General Description

The DS9481R-200 is a USB-to-1-Wire® adapter for easy PC connectivity to 1-Wire devices. The adapter provides an RJ11 connector with the signals to communicate with all 1-Wire and iButton® devices that support a 1.8V data I/O level. Additionally, the adapter provides the support and signaling to program 1-Wire/iButton EEPROM devices. To provide a total hardware solution, the DS9481R-200 can readily be used with the family of DS9120 socket adapters to create a 1-Wire PC programmer for 1-Wire slave devices (contact factory for more information). The equivalent slave hardware solution for the iButton is the DS1402D-DR8.

Adapter Contents

QTY	DESCRIPTION
1	USB-to-1-Wire adapter Maxim DS9481R-200#
1	USB Type A-to-USB Mini-Type B cable Qualtek Electronics Corp. 3021003-03

Features

- Driver Support for Windows® 8, Windows 7, and Windows Vista® Operating Systems
- Enumerates as a Virtual PC COM Port by Use of the Prolific PL-2303HXD USB-to-UART Bridge IC
- Emulates the DS2480B 1-Wire Line Driving Functionality
- 1-Wire EEPROM Programming
- 1.8V Read/Write Operation to 1-Wire/iButton Devices
- RJ11 Interface for Standard Connectivity Accessories such as the DS9120 Family of Socket Adapters
- Supports Standard and Overdrive 1-Wire Communication
- Provides Strong Pullup to 1.8V
- Fully Compliant with USB 2.0 Specification

Ordering Information

PART	TYPE
DS9481R-200#	Adapter

#Denotes RoHS compliant.

DS9481R-200 USB-to-1-Wire/iButton Adapter

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Windows and Windows Vista are registered trademarks and registered service marks of Microsoft Corporation.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C4, C11-C14, C20, C23	8	0.1µF, 16V X7R ceramic capacitors (0603) KEMET C0603C104K4RACTU
C2, C3	2	2.2µF, 16V Y5V ceramic capacitors (0805) Murata GRM21BF51C225ZA01L
C5	1	10nF ±5%, 16V X7R ceramic capacitors (0603) AVX 06035C103JAT2A
C6, C21	2	4.7µF, 16V Y5V ceramic capacitors (0805) TDK Corp. C2012Y5V1C475Z
C9, C25	0	Do not populate, capacitors
C10	1	10µF, 10V Y5V ceramic capacitor (0805) TDK Corp. C2012Y5V1C106Z
C16	0	Do not populate, 470pF ceramic capacitor (0603)
C17	1	1µF, 10V X7R ceramic capacitor (0603) Taiyo Yuden LMK107B7105KA-T
C19	1	10pF, 50V NP0 ceramic capacitor (0603) TDK C1608C0G1H100D
CN1	1	USB Mini-AB connector, right-angle, SMD, 5-position Kycon KMBX-SMT-5S-S-30TR
D1	1	4.7V, 350mW +/-5% zener diode (SOT23) Diodes Inc. MMBZ5230B-7-F
D3	1	Orange LED (TSS type) (0603) Panasonic/SSG LNJ812R83RA
FB1, FB2	2	220Ω, 2000mA ferrite chips (0805) Murata BLM21PG221SN1D
J1	1	6-position, right-angle, PCB-mounted jack Tyco Electronics 5520425-3
J2	0	Do not populate, JTAG connector

