Titan 8000
Visual Command Center

Revision 2.3.8, (March, 2014)

AVITECH

ABOUT THIS MANUAL
This manual contains information on how to use Avitech Titan 8000.

Throughout the manual the following conventions are used to distinguish elements of text.

provides additional hints or information that requires special attention.

identifies warnings which must be strictly followed.

Any name of a menu, command, icon or button displayed on the screen is shown in a bold typeset. For example: On the **Start** menu select **Settings**.

To assist us in making improvements to this user manual, we would welcome any comments and constructive criticism. Email us at: sales@avitechvideo.com.

WARNING
Do not attempt to disassemble Titan 8000. Doing so may void the warranty. There are no serviceable parts inside. Please refer all servicing to qualified personnel.

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Regulatory Information

Marking labels located on the exterior of the device indicate the regulations that the model complies with. Please check the marking labels on the device and refer to the corresponding statements in this chapter. Some notices apply to specific models only.

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English
This product follows the provisions of the European Directive 1999/5/EC.

Dansk (Danish)
Dette produkt er i overensstemmelse med det europæiske direktiv 1999/5/EC.

Nederlands (Dutch)
Dit product is in navolging van de bepalingen van Europees Directief 1999/5/EC.

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Français (French)
Ce produit est conforme aux exigences de la Directive Européenne 1999/5/EC.

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Dieses Produkt entspricht den Bestimmungen der Europäischen Richtlinie 1999/5/EC.

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Statement of Compliance

This product complies with Australia and New Zealand's standards for radio interference.

1. Getting Started

This chapter introduces the features and specifications as well as external components of Titan 8000. It also guides you through the process of setting up your Titan 8000.

1.1 Package Contents

After unpacking the shipping carton, the following items can be found:

Avitech Titan 8000

Utility Disc (software and user manual)

Redundant DC Power Supply (optional) *

Standard Power Cord (USA customer only)

14-inch RS-485 Cascading Cable (optional – when purchasing 2 or more Titan 8000)

16-inch DVI-I Cascading Cable (optional – when purchasing 2 or more Titan 8000)

RJ-50 GPIO / Tally Terminal Block

DVI-I Male to Female Cable (optional) **
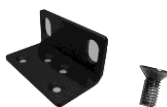

DVI-I Breakout Cable (optional)

DVI to VGA Adapter (optional)

Avitech Phoenix TACP (optional) ***

Avitech MKC (optional) ***

**Ear with screw
(already installed on Titan 8000 upon order for
assembly on to rack mount)**

Table 1-1 Package Contents

* This is an optional external power supply along with associated dual power supply PCBA inside Titan 8000 to achieve power redundancy. If this optional external power supply is connected, power (AC or DC) can be unplugged on Titan 8000 without affecting power supply to unit.
** When using DVI-I female connector on Titan 8000, connector may easily be damaged if DVI-I plug (male) has bended pins. With this optional DVI-I male to female cable permanently connected to Titan 8000, then frequent connection and disconnection will only occur to female end of this short cable, rather than to female connector of Titan 8000.
*** Avitech Phoenix TACP and MKC can be used with Titan 8000. Contact your authorized dealer or refer to Phoenix TACP or MKC User Manual for more details.

1.2 Product Features

Model	DVI / VGA / YPbPr Input	SDI / CVBS Input
Titan 8002V	2	N/A (not applicable)
Titan 8004V	4	N/A
Titan 8004C	2	2 PAL /NTSC
Titan 8008C	4	4 PAL / NTSC
Titan 8004U	2	2 HD / SD-SDI / PAL / NTSC
Titan 8008U	4	4 HD / SD-SDI / PAL / NTSC

Table 1-2 Titan 8000 Series Video Comparison

- ✓ *Automatic sensing of HD/SD-SDI and NTSC/PAL analog input*

- ✓ *Automatic detection of optimal display resolution*

- ✓ *Computer graphic input:*
  single scalable DVI-I input (VGA/DVI/NTSC/PAL) resolution up to 1920×1200 (WUXGA), any position

- ✓ *Up to 26 internal configuration presets*

- ✓ *On-screen display (OSD) of labels, borders, and video alarms*

- ✓ *Standalone operation (single Titan) with communication control via IP or RS-232; or multiple operations*

- ✓ *One Titan can fit in a single rack unit (RU) space for a maximum of 8 video inputs and one multimedia input*

- ✓ *Compatibility with Phoenix-G (formerly Galaxy) software for configuration, monitor layout, and multiple-system control*

