GALAXY CONTROL SYSTEMS

635-FTS FACTORY TESTING GUIDE

(Supported on 635-CPU v10.4.9 - *or later*)

Performing Factory Tests with a 635 Factory Test Station(FTS)

GALAXY TECHNICAL GUIDE ◆ 1st EDITION ◆ SEP 2015

GALAXY
CONTROL SYSTEMS

GALAXY CONTROL SYSTEMS

VERSION 10.4.9

How to Perform 635-CPU(FTS) Factory Tests

The "635-CPU Factory Test Station" is an embedded feature of the 635 v10.4.9 (or later), released September 2015. This FTS feature allows a 635-CPU to function as a Factory Test Station in a real Field Installation situation or a Factory Test Kit in a test lab environment.

The embedded *FTS Mode* can be used to perform a *factory tests* and restore *factory-default settings & flash code* on both 635-series & 600-series boards.

1st Edition – Sept 2015

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Table of History - Document Version & Features

Date	Version & Editions	Descriptions
SEP 2015	**SG 10.4.9** 1st Edition	**635-CPU Flash v10.4.9 (or later) supports Built-in Factory Test Station (FTS):** **Factory Test Station** - provides the ability to perform factory tests on a target board or to reprogramming the factory-default settings and flash code. File transfer requires the Web Server or Terminal supporting XMODEM protocol.

1. Overview: The 635 Factory Test Station (embedded FTS)

*This guide provides instructions for using the **635 Factory Test Station (FTS)** to run factory tests on boards.*

Introduction to the Embedded 635 Factory Test Station Mode

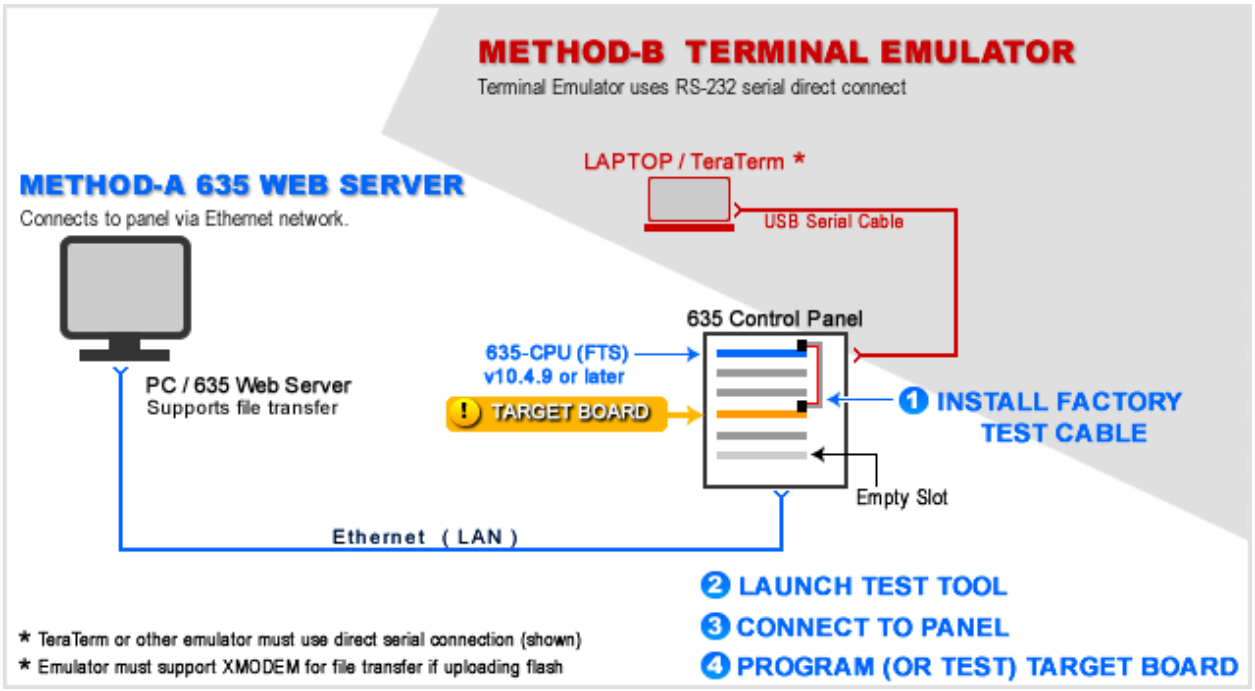
The 635-CPU is designed with the **635 Factory Test Station (FTS)** built into its embedded system.

Factory Functions have been added to the *embedded 635 Web Server,* so the tests and factory programming can be performed using the native Ethernet connection on the CPU. This allows the *target board* to remain connected to its field panel for all tests, programming and flashing. Likewise the tests can be performed in a lab setting using a Factory Test Station kit.

Capabilities of the 635-CPU(FTS) v10.4.9 (or higher) …

1. **Factory Tests**. (THIS GUIDE)
   - » can be performed on target boards of 600 and 635-series hardware in the field panel or a lab panel
   - » can perform Factory Tests without having to flash a board. Board can have any version of flash on it.
2. **Factory-default Programming / Restoring Factory Flash** (See 635-CPU Factory Programming Guide)

See Chapter 2 for a full list of components needed.



Factory Test Station in field setting - showing both methods (Embedded Web Server vs. Terminal Emulator)

Requirements & Recommendations

HARDWARE REQUIREMENTS

1. FTS Mode requires a 635-CPU running v 10.4.9 (or later) = **PN 20-0635-10**.
2. The Target Board can be 600-series or 635-series model.
3. The ***635-CPU(FTS)*** supports uploading an older/alternate S28 flash different than the embedded version .
    a) You can upload a version of S28 that matches the field system.
    b) You can upload an S28 file for a special board.
    c) You can upload an alternate S28 flash for one target board at a time.

POWER AND CABLES

4. **+12 VDC power** must be applied/ON for the 635-CPU & Target Board (supplied by the panel power supply).
5. The 635-CPU will require using the correct **14-PIN Factory Data Ribbon Cable**. **(PN 81-0680-00).**
6. **If you are using the Tera Term, you will also need the Serial Cable and possible the USB converter if your test PC doesn't have a 9-PIN Serial Com Port.**

SOFTWARE TOOL NEEDED

1. The latest **Firefox browser** is recommended/needed.
2. Uses the **embedded *635 Web Server*** via PC/Browser via the Ethernet network
3. (OPTIONAL TOOL) a compatible **terminal emulator** (e.g. TeraTerm, distributed on the Galaxy CD).
    - The terminal emulator must support XMODEM protocol for file transfer if "uploading" flash files.
    - In this case you will connect using the RS-232 Serial Programming Cable.

NETWORK STIPULATIONS

1. You should be able to connect to your *635-CPU(FTS) embedded web page* by entering the IP Address into a browser anywhere on the network.
2. IF you don't know the IP Address, you should be able to look up the ***last-known IP Address*** in the SG Controller Programming screen.
3. IF you cannot find or connect to, the *635-Eembedded Web Server Panel Status page* , then you can use …
    a) **Or** the **635 Web Config Tool** to auto-detect the CPU MAC Address, which requires the panel door to be open and the local PC to be on the same network segment as the panel .
    b) **Or** a third option is to use the 635 Web Config Tool and temporarily patch directly into the *635-CPU(FTS) on-board Ethernet port with a Cat-5 cable (standard cable should work).*
    c) **TeraTerm** with a direct Serial connection, which requires a serial cable to communicate.

OTHER STIPULATIONS

4. The 600/635 Target Boards can be running any version of firmware if they are being factory tested.
   NOTE: The ***FTS-CPU*** can only upload flash file for one target board at a time (i.e. DPI, DRM, DSI, DIO, …)
5. **Factory Testing is covered in the Factory Testing Guide.**

2. Preparing the Test Environment & Test Tools

This section covers information about preparing to perform Factory Testing from a lab or field setting.

COMPONENTS NEEDED FOR FACTORY TESTING – by Test Method

The table below lists the components needed to do Factory Tests based on each Test Method.

NOTICE: You can use any terminal emulator that supports XMODEM Protocol. TeraTerm is an open-source equivalent to HyperTerminal. For your convenience TeraTerm is provided on the Factory CD.

Test Methods	635 WEB SERVER (Test Method-A)	TERMINAL EMULATOR (Test Method-B)
WINDOWS PC	**Local PC & Web Browser** Web Server embedded on CPU/ Firefox prefer.	**Portable PC/Laptop** (with TeraTerm installed)
Connection Method	**Local Ethernet / Cat-5 Connection** (CPU IP Address needed)	**Direct Serial / RS-232 Connection** to CPU On-board Serial Port
Comm. Cables	- -	**RS-232 Serial Cable 9-PIN M/F** (**PN 81-2100-00** / CPU Programming Cable)
	- -	**USB to 9-pin Converter Cable** (**PN 81-1015-00** / If no 9-pin port on laptop)
Factory Test Station		
CPU PN 20-0635-10	**635-CPU(FTS) v10.4.9 or higher**	**635-CPU(FTS) v10.4.9 or higher**
Existing Panel Power	**+12 VDC Power supplied** *Included in Field Panel or Test Panel*	**+ 12 VDC Power supplied** *Included in Field Panel or Test Panel*
Existing I2C Data Cable	**16-PIN Ribbon Cable** *Included in Field Panel or Test Panel*	**16-PIN Ribbon Cable** *Included in Field Panel or Test Panel*
FTS Accessory Kit **(Loopback Devices)** **Loopbacks & FTS cable are included in the kit.** *Replacement part numbers are provided for convenience*	• **635 DRM = PN 20-0681-00** • **635 DSI = PN 20-0683-00** • **600 DPI = PN 20-0680-00** • **600 DSI = PN 20-0682-00** • *600 DIO = (not applicable)* • *600/635 CPU (not applicable)*	• **635 DRM = PN 20-0681-00** • **635 DSI = PN 20-0683-00** • **600 DPI = PN 20-0680-00** • **600 DSI = PN 20-0682-00** • *600 DIO = (not applicable)* • *600/635 CPU (not applicable)*
Factory Test Cable	**14-PIN Ribbon Cable** PN 81-0680-00	**14-PIN Ribbon Cable** PN 81-0680-00
Factory CD		
S28 Flash files*	**Older flash or special board versions**	**Older flash or special board versions**
Supporting Test Tools	***635 Web Server is embedded on CPU***	**TeraTerm Emulator (EXE file)** Must be installed on the Laptop.
	635 Web Config Tool Only needed if you need to find the CPU by its MAC Address in a field setting.	

