

DS9488-GP8/DS9122x Evaluation System

Multidevice Programmer for 1-Wire and I2C Devices

General Description

The DS9488-GP8 multidevice programmer for 1-Wire® and I2C devices simultaneously programs up to 8 devices that use the 1-Wire or I2C bus programming interface. A variety of socket adapters (DS9122 series) allows one programmer to support multiple IC types. Software drivers for every supported device are quickly and easily installed. LED status indicators immediately identify the pass/fail status of individual devices.

Configuration settings allow access to device-specific features such as memory protection, read/write permissions, authentication, etc. These can be store as a configuration profile and automatically loaded in subsequent programming sessions.

A USB interface connects the programmer to any computer. A convenient Windows® application allows for easy operation of the programmer.

Available socket adapters allow the DS9488-GP8 to program a variety of Maxim devices. The [Ordering Information](#) lists the socket adapters and the devices they support.

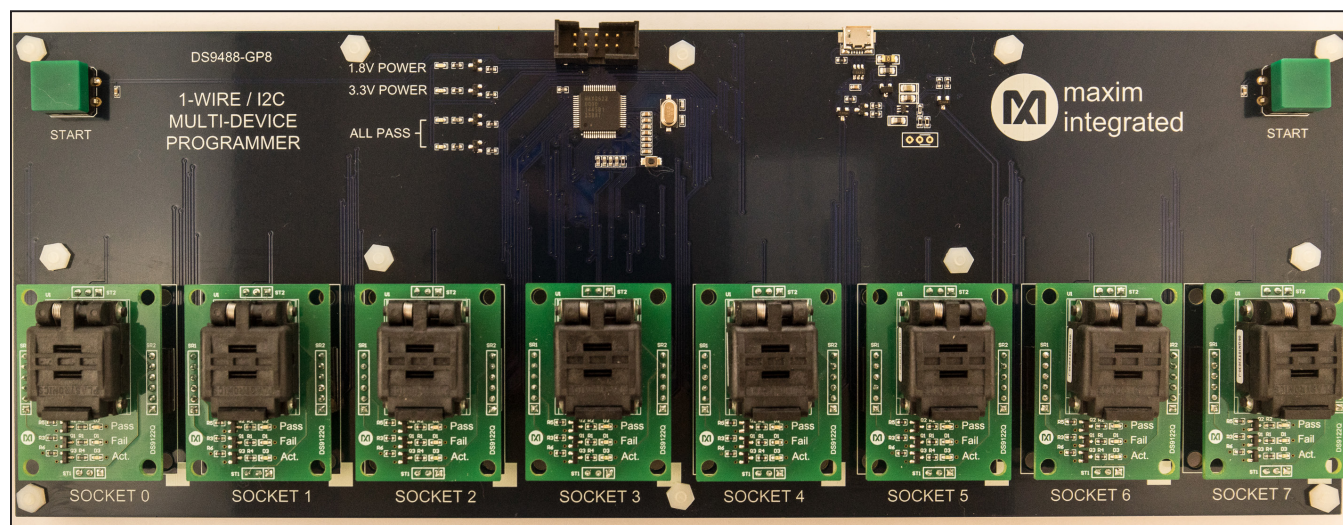
Benefits and Features

- Programs Up to 8 Devices in a Single Session
- Multiple Devices Supported by One Programmer
- Socket Adapters Available for Most Devices
- Easy Installation of New Device Software
- Intuitive Windows Application Reduces Learning Time
- Standard USB Interface Connects to Any Computer
- Status LEDs Provide Immediate Pass/Fail Confirmation

EV System Contents

- DS9488-GP8 EV kit board
- USB A-to-Micro-USB B cable

DS9488-GP8 Programmer



1-Wire is a registered trademark of Maxim Integrated Products, Inc.
Windows is a registered trademark and registered service mark of Microsoft Corporation.

[Ordering Information](#) appears at end of data sheet.

Setup

Required Equipment

- Computer equipped with Windows and .NET Framework 4.5 or later
- DS9488-GP8 EV kit board
- USB A-to-micro-USB B cable
- One to eight socket adapters for the intended ICs
- One to eight ICs to be programmed

Selecting Socket Adapters

One to eight socket adapters matching the IC packages must be purchased separately from Maxim before the programmer can be used. No socket adapters are included with the DS9488-GP8. A list of available sockets is provided on the DS9488-GP8 product page.

Most socket adapters program a single device at a time and take up one socket site. Dual socket adapters cover two socket sites, but each IC has a dedicated set of status LEDs on the PCB as shown in [Figure 1](#).

