Ti USB FIRMWARE UPGRADE PROCEDURE
03/04/10

Overview

A new program loading procedure which uses USB communications is now available for the Ti Series inverted microscopes.

This document describes how to load firmware upgrade programs using USB communications.

<u>The new procedure specifically applies to the Ti-E Stand, Ti-E/B Stand, Hub A Main & Sub CPU and Hub B. To use this procedure the existing firmware must be version 1.10 or later.</u>

Product Code	Product name	Program version
MEA53100	TI-E	
MEA53110	TI-E/B	
MEF55030	TI-HUBC/A Hub Controller A	V.1.10 or later
MEF55035	TI-HUBC/B Hub Controller B	

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Important Notes!

The USB device driver for TI microscopes is required. Note that there are Ti drivers specifically for Windows XP and Vista operating systems! Do not get them mixed up.

For details, see "Installing the USB device driver for TI microscopes." Pg. 19

The Ti-E stand, Hub-A and Hub-B all use specific "FDT" firmware upgrade writing programs and they are specific for Windows XP or Vista so make sure you have the correct versions. When you open the program as called for in the procedure and you do not see the program name, version or checksum then you probably have the wrong OS version.

If the TI-HUBC/A Hub Controller A is connected to the microscope (TI-E or TIE/B), firmware upgrade programs, for both the Ti-E Microscope Stand and Hub Controller, can be loaded through the Hub controller. There is no need to disconnect it from the microscope.

There is no need to disconnect any motorized accessories from the Hub.

In case the loading results in failure, contact your Nikon support representative.

CPU and Program Name

For information on the CPU and the program name used by each component, see the table below.

Product Code	Product name	CPU	Program name
MEA53100	TI-E	HD64F7065	Ti-E.mot
MEA53110	TI-E/B		
MEF55030	TI-HUBC/A Hub Controller A	Main: HD64F7145	HUB-AM.mot
		Sub: HD64F7065	HUB-AS.mot
MEF55035	TI-HUBC/B Hub Controller B	HD64F7065	HUB-B.mot

Program Load Procedure for TI-E and TI-E/B Main Body

| 1	PC	Windows 2000 SP4 / XP SP2
2	Communication cables	USB cable
3	Tool (Note 1)	(A) Ti-E upgrade tool "Ti-E_FDT.exe" from Nikon
4	Program	(1) Ti-E.mot

NOTE 1) To obtain this tool, please contact Nikon.

Save and unzip the file "Ti_CPU_V1.21" (or later) to the PC which includes the files "Ti-E_FDT.exe" and "Ti-E.mot".

[Connection to the PC]
Connecting TI-E or TI-E/B to the PC to upgrade stand firmware.

To PC

Connecting TI-HUBC/A Hub Controller A to the PC to upgrade Hub A or B firmware.

To PC
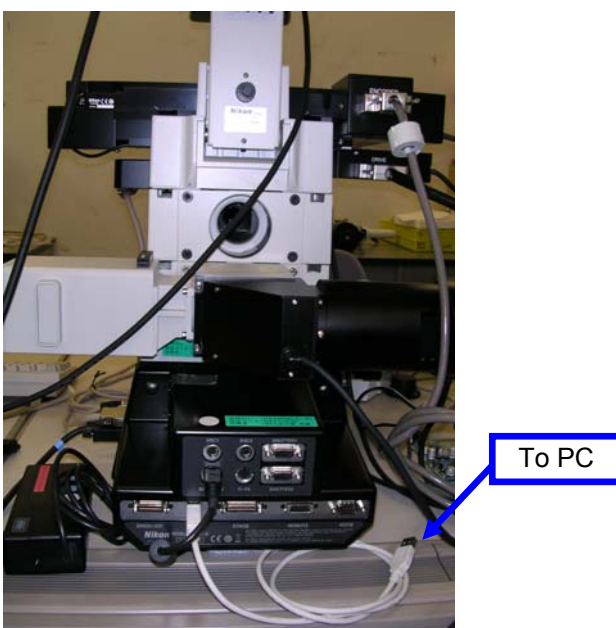
[Program load procedure]

Turn on the power to the PC and start Windows. **Make sure the USB cable is connected between the Ti-E Stand and computer or Ti-E Stand with Hub-A and computer.**

Turn on the power of the TI-E or TI-E/B.