*** UPLOAD TO INSTALL FLASH ON A SPECIAL BOARD (CPU, CTM, OEM, or READER MODULE), or IF YOU NEED AN OLDER VERSION THAN EMBEDDED VERSION.**

3. Factory Test using the 635 Web Server

QUICK STEPS - TEST SETUP for using the 635 Web Server

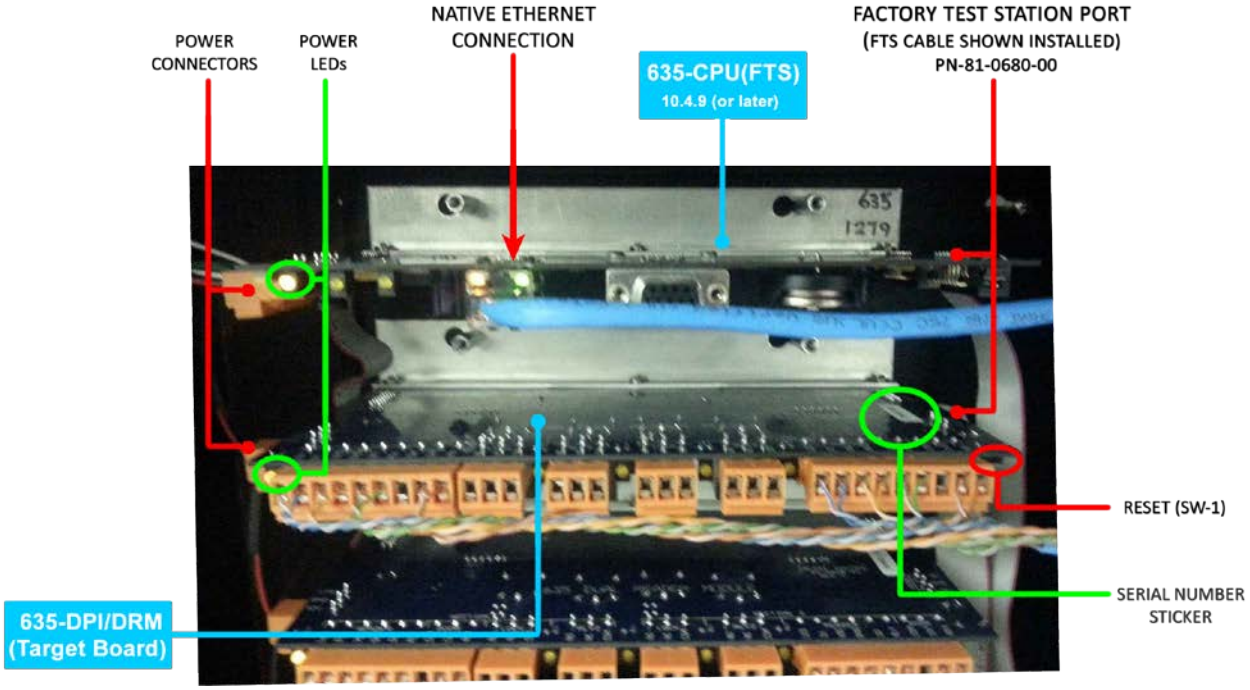
The 635 Web Server is embedded on the 635-CPU Factory Test Station and opens to the ***Panel Status*** page.

If you need to get to the *All Panels Summary* or *Panel Configuration* page, you must use the 635 Web Server Config Tool which can be installed from the Factory CD . See Errors and Exceptions chapter at the end of this guide for details.

☑	#	TEST ENVIRONMENT SETUP
	1	**If you have not yet done so, install the 635-CPU(FTS) into the Test Panel**
	➢	**FOR FIELD PANEL:** the CPU(FTS) and Target Board can remain connected to the panel's power harness and I2C Data Buss (16-PIN Ribbon Cable). You can run tests even if the target board is not detected on the IC2 buss (Panel Status page).
	➢	*The "test" command will not reset a target board, but "program" will flash & reset the target board to factory defaults*.
	2	+12 VDC power must be applied to the 635 CPU Factory Test Station (via existing FTS or Field Panel harness).
	3	Verify the Power LED = ON/LIT for the 635-CPU(FTS) – at front left corner (D5).
	4	The Ethernet Cable (Cat-5) must be connected to the 635-CPU(FTS) – at front center edge Halo Jack (J5).
	5	Connect Factory Test Cable (14-PIN) to "Factory Test Station" Port – on the front right side (J9). Note: connecting to the back Factory port will cause the factory test to error on step 1.
	6	From the Test PC: Enter the IP Address of the 635-CPU(FTS) into the Web Browser. » this displays the *Panel Status* page.
	7	Confirm the 635-CPU(FTS) is running v 10.4.9 (or higher) on the *Panel Status* page
	➥	Proceed to the appropriate TEST (section) that matches your 635 or 600 Target Board.

Example of Factory Test Station Setup using Ethernet/Web Server

635-DRM is shown, but any model target board could be connected.

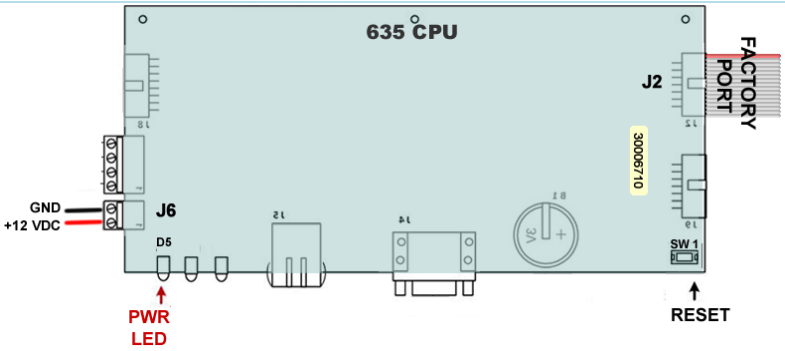
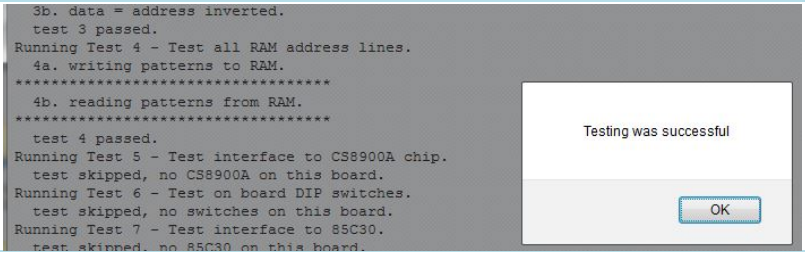


Testing a 635 CPU using the 635 Web Server

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

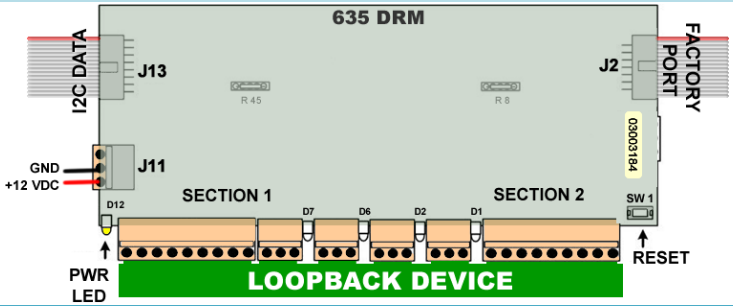
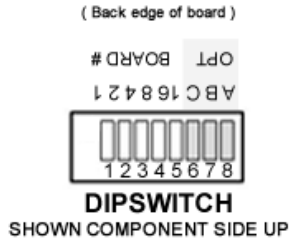
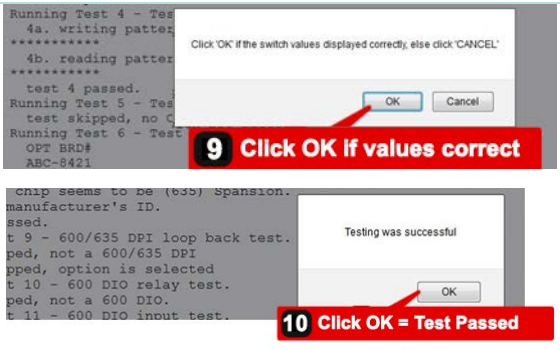
☑	#	Testing the 635 CPU (635 Control Module)
	1	Install the Target Board in the Factory Test Station – connect Power (J6)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D7).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J2).
↪		 **Obtain the following BEFORE you Factory Program (Factory Flash) a CPU. Testing alone does not reset.** *Serial Number* _____ *CPU IP Addr* _____ *CPU Subnet* _____ *CPU Gateway* _____ ***Event Server 1*** *IP Addr* _____
	4	**Obtain the Network Settings and Ser. Num. if you will factory program/flash the CPU after running the test:**
		TIP: Board Serial Number is found on the sticker on back of board.
	5	**On Panel Status page:** Scroll down and click on the Factory Functions link.
↪		
	6	**On Factory Functions page:** in the left column, click on the **635-CPU hyperlink**. The test runs automatically
↪		 **< Loopback option should remain unchecked for a CPU Target Board**
	7	**Click OK** to confirm the **"Testing was successful"** message.
↪		 *There is no user interaction for the 600 CPU target board once the test begins.* *The test runs straight*
↪		Remove Factory Cable Device when finished.
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Test a 635 DRM (DPI) using the 635 Web Server

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» The target board can be running any version of flash. A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if the test fails.

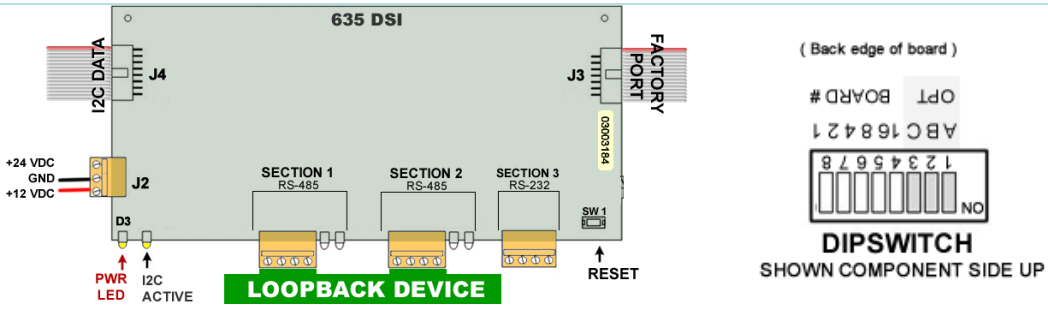
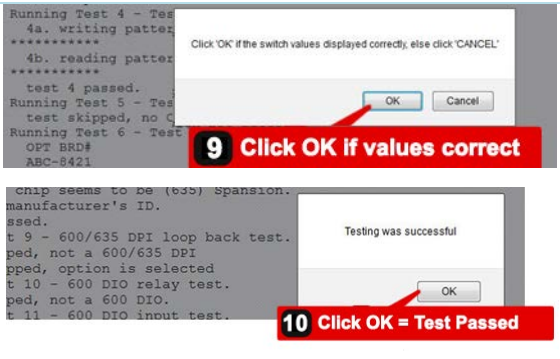
☑	#	Testing the 635 Dual Port Intelligent Module
	1	Install the Target Board in the Factory Test Station – connect Power (J11) and I2C Data Ribbon Cable(J13)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D12).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J2).
	4	(optional) Install the Loopback Device. Running tests without the loopback only tests memory.
	↳	 
	5	**On Panel Status page:** Press **F5 key** and ensure the **Target Board** appears as a connected board. » write down the Board ID of the Target Board (_____) in case you need to *program* Target Board » write down the Board Serial Number (_____) in case you need to *program* Target Board NOTE: the "test" will run even if board doesn't show on the boards list, but you need to obtain the ID and Ser. Num. manually.
	6	**On Panel Status page:** Scroll down and click on the Factory Functions link.
	↳	
	7	**On Factory Functions page:** set the Loopback checkbox to match your test case (Check if **not** installed)
	8	**On Factory Functions page:** in the left column, click on the **635-DPI hyperlink**. The test runs automatically.
	9	**Click OK** to confirm that dipswitch settings match on-screen display (0=OFF; 1=ON). (Toggling dipswitch positions will validate they are working. **Restore the correct board ID after toggling**.)
	10	**Click OK** to continue and complete the test. Remove Factory Cable and Loopback Device when finished.
	↳	 
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing a 635 DSI using the 635 Web Server

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» The target board can be running any version of flash. A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if the test fails.

