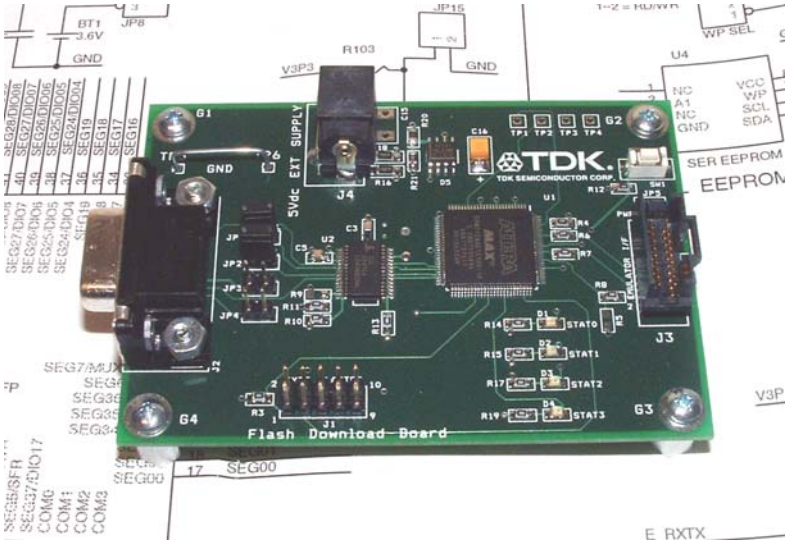
71M65XX Flash Download Board Module

USER'S MANUAL



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Flash Download Board for
Power Meter IC Demo Boards

71M65XX FDBM

USER'S MANUAL

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1 GETTING STARTED

1.1 GENERAL

The TDK Semiconductor Corporation (TSC) 71M6511 and 71M6513 Demo Boards are power meter IC demonstration boards for evaluating the 71M651X family devices for electronic power metering applications.

Both the 71M6511 and 71M6513 integrated circuits contain generic 8051 microprocessors, a separate computation engine, and flash memory that can be programmed by the user. The Demo Boards are shipped with a standard demo program contained in the flash memory of the ICs that allows evaluation of the IC capabilities without having to generate software.

Software development is usually done with a C compiler, using the libraries shipped with the Demo Kit, and with an in-circuit-emulator that allows downloading of the generated code to the Demo Board and controlled execution of the code (debugging).

In many instances a full-blown in-circuit-emulator is not required. This is the case when, for instance, a code update has to be downloaded to a Demo Board or when blank production chips located on a board designed by a customer must be programmed. The Flash Download Board Module allows transfer of object files from the host computer (PC) to 71M6511 and 71M6513 Demo Boards.

1.2 SAFETY AND ESD NOTES

Connecting live voltages to the Demo Board system will result in potentially hazardous voltages on the Demo Board.

EXTREME CAUTION SHOULD BE TAKEN WHEN HANDLING THE DEMO BOARD ONCE IT IS CONNECTED TO LIVE VOLTAGES!

THE DEMO SYSTEM AND FLASH DOWNLOAD BOARD ARE ESD SENSITIVE! ESD PRECAUTIONS SHOULD BE TAKEN WHEN HANDLING THE BOARDS!

1.3 DOWNLOAD BOARD KIT CONTENTS

- Flash Download Board Module 71M65XX FDBM
- Download Cable (ribbon cable) w/ double-row 0.05" connectors (2 x 10) compatible with emulator (ICE) connector on TDK Semiconductor 71M6511 and 71M6513 Demo Boards
- Serial cable, DB9, Male/Female, 2m (Digi-Key P/N AE1020-ND)
- CD-ROM containing documentation, executable program and utilities, including Microsoft © .NET 1.1 framework update file (dotnetfx.exe)

1.4 DOWNLOAD BOARD SETUP

Figure 1-1 shows the basic connections of the Download Board with the Demo Board (or target board) and the external equipment.