Install the USB device driver for Ti microscope in the PC. Note: Skip this operation if it is already installed. See Page 19 for the driver installation.

Load "Ti-E.mot" using the upgrade tool for Ti-E (Ti-E_FDT.exe).

Launch "Ti-E_FDT.exe." Make sure you have appropriate XP or Vista Version for the computer doing the upgrade.

The current program version and checksum will be displayed as shown below (marked in red).
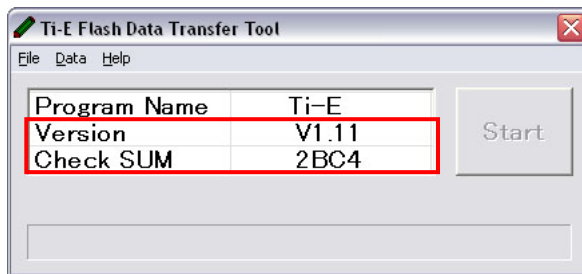
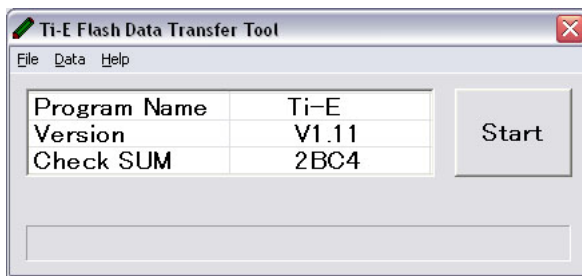Click on [File] and select "Open An S-Record" and open "Ti-E.mot".
IMPORTANT NOTE: IT IS IMPERATIVE THAT YOU SELECT THE CORRECT PROGRAM FOR THE DEVICE BEING UPGRADED! IF YOU INSTALL THE WRONG UPDATE THE HUB WILL NOT BOOT AND THE DEVICES WILL NEED TO BE RETURNED TO NY
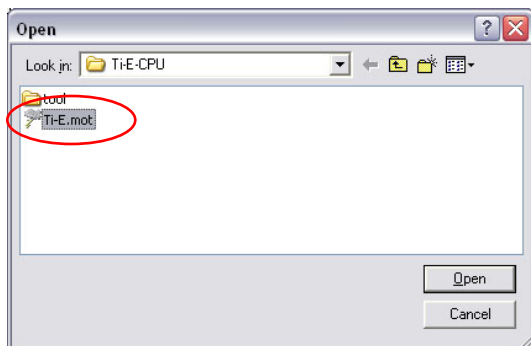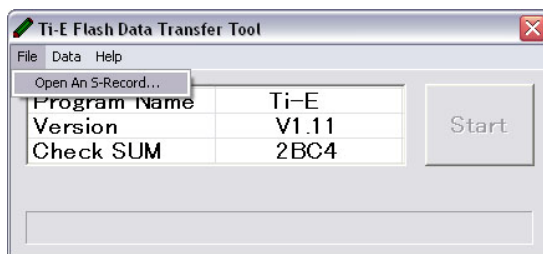
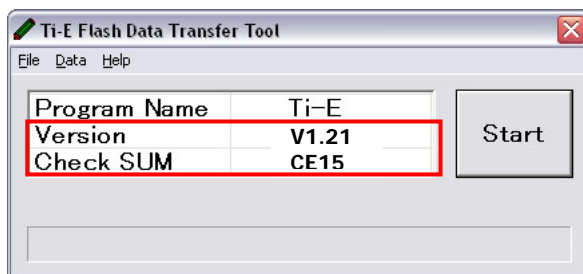When the following dialog box appears, click [OK].