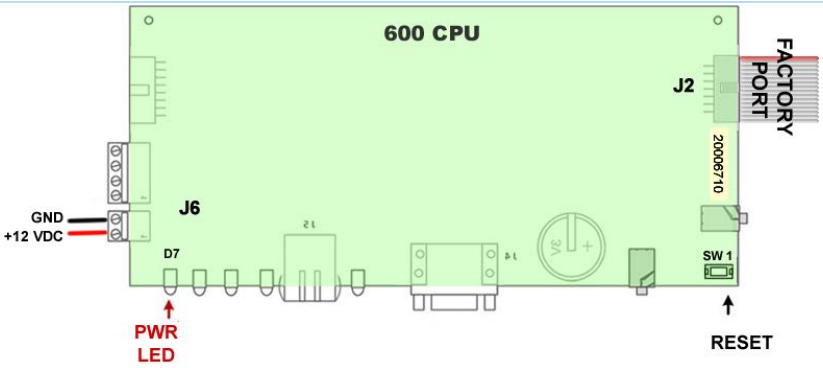
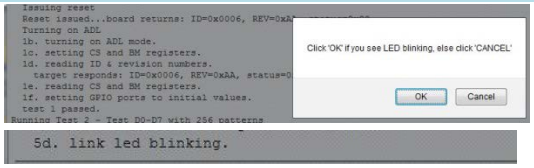
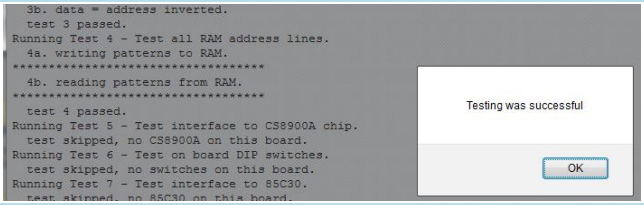
☑	#	Testing the 635 Dual Serial Interface Module
	1	Install the Target Board in the Factory Test Station – connect Power (J2) and I2C Data Ribbon Cable(J4)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D3).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J3).
	4	(optional) Install the Loopback Device. Note: Running tests without the loopback only tests memory.
	↪	
	5	**On Panel Status page:** Press **F5 key** and ensure the **Target Board** appears as a connected board.
	↪	» write down the Board ID of the Target Board (_____) in case you need to *program* Target Board » write down the Board Serial Number (_____) in case you need to *program* Target Board
		NOTE: the "test" will run even if board doesn't show on the boards list, but you need to obtain the ID and Ser. Num. manually.
	6	**On Panel Status page:** Scroll down and click on the Factory Functions link.
	↪	
	7	**On Factory Functions page:** set the Loopback checkbox to match your test case (Check if not installed)
	8	**On Factory Functions page:** in the left column, click on the **635-DSI hyperlink**. The test runs automatically.
	9	**Click OK** to confirm that dipswitch settings match on-screen display (0=OFF; 1=ON). (Toggling dipswitch positions will validate they are working. **Restore the correct board ID after toggling**.)
	10	**Click OK** to complete the test. Remove Factory Cable and Loopback Device when finished**.**
	↪	 
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing a 600 CPU using Terminal Emulator

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

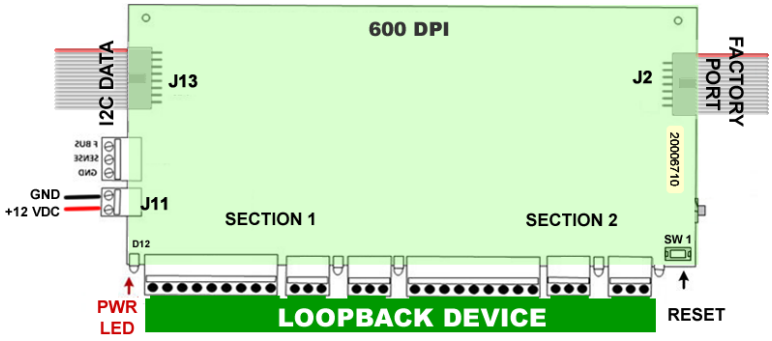
» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

☑	#	Testing the 600 CPU (635 Control Module)
	1	Install the Target Board in the Factory Test Station – connect Power (J6)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D7).
	3	*Connect the Factory Test Cable to the Factory Port – on right side of board(J2).*
↳		 **Obtain the following BEFORE you Factory Program a CPU (Factory Flash). Testing alone does not reset.** *Serial Number* _____ *CPU IP Addr* _____ *CPU Subnet* _____ *CPU Gateway* _____ *Event Server 1* *IP Addr* _____
	4	**Obtain the serial number if you will factory program/flash the CPU after running the test:**
		TIP: Board Serial Number is found on the sticker on back of board.
	5	**On Panel Status page:** Scroll down and click on the Factory Functions link.
↳		
	6	**On Factory Functions page:** in the left column, click on the **600-CPU hyperlink**. The test runs automatically
↳		 **< Loopback option should remain unchecked for a CPU Target Board**
	7	**Click OK** to confirm the LEDs are blinking on the CPU. (Cancel will stop/fail the test)
	8	**Click OK** to confirm the **"Testing was successful"** message.
↳		 ^^ screenshot cropped to show the test results. 
↳		Remove Factory Cable Device when finished.
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing the 600 DPI using the 635 Web Server

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

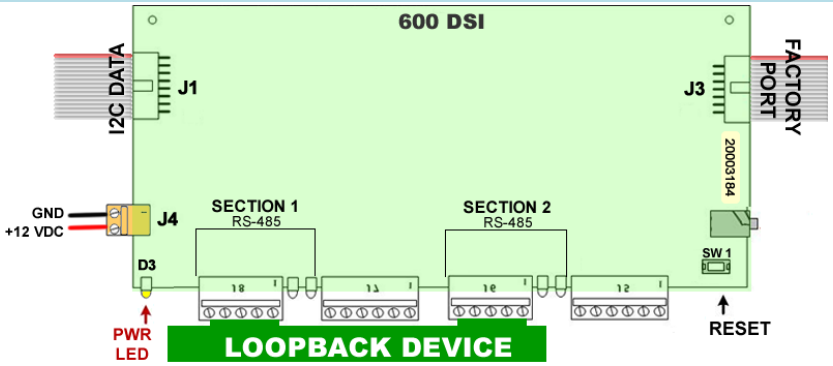
- » The target board can be running any version of flash. A factory "test" will not restore a target board to factory-default settings.
- » Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if the test fails.

☑	#	Testing the 600 Dual Port Intelligent Module
	1	Install the Target Board in the Factory Test Station – connect Power (J11) and I2C Data Ribbon Cable(J13)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D12).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J2).
	4	(optional) Install the Loopback Device. Note: Running tests without the loopback only tests memory.
	↪	
	5	**On Panel Status page:** Press **F5 key** and ensure the **Target Board** appears as a connected board. » write down the Board ID of the Target Board (_____) in case you need to *program* Target Board » write down the Board Serial Number (_____) in case you need to *program* Target Board NOTE: the "test" will run even if board doesn't show on the boards list, but you need to obtain the ID and Ser. Num. manually.
	6	**On Panel Status page:** Scroll down and click on the Factory Functions link.
	↪	
	7	**On Factory Functions page:** set the Loopback checkbox to match your test case (**Check if not installed**)
	8	**On Factory Functions page:** in the left column, click on the **600-DPI hyperlink**. The test runs automatically.
	9	**Click OK** to complete the test. Remove Factory Cable and Loopback Device when finished.
	↪	 
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing the 600 DSI using the 635 Web Server

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

- » The target board can be running any version of flash. A factory "test" will not restore a target board to factory-default settings.
- » Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if the test fails.

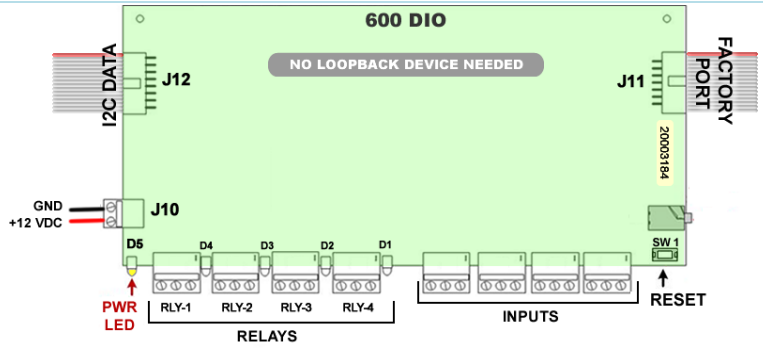
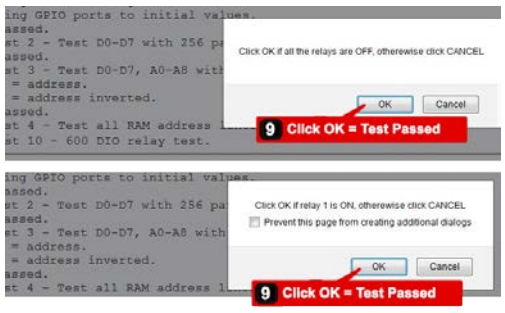
☑	#	Testing the 600 Dual Serial Interface Module
	1	Install the Target Board in the Factory Test Station – connect Power (J4) and I2C Data Ribbon Cable(J1)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D3).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J3).
	4	(optional) Install the Loopback Device. Note: Running tests without the loopback only tests memory.
➥		
	5	**On Panel Status page:** Press **F5 key** and ensure the **Target Board** appears as a connected board. » write down the Board ID of the Target Board (_____) in case you need to *program* Target Board » write down the Board Serial Number (_____) in case you need to *program* Target Board NOTE: the "test" will run even if board doesn't show on the boards list, but you need to obtain the ID and Ser. Num. manually.
	6	**On Panel Status page:** Scroll down and click on the Factory Functions link.
➥		
	7	**On Factory Functions page:** set the Loopback checkbox to match your test case (**Check if not installed**)
	8	**On Factory Functions page:** in the left column, click on the **600-DSI hyperlink**. The test runs automatically.
	9	**Click OK** to complete the test. Remove Factory Cable and Loopback Device when finished.
➥		 
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing the 600 DIO using the 635 Web Server

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» The target board can be running any version of flash. A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if the test fails.

☑	#	Testing the 600 Digital I/O Module
	1	Install the Target Board in the Factory Test Station – connect Power (J10) and I2C Data Ribbon Cable(J12)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D5).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J11).
	➥	
	5	**On Panel Status page:** Press **F5 key** and ensure the **Target Board** appears as a connected board.
	➥	» write down the Board ID of the Target Board (_____) in case you need to *program* Target Board » write down the Board Serial Number (_____) in case you need to *program* Target Board
		NOTE: the "test" will run even if board doesn't show on the boards list, but you need to obtain the ID and Ser. Num. manually.
	6	**On Panel Status page:** Scroll down and click on the *Factory Functions* link.
	➥	
	7	**On Factory Functions page:** Place a checkmark in the Loopback checkbox.
	8	**On Factory Functions page:** in the left column, click on the **600-DIO hyperlink**. The test runs automatically.
	9	**User is prompted to confirm each Relay test by clicking OK if LEDs match the test:** **A)** All Relay LEDs = OFF; **B)** Rly-1 = ON; **C)** Rly-2 = ON; **D)** Rly-3 = ON; **E)** Rly-4 = ON;
	10	**Click OK** to complete the test. **Remove Factory Cable when finished**.
	➥	  
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

