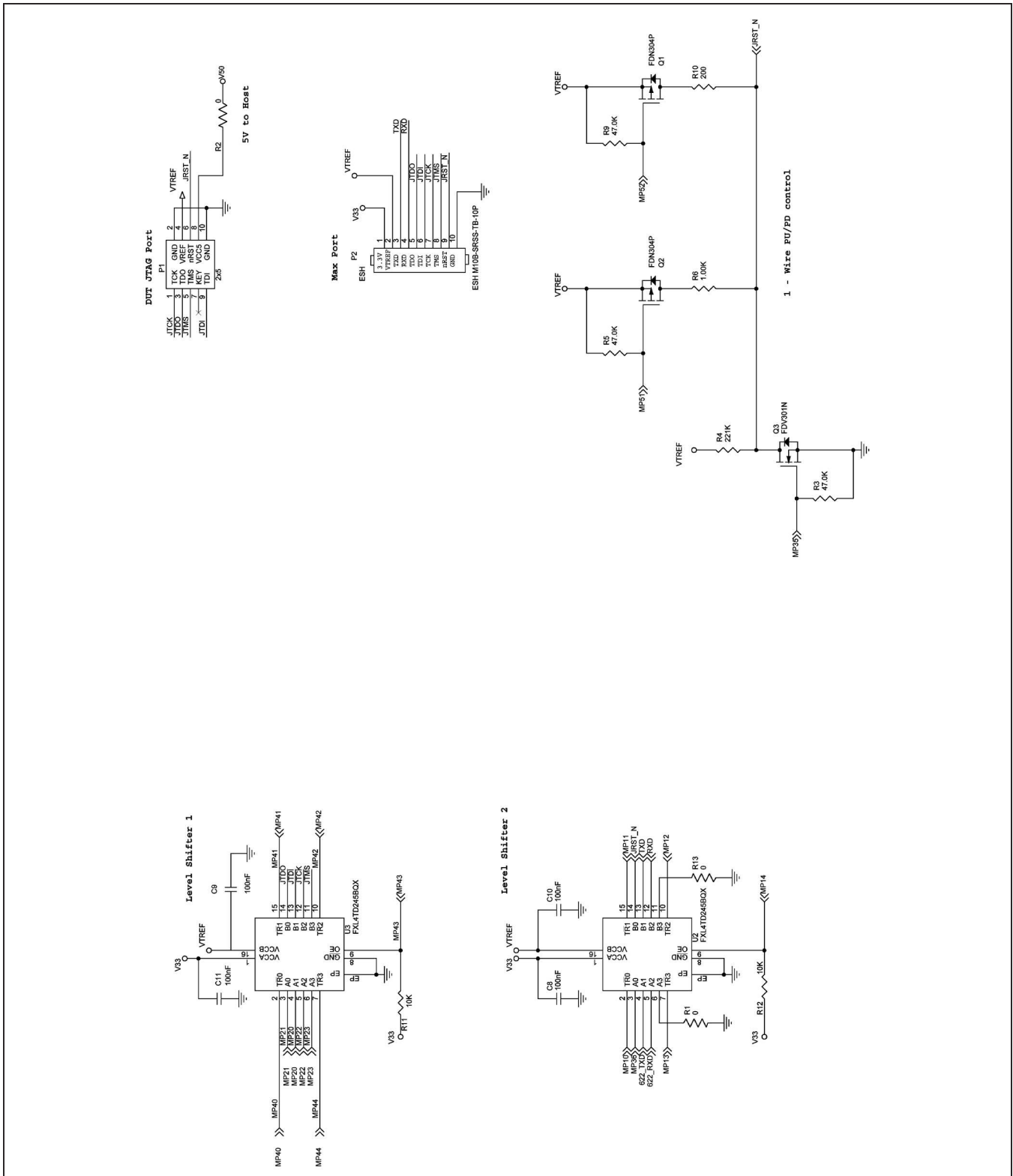


Figure 21. MAXQ USB-to-JTAG/1-Wire Adapter EV Kit Schematic (Sheet 3 of 3)

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

Ordering Information

| PART | TYPE |
|--------------------|-------------|
| MAXQUSBJTAGOW-KIT# | Adapter |

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

MAXQ USB-to-JTAG/1-Wire Adapter

Evaluates: MAXQ Microcontrollers

Revision History

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

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MAXQ USB-to-JTAG/1-Wire Adapter

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