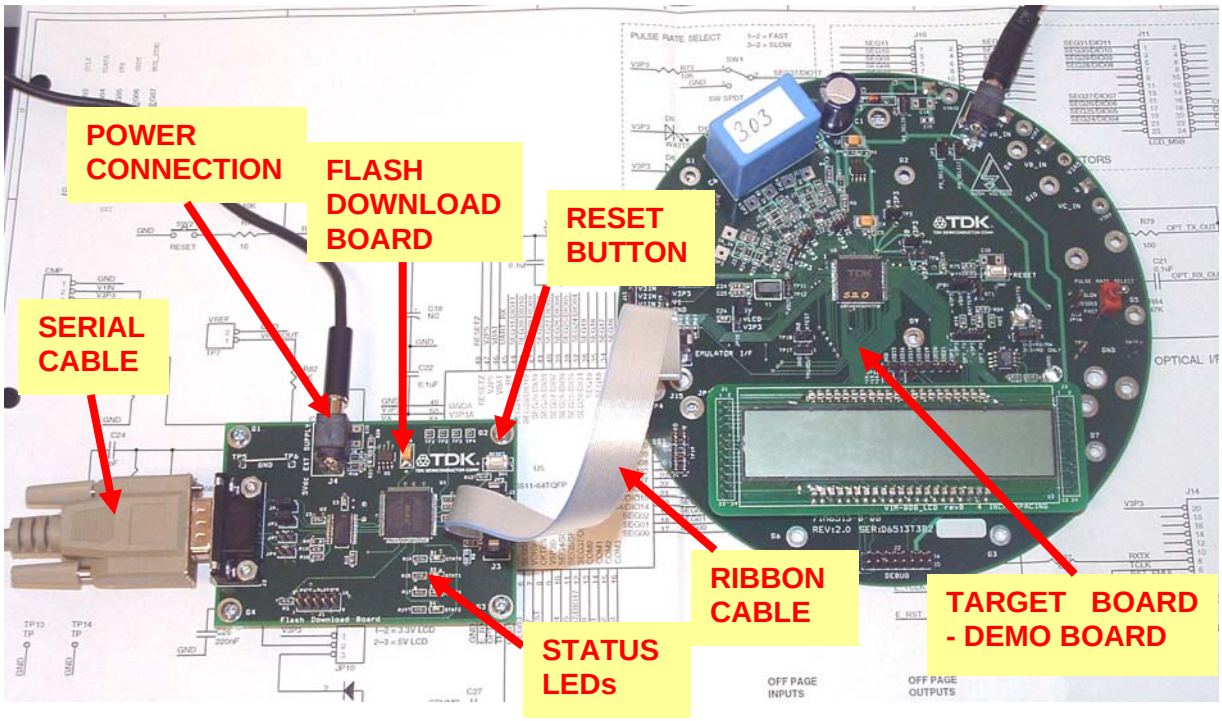


Figure 1-1: TDK Flash Download Board: Basic Connections

A Demo Board with a Flash Download Board connected is shown in figure 1-1. The Flash Download Board interfaces to a PC through a 9-pin serial cable. The Flash Download Board interfaces to the Demo Board or to the target board containing the 651X IC with a flat ribbon cable.

Note: It is not recommended to use the Flash Download Board while live AC voltage is connected to the Demo Board.

1.4.1 POWER SUPPLY SETUP

The 2.5mm plug of the external power supply must be plugged into jack J4 on the Flash Download Board. The Demo Board must be powered with its own external power supply, connected to J1 on the Demo Board.

1.4.2 SERIAL CONNECTION SETUP

For connection of the DB9 serial port to a PC, either a straight or a so-called "null-modem" cable may be used. JP1 and JP2 are plugged in for the straight cable, and JP3/JP4 are empty. The jumper configuration is reversed for the null-modem cable, as shown in table 1-1.