4. Factory Test using the Terminal Emulator

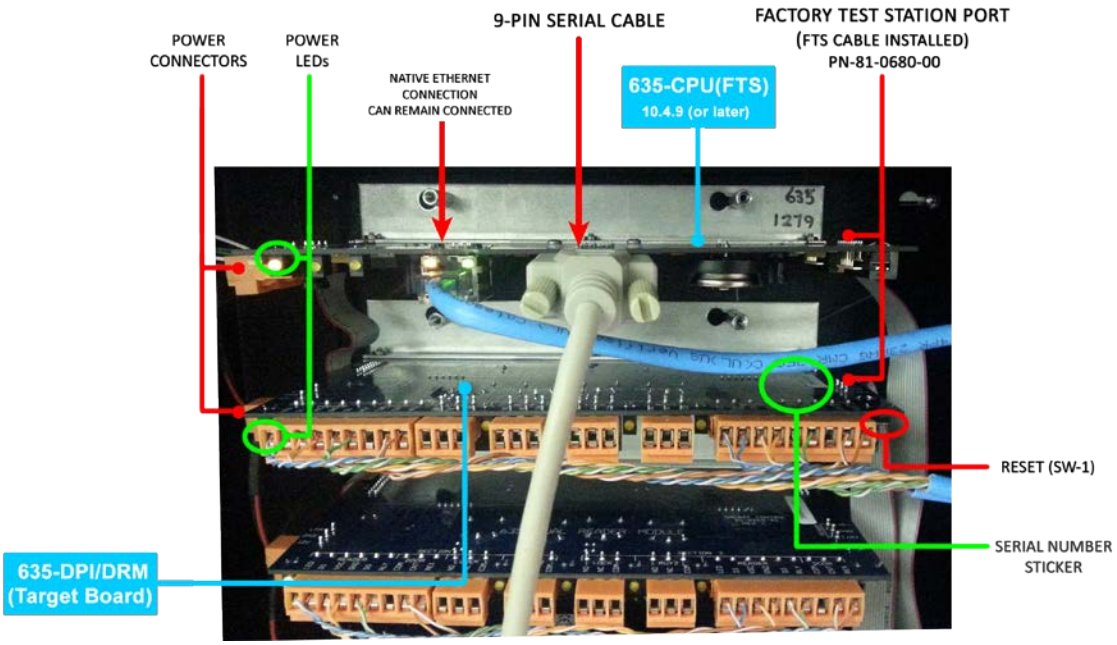
QUICK STEPS - TEST SETUP if using TERA-TERM

The TeraTerm or equivalent emulator must be installed on your PC/Laptop. TeraTerm EXE is on the Factory Test CD. *TeraTerm is supported on XP/Windows-7/Windows-8. Accept all default settings during the install.*

☑	#	DESCRIPTION
	1	**If you have not yet done so, install the 635-CPU(FTS) into the Test Panel**
	➥	**FOR FIELD PANEL:** the CPU(FTS) and Target Board can remain connected to the panel's power harness and I2C Data Buss (16-PIN Ribbon Cable). You can run tests even if the target board is not detected on the IC2 buss.
	➥	Running a factory "program" (factory flash) will restore a board to factory defaults if board cannot pass.
	2	**+12 Vdc power** must be applied to the *Factory Test Station* (FTS Panel or Field Panel).
	3	Verify the **Power LED = ON/LIT** for the 635-CPU(FTS) – front left corner (D5).
	4	**Ethernet Cable (Cat-5)** will be connected to the 635-CPU(FTS) (J5), but is not used for the Board Tests
	5	Connect **Factory Test Cable** (14-PIN) to "Factory Test Station Port" (J9) – front corner of CPU.
	6	Connect **Serial RS-232 Programming Cable** (9-PIN M/F) To "Config Port" (J4) – Front Center Of CPU. » Connect the other end of the Serial Cable to the Laptop Serial Port (or USB Port as appropriate)
	7	**From the Test PC/Laptop:** Launch the TeraTerm application from the desktop icon. » Select the [Serial] and pick the correct COM Port (com1, com2, com3, …) » The comm parameters are 57600 Baud, 8 Data bits, 1 Stop bit, No Parity, No Flow Control. (Save this connection from the menu **Setup > Save Setup**)
	8	Issue "boards" command to ensure the 635-CPU(FTS) is running the embedded **v 10.4.9 (or higher)**
	➥	**Proceed to the appropriate TEST PAGE (section) for the Target Board**

Example of Factory Test Setup using TeraTerm Emulator

635-DRM is shown, but any model target board could be connected this way.

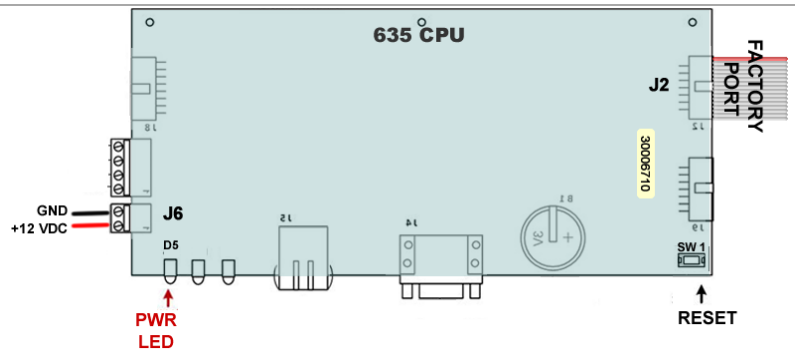


Testing a 635 CPU using Terminal Emulator

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

☑	#	Testing the 635 CPU by Selecting Board 1
	1	Install the Target Board in the Factory Test Station – connect Power (J6)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D7).
	3	*Connect the Factory Test Cable to the Factory Port – on right side of board(J2).*
➥		 **Obtain the following BEFORE you Factory Program (Factory Flash) a CPU. Testing alone does not reset.** *Serial Number* _____ *CPU IP Addr* _____ *CPU Subnet* _____ *CPU Gateway* _____ ***Event Server 1*** *IP Addr* _____
	4	**Obtain the Network Settings and Ser. Num. if you will factory program/flash the CPU after running the test:**. TIP: Board Serial Number is found on the sticker on back of board.
	5	**Type the "fts" command and press <Enter> key** – to enter the Factory Test Mode.
	6	**Type the "select" command and press <Enter> key** – to display the list of target boards supported
	7	**Type "4" and press <Enter> key**.
	8	**Type "test" and press <Enter> key** – to execute the factory test with loopback installed**.**

➥		`> fts`
		`fts: 635 DPI> select`
		`Select the type of board you wish to test and/or flash:`
		`1 = 635 CPU, CPU for 635 controllers.`
		`2 = 635 DPI, DPI for 6xx controllers.`
		`3 = 635 DSI, Dual Serial Interface.`
		`4 = 600 CPU, CPU for 600 controllers.`
		`5 = 600 DPI, DPI for 600 controllers.`
		`6 = 600 DSI, Dual Serial Interface.`
		`7 = 600 DIO, Digital I/O 600 controllers.`
		`8 = 508i, eZ80 replacement CPU for 508 controllers.`
		`9 = 635 ERM, Enrollment Reader Module.`
		`10 = 635 Control Module: Otis Elevator.`
		`11 = 635 Control Module: Card Tour.`
		`select> 4`
		`fts: 600 CPU> test`

	9	**Press the <space bar> to bypass the Input test in the field setting**.

		`Running Test 12 - Test 600/635 CPU inputs: tamper/ac fail/low battery.`
		`Connect pins 2-4 to ground (pin 1) to test;`
		`Hit the space bar to end test, if successful;`
		`or any other key to stop test, if failure.`
		`-J7-`
		`1234 (2=I2C RECV LED; 3=I2C XMIT LED, 4=BOTH)`
		`G000` < This test must be done at the Galaxy factory. If CPU has problems with this functionality, then return CPU for repair.

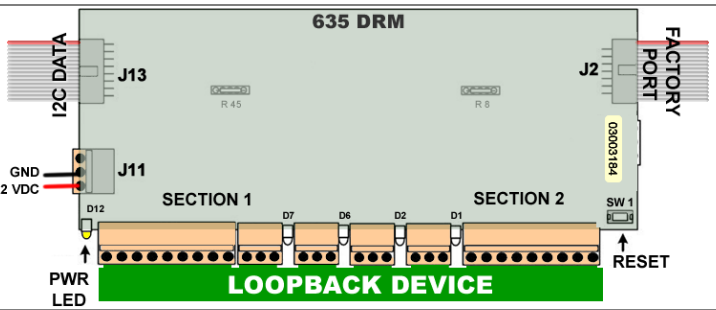
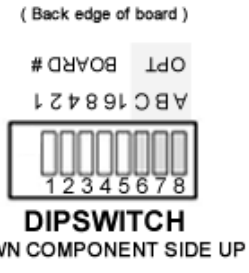
	10	**Type "exit" and press <Enter> key -** when tests complete. **Uninstall Factory Test Cable.**
➥		`All tests completed.` `fts: 600 CPU> exit`
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing a 635 DRM (DPI) using Terminal Emulator

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

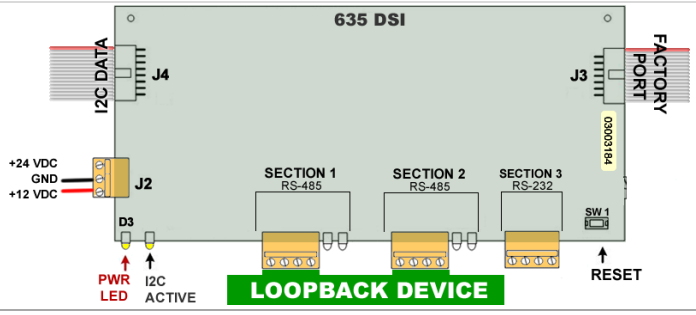
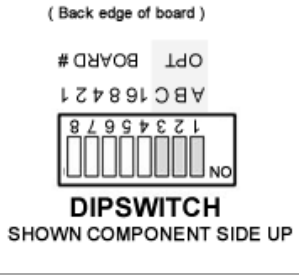
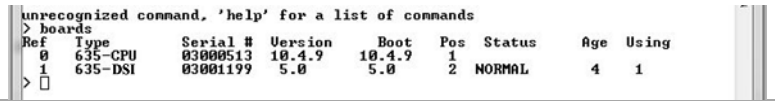
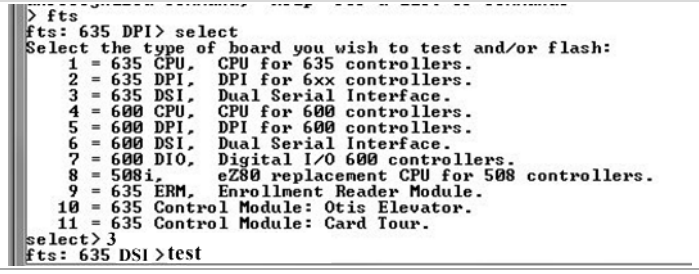
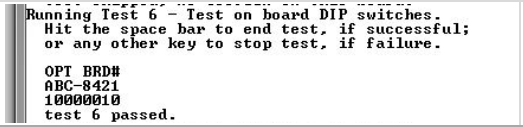
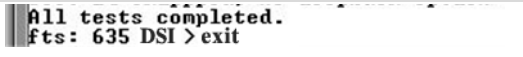
☑	#	Testing the 635 DRM (DPI) by Selecting Board 2
	1	Install the Target Board in the Factory Test Station – connect Power (J11) and I2C Data Ribbon Cable(J13)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D12).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J2).
	4	(optional) Install **Loopback Device** on Section 1 & 2 of board.
➥		 
	5	**Type "boards" and <Enter> key** to ensure the intended Target Board is connected. » write down the Board ID of the Target Board (_____) » write down the Board Serial Number (_____) only if you are going to flash the Target Board
➥		unrecognized command, 'help' for a list of commands > boards Ref Type Serial # Version Boot Pos Status Age Using 0 635-CPU 03000513 10.4.9 10.4.9 1 1 635-DPI 03001199 5.0 5.0 2 NORMAL 4 1 > Note: you can still test board even if it does not show on screen. You will need to obtain Board ID and Ser Number manually. (See Errors & Exceptions chapter)
	6	**Type the "fts" command and press <Enter> key** – to enter the Factory Test Mode.
	7	**Type the "select" command and press <Enter> key** – to display the list of target boards supported
	8	**Type "2" and press <Enter> key**.
	9	**Type "test" and press <Enter> key** – to execute the factory test with loopback installed**.**
		(optional) if Loopback device is not installed, type "testx" to test board memory and skip loopback tests).
➥		> fts fts: 635 DPI> select Select the type of board you wish to test and/or flash: 1 = 635 CPU, CPU for 635 controllers. 2 = 635 DPI, DPI for 6xx controllers. 3 = 635 DSI, Dual Serial Interface. 4 = 600 CPU, CPU for 600 controllers. 5 = 600 DPI, DPI for 600 controllers. 6 = 600 DSI, Dual Serial Interface. 7 = 600 DIO, Digital I/O 600 controllers. 8 = 508i, eZ80 replacement CPU for 508 controllers. 9 = 635 ERM, Enrollment Reader Module. 10 = 635 Control Module: Otis Elevator. 11 = 635 Control Module: Card Tour. select> 2 fts: 635 DPI>test
	10	User is prompted to ***confirm*** dipswitch positions(0=OFF, 1=ON). (TIP: toggling switches will test functioning) **Press the <space bar> to confirm test** after restoring dipswitches to correct Board ID if you toggled them.
➥		Running Test 6 - Test on board DIP switches. Hit the space bar to end test, if successful; or any other key to stop test, if failure. OPT BRD# ABC-8421 10000010 test 6 passed. < screenshot is cropped to show only dipswitch test results. Press <space bar> if dipswitch test passes. Press any other key to stop test if dipswitch test fails.
	11	**Type "exit" and press <Enter> key -** when tests complete. **Uninstall Factory Test Cable and Loopback Device.**
➥		All tests completed. fts: 635 DPI>exit
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing a 635 DSI using Terminal Emulator