DESIGNATION	QTY	DESCRIPTION
Q4, Q5	2	115mA, 60V n-channel MOSFETs (SOT23) Diodes, Inc. 2N7002-7-F
Q6	1	3.9A, 20V p-channel MOSFET (SOT23) NXP PMV65XP,215
R1, R29	0	Do not populate, resistors
R2, R3, R5	3	27Ω ±1%, 1/10W SMD resistors (0603) Yageo RC0603FR-0727RL
R4, R16	2	1.5kΩ ±1%, 1/10W SMD resistors (0603) Panasonic ECG ERJ-3EKF1501V
R7, R8	2	3.00Ω ±5%, 1/10W SMD resistors (0603) Panasonic ERJ-3GEYJ3R0V
R9	1	604Ω ±1%, 1/10W SMD resistor (0603) Panasonic ERJ-3EKF6040V
R10	1	0Ω ±1%, 1/10W SMD resistor (0603) Panasonic ECG ERJ-3GEY0R00V
R13, R20, R27, R30	4	100kΩ ±1%, 1/10W SMD resistors (0603) Yageo RC0603FR-07100KL
R14	1	1kΩ ±1%, 1/10W SMD resistor (0603) Yageo RC0603FR-071KL
R18	1	2.2kΩ ±5%, 1/10W SMD resistor (0603) Panasonic ERJ-3GEYJ222V
R22	1	4.99Ω ±1%, 1/10W SMD resistor (0603) Yageo RC0603FR-074R99L
R23	1	5.1kΩ ±0.1%, 1/10W SMD resistor (0603) Panasonic ERA-3AEB512V

Component List (continued)

DESIGNATION	QTY	DESCRIPTION
R24	1	7.5kΩ ±1%, 1/10W SMD resistor (0603) Panasonic ERJ-3GEYJ752V
R25	1	11kΩ ±0.1%, 1/10W SMD resistor (0603) Vishay/Dale NPW060311K0BEEA
R28	1	10Ω ±1%, 1/10W SMD resistor (0603) Yageo RC0603FR-0710RL
R31	1	32.4kΩ ±1%, 1/10W SMD resistor (0603) Vishay/Dale NPW060332K4BEEA
R32	1	4.12Ω ±1%, 1/10W SMD resistor (0603) Panasonic ERJ-3EKF4121V
RT1	1	0.12A, 30V PTC resettable fuse (1206) Bourns MF-NSMF012-2
SW1	0	Do not populate, switch
U1	1	Low-dropout, 300mA linear regulator (5 SOT23) Maxim MAX8887EZK33+T (Top Mark: ADPZ)

DESIGNATION	QTY	DESCRIPTION
U4	0	Do not populate, Silicon oscillator (3 SC70) Maxim MAX7381AXR126-T
U5	1	USB-to-serial bridge controller (28 SSOP) Prolific PL-2303HXD SSOP
U6	1	16-bit microcontroller with infrared module (32 TQFN-EP*) Maxim MAXQ610A-9410+
U7	1	±15kV ESD, high-drive current, dual-level translator Maxim MAX3394EETA+
U8	1	High-voltage, low-power linear regulator (5 SOT23) Maxim MAX1616EUK+ (Top Mark: ABZD)
U9	1	1.8V comparator (5 SOT23) STMicroelectronics TS3021ILT
—	1	PCB: DS9481R-200 REV 1

EP = Exposed pad.

Quick Start

Recommended Equipment

- Maxim DS9481R-200 (included in adapter)
- USB type-A to USB Mini type-B cable (included in adapter)
- RJ11 cable assembly (not included)
- PC with a Windows 8, Windows 7, or Windows Vista OS and a spare USB port

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

Procedure

1) Do the following to install the PL-2303HXD Prolific driver:

   a) Download either the driver file called PL2303_Prolific_DriverInstaller_v1_9_0.zip or the latest version from **http://files.maxim-ic.com/sia_bu/public**.

   b) **Open** and **Run** either the file called PL2303_Prolific_DriverInstaller_v1.9.0.exe or the latest version.

   c) Follow the directions of the **Install Wizard** until **Finish** is reached for the PL-2303 USB-to-serial driver installation. Close by clicking the **Finish** button.