Click [Start].

When the following dialog box appears, click [OK]. Then close FDT program.

Turn off the power of the TI-E or TI-E/B and turn it on again. After the stand initializes launch "Ti-E_FDT.exe" again.

* The upgraded program version and checksum will be displayed as shown below (marked in red).

Proceed to "Initialize Data" to complete firmware upgrade!

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Initialize data by selecting the operation from [Data] menu.

When the data initialization is completed, the following dialog box appears. Click [OK].

Click [×] on the upper right corner to end the Ti-E upgrade tool (Ti-E_FDT.exe).

<u>Turn off the power of the TI-E or TI-E/B. This completes the procedure.</u>

Program Load Procedure for TI-HUBC/A Hub Controller A (Main CPU)

[Preparation]

1	PC	Windows 2000 SP4 / XP SP2
2	Communication cables	USB cable
3	Tool (Note 1)	(B) HUB-A (main CPU) upgrade tool (HUB-AM_FDT.exe) from Nikon
4	Program	(1) HUB-AM.mot

NOTE 1) To obtain this tool, please contact Nikon.

Save and unzip the file "HUB-A_MCPU_V1.21" (or later) to the PC which includes the files   "HUB-AM_FDT.exe" and "HUB-AM.mot"

[Connection to the PC]

Make sure the Hub is connected to the stand. It is unnecessary to disconnect any of the motorized components connected to the Hub.

Turn on the power of the PC and start Windows. **Make sure the USB cable is connected between the Ti-E Stand with Hub A and computer.**

Turn on Hub A.

Install the USB device driver for Ti microscope in the PC. Note: Skip this operation if it is already installed. See Page 19 for the driver installation.

Load "HUB-AM.mot" using the upgrade tool (HUB-AM_FDT.exe) for HUB-A (main CPU).
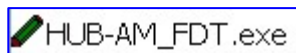
HUB-AM_FDT.exe   Launch "HUB-AM_FDT.exe."   **Make sure you have appropriate XP or Vista Version for the computer doing the upgrade.**

* The current program version and checksum will be displayed as shown below (marked in red).
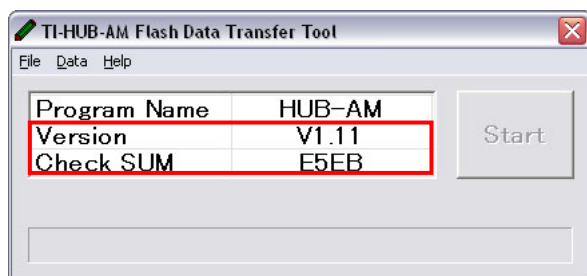
Click on [File] and select "Open An S-Record" and open "HUB-AM.mot".
IMPORTANT NOTE: IT IS IMPERATIVE THAT YOU SELECT THE CORRECT PROGRAM FOR THE DEVICE BEING UPGRADED! IF YOU INSTALL THE WRONG UPDATE THE HUB WILL NOT BOOT AND THE DEVICES WILL NEED TO BE RETURNED TO NY
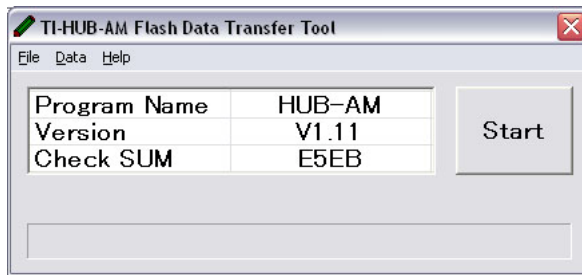**DO NOT MIX UP HUB A "MAIN" AND "SUB CPU" FIRMWARE UPGRADES**
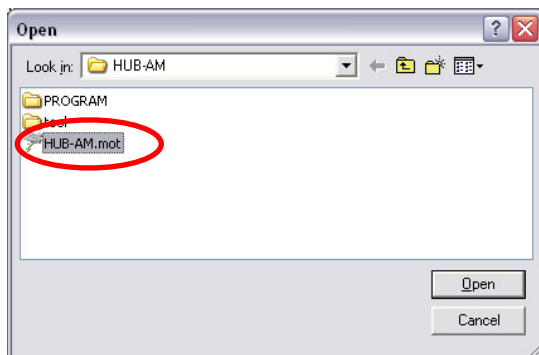
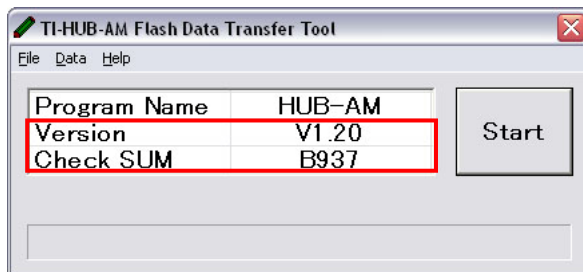When the following dialog box appears, click [OK].