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

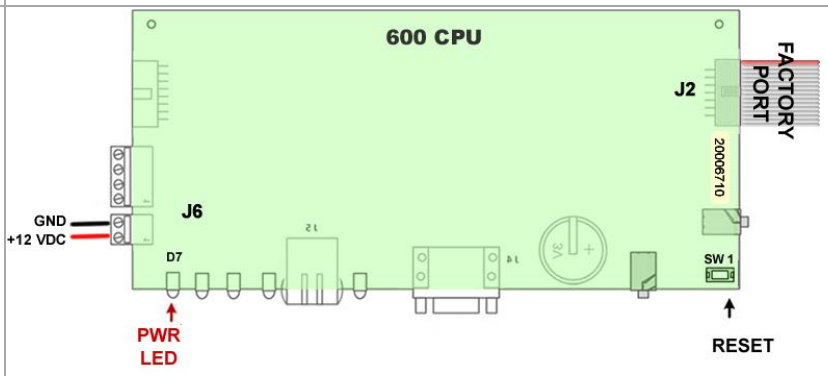
☑	#	Testing the 635 DSI by Selecting Board 3
	1	Install the Target Board in the Factory Test Station – connect Power (J2) and I2C Data Ribbon Cable(J4)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D3).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J3).
	4	(optional) Install **Loopback Device** on Section 1 & 2 of board.
	➥	 
	5	**Type "boards" and <Enter> key** to ensure the intended Target Board is connected. » write down the Board ID of the Target Board (_____) » write down the Board Serial Number (_____) only if you are going to flash the Target Board
	➥	 Note: you can still test board even if it does not show on screen. You will need to obtain Board ID and Ser Number manually. (See Errors & Exceptions chapter)
	6	**Type the "fts" command and press <Enter> key** – to enter the Factory Test Mode.
	7	**Type the "select" command and press <Enter> key** – to display the list of target boards supported
	8	**Type "3" and press <Enter> key**.
	9	**Type "test" and press <Enter> key** – to execute the factory test with loopback installed**.**
		(optional) if Loopback device is not installed, type "testx" to test board memory and skip loopback tests).
	➥	
	10	User is prompted to ***confirm*** dipswitch positions(0=OFF, 1=ON). (TIP: toggling switches will test functioning) **Press the <space bar> to confirm test** after restoring dipswitches to correct Board ID if you toggled them.
	➥	 < screenshot is cropped to show only dipswitch test results. Press <space bar> if dipswitch test passes. Press any other key to stop test if dipswitch test fails.
	11	**Type "exit" and press <Enter> key -** when tests complete. **Uninstall Factory Test Cable and Loopback Device.**
	➥	
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing a 600 CPU using Terminal Emulator

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

☑	#	Testing the 600 CPU by Selecting Board 4
	1	Install the Target Board in the Factory Test Station – connect Power (J6)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D7).
	3	*Connect the Factory Test Cable to the Factory Port – on right side of board(J2).*
➥		 **Obtain the following BEFORE you Factory Program (Factory Flash) a CPU. Testing alone does not reset.** *Serial Number* _____ *CPU IP Addr* _____ *CPU Subnet* _____ *CPU Gateway* _____ ***Event Server 1*** *IP Addr* _____
	4	**Obtain the Network Settings and Ser. Num. if you will factory program/flash the CPU after running the test:**.
		TIP: Board Serial Number is found on the sticker on back of board.
	5	**Type the "fts" command and press <Enter> key** – to enter the Factory Test Mode.
	6	**Type the "select" command and press <Enter> key** – to display the list of target boards supported
	7	**Type "4" and press <Enter> key**.
	8	**Type "test" and press <Enter> key** – to execute the factory test with loopback installed**.**

➥		`> fts`
		`fts: 635 DPI> select`
		`Select the type of board you wish to test and/or flash:`
		`1 = 635 CPU, CPU for 635 controllers.`
		`2 = 635 DPI, DPI for 6xx controllers.`
		`3 = 635 DSI, Dual Serial Interface.`
		`4 = 600 CPU, CPU for 600 controllers.`
		`5 = 600 DPI, DPI for 600 controllers.`
		`6 = 600 DSI, Dual Serial Interface.`
		`7 = 600 DIO, Digital I/O 600 controllers.`
		`8 = 508i, eZ80 replacement CPU for 508 controllers.`
		`9 = 635 ERM, Enrollment Reader Module.`
		`10 = 635 Control Module: Otis Elevator.`
		`11 = 635 Control Module: Card Tour.`
		`select> 4`
		`fts: 600 CPU> test`

	9	User is prompted to ***confirm*** Blinking LEDs **Press the <space bar> to confirm LEDs are blinking as expected**.

➥		`Running Test 5 - Test interface to CS8900A chip.`
		`5a. reset the chip.`
		`5b. read the product ID.`
		`target responds: ID=0x630E 0A00`
		`5c. write/read all 256 possible values.`
		`5d. link led blinking.`
		`Hit the space bar to end test, if successful;`
		`or any other key to stop test, if failure.` < screenshot is cropped to only show test result.
		
		Press <space bar> if Blinking LEDs test passes.
		Press any other key to stop test if LED test fails.

	10	**Press the <space bar> to bypass the Input test in the field setting**.

		`Running Test 12 - Test 600/635 CPU inputs: tamper/ac fail/low battery.`
		`Connect pins 2-4 to ground (pin 1) to test;`
		`Hit the space bar to end test, if successful;`
		`or any other key to stop test, if failure.`
		
		`-J7-`
		`1234 (2=I2C RECV LED; 3=I2C XMIT LED, 4=BOTH)`
		`G000` < This test must be done at the Galaxy factory.
		If CPU has problems with this functionality, then return CPU for repair.

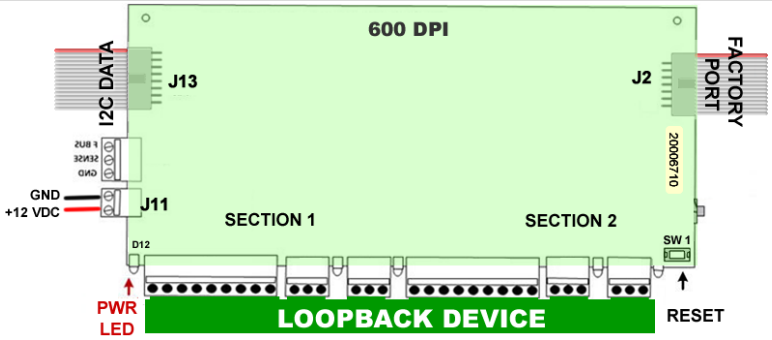
	11	**Type "exit" and press <Enter> key -** when tests complete. **Uninstall Factory Test Cable.**
➥		`All tests completed.` `fts: 600 CPU> exit`
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing a 600 DPI using Terminal Emulator

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

☑	#	Testing the 600 DPI by Selecting Board 5
	1	Install the Target Board in the Factory Test Station – connect Power (J11) and I2C Data Ribbon Cable(J13)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D12).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J2).
	4	(optional) Install **Loopback Device** on Section 1 & 2 of board.
➥		
	5	**Type "boards" and <Enter> key** to ensure the intended Target Board is connected. » write down the Board ID of the Target Board (_____) » write down the Board Serial Number (_____) only if you are going to flash the Target Board

➥		`unrecognized command, 'help' for a list of commands`
		`> boards`
		`Ref Type Serial # Version Boot Pos Status Age Using`
		`0 635-CPU 03000513 10.4.9 10.4.9 1`
		`1 600-DPI 02003587 5.0 5.0 2 NORMAL 4 1`
		`>` Note: you can still test board even if it does not show on screen. You will need to obtain Board ID and Ser Number manually. (See Errors & Exceptions chapter)

	6	**Type the "fts" command and press <Enter> key** – to enter the Factory Test Mode.
	7	**Type the "select" command and press <Enter> key** – to display the list of target boards supported
	8	**Type "5" and press <Enter> key**.
	9	**Type "test" and press <Enter> key** – to execute the factory test with loopback installed**.**
		(optional) if Loopback device is not installed, type "testx" to test board memory and skip loopback tests).

➥		`> fts`
		`fts: 635 DPI> select`
		`Select the type of board you wish to test and/or flash:`
		`1 = 635 CPU, CPU for 635 controllers.`
		`2 = 635 DPI, DPI for 6xx controllers.`
		`3 = 635 DSI, Dual Serial Interface.`
		`4 = 600 CPU, CPU for 600 controllers.`
		`5 = 600 DPI, DPI for 600 controllers.`
		`6 = 600 DSI, Dual Serial Interface.`
		`7 = 600 DIO, Digital I/O 600 controllers.`
		`8 = 508i, eZ80 replacement CPU for 508 controllers.`
		`9 = 635 ERM, Enrollment Reader Module.`
		`10 = 635 Control Module: Otis Elevator.`
		`11 = 635 Control Module: Card Tour.`
		`select> 5`
		`fts: 600 DPI >test`

	10	User is prompted to ***confirm*** dipswitch positions(0=OFF, 1=ON). (TIP: toggling switches will test functioning) **Press the <space bar> to confirm test** after restoring dipswitches to correct Board ID if you toggled them.

➥		`Running Test 6 - Test on board DIP switches.`
		`Hit the space bar to end test, if successful;`
		`or any other key to stop test, if failure.`
		`OPT BRD#`
		`ABC-8421`
		`10000010`
		`test 6 passed.`
		< screenshot is cropped to show only dipswitch test results.
		Press <space bar> if dipswitch test passes.
		Press any other key to stop test if dipswitch test fails.