The socket adapters employ ESD-sensitive components. Observe safe ESD practices when handling the socket adapters.

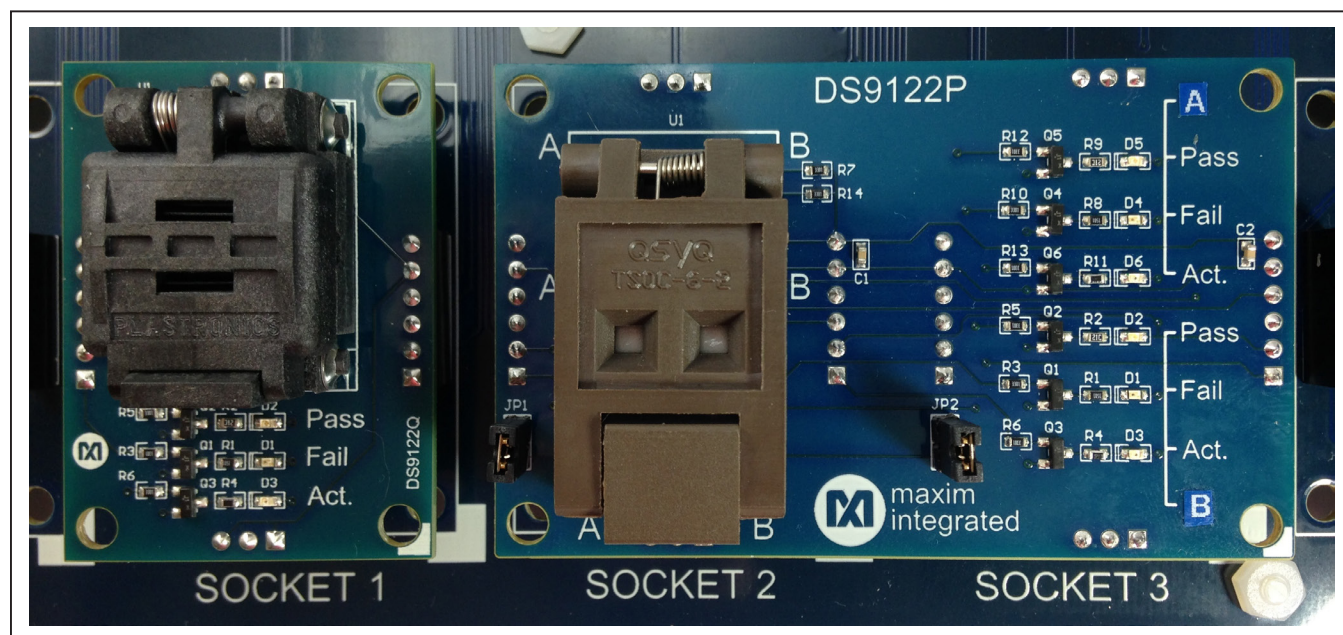


Figure 1. Single and Dual IC Socket Adapters

Application Installation

- 1) Download the latest version of the DS9484-GP8 application software from <http://content.maximintegrated.com/en/design/tools/applications/evkit-software/>.
- 2) Unzip the downloaded file into an empty directory.
- 3) While observing safe ESD practices, carefully remove the EV kit board from its packaging. Inspect the board to ensure that no damage occurred during shipment.
- 4) Connect the DS9488-GP8 to a PC using the supplied USB A-to-Micro-USB B cable. All LEDs on the DS9488-GP8 momentarily illuminate. One or more LEDs might remain on. The EV kit must be connected during application installation.
- 5) Click on the setup application to begin installation.
- 6) Follow the installation instructions. If prompted, allow the DS9488-GP8 USB drivers to be installed.
- 7) Install the desired device-specific drivers.

Device-Specific Driver Installation

Install device-specific drivers by using the application.

- 1) Download the compressed device-specific driver package from <http://content.maximintegrated.com/en/design/tools/applications/evkit-supplemental/>. The package name incorporates the name of the device. For example, DS9488_Driver_DS2431 supports all packages of the DS2431.
- 2) Navigate to the **Application Setup** tab and click on the **Device Drivers** radio button. See [Figure 2](#).
- 3) Click on the **View Device Drivers** button. Copy the driver package into the **Device Drivers** folder.
- 4) Extract the .dll file and .pdf file for each device.
- 5) The drivers in the **Device Drivers** folder are automatically loaded when the application is launched. To load a driver for immediate use, click on the **Load Device Driver...** button and select the drivers to install.