- ✓ *Avitech ASCII Protocol (AAP) support*

- ✓ *HDCP-compliant*

- ✓ *RJ-50 GPI terminal block adapter for tally or loading presets*

- ✓ *Up to 26 presets/configurations can be saved and recalled from module's Flash EEPROM*

- ✓ *Compatible with MCC 8004 modules (non-HDCP compliant Titan only)*

- ✓ *Supports Avitech MKC 104/204 (mouse/keyboard controller)*

1.3   Specifications

Input	
SDI/CVBS (BNC connector)	Automatic sensing ❖ *HD-SDI: 1080i59.94, 1080i60, 1080i50, 720p59.94, 720p60, 720p50* ❖ *SD-SDI: 525p59.94, 625p50* ❖ *NTSC/525i / PAL/625i* Number of inputs ❖ *Titan 8002V: 2 automatic detection VGA/DVI (YPbPr)* ❖ *Titan 8004V: 4 automatic detection VGA/DVI (YPbPr)* ❖ *Titan 8004C: total is 4* *2 automatic detection VGA/DVI (YPbPr) 480p60, 720p50/60, 1080i50/60, 576p50, plus 2 automatic detection PAL/NTSC* ❖ *Titan 8008C: total is 8* *4 automatic detection VGA/DVI (YPbPr) 480p60, 720p50/60, 1080i50/60, 576p50, plus 4 automatic detection PAL/NTSC* ❖ *Titan 8004U: total is 4* *2 automatic detection VGA/DVI (YPbPr) 480p60, 720p50/60, 1080i50/60, 576p50, plus 2 automatic detection HD/SD-SDI/ PAL/NTSC* ❖ *Titan 8008U: total is 8* *4 automatic detection VGA/DVI (YPbPr) 480p60, 720p50/60, 1080i50/60, 576p50, plus 4 automatic detection HD/SD-SDI/ PAL/NTSC*
DVI-I	Automatic sensing, input can be used as background or to cascade with another Titan 8000; supported input signal: ❖ *Up to 1920×1200 (WUXGA)* Number of input: 1
GPI (terminal block adapter)	8; configurable for tally or loading preset

Output	
DVI-I	Number of output: 1 ❖ *800×600 up to 1920×1200 (WUXGA)* <u>Note</u>: *No simultaneous DVI and RGB output is possible when Titan model supports* **HDCP**.

Others	
RS-232	Baud rate: up to 1 Mbaud
RJ-45	Network Type: 100Base-T
RS-485	Number of ports: 2
Housing	Metal
Power	Power consumption is less than 30W Power Supply: ❖ *100 ~ 250 V AC / 50/60 Hz (external)*
Dimension/Weight	Dimension, 483×254 mm (19×10 inch) – 1RU Weight, 3.6 kg (8 lb)
Environment/Safety	Temperature: ❖ *Operating: 0 ℃ (32 ℉) to 40 ℃ (104 ℉)* ❖ *Storage: –10 ℃ (14 ℉) to 50 ℃ (122 ℉)* Humidity, 0% to 80% relative, non-condensing Safety, FCC/CE/C-Tick/Class A

Table 1-2 Specifications
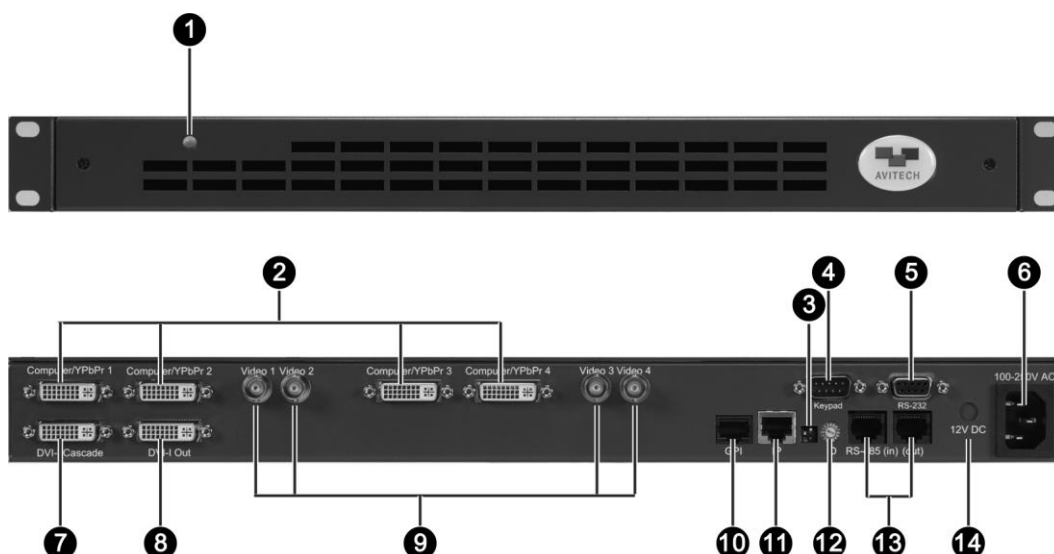
1.4 Connections to the Titan 8000