Configuration	JP1	JP2	JP3	JP4
Straight Cable	installed	installed	--	--
Null-Modem Cable	--	--	installed	installed

Table 1-1: Jumper settings on Debug Board

JP1 through JP4 can also be used to alter the connection when the PC is not configured as a DCE device.

The serial cable provided with the Flash Download Board kit must be plugged into a vacant COM port on the host computer (DB-9 connector). The other end of the serial cable must be plugged into connector J2 on the Flash Download Board.

1.4.3 PREPARATIONS REQUIRED FOR THE HOST COMPUTER

The file **Flashloader.exe** contained on the CD-ROM provided with the Flash Download Board kit must be copied to the hard disk of the host computer. It is also possible to run the application directly off the CD-ROM if so desired.

Before starting the application, it must be ensured that the proper .NET 1.1 Framework environment is installed on the host computer. The Flashloader.exe application is based on Microsoft © development tools.
A copy of the .NET 1.1 framework file (**dotnetfx.exe**) is supplied on the CD-ROM and must be installed on the host by executing the **dotnetfx.exe** install program.

Note: Messages "….DLL missing" or similar messages displayed upon starting the Flashloader.exe application mean that the .NET 1.1 framework is not installed on the host computer.

Updates to the file **Flashloader.exe** may be available though the TDK web site (www.tdksemiconductor.com) or Signum Systems web site (www.signum.com/support.htm). Please check regularly for any updates.

1.5 USING THE FLASH DOWNLOAD BOARD

The procedure for downloading code to a target board is as follows:

1) Ensure that the V1 pin on the target chip is connected to V3P3 (jumper at TP10 installed when using Demo Boards 6511 or 6513).
2) Connect the serial cable provided with the Flash Download Board kit between a vacant COM port on the host computer (DB-9 connector) and connector J2 on the Flash Download Board (see Figure 1-1).
3) Connect the 20-pin flat ribbon cable between the Flash Download Board and the target board.
4) Apply power to the target board and then to the Flash Download Board.
5) Press and release the reset button SW1 on the Flash Download Board. This will erase the flash memory on the target.
6) If the target board is powered up and functions properly, the status LED labeled STAT0 lights up after the reset button SW1 is pressed.
   Note: Downloads are only successful if the STAT0 LED is on before the download process starts.
7) Start the Flash Download application (Flashloader.exe) by double-clicking program name in Windows Explorer. This will bring up the dialog box shown in Figure 1-2.
   Depending on the configuration of the host computer, this dialog box may show, one, two or more entries labeled COM1, COM2 and so forth. Select the COM port that the serial cable is plugged into by first clicking on the name of the COM port and then by clicking on the white square next to the COM port name in the dialog box. In figure 1-3, COM port 1 has been selected.
8) To select the object file to be transferred to the Demo Board, the File menu in the dialog box must be accessed by clicking on "File". The file selection dialog box shown in Figure 1-4 allows selection of any local or remote file (for example 6513_demo.hex).
9) After selecting the desired object file, click on the Open button. This will start the download process, indicated by blue rectangles appearing in the progress bar on the bottom side of the dialog box. Completion of the download is indicated by the dialog boxes shown in Figure 1-6.
   Note: During the download process, the status LEDs labeled STAT1 and STAT2 will be flickering, while STAT0 will be off.
   Once, the download is completed, the LED labeled STAT1 or STAT2 will be on. At this point, the flat ribbon cable may be removed from the target board.
10) Failure of the download process is indicated with the status LED STAT3.