Click [Start].

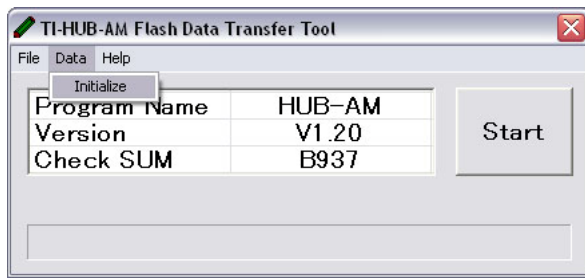When the following dialog box appears, click [OK]. Then close the FDT program.

Turn off the power of the Hub Controller A and turn it on again. After the stand initializes launch the "HUB-AM_FDT.exe" program.

* The upgraded program version and checksum will be displayed as shown below (marked in red).

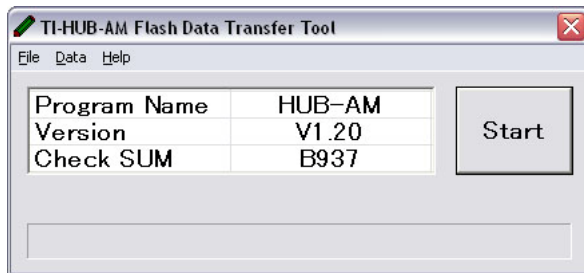**Proceed to "Initialize Data" to complete firmware upgrade!**

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Click [Data] → [Initialize].

When the following dialog box appears, click [OK].

Click [×] on the upper right corner to end the HUB-A (main CPU) upgrade tool "HUB-AM_FDT.exe."

Turn off the power of the Hub Controller A. This completes the procedure.

Program Load Procedure for TI-HUBC/A Hub Controller A (Sub CPU)

[Preparation]

1	PC	Windows 2000 SP4 / XP SP2
2	Communication cables	USB cable
3	Tool (Note 1)	(C) HUB-A (sub CPU) upgrade tool (HUB-AS_FDT.exe) from Nikon
4	Program	(1) HUB-AS.mot

NOTE 1) To obtain this tool, please contact Nikon.

Save and unzip the file HUB-A_SubCPU_V1.21 (or later) to the PC which includes the files "HUB-AS_FDT.exe" and "HUB-AS.mot".

[Connection to the PC]

Make sure the Hub is connected to the Ti-E stand. It is unnecessary to disconnect any of the motorized components connected to the Hub.

Turn on the power of the PC and start Windows. **Make sure the USB cable is connected between the Ti-E Stand with Hub A and computer.**

Turn on Hub A.