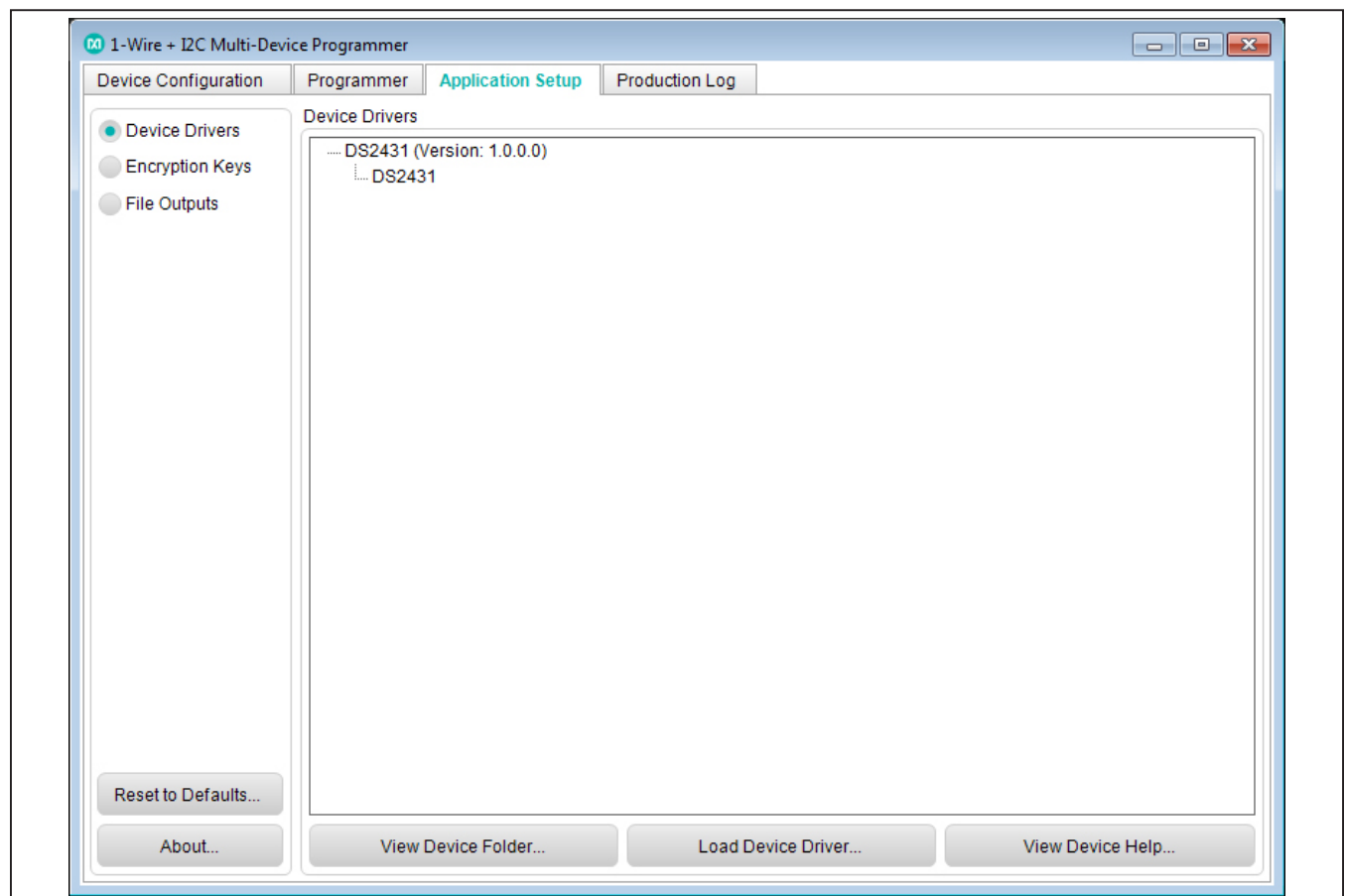


Figure 2. Installed Device Drivers

Programming

If socket adapters have not been installed, remove power from the DS9488-GP8. Install the socket adapters, and reapply power.

The programming procedure has three steps:

- Device configuration
- Production file creation
- Programming

Device Configuration

- 1) Navigate to the **Device Configuration** tab, shown in [Figure 3](#).
- 2) Select the device type to be programmed.
- 3) Configure the device-specific options. Information about the options can be found in the IC data sheet and also in .pdf files under the **Application Setup** tab, **View Device Help**.
- 4) If desired, click **Save As...** to record the configuration options.