Figure 1-1 Titan 8000 Components

Front Panel	
❶ **Indicator**	Lights green when Titan 8000 is powered on

Table 1-3 Titan 8000 Front Component Description

Rear Panel	
❷ **DVI / VGA In**	DVI-I connector for DVI (YPbPr) VGA video input sources
❸ **Dip Switches**	Updates the firmware (left); as well as reset Titan 8000 to factory-default setting
❹ **Serial**	Keypad connector for signal from optional Avitech MKC (Mouse Keyboard Controller) or numerical Simplified Control Panel (SCP) keypad
❺ **Serial**	RS-232 connector for signal from computer
❻ **Power (AC)**	Connects to 100 to 240 V AC power cord
❼ **Cascade In**	DVI-I connector for multimedia input (cascade from other Titan 8000 or from other video source as background image)
❽ **DVI Out**	DVI-I connector for output to monitor
❾ **SDI In**	BNC connectors for HD SD-SDI NTSC PAL video input sources
❿ **GP Input**	RJ-50 connector for general purpose input
⓫ **Ethernet (IP)**	For setup via Avitech Phoenix-G utility through network connection
⓬ **ID**	Rotary dial to assign unique addresses in systems with two or more chassis
⓭ **RS-485 In/Out**	For serial cascading input/output
⓮ **Power (DC 12V)**	Connects to the 12 V DC power adapter

Table 1-4 Titan 8000 Rear Component Description

2. Hardware Configuration

Perform the following steps to get your Titan 8000 series up and running:

> 📄 | *The steps outlined next would depend on type of configuration you wish to set up.*

Step 1. **Option 1 (module without HDCP function)**
Connect up to 4 BNC cables to 4 **Video 1** / **2** / **3** / **4** *ports for:*
– HD/SD-SDI / NTSC/PAL video inputs or;
– NTSC/PAL video inputs.

Or
Connect up to 4 VGA/DVI cables to 4 **Computer/YPbPr 1** / **2** / **3** / **4** *ports for VGA/DVI video inputs.*

Option 2 (module with HDCP function)
Connect up to 4 BNC cables to 4 **Video 1** / **2** / **3** / **4** *ports for:*
– HD/SD-SDI / NTSC/PAL video inputs or;
– NTSC/PAL video inputs.

Or
Connect up to 4 DVI/HDMI® cables to 4 **Computer/YPbPr 1** / **2** / **3** / **4** *ports for DVI/HDMI video inputs.*
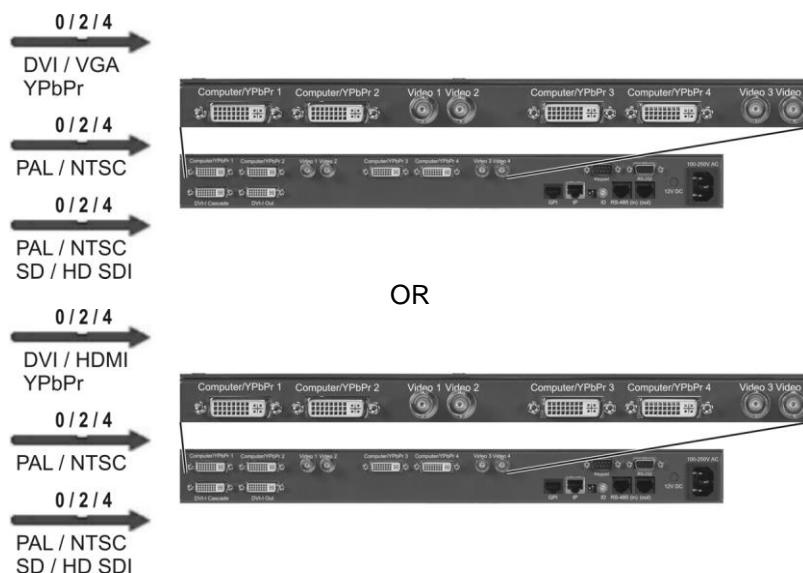
Figure 2-1 Connect Up to Four Video Sources

Step 2. *Connect RS-232 cable to **RS-232** port for signal from computer.*

*And/or, connect Ethernet cable to **IP** port for using computer's Phoenix-G (formerly