Install the USB device driver for Ti microscope in the PC. Note: Skip this operation if it is already installed. See Page 19 for the driver installation.

Load "HUB-AS.mot" using the upgrade tool (HUB-AS_FDT.exe) for HUB-A (sub CPU).

Launch "HUB-AS_FDT.exe."   **Make sure you have appropriate XP or Vista Version for the computer doing the upgrade.**
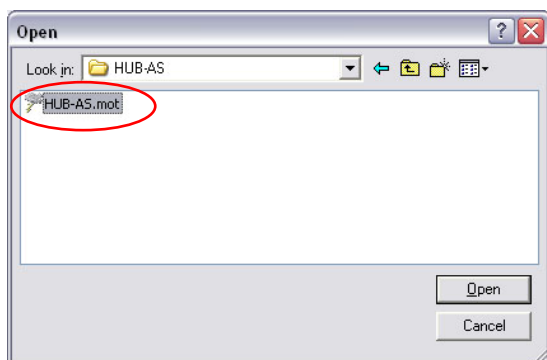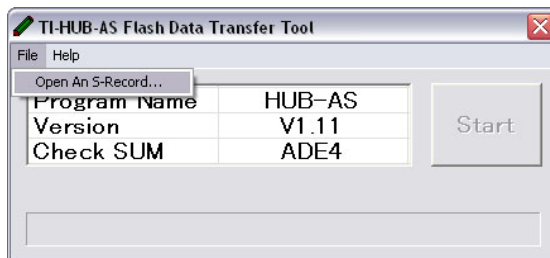
The current program version and checksum will be displayed as shown below (marked in red).
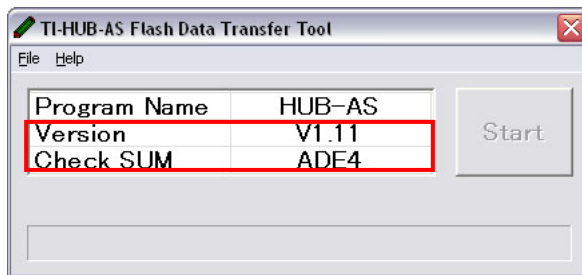
Click on [File] and select "Open An S-Record" and open "HUB-AS.mot".
IMPORTANT NOTE: IT IS IMPERATIVE THAT YOU SELECT THE CORRECT PROGRAM FOR THE DEVICE BEING UPGRADED! IF YOU INSTALL THE WRONG UPDATE THE HUB WILL NOT BOOT AND THE DEVICES WILL NEED TO BE RETURNED TO NY
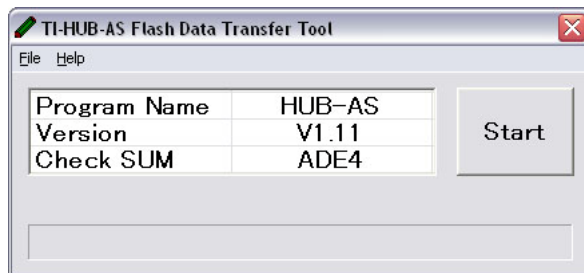**DO NOT MIX UP HUB A "MAIN" AND "SUB CPU" FIRMWARE UPGRADES**
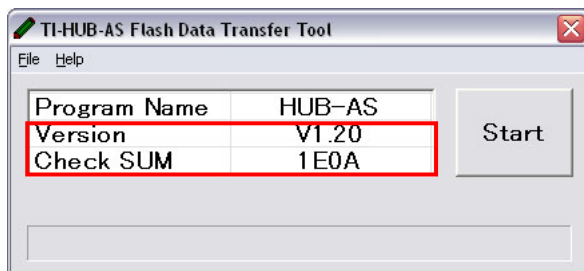
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When the following dialog box appears, click [OK].

TI-HUB-AS Flash Data Transfer Tool

An S-Record file was loaded.

OK

Click [Start].

