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APPLICATION NOTE 5403

How to Build a 1-Wire® Evaluation Kit

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Abstract: The 1-Wire product family includes numerous devices that can be easily evaluated using a Windows®-based PC with a USB port and free demo software from Maxim's website. This tutorial describes parts that can be used for the hardware and explains how to download the software.

Introduction

You can easily build a 1-Wire evaluation (EV) kit from off-the-shelf 1-Wire components that are offered in TO-92, TSOC, and TDFN packages. The EV kit includes free demo software that runs on a Windows®-based PC with a USB port. The kit also includes a socket board into which the 1-Wire device is plugged. The EV kit is useful for performing a first-time evaluation of a 1-Wire device, but is also convenient for low-volume preprogramming applications where specific data patterns are written to a 1-Wire memory device. For iButton® packages, select the [DS9092K iButton Starter Kit](#) instead of using the options detailed in the tutorial.

Components

- 1-Wire device for evaluation
- Socket board and RJ-11 cable
- USB adapter
- Free 1-Wire demo software

1-Wire Devices Supported

This EV kit design only supports 1-Wire devices available in the TO-92, TSOC, and TDFN packages. To determine which packages are available for a given 1-Wire device, consult the Ordering Information section of an individual device's data sheet. An overview of all available 1-Wire devices can be found at www.maximintegrated.com/1-wire.

Socket Board

The [DS9120](#) family of socket boards is offered for TO-92, TSOC, and TDFN packages. After you have selected the package for your 1-Wire device and verified package availability on the device data sheet, select the corresponding DS9120 variant. Each variant includes an RJ-11 cable to connect to the USB

adapter. For more details, consult the [DS9120 data sheet](#). **Table 1** summarizes the DS9120 variant parts.

Table 1. DS9120 Variants	
Variant	Package
DS9120+	TO-92 only
DS9120P+	TSOC and TO-92
DS9120Q+	TDFN and TO-92

USB Adapter

Maxim offers two USB adapters that can be used for the 1-Wire EV kit. The [DS9490R](#) is the lowest cost adapter that will work for 5V EEPROM 1-Wire devices and any others that do not require a special external programming voltage. For 1-Wire devices that operate at 3.3V or use EPROM and other one-time programmable (OTP) technologies, the [DS9481R](#) should be selected. Some 1-Wire EPROM devices require an external 12V programming pulse applied in order to program the memory. The [DS28E10](#) is an example of an OTP device that requires a 7V programming voltage. The [DS9481R-3C7](#) is fully equipped to internally generate the 12V and 7V programming voltages. **Table 2** summarizes the adapter capabilities.

Table 2. USB Adapters			
USB Adapter	1-Wire Communication Voltage (V)	Programming Voltage (V)	Supported 1-Wire Products
DS9481R-3C7	3.3	12	3.3V and EPROM 1-Wire devices
DS9481R-3C7	3.3	7	3.3V devices and DS28E10
DS9490R	5	5	All other 5V 1-Wire devices

Free 1-Wire Demo Software

If you have selected the DS9481R-3C7, you must install the Prolific Software drivers prior to installing the Maxim 1-Wire demo software. In this case, follow the installation instructions detailed in the Quick Start section of the [DS9481R data sheet](#). If you have selected the DS9490R adapter, follow the instructions below:

1. Go to the [1-Wire Drivers—Getting Started webpage](#).
2. Click the **Click to go to Download Page** button.
3. From the **Choose Operating System** drop-down list, select your OS.
4. From the **Select File** drop-down list, select 32-bit or 64-bit 1-Wire drivers for the architecture being used by your OS.
5. Click the **Download** button.

6. When prompted by the question [Do you want to run or save this file?](#), select [Run](#).
7. When you get a security warning that says [Do you want to run the software?](#), select [Run](#).
8. Read and check the box if you accept the license agreement and click [Install](#).
9. Click [Finish](#) to exit the Setup Wizard.

For a tutorial on how to use the OneWireViewer demo software, consult the [OneWireViewer User's Guide](#). For troubleshooting, see application note 5057, "[OneWireViewer Tips and Tricks](#)."

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Related Parts		
DS2401	Silicon Serial Number	Free Samples
DS2406	Dual Addressable Switch Plus 1Kb Memory	Free Samples
DS2411	Silicon Serial Number with V _{CC} Input	Free Samples
DS2413	1-Wire Dual Channel Addressable Switch	Free Samples
DS2417	1-Wire Time Chip With Interrupt	Free Samples
DS2431	1024-Bit 1-Wire EEPROM	Free Samples
DS2432	1Kb Protected 1-Wire EEPROM with SHA-1 Engine	Free Samples
DS24B33	1-Wire 4Kb EEPROM	Free Samples
DS2502	1Kb Add-Only Memory	Free Samples
DS2502-E48	48-Bit Node Address Chip	Free Samples
DS2502-E64	IEEE EUI-64 Node Address Chip	Free Samples
DS2505	16Kb Add-Only Memory	Free Samples
DS28E01-100	1Kb Protected 1-Wire EEPROM with SHA-1 Engine	Free Samples
DS28E02	1-Wire SHA-1 Authenticated 1Kb EEPROM with 1.8V Operation	Free Samples
DS28E10	1-Wire SHA-1 Authenticator	Free Samples
DS28E15	1-Wire SHA-256 Secure Authenticator with 512-Bit User EEPROM	Free Samples
DS28E25	1-Wire SHA-256 Authenticator with 4Kb User EEPROM	Free Samples
DS28EC20	20Kb 1-Wire EEPROM	Free Samples
DS9120	Socket Boards for Evaluating 1-Wire Devices	

DS9481R-3C7 USB-to-1-Wire®/iButton® Adapter

DS9490R USB to 1-Wire/iButton Adapter

More Information

For Technical Support: <http://www.maximintegrated.com/support>

For Samples: <http://www.maximintegrated.com/samples>

Other Questions and Comments: <http://www.maximintegrated.com/contact>

Application Note 5403: <http://www.maximintegrated.com/an5403>

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