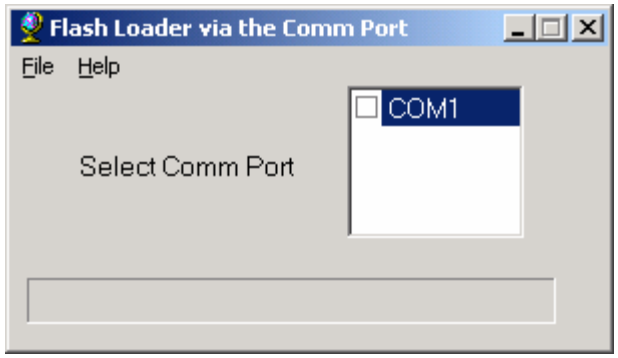


Figure 1-2: Flashloader initial Dialog Box

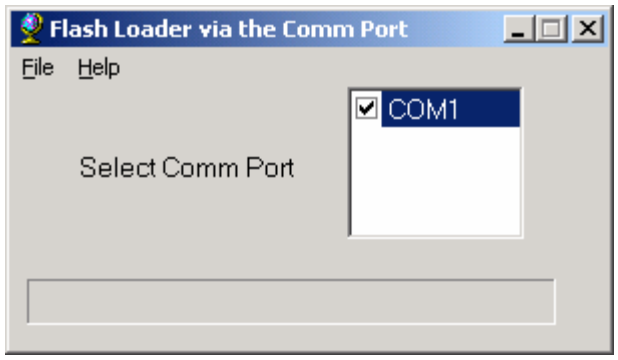


Figure 1-3: Flashloader Dialog Box with COM1 Selected

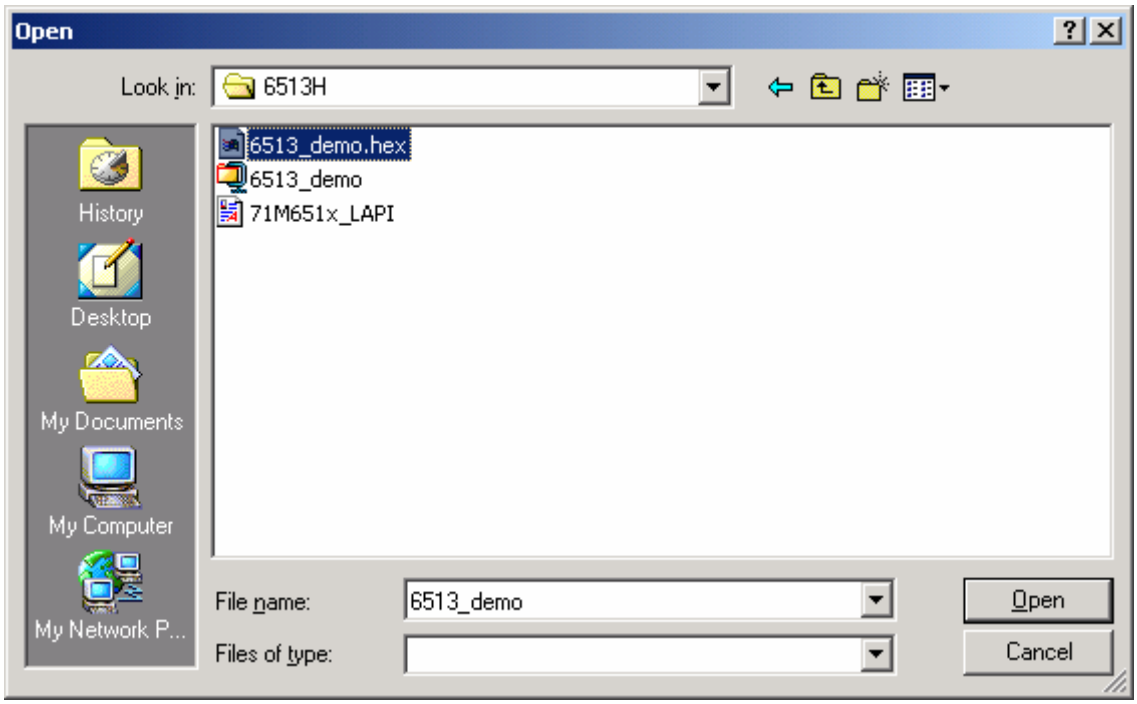


Figure 1-4: Flashloader File Selection Dialog Box

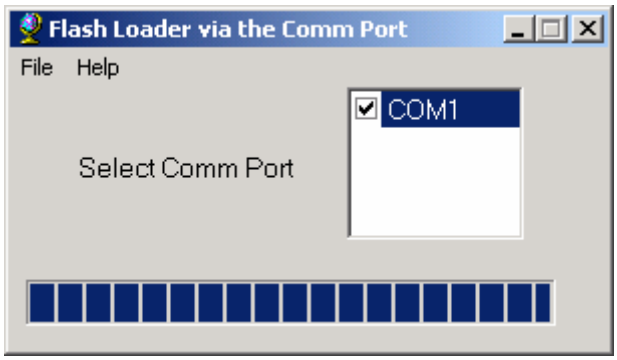


Figure 1-5: Flashloader File Dialog Box with Progress Bar

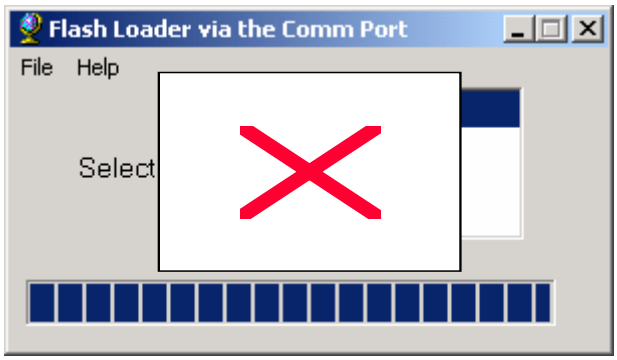


Figure 1-6: Flashloader File Dialog Box with Download Complete

By pressing the reset button on the target, the target processor will be running the newly loaded program.

Multiple downloads can be performed with the Flash Download Board. To download to another target, the new target must be connected to the flat ribbon cable, the reset switch SW1 must be pressed, and the file to be downloaded must be selected again.