2) Do the following to install the 1-Wire drivers:

   a) Go to the 1-Wire Drivers—Getting Started webpage at **www.maximintegrated.com/1-wire-drivers**.

   b) Click on the **Click to go to Download Page** button.

   c) From the **Choose Operating System** drop-down list, select your OS.

   d) From the **Select File** drop-down list, select 32-bit or 64-bit 1-Wire drivers for the architecture being used by your OS.

   e) Click the **Download** button.

   f) When prompted by the question **Do you want to run or save this file?**, select **Run**.

   g) When you get a security warning that says **Do you want to run the software?**, select **Run**.

   h) Read and check the box if you accept the license agreement and click **Install**.

   i) Click the **Finish** button to exit the Setup Wizard.

3) The DS9481R-200 USB-to-1-Wire adapter uses both the Prolific PL-2303HXD and the Maxim MAXQ610 to emulate a virtual COM-to-1-Wire port on any PC. Find the enumeration of the virtual COM port by inserting the DS9481R-200 into a spare USB port on the computer. Determine the COM port by looking in **Control Panel→System→Hardware→Device Manager** and

Figure 1. DS9481R-200 USB-to-1-Wire/iButton Adapter and Cable

expand **Ports (COM & LPT)**. The port is COM2 in the example shown in Figure 2.
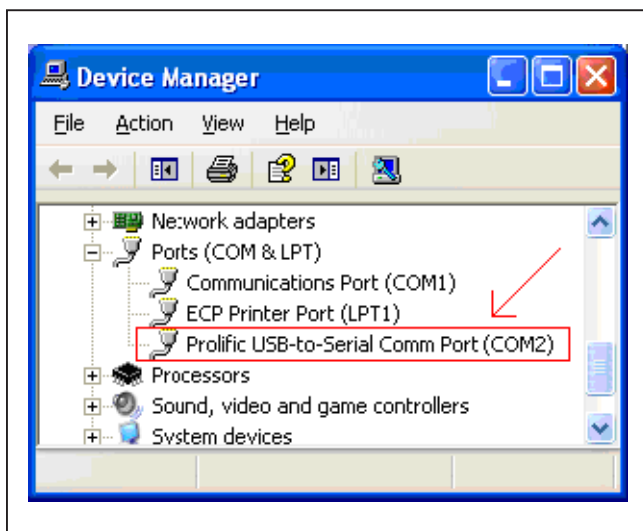
Figure 2. DS9481R-200 COM Port Cable

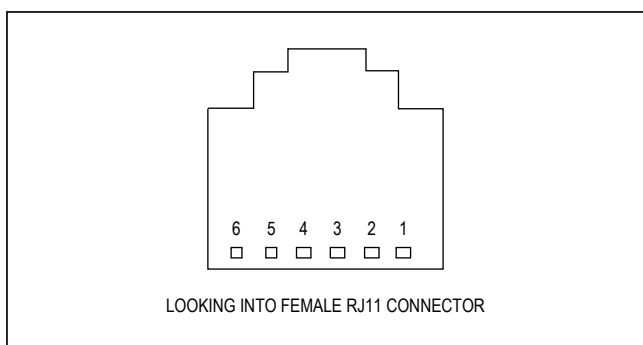LOOKING INTO FEMALE RJ11 CONNECTOR

Figure 3. 1-Wire RJ11 Port

Table 1. 1-Wire RJ11 Pinout

CONNECTOR PIN	SIGNAL NAME
1	1.8V
2	GND
3	OW (DATA)
4	OWGND
5	N.C.
6	GP

You have now completed the installation of the DS9481R-200 adapter. Obtain the adapter software and directions for installation for your 1-Wire/iButton slave device by contacting Maxim online technical support at **https://support.maximintegrated.com/1-Wire**.

Detailed Description of Connectors

RJ11 Pinout

Table 1 and Figure 3 show the RJ11 pinout mounted on the DS9481R-200 PCB at J1. The RJ11 pin 1 can supply 1.8V and can be used for auxiliary board power. The GND is the ground of the 1.8V supply. The signal OW (DATA) stands for the 1-Wire data bus. The ground return for OW (DATA) is the signal OWGND. The GP signal is reserved for future general-purpose usage and is functionally not used by the DS9481R-200.