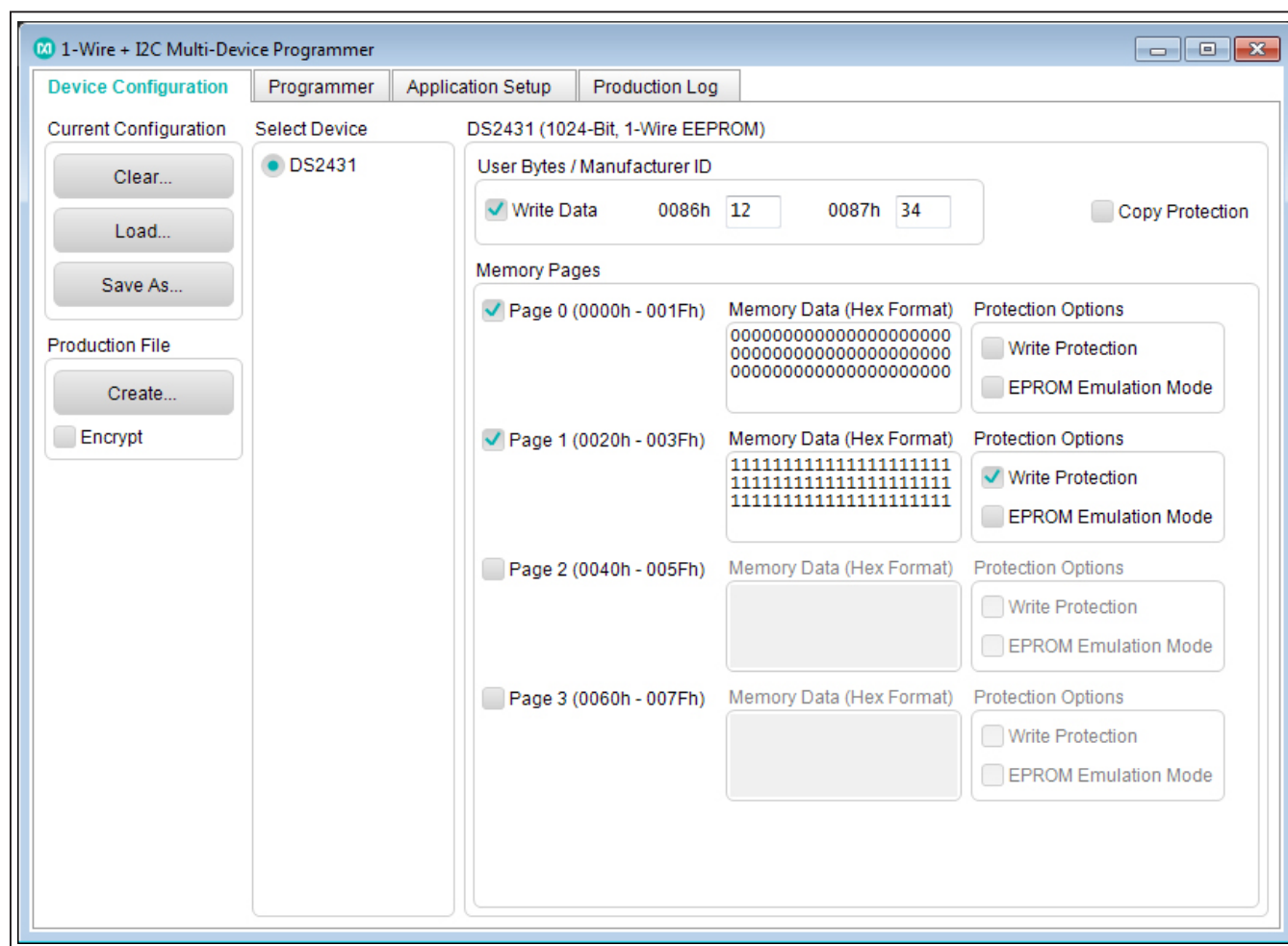


Figure 3. Device Configuration

Production File Creation

The production file compiles all the configuration information and data into a single .xml file to be used by the programmer. After the device configuration has been input, press the **Production File Create** button and save the file to the folder defined in the **Application Setup, File Outputs** field.

The programmer offers the option to encrypt the production file for secure transfer between sites.

Programming

- 1) Populate the desired sockets.
- 2) Navigate to the **Programmer** tab and select the active sockets as shown in [Figure 4](#). An error is generated during programming if an active socket is not populated with an IC.
- 3) Make sure the programmer is connected. If not, select **Auto Detect** under the **COM** button. Then click on the **Connect** button. The text below the **Connect** button indicates the programmer is connected.
- 4) Load a previously generated production file using the **Load Production File...** button.
- 5) Press either **Start** button on the programmer board or the **Start** button on the **Programmer** tab. The active LEDs on each socket board illuminate during programming and the progress bar advances.
- 6) When programming is complete, the ALL PASS indicator on the programmer is green if all devices programmed and verified correctly. The indicator is red if any of the devices fail verification.
- 7) The application keeps a running summary of the programming session. The cumulative results of each session are logged in the **Outputs** folder.