2

2 HARDWARE DESCRIPTION

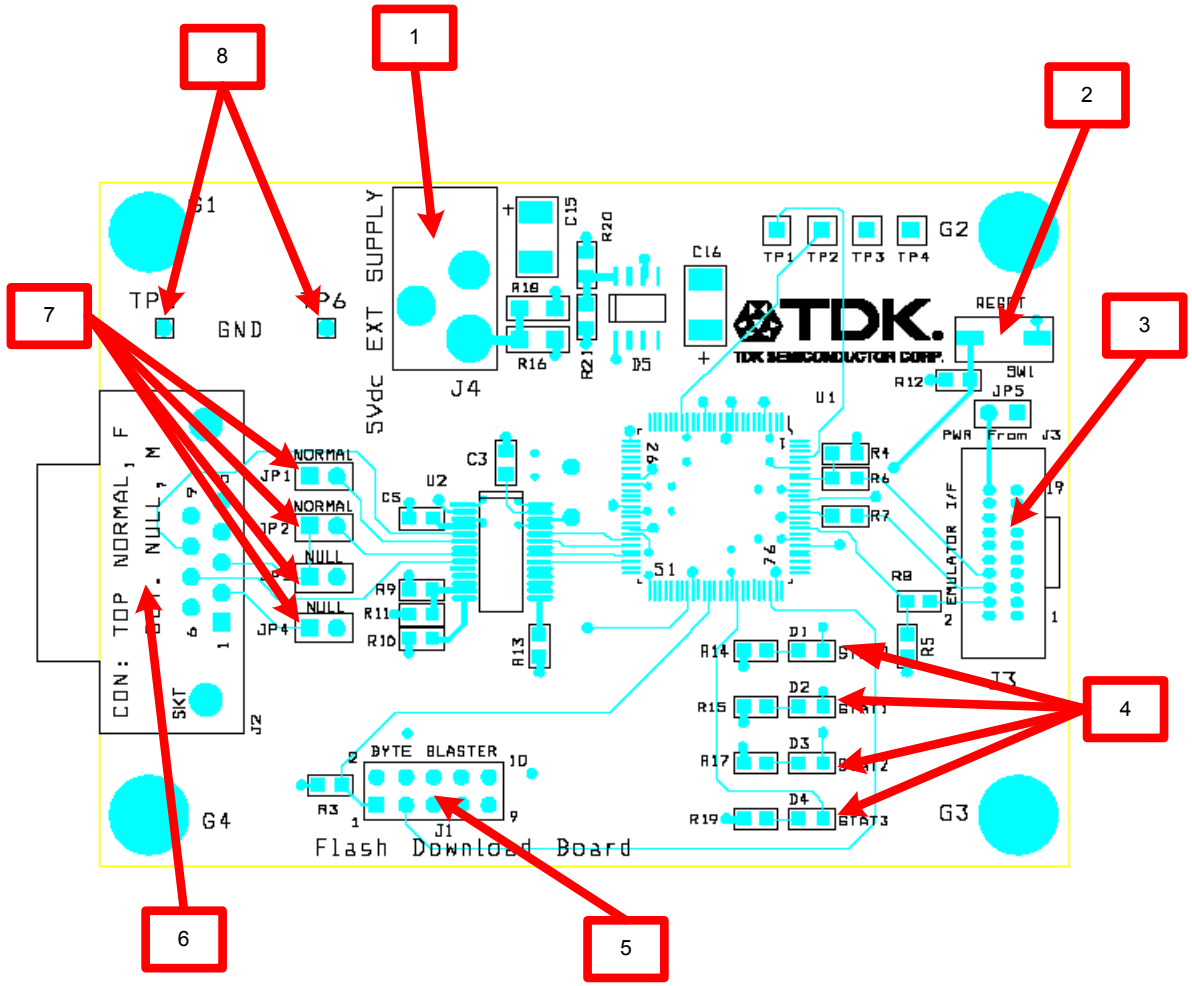
2.1 BOARD DESCRIPTION: JUMPERS, SWITCHES AND TEST POINTS

The items described in the following tables refer to the flags in Figure 2-1

Item # (Figure 2.1)	Elec. Schematic & PCB Silk Screen Reference	Name	Use
1	J4	5 Volt external supply	Plug for connecting external 5 VDC power supply (wall wart).
2	SW1	Reset	Reset button: Push to reset the FPGA on the board.
3	J3	Emulator I/F	The ribbon cable that makes the connection to the Demo Board is plugged in here.
4	D1…D4	LEDs	These LEDs are used to display download status.
5	J1	Byte Blaster	
6	J2	None	The DB9 cable that makes the connection to the PC is plugged in here.
7	JP1, JP2 JP3, JP4	Normal NULL	2-pin headers. Jumpers are plugged into JP1 and JP2 if a straight DB9 cable is used. 2-pin headers. Jumpers are plugged into JP3 and JP4 if a null-modem DB9 cable is used.
8	TP5, TP6	GND	Ground test points.

Table 2-1: Flash Download Board Description

Figure 2-1: Flash Download Board: Component Side View



2.2 BOARD HARDWARE SPECIFICATIONS

PCB Dimensions

- PCB size — 3 1/2" x 2 7/16" (88 x 62mm)
- Thickness — 0.062" (1.6mm)
- Height w/ components and 3/8" spacers — 1.0" (25.4mm)

Environmental

- Operating Temperature — 0°…+50°C
  Storage Temperature — 0°…85°C

Power Supply

- DC Input Voltage — 5VDC ±0.5V
- Supply Current — 15mA typical

Interface Connectors

- DC Supply Jack (J4) to Wall Transformer — Concentric connector, 2.5mm
- Demo Board (J3) — 10x2 Header, 0.05" pitch
- PC (J2) — DB9, female
- Byte Blaster (J1) — 5x2 header, 0.1" pitch

Controls and Displays

- Reset — Button (SW1)
- "STAT0" — LED (D1)
- "STAT1" — LED (D2)
- "STAT2" — LED (D3)
- "STAT3" — LED (D4)

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