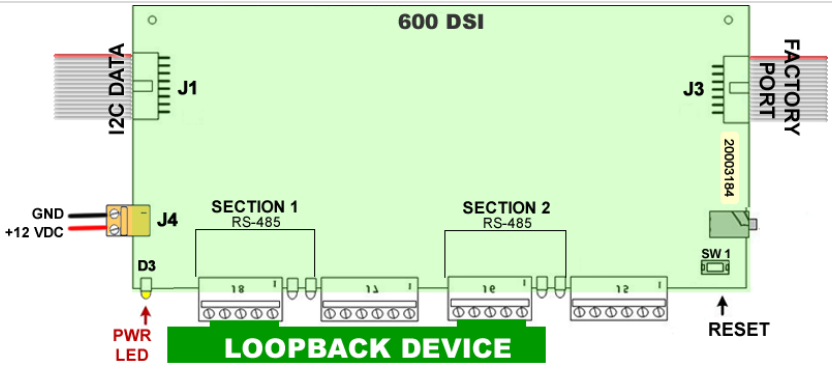
	11	**Type "exit" and press <Enter> key -** when tests complete. **Uninstall Factory Test Cable and Loopback Device.**
➥		`All tests completed.` `fts: 600 DPI >exit`
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing a 600 DSI using Terminal Emulator

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

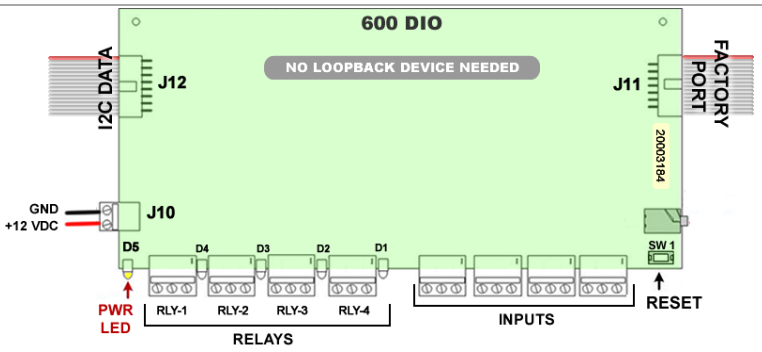
☑	#	Testing the 600 DSI by Selecting Board 6
	1	Install the Target Board in the Factory Test Station – connect Power (J4) and I2C Data Ribbon Cable(J1)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D3).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J3).
	4	(optional) Install Loopback Device on Section 1 & 2 of board.
➥		
	5	**Type "boards" and <Enter> key** to ensure the intended Target Board is connected. » write down the Board ID of the Target Board (_____) » write down the Board Serial Number (_____) only if you are going to flash the Target Board
➥		unrecognized command, 'help' for a list of commands > boards Ref Type Serial # Version Boot Pos Status Age Using 0 635-CPU 03000513 10.4.9 10.4.9 1 1 600-DSI 02003587 5.0 5.0 2 NORMAL 4 1 > Note: you can still test board even if it does not show on screen. You will need to obtain Board ID and Ser Number manually. (See Errors & Exceptions chapter)
	6	**Type the "fts" command and press <Enter> key** – to enter the Factory Test Mode.
	7	**Type the "select" command and press <Enter> key** – to display the list of target boards supported
	8	**Type "6" and press <Enter> key**.
	9	**Type "test" and press <Enter> key** – to execute the factory test with loopback installed**.**
		(optional) if Loopback device is not installed, type "testx" to test board memory and skip loopback tests).
➥		> fts fts: 635 DPI> select Select the type of board you wish to test and/or flash: 1 = 635 CPU, CPU for 635 controllers. 2 = 635 DPI, DPI for 6xx controllers. 3 = 635 DSI, Dual Serial Interface. 4 = 600 CPU, CPU for 600 controllers. 5 = 600 DPI, DPI for 600 controllers. 6 = 600 DSI, Dual Serial Interface. 7 = 600 DIO, Digital I/O 600 controllers. 8 = 508i, eZ80 replacement CPU for 508 controllers. 9 = 635 ERM, Enrollment Reader Module. 10 = 635 Control Module: Otis Elevator. 11 = 635 Control Module: Card Tour. select> 6 fts: 600 DSI >test
	10	User is prompted to ***confirm*** dipswitch positions(0=OFF, 1=ON). (TIP: toggling switches will test functioning) **Press the <space bar> to confirm test** after restoring dipswitches to correct Board ID if you toggled them.
➥		Running Test 6 - Test on board DIP switches. Hit the space bar to end test, if successful; or any other key to stop test, if failure. OPT BRD# ABC-8421 10000010 test 6 passed. < screenshot is cropped to show only dipswitch test results. Press <space bar> if dipswitch test passes. Press any other key to stop test if dipswitch test fails.
	11	**Type "exit" and press <Enter> key -** when tests complete. **Uninstall Factory Test Cable and Loopback Device.**
➥		All tests completed. fts: 600 DSI >exit
!		**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)

Testing a 600 DIO using Terminal Emulator

NOTICE: Factory "test" can be executed even if the board is not showing up on "boards" command when connected to I2C Buss.

» A factory "test" will not restore a target board to factory-default settings.

» Running a factory "program" (factory flash) will restore a board to factory defaults. You can restore a board if a factory test fails.

☑	#	Testing the 600 DIO by Selecting Board 7
	1	Install the Target Board in the Factory Test Station – connect Power (J10) and I2C Data Ribbon Cable(J12)
	2	Verify the Power LED = ON/LIT for the Target Board – front left corner (D5).
	3	Connect the Factory Test Cable to the Factory Port – on right side of board(J11).
	➥	
	5	**Type "boards" and <Enter> key** to ensure the intended Target Board is connected. » write down the Board ID of the Target Board (_____) » write down the Board Serial Number (_____) only if you are going to flash the Target Board

	➥	`unrecognized command, 'help' for a list of commands`
		`> boards`
		`Ref Type Serial # Version Boot Pos Status Age Using`
		`0 635-CPU 03000513 10.4.9 10.4.9 1`
		`1 600-DIO 02003587 5.0 5.0 2 NORMAL 4 1`
		`>` Note: you can still test board even if it does not show on screen. You will need to obtain Board ID and Ser Number manually. (See Errors & Exceptions chapter)

	6	**Type the "fts" command and press <Enter> key** – to enter the Factory Test Mode.
	7	**Type the "select" command and press <Enter> key** – to display the list of target boards supported
	8	**Type "7" and press <Enter> key**.
	9	**Type "test" and press <Enter> key** – to execute the factory test with loopback installed**.**

	➥	`> fts`
		`fts: 635 DPI> select`
		`Select the type of board you wish to test and/or flash:`
		`1 = 635 CPU, CPU for 635 controllers.`
		`2 = 635 DPI, DPI for 6xx controllers.`
		`3 = 635 DSI, Dual Serial Interface.`
		`4 = 600 CPU, CPU for 600 controllers.`
		`5 = 600 DPI, DPI for 600 controllers.`
		`6 = 600 DSI, Dual Serial Interface.`
		`7 = 600 DIO, Digital I/O 600 controllers.`
		`8 = 508i, eZ80 replacement CPU for 508 controllers.`
		`9 = 635 ERM, Enrollment Reader Module.`
		`10 = 635 Control Module: Otis Elevator.`
		`11 = 635 Control Module: Card Tour.`
		`select> 7`
		`fts: 600 DIO>test`

	10	User is prompted to ***confirm*** dipswitch positions(0=OFF, 1=ON). (TIP: toggling switches will test functioning) **Press the <space bar> to confirm test** after restoring dipswitches to correct Board ID if you toggled them.

	➥	`Running Test 6 - Test on board DIP switches.`
		`Hit the space bar to end test, if successful;`
		`or any other key to stop test, if failure.`
		`OPT BRD#`
		`ABC-8421`
		`10000010`
		`test 6 passed.`
		< screenshot is cropped to show only dipswitch test results.
		Press <space bar> if dipswitch test passes.
		Press any other key to stop test if dipswitch test fails.

	11	**Type "exit" and press <Enter> key -** when tests complete. **Uninstall Factory Test Cable when finished.**
	➥	`All tests completed.` `fts: 600 DIO >exit`
!	**IF TEST ERRORS:** Confirm power and factory cables are installed correctly (see Errors & Exceptions chapter)	

5. Appendix – Errors, Exceptions, and Other Tips

Related Galaxy Reference Manuals:

- 635-FTS Factory Testing Guide (THIS GUIDE)
- 635-FTS Factory Programming Guide
- 635 Web Server Configuration Tool
- 635-600 Hardware Installation Guide
- System Galaxy Software User Guide

ERRORS & EXCEPTIONS DURING TESTS

There are a number of reasons you can encounter ERRORS or Failures in the Board Test.

TEST ERRORS OUT ON STEP-1

1. The Factory Test Cable is not correctly connected to the 635-CPU Factory Test Station Board.
   - » SYMPTOM: Test errors out on Step-1
   - » CORRECTION: Connect the Factory Cable to (J9) Factory Test Station port and rerun the test.

2. The Factory Test Cable is not correctly connected to the Target Board.
   - » SYMPTOM: Test errors out on Step-1
   - » CORRECTION: Connect the Factory Cable to Factory port and rerun the test.

3. The Power Connector is not connected to the Target Board:
   - » SYMPTOM: Test errors out on Step-1
   - » CORRECTION: Connect the power connector to the Target Board and rerun the test.

TEST ERRORS OUT AT CS AND BM REGISTERS

4. The Target Board is not properly initialized:
   - » SYMPTOM: Test errors out on Step-1 C setting CS and BM registers
   - » CORRECTION: Reseat Factory cable connection and Rerun the test.
   - » Also reset board and rerun the test.

TEST FAILS DUE TO OPERATOR REPORTED FEEDBACK

5. The User/Operator clicked Cancel button (Web Server interface) or “any key” Terminal Emulator:
   - » SYMPTOM: Operator Reported Failure
   - » REASON: user stopped the test because the board state or behavior (LEDs or dipswitch settings) did not accurately match the values reported on the test screen.
   - » RETEST: rerun the test to confirm the user is interpreting the results accurately.
   - » RECOVERY EFFORT: if board still fails the retest, the user can perform a factory reset.
     NOTICE: the “program” command restores the board to factory-default settings/flash.
     CAUTION: Before running the program command, be sure to collect the board ID, serial number, and network settings as appropriate. Also upload the correct flash version if it is older than the embedded FTS version OR if the target board is a 600 CPU.
   - » RETEST: after you have finished the factory reset and reconfigured the board ID / network settings, the board can be retested.
   - » FINAL RESOLUTION: If board still does not pass the test, return the board to Galaxy for repair.

TIPS FOR FINDING A BOARD ID WITHIN SYSTEM GALAXY

Factory flashing a 600 daughter board will reset the ID to the factory-default Board ID (34). You must return the board to its normal ID used in the system programming to restore proper operation. You want to avoid having to reconfigure system devices.

If the Board is not reporting/detected on the I2C Buss (Panel Status Page OR TeraTerm emulator), you can find the last known board ID by looking in the System Galaxy programming screens.

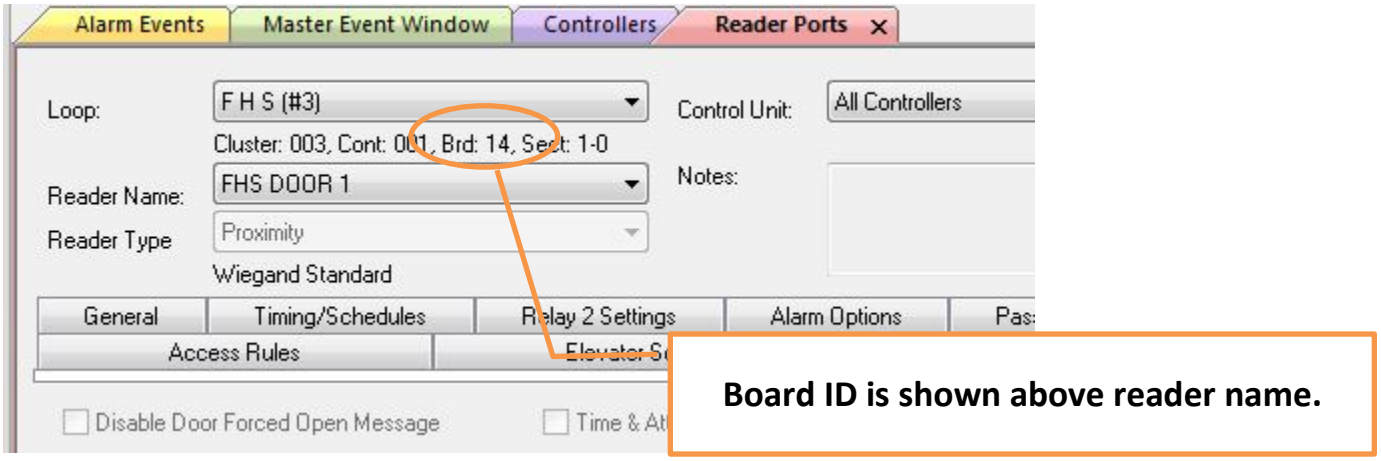
FINDING A 600-DPI BOARD ID (FROM READER PROPERTIES SCREEN)

If your board is a 600-DPI, go to the Reader Properties screen of the reader that is wired to your board.