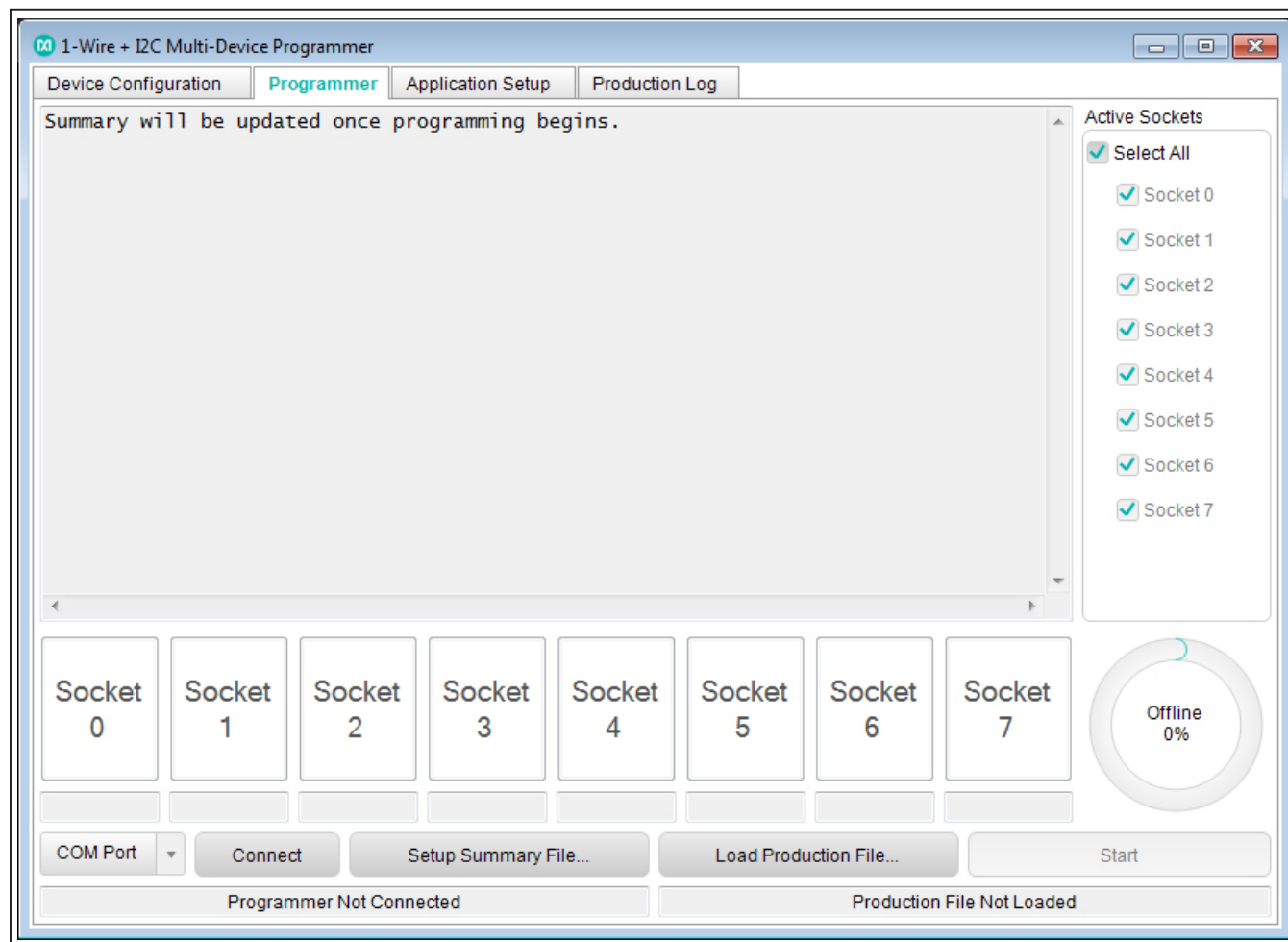


Figure 4. Programming Dialog

Figure 5 shows the application following a programming session in which sockets 1–5 are populated, and socket 4 failed post-programming verification. Figure 6 shows the programmer hardware after the same programming session with the pass/fail LEDs illuminated.