TI-HUB-AS Flash Data Transfer Tool

File   Help

Program Name	HUB-AS
Version	V1.11
Check SUM	ADE4

Start

When the program loading is completed, the following dialog box appears. Click [OK]. Then close the FDT program.

TI-HUB-AS Flash Data Transfer Tool
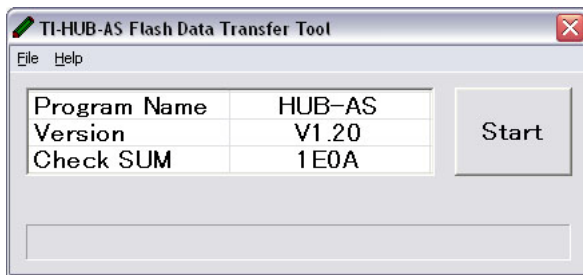
The flash data was written to the device.

OK

Turn off the power of the Hub Controller A and turn it on again. After the stand initializes launch the "HUB-AS_FDT.exe" program.

* The upgraded program version and checksum will be displayed as shown below (marked in red).

TI-HUB-AS Flash Data Transfer Tool

File   Help

Program Name	HUB-AS
Version	V1.20
Check SUM	1E0A

Start

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Click [×] on the upper right corner to end the HUB-A (sub CPU) upgrade tool "HUB-B_FDT.exe."

Turn off the power of the Hub Controller A. This completes the procedure.

Current Firmware & Checksums as of 12/01/07

Ti-E,Ti-E/B	V1.21	sum:CE15
HUB-A-(M)	V1.20	sum:B937
HUB-A-(S)	V1.20	sum:0E0D
HUB-B	V1.20	sum:20BA
Remote	V1.20	sum:5B34
LUSU	V1.00	sum:DC84
JOY	V1.20	sum:E130
ERGO	V1.00	sum:7E75

Program Load Procedure for TI-HUBC/B Hub Controller B

[Preparation]

1	PC	Windows 2000 SP4 / XP SP2
2	Communication cables	USB cable
3	Tool (Note 1)	(D) HUB-B upgrade tool "HUB-B_FDT.exe" from Nikon
4	Program	(1) HUB-B.mot

NOTE 1) To obtain this tool, please contact Nikon.

Save and unzip the file HUB-B_CPU_V1.21 (or later) to the PC which includes the files "HUB-B_FDT.exe" and "HUB-B.mot".

[Connection to the PC]

Make sure the Hub is connected to the stand. It is unnecessary to disconnect any of the motorized components connected to the Hub

Turn on the power of the PC and start Windows. **Make sure the USB cable is connected between the Hub and computer.**

Turn on HubB.

Install the USB device driver for Ti microscope in the PC. Note: Skip this operation if it is already installed. See Page 19 for the driver installation.

Load "HUB-B.mot" using the upgrade tool (HUB-B_FDT.exe) for HUB-B.

Launch "HUB-B_FDT.exe." **Make sure you have appropriate XP or Vista Version for the computer doing the upgrade.**

