DE-4000

Next-Generation Safety Shutdown & Control System

Firmware Update Quick Start Guide

Required Documents

- ST-Link Programming Procedure.pdf *
- MicroSD SOM Update.pdf *
- IP Address Instructions.pdf
- Pinging Instructions.pdf

Required Software*

ST-Link Utility Software v4.6.0

Required Hardware*

ST-Link Tool – 693225-KT, which includes:

- Programmer (Used with PC)
- Programmer Adapter Board
- Programming Cable (Board to Adapter)

*Required
for LEGACY FIRMWARE UPDATE only.

Overview

WARNING! Failure to properly follow these instructions may cause damage to the DE-4000 system.

This quick start guide refers to several documents that will provide step-by-step procedures for programming and downloading the support files for the DE-4000. See **Required Documents** above.

NOTE: A basic understanding of DE-4000 operation and configuration is required. Reference the DE-4000 Operation and Configuration Manual.

Firmware Update

STEP 1: Download the Required Files

1. Click the links to download the required PDF documents:
    a. ST-Link Programming Procedure.pdf *
    b. IP Address Instructions.pdf
    c. MicroSD SOM Update.pdf *
    d. Pinging Instructions.pdf
2. Download ST-Link Utility Software v4.6.0 *
3. Download the firmware zip file from GitHub. The zip file contains three files:SOM firmware:
    a. update.atf
    b. Controller module firmware: CONTROL_X.X.X.s19
    c. Terminal module firmware: TERMINAL_X.X.X.s19
4. **IMPORTANT:** Export the DE-4000 system configuration JSON file. Updating the SOM will erase any previous DE-4000 system configuration.

*Required for **LEGACY FIRMWARE UPDATE** only.

STEP 2: Update the Firmware

If your current firmware is:

- **Pre-3.0.0:** Please go to **LEGACY FIRMWARE UPDATE** below.
- **3.0.1 or Higher:** Please go to **BOOTLOADER FIRMWARE UPDATE** below.

NOTE: If you have pre-2.0.1 firmware, please contact your support team for assistance in updating your firmware to the latest system.

LEGACY FIRMWARE UPDATE (FIRMWARE PRE-3.0.0)

Please perform the following steps in order:

1. Follow the instructions in the ST-Link Programming Procedure.pdf to:
   a. Connect the ST-Link Tool to the DE-4000.
   b. Update the controller and terminal module firmware.

1. Follow the instructions in the MicroSD SOM Update.pdf to update the SOM firmware.
   a. Remember, when loading 3.0.0 firmware or higher, you will update three files: **update.atf**, **CONTROL_X.X.X.s19**, and **TERMINAL_X.X.X.s19**. All three files must be located in the root of the microSD card.
   b. The microSD card must be 32 GB or less and formatted as FAT32. **NOTE:** Cards with larger than 32 GB capacity will not work properly.

BOOTLOADER FIRMWARE UPDATE (FIRMWARE 3.0.1 OR HIGHER)

1. Place the firmware file on an empty flash drive, and insert it into the USB port on the DE-4000. The flash drive will take 30 seconds to mount and display the firmware to the controller board.
2. Click the gear ⚙ icon in the bottom-right corner of the main dashboard page. See *Figure 1*.
3. On the General settings screen, click the **System Info button** in the top-right corner. See *Figure 2*.
4. Press the **Refresh button** in the bottom-left corner. See *Figure 3*. The **No Firmware Available button** will change to **Firmware Available** for each module that has an update file on the flash drive.

The SOM web app, controller, and terminal boards all need to be updated separately:

1. Select a firmware file by pressing the **Firmware Available button** to the right. See *Figure 3*.
2. Meet the required update conditions:
   a. **State = 0** – The DE-4000 cannot be in a "Running" state; it must either be "Fault" or "Ready to Start".
   b. **RPM = 0** – All terminal board RPM inputs must read 0 or be disconnected.
   c. **File Selected** – A firmware file must be selected.
3. When all conditions have been met, the **Proceed to Update button** will become available. See *Figure 3*. Press the button to begin the update.
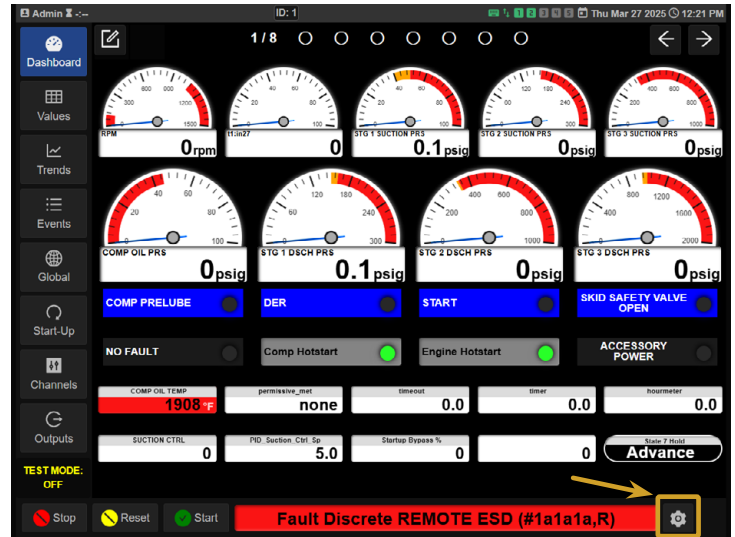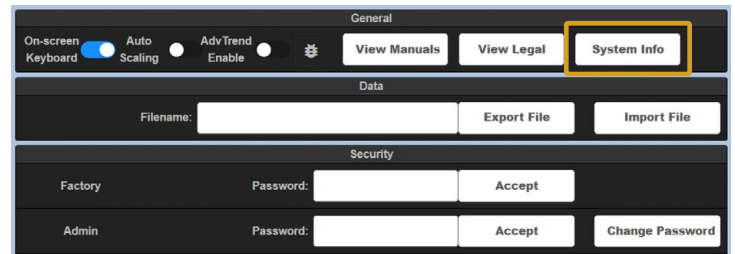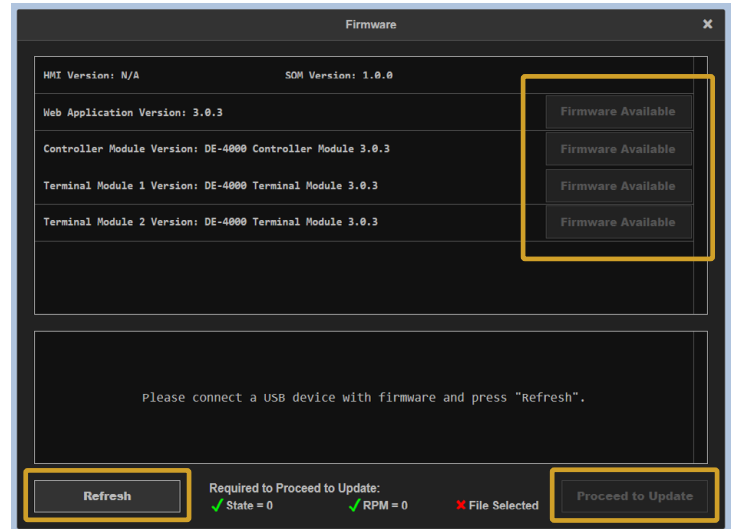

Figure 1

Figure 2

Figure 3

BOOTLOADER UPDATE NOTES:

- The bootloader update takes approximately 5 minutes.
- Altronic recommends updating all firmware from the "bottom up." Start with the last Terminal Board, then update the next in line, all the way to the first. Update the Controller next. Finally, update the WebApp.
- If using a laptop and updating via Bootloader, you must connect to IP Address 98.102.65.174.
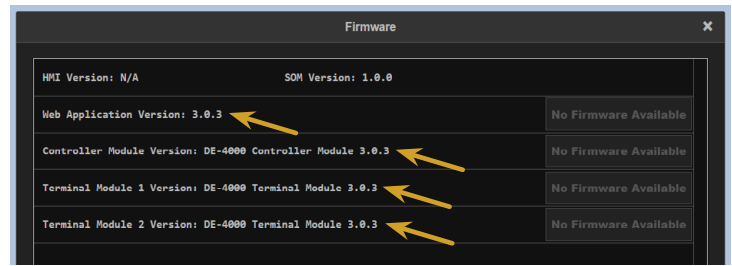

Figure 4

STEP 3: Confirm the Firmware Update

1. Set your computer IP address to **98.102.65.200**. Please refer to IP Address Instructions.pdf.
2. Connect an Ethernet cable to your PC and port 5 on the controller.
3. On your computer, open any internet browser. We recommend Chrome or Firefox for best results.
4. Type the IP address for the controller into the browser: **98.102.65.174**
5. Once you have established communications with the controller and the main dashboard has loaded, click the gear ⚙ icon in the bottom-right corner. See *Figure 1*.
6. On the General settings screen, click the **System Info button** in the top-right corner. See *Figure 2*.
7. The firmware versions for each device will be shown. See *Figure 4*. Check the Web Application, Controller Module, and Terminal Module versions, and if they are correct, move to the next step. If any information is incorrect, start the update procedure from the beginning.
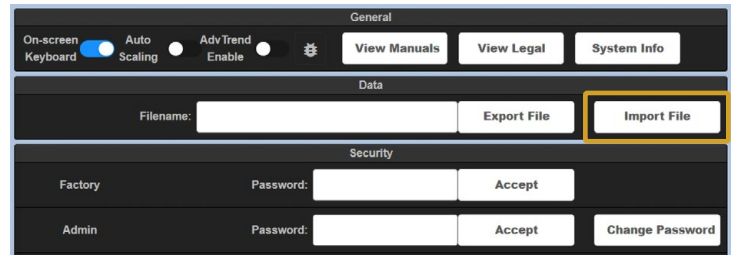

Figure 5

NOTE: The SOM version will be 1.0.0 regardless of the controller and terminal board firmware. There is no need to confirm the HMI version.

STEP 4: Import New JSON into the Controller

1. Make sure the Ethernet cable is still plugged into port 5 on the controller.
2. Click the gear ⚙ icon in the bottom-right corner of the main dashboard. See *Figure 1*.
3. On the General settings page, click the **Import File button** in the top-right corner. See *Figure 5*.
4. A window showing your computer files opens. Select the correct JSON file from the list, and click the **Open button**.
5. A banner reading "Importing & Saving Configuration" will appear. When the configuration file is finished loading, the banner will disappear.
6. Power cycle the system down for a few seconds and your DE-4000 will be loaded with the JSON configuration.

Troubleshooting Tips

If you are having trouble communicating with any of the devices or it does not download the firmware correctly, please refer to the Pinging Instructions.pdf.

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