Mini-USB Pinout

The 5-position Mini-USB type AB connector is mounted at CN1 of the DS9481R-200 PCB, as shown in Table 2.

Hardware/Firmware Capabilities

The DS9481R-200 uses both the Prolific PL-2303HXD and the Maxim MAXQ610. The PL-2303HXD is fully compliant with USB 2.0 specification for Windows 8, Windows 7, or Windows Vista and provides a bridge for the USB-to-UART connection. The MAXQ610 is loaded with firmware that emulates the functionality of the DS2480B serial-to-1-Wire line driver at a lower 1.8V operation voltage. The MAXQ610 functions as a UART-to-1-Wire bridge and can serve custom application needs with firmware programmability.

Table 2. Mini-USB Type AB USB Pinout

CONNECTOR PIN	SIGNAL NAME
1	5.0V
2	DMCN
3	DPCN
4	NC
5	GND
6-9	GND_EARTH
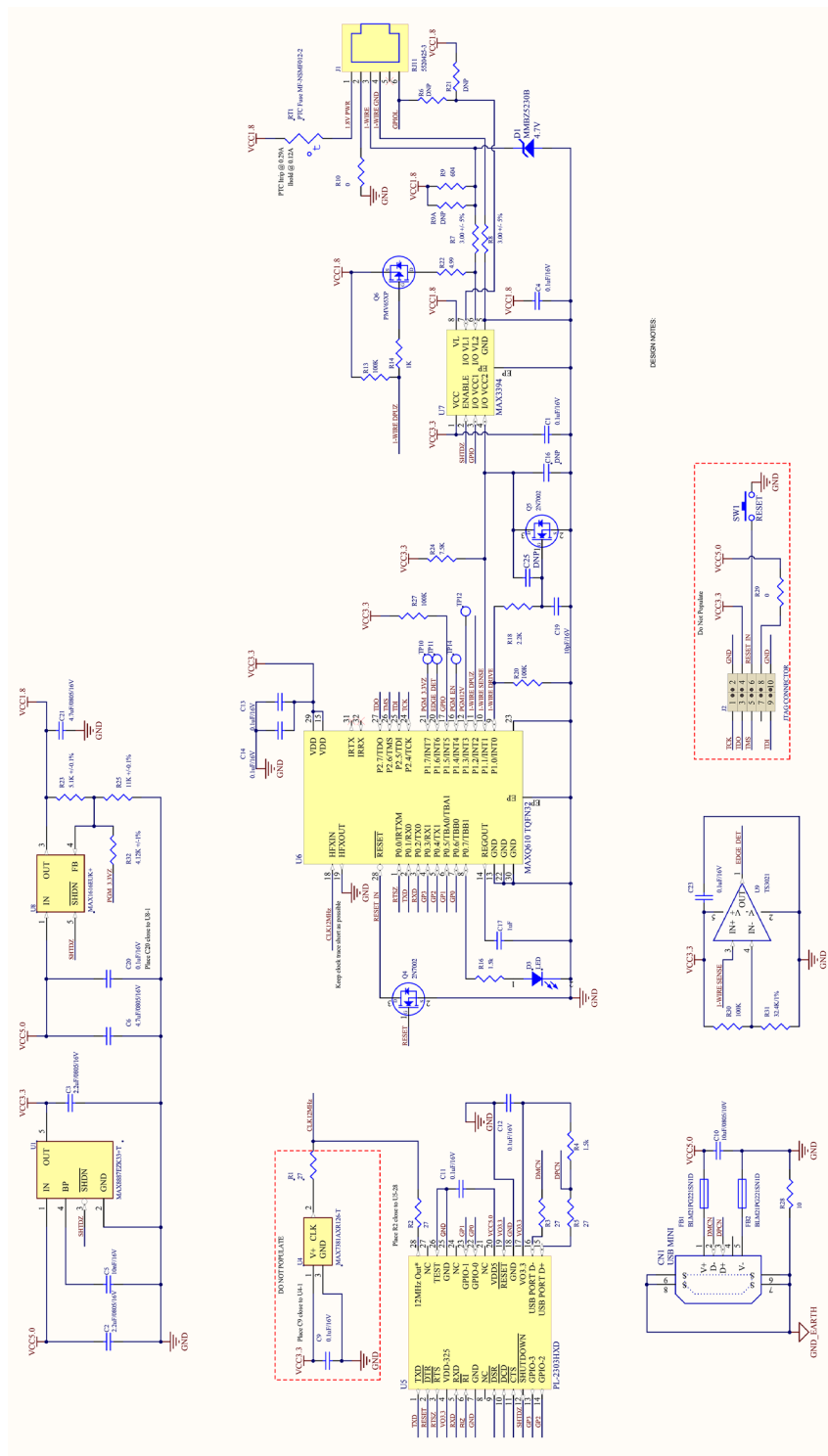
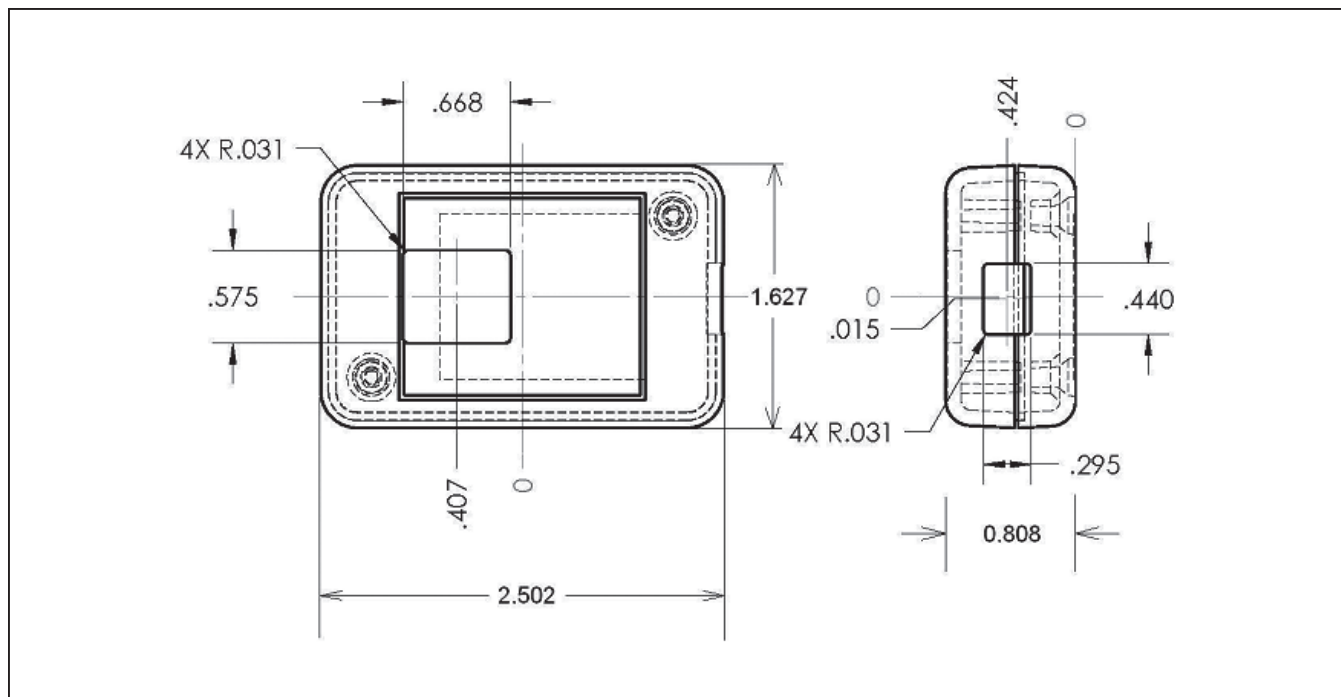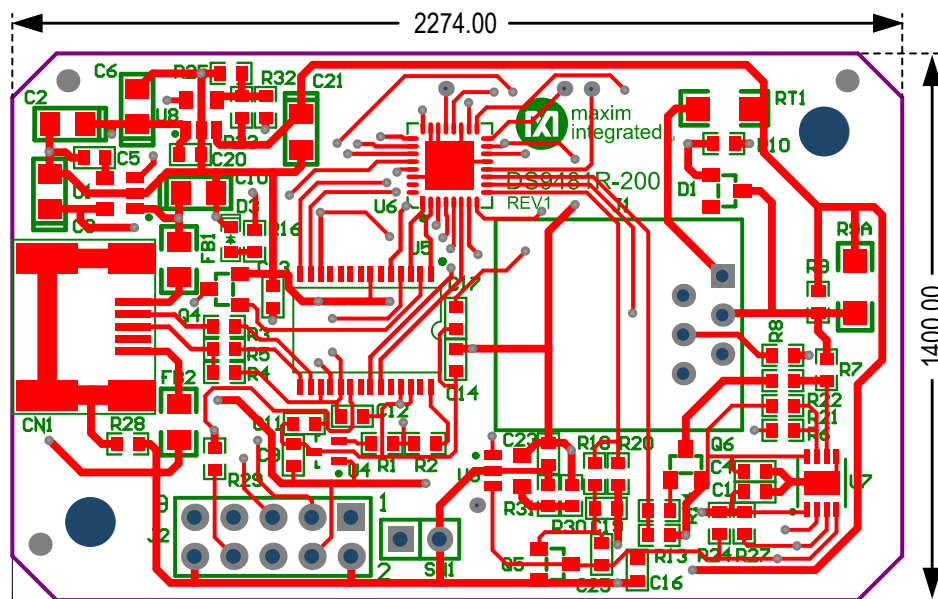*Figure 4. DS9481R-200 Adapter Board Schematic*