* The current program version and checksum will be displayed as shown below (marked in red).
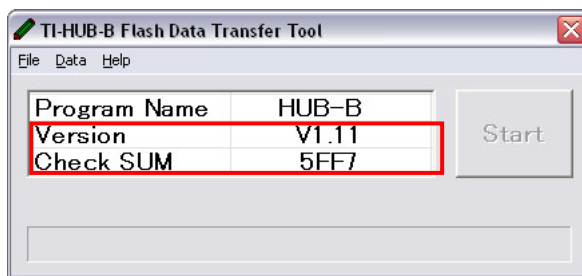
Click on [File] and select "Open An S-Record" and open "HUB-B.mot".
IMPORTANT NOTE: IT IS IMPERATIVE THAT YOU SELECT THE CORRECT PROGRAM FOR THE DEVICE BEING UPGRADED! IF YOU INSTALL THE WRONG UPDATE THE HUB WILL NOT BOOT AND THE DEVICES WILL NEED TO BE RETURNED TO NY
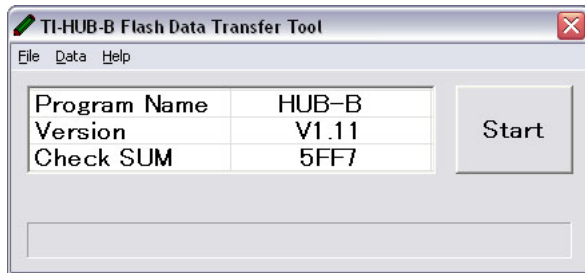**DO NOT MIX UP HUB A & HUB B "MAIN" AND "SUB CPU" FIRMWARE UPGRADES**
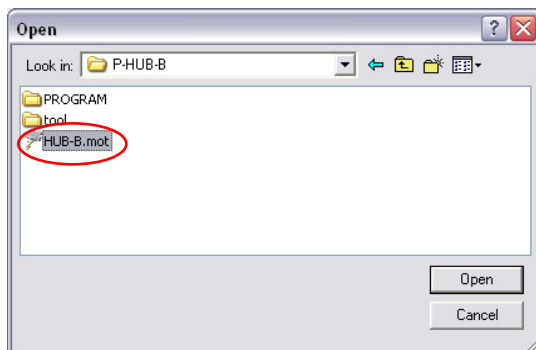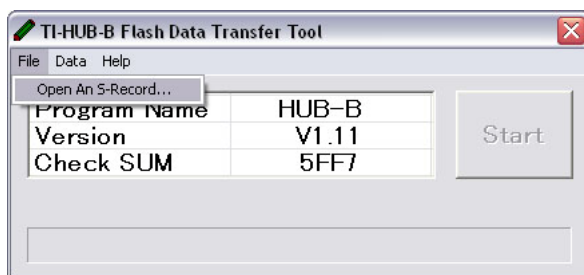
When the following dialog box appears, click [OK].
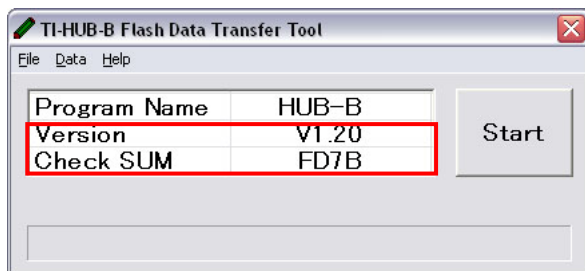

Click [Start].

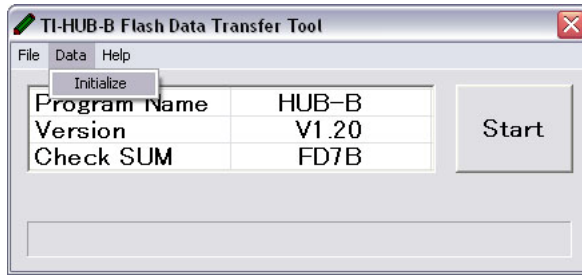When the following dialog box appears, click [OK]. Then close the FDT program.

Turn off the power of the Hub Controller B and turn it on again. After the stand initializes open "HUB-B_FDT.exe" program.

* The upgraded program version and checksum will be displayed as shown below (marked in red).

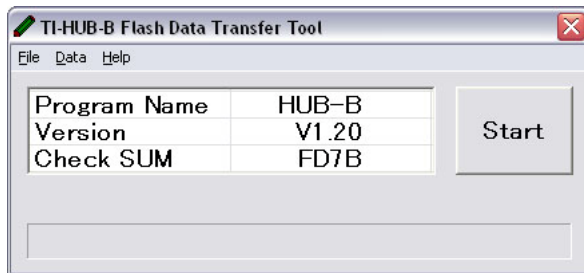**Proceed to "Initialize Data" to complete firmware upgrade!**

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Click [Data] → [Initialize].