- Open System Galaxy and login with master login - as needed
- From menu, choose **Configure > Hardware > Doors/Readers**

1. Select the Loop Name that the reader belongs to.
2. Select the Controller Name that the reader belongs to.
3. Select the Reader Name for the desired reader.

» **The Board number is listed above the Reader Name field.**



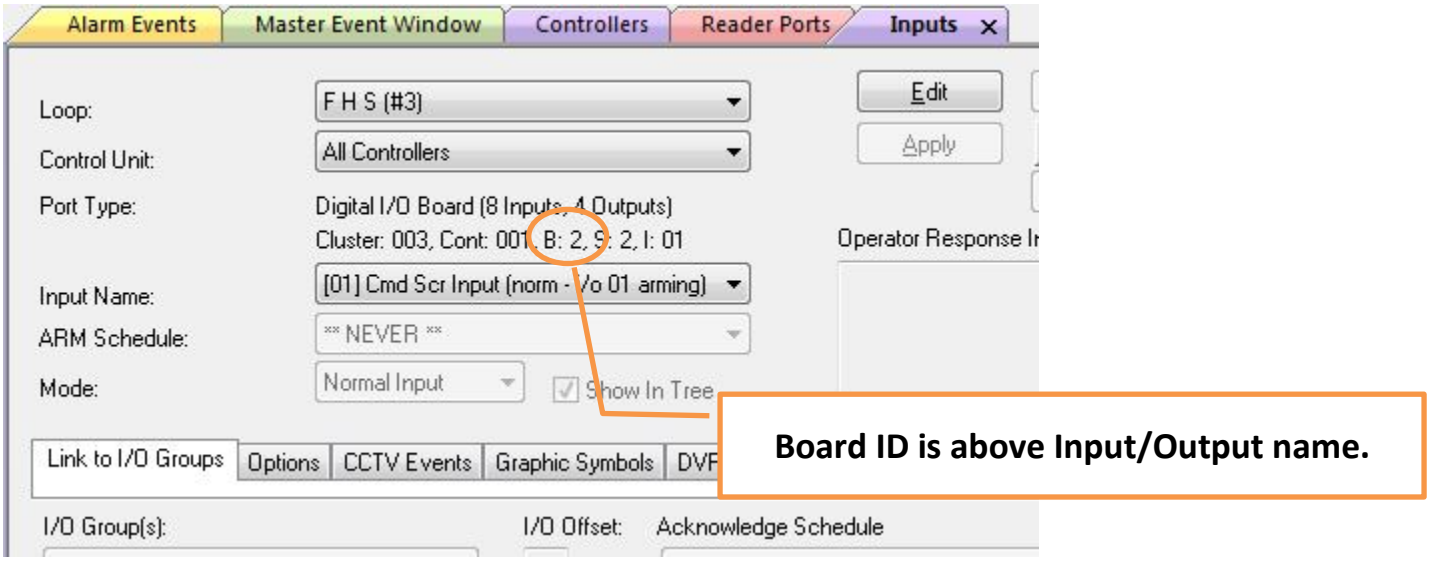
FINDING A 600-DIO BOARD ID – (FROM INPUT/OUTPUT PROPERTIES SCREEN)

If your board is a 600-DIO, go to the Properties screen of an Input or Output that is wired to your board.

- Open System Galaxy and login with master login - as needed
- From menu, choose **Configure > Hardware > Inputs (or Outputs)**

1. Select the Loop Name that the device belongs to.
2. Select the Controller Name that the device belongs to.
3. Select the Input/Output Name for the desired device.

» **The Board Number is listed above the Input/Output Name field.**



FINDING A 600-SERIES BOARD ID (FROM THE CONTROLLER PROPERTIES SCREEN)

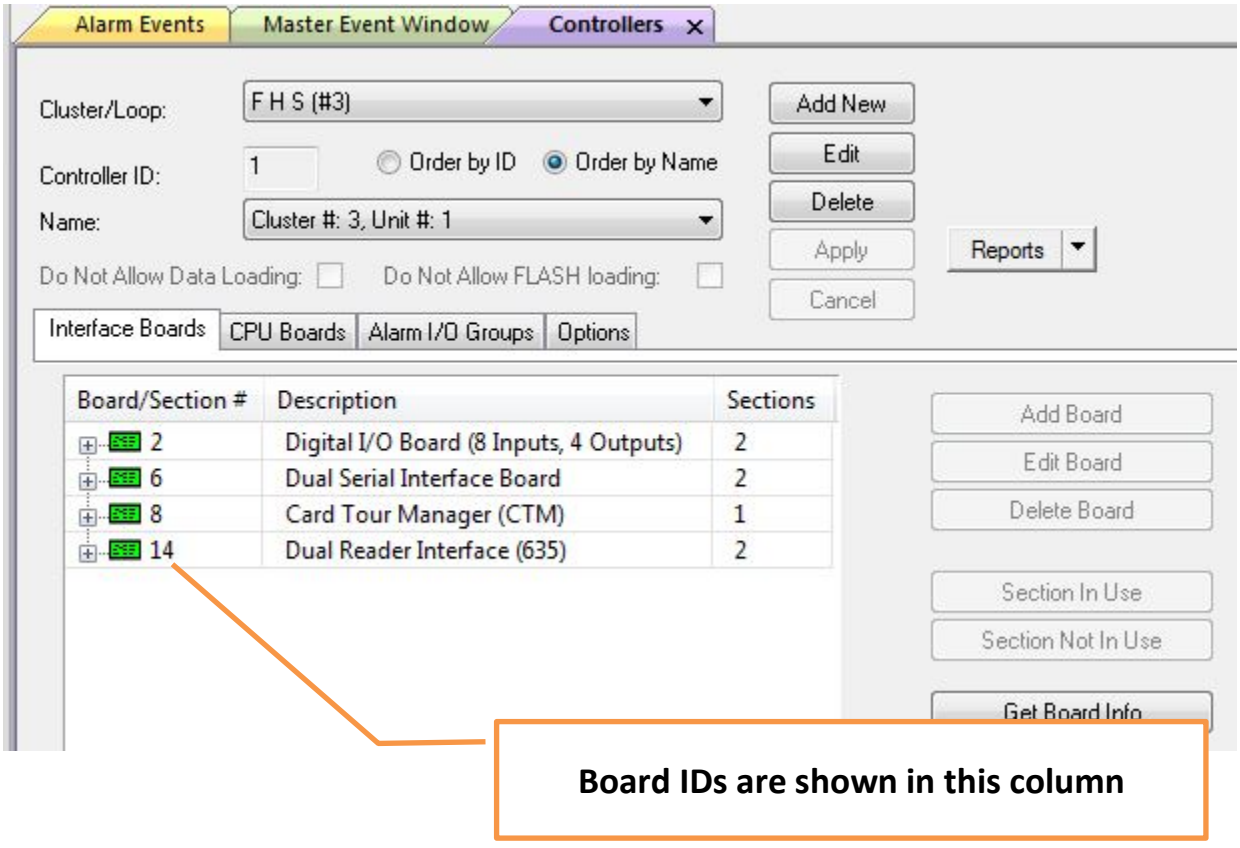
Another place to see all the board numbers that are known to be connected to the panel, is by looking Controller Properties screen.

- Open System Galaxy and login with master login - as needed
- From menu, choose **Configure > Hardware > Controllers(600)**

1. Select the Loop Name that the controller belongs to.
2. Select the Interface Boards tab – if needed

   DO NOT CLICK THE GET BOARDS INFO BUTTON.

» **The Board numbers are listed in the first column showing the Board/Section #.**



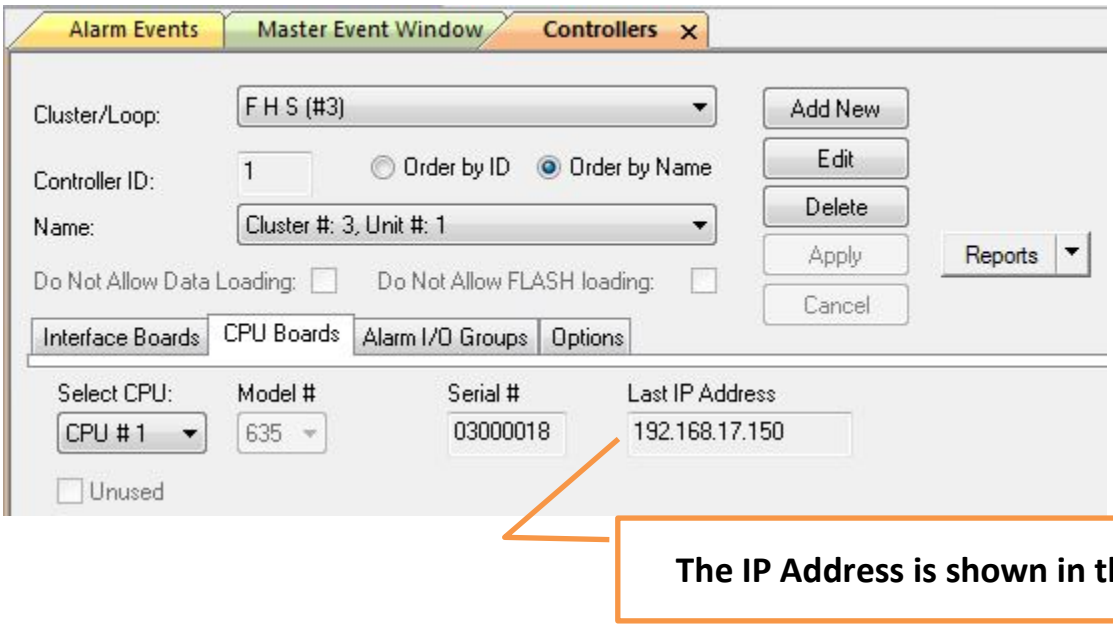
FINDING a CPU IP Address (IN THE CONTROLLER PROPERTIES SCREEN)

The last known IP Address for your 635-CPU(FTS), is found in the Controller Properties screen.

- Open System Galaxy and login with master login - as needed
- From menu, choose **Configure > Hardware > Controllers(600)**

1. Select the Loop Name that the controller belongs to.
2. Select the CPU Boards tab – if needed

» **The last-known IP Address is displayed in the [Last IP Address] field.**



If you cannot use the last known IP Address to connect to your panel, then see the next section about installing the Web Config Tool and connect via Ethernet connection – or Go to Chapter 4 to TeraTerm terminal emulator via direct serial connection.

HOW TO INSTALL THE 635 WEB SERVER TOOL …

Normally, the **embedded 635 Web Server – Panel Status page** can be opened by typing the ***CPU IP Address*** into a PC/Browser.

If the IP Address is unknown, or needs to be configured, the ***client-side 635 Web Server Config Tool*** is able to auto-detect the MAC Addresses of the CPUs that are on the ***same network segment*** as the panel.

