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## Firmware

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*This chapter explains how to download the Firmware.*

The firmware is stored on the flash memory and can be upgraded if necessary. Remember, if you need the newest version of firmware, contact your Graphtec distributor.

### Tools

- Computer, Windows based.
- Software, the Data File Output Utility Ver. 2.08 program with the executable file named "SEND.exe".

## Installation and Starting the Data File Output Utility Program

The Data File Output Utility program outputs specified data from the computer to the plotter. It can use the parallel interface (printer port) or the USB interface. If you wish to use the USB interface, you must install the plotter driver (OPS628 Ver.7.12 or later) into the your computer. You can use this utility program to download the firmware or the plotting data to the plotter. This utility program is designed for the Windows operating system.

### Minimum System Requirements

- Computer capable of loading the Microsoft Windows operating system.
- Microsoft Windows 95, 98, Me, 2000 or Windows NT4.0.
- Required capacity of the memory (RAM) depends upon the operating system.
- 1MB of free hard disk space to install this program.
- CD-ROM drive or floppy drive for installation.

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**NOTE:** If you wish to use the USB interface to download the file to the plotter, you must use Windows 98 or Me, 2000, XP operating systems only. The Windows 95 and NT4.0 operating systems do not support the USB interface.

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### Set-up and starting the Data File Output Utility Program

1. Obtain the Data File Output Utility program and the necessary firmware files from your Graphtec distributor.
2. Create a working folder on the hard drive.
3. Once you obtain the program on CD or floppy disk, insert it into the drive and then open it using Windows Explorer. Copy the SEND.exe file to the working folder on the hard drive.  
When you download this program or receive it by e-mail, save it in the working folder on the hard drive. If the file is archived, open the archived file and then place the SEND.exe file into the working folder.
4. Copy the necessary firmware file to the working folder on the hard drive.  
If you wish to use the USB interface for downloading the firmware, set the plotter driver before starting Step 5.
5. In Windows Explorer, open the working folder and double-click the SEND.exe file icon to start the program.
6. The following menu appears:

Data File Output Utility Ver.2.08	
Look in:	<input type="text" value="▼"/>
<div style="border: 1px solid black; height: 100px; width: 100%;"></div>	
File name:	<input type="text"/>
Files of type:	<input type="text" value="Data Files (*.plt, *.prn)"/>
Output:	<input type="text" value="LPT1"/>
No. of copy:	<input type="text" value="1"/> ▼
<div style="text-align: right;"><input type="button" value="Print"/> <input type="button" value="Cancel"/></div>	

Look in: is the selector of the folder. The saved files in the selected folder are shown in the file window that is under the file selector.

File name: is the selector of the file. You can type in the file name into the box or click the file that is shown in the file window.

Files of type: is for specifying the type of file. The default set-up is the data file with “plt” or “prn” as the extension of the file name. Other settings allow you to see all files in this setting.

Output: is the selector of the output port. The default set-up is when the parallel interface (printer port) and LPT1 appear on the output port selector. When you wish to use the USB interface, click the ▼ button and then select the name of the plotter into which you are installing the plotter driver.

#### Set-Up the Plotter Driver Program

1. Obtain the plotter driver (OPS628 Ver.7.12 or later) from your Graphtec distributor.
2. See the “Read me” file on the plotter driver (OPS628 Ver.7.12 or later) for detailed installation instructions.

## Downloading the Main Program

The main program has a code to control the moving mechanisms, the control panel, interface and other systems. The main program source file is called "fc51v100.x" for the FC5100-75/-100/-130. When updating the main program, you may have a different file name.

**CAUTION:** You must complete the entire process. If it is not completed, you will lose the plotter's main program and will not be able to start the machine. If this occurs, you must replace the flash memory.

### Setting the plotter to download mode

1. Connect the Parallel (printer) cable or the USB cable between the plotter and the computer.
2. Turn on the power of the plotter while pressing the RIGHT ARROW key. Continue to press the RIGHT ARROW key until a beeper sounds.
 

```
PASSWORD (V1.00)
```
3. The password menu appears. Input the password; press the keys in the following order: DOWN ARROW key; UP ARROW key; RIGHT ARROW key; LEFT ARROW key.
 

```
BOOT
MAIN
```
4. The program type selection menu appears. Press the F2/SPEED key to select MAIN.
5. The mode of the Parallel interface selection menu appears. Press the F3/QUALITY key to select MODE1. If communication between the plotter and computer does not work successfully, re-start the download and then press the F4/OFFSET key to select MODE2. If you are using the USB interface, press the F3/QUALITY key or the F4/OFFSET key and go to the next step.
 

```
SELECT SEND MODE

MODE1>
MODE2>
```
6. The FLASH CLEAR menu appears. The plotter will immediately start to clear the programs on the flash memory.
 

```
FLASH CLEAR
VECTOR BLOCK = 8
```
7. When FLASH CLEAR is completed, the SEND MAIN PROGRAM menu appears.
 

```
SEND MAIN PROGRAM
000KB COMPLETED
```
8. Set the "File name" to the "fc51v100.x" file on the Data File Output Utility Program to select the main program. Click the "Print" button to start downloading. After the downloading is complete, the LOAD MEDIA menu appears.
 

```
LOAD MEDIA!

INITIAL MENU>
```

### Checks you need to do

- Verify that the plotter starts after turning on the power. If it does not start, the plotter has lost the main program. You must then download the main program again.
- Make sure you are loading the correct version number of the main program.