Figure 5. DS9481R-200 Adapter Enclosure Dimensions

TOP METAL

TOP SILK SCREEN

BOTTOM METAL
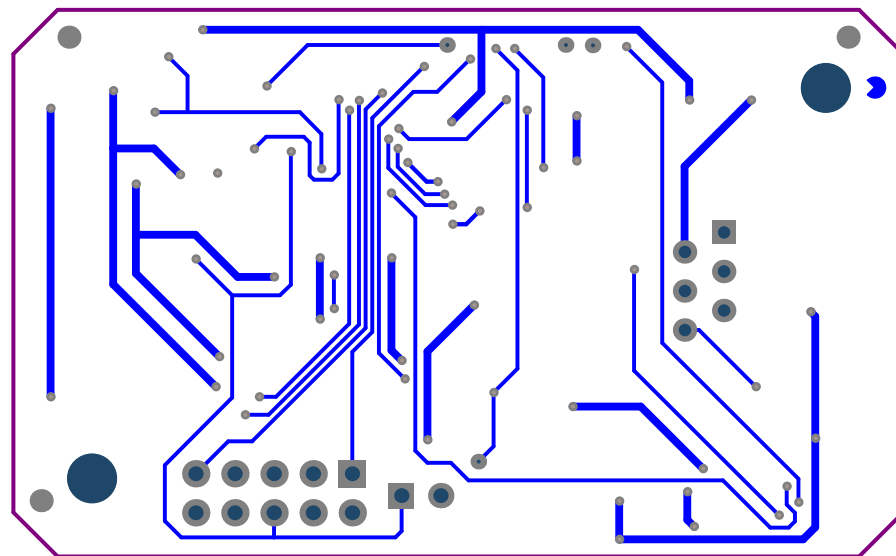
Figure 6. DS9481R-200 Adapter Board—Composite Layout

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	7/14	Initial release	—

Mouser Electronics

Authorized Distributor

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