If you cannot get to the same network segment as the panel, you can install the ***635 Web Server Config Tool*** on a laptop and temporarily jack directly into the CPU Eternet port with a standard CAT5. Another option is to use a terminal emulator to connect to the Serial Port on the CPU (which requires a serial programming cable).

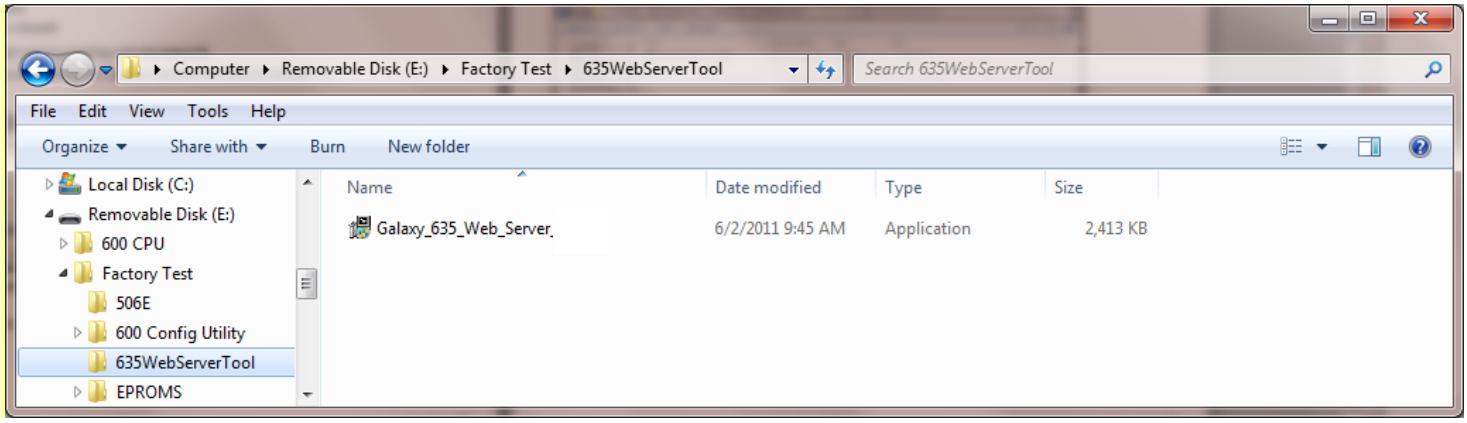
INSTALL this tool IF you need to find the CPU by MAC Address or need to see the Panel Configuration.

INSTALLING THE 635 WEB SERVER CONFIGURATION TOOL

- The latest version of Firefox browser is recommended/needed.
- The ***Galaxy_635_Web_Server executable*** is found in the **635 Web Tool** folder on the Factory Test CD.
  1. Copy the ***Galaxy_635_Web_Server executable file*** to your laptop.
  2. Double-click on the ***Web Tool.exe*** file to launch the install program.

» When finished, the 635 Web Tool **desktop icon** 

should be installed on your desktop.



PATH: CD\Factory Test\635WebServerTool\Galaxy_635_Web_Server_V106.exe (shown)

USING THE 635 WEB SERVER CONFIGURATION TOOL

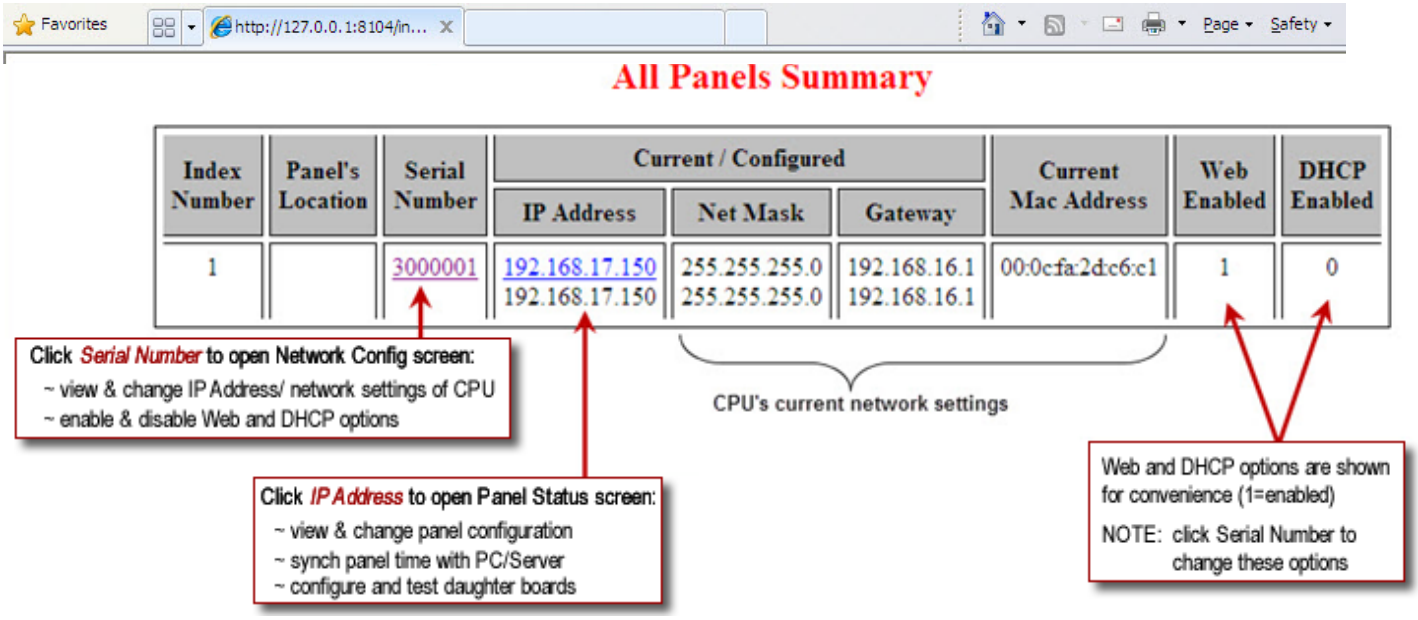
This tool is designed to find the Galaxy MAC Addresses from your local PC/Browser.

- ❖ The latest version of Firefox browser is recommended/needed.
- ❖ The **door to the panel enclosure must be open** for the Web Tool to detect MAC Addresses .

1. Double-click the **desktop icon** 

to open the 635 Web Tool and detect the MAC Addresses.
   - **a)** The Browser will list only the Galaxy MAC Addresses
   - **b)** Click the **serial number link** to configure the IP Address and network settings if needed.
   - **c)** Click the **IP Address link** to go to the **Panel Status page –** you can complete all the tasks required by using the 635 Web Config Tool.

» NOTE: The **panel door must remain open** if you need to configure a Board ID for a 600-series target board.



HOW TO INSTALL & CONFIGURE THE TERATERM EMULATOR …

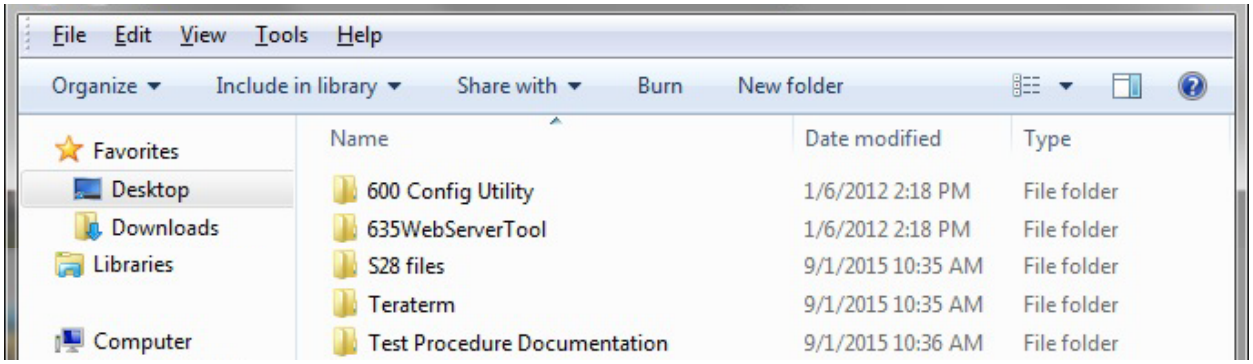
Install and configure the **TeraTerm Emulator only** if you cannot connect to the 635-Factory Test Station(CPU) using the 635 Web Page/browser.

INSTALLING TERATERM EMULATOR

❖ Insert the Galaxy CD and open the **Windows File Explorer window …**

3. Open the **Factory Test** folder
4. Open the **TeraTerm** folder
5. Copy the ***TeraTerm executable file*** to your laptop.
6. Double-click on the ***TeraTerm.exe file*** to launch the install program
7. Accept the license agreement and all the default settings on each install screen.
8. When finished, the TeraTerm desktop icon should be installed on your desktop.

See the next section for instructions on Configuring the RS-232 Serial Port Settings.



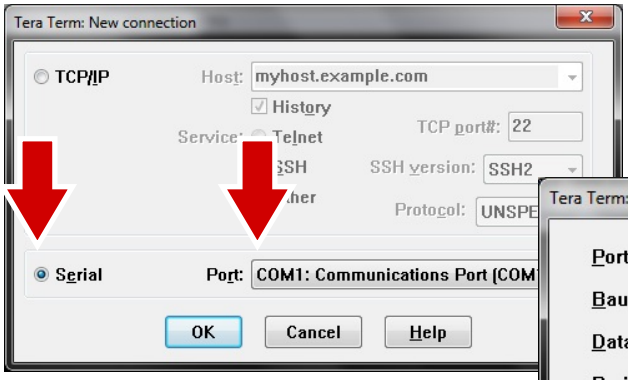
CONFIGURING SERIAL PORT SETTINGS

You must correctly set up the ***connection parameters*** to connect to the 635-FTS (CPU) Board. These settings are used regardless of which Terminal Emulator you choose.

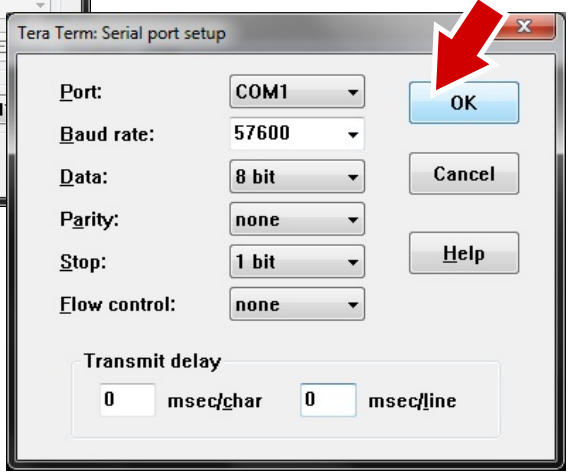
When using the terminal emulator, you must connect the USB Serial Cable from the laptop com port to the Serial Port on the 635-CPU.

❖ Insert the Galaxy CD and open the **Windows File Explorer window …**

1. **Launch TeraTerm from the Desktop Icon** – to open the *New Connection* window.
2. Click the **[Serial] option**.
3. Choose the desired **COM Port**.
4. Click **[OK] button**.
5. From TeraTerm menu, choose **Setup > Serial Port …** (to configure the connection parameters).
6. **Select desired COM Port and the following parameters:**
   - » Baud Rate = "**57600**"
   - » Set Data = **8 bit**
   - » Parity = **None**
   - » Stop Bit = **1 bit**
   - » Flow Control = **None**
7. Click **OK Button** to begin communicating with the board.
8. At this point you can issue the "fts" command as desired – see Chapter 4 for instructions.



New Connection window @ step-1



Serial Port Setup window @ step-5