Production File Encryption

The application provides the option to encrypt production files so they can be securely transferred between a master (configuration) system and one or more programming systems. The application generates an RSA public/private

key pair that is used for the encryption and decryption. Figure 7 illustrates the procedure for generating and installing encryption keys and creating and loading an encrypted production file. One key pair should be created by the master system and shared among all the programming systems.

The application loads both encrypted and nonencrypted production files if encryption keys are installed. Attempts to load an encrypted production file without first installing the encryption keys generate an error.

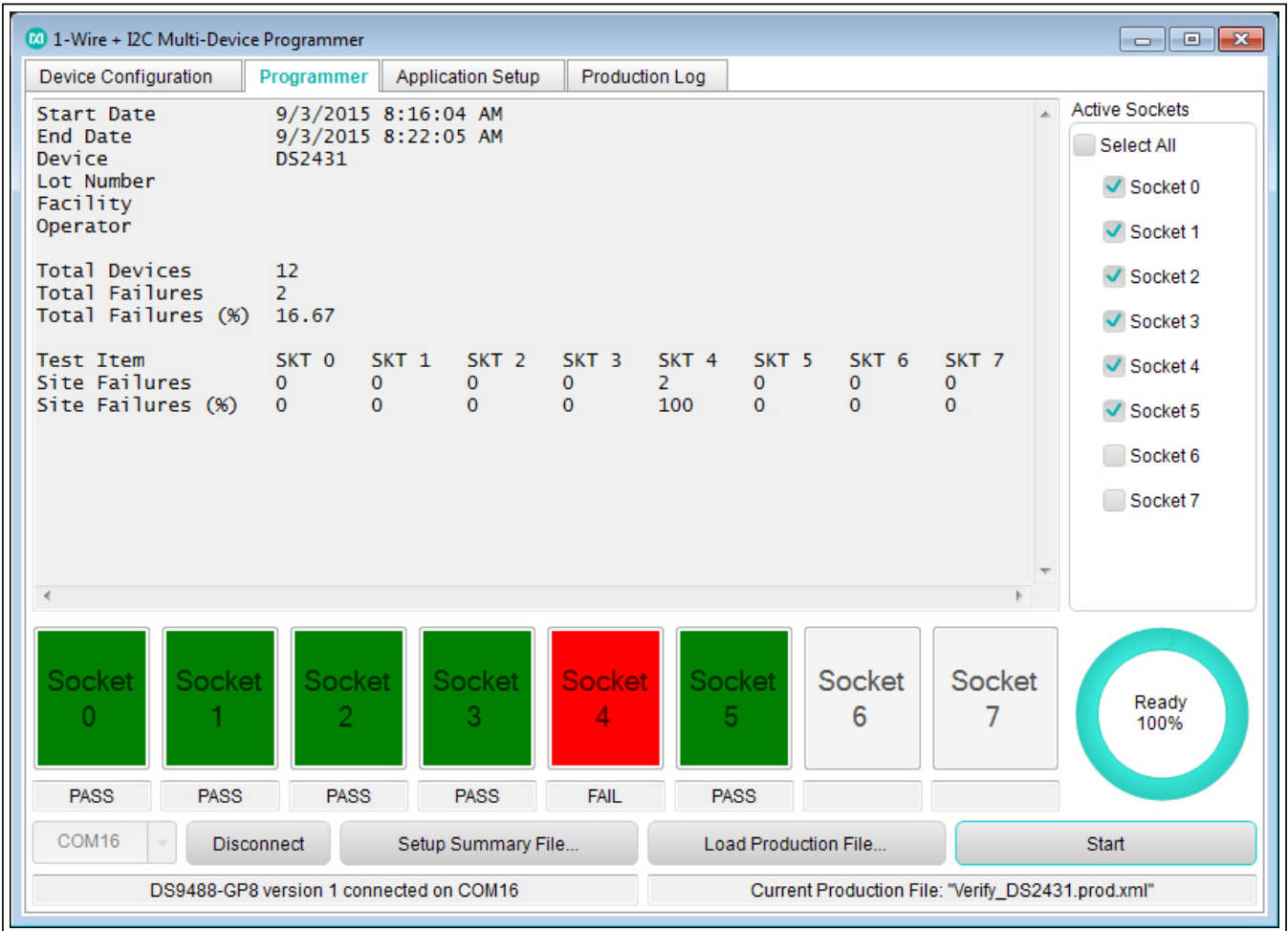


Figure 5. Example Session—GUI

DS9488-GP8/DS9122x
Evaluation System

Multidevice Programmer for
1-Wire and I2C Devices

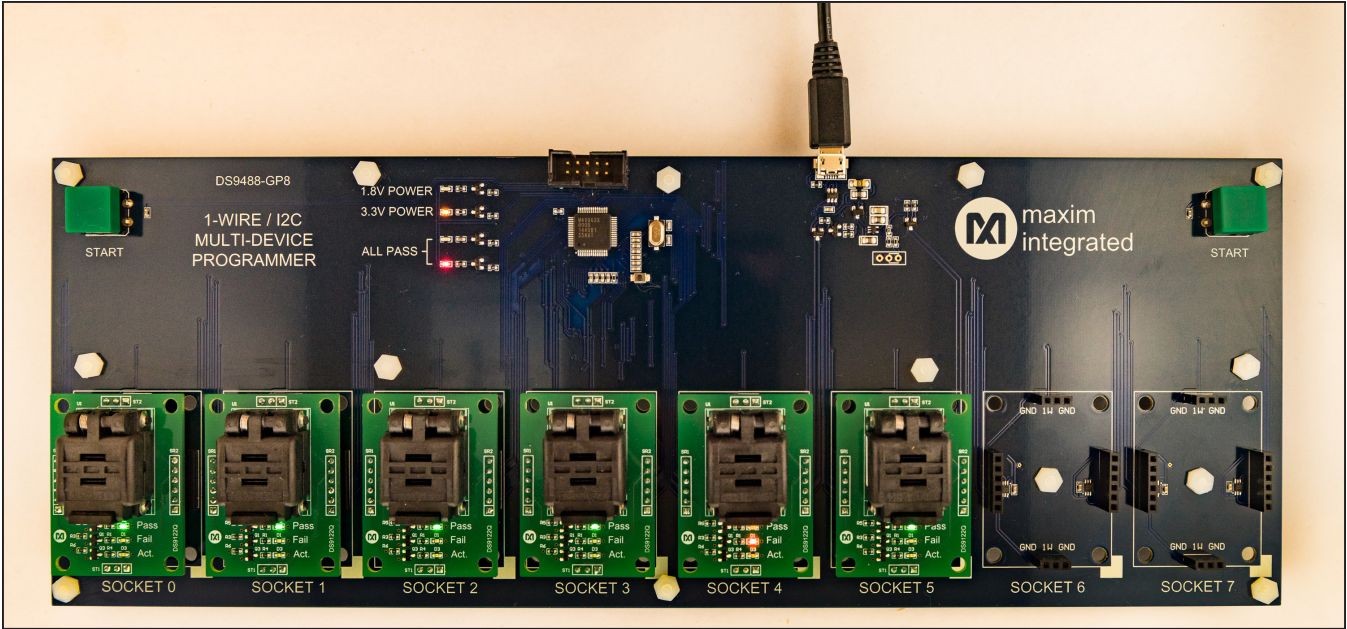


Figure 6. Example Session—Programmer

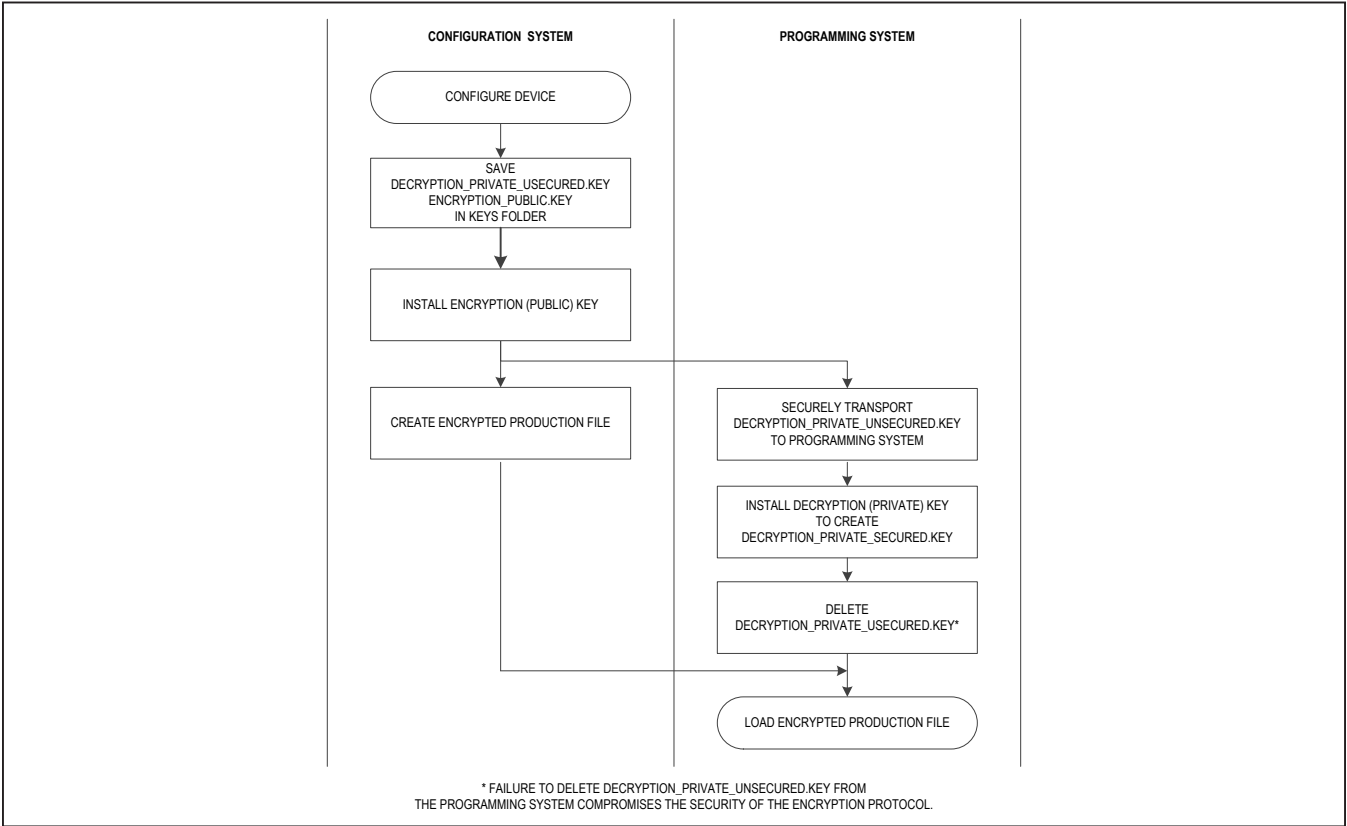


Figure 7. Using Encrypted Production Files

Key Generation and Installation

- 1) On the master system, navigate to **Generate Key Pair** under the **Application Setup** → **Encryption Keys** dialog. Two keys are generated in the **Keys** folder:
 - decryption_private_unsecured.key (unencrypted 1024-bit private key)
 - encryption_public.key (unencrypted 1024-bit public key)
- 2) Install the public key on the master system by clicking on the **Install Encryption (Public) Key** button and selecting **encryption_public.key**.
- 3) Securely transport decryption_private_unsecured.key to the keys directory of the programming system.
- 4) On the programming system navigate to the **Application Setup** → **Encryption Keys** dialog. Click **Install Decryption (Private) Key** and select **decryption_private_unsecured.key**. This creates a new encrypted private key (decryption_private_secured.key) using the Windows Data Protection API that is unique to the production computer.
- 5) Erase **privkey_unencrypted.key** from the programming system.

Producing Encrypted Production Files

- 1) Load or create a configuration through the **Device Configuration** tab.
- 2) Select the **Encrypt** option.
- 3) Press the **Create** button. The production file is encrypted using the public key and placed in the outputs folder.

Troubleshooting

Programming failures can sometimes be caused by incorrect settings in the **Device Options** dialog. Refer to the appropriate data sheet for details of the configuration options.

The application keeps a detailed log of the programmer sessions, which can be used to troubleshoot problems. The log file is in .txt format and located in the **Outputs** folder.

Go to support.maximintegrated.com/micro for technical support.

Component List, Schematics, and PCB Layout

See the following links for component information, schematics, and PCB layout:

- [DS9488 BOM](#)
- [DS9488 schematic](#)
- [DS9488 PCB layout](#)
- [DS1922P BOM](#)
- [DS1922P schematic](#)
- [DS1922P PCB layout](#)
- [DS1922Q BOM](#)
- [DS1922Q schematic](#)
- [DS1922Q PCB layout](#)

Ordering Information

PART	TYPE	SUPPORTED DEVICES
DS9488-GP8#	8-socket multidevice programmer	—
DS9122P#	6-pin TSOC dual socket adapter	DS2431P DS28E15P DS28E22P DS28E25P DS28E35P
DS9122Q#	6-pin TDFN (3mm x 3mm) socket adapter	DS2431Q DS28E15Q DS28E22Q DS28E25Q
DS9122QA#	8-pin TDFN (2mm x 3mm) dual socket adapter*	DS28C22Q DS28E35Q

#Denotes RoHS compliant.

*Future product—contact factory for availability.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	11/15	Initial release	—

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

Maxim Integrated cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim Integrated product. No circuit patent licenses are implied. Maxim Integrated reserves the right to change the circuitry and specifications without notice at any time.