When the following dialog box appears, click [OK].

Click [×] on the upper right corner to end the HUB-B upgrade tool "HUB-B_FDT.exe."

Turn off the power of the Hub Controller B. This completes the procedure.

Installing the USB device driver for TI microscopes

* To obtain the USB device driver, please contact Nikon. **Make sure you have appropriate XP or Vista Version for the computer doing the upgrade.**

Turn on the power of the PC and start Windows.

Save and unzip the file "USB Device Driver" to the PC which includes the files "Timicusb.inf and Timicusb.sys".

Turn on the power of the Ti-E, HUB-A (or HUB-B) and connect it to the PC using the USB cable.

The "Found New Hardware Wizard" opens.
Click [Install from a list or specific location (Advanced)] and then click [Next >].

Click [Search for the best driver in these locations.] and enable [Include this location in the search:].
Click [Browse] and specify the location where the copied device driver is located. Click [Next >].
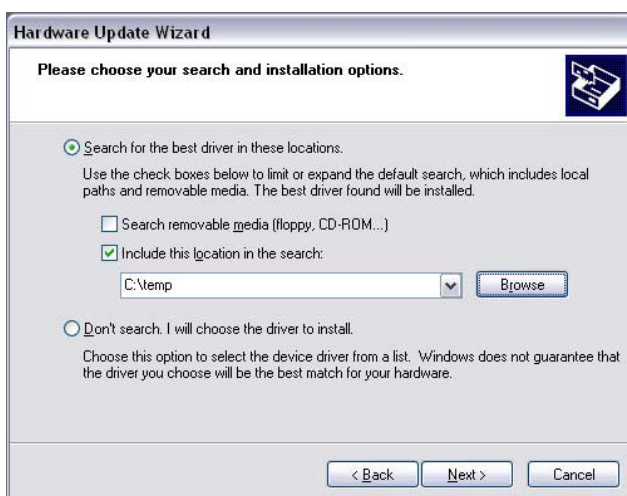
When the following dialog box appears, click [Continue Anyway].
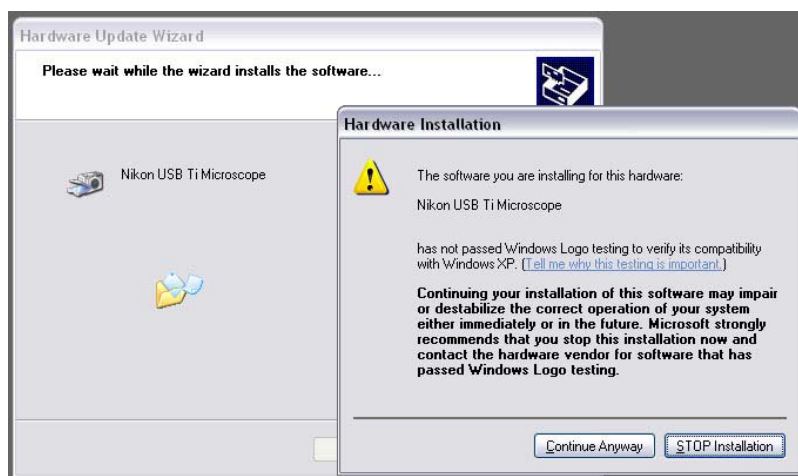
Click [Finish]. This completes the procedure.

Current Firmware & Checksums as of 12/01/07

Ti-E,Ti-E/B	V1.21	sum:CE15
HUB-A-(M)	V1.20	sum:B937
HUB-A-(S)	V1.20	sum:0E0D
HUB-B	V1.20	sum:20BA
Remote	V1.20	sum:5B34
LUSU	V1.00	sum:DC84
JOY	V1.20	sum:E130
ERGO	V1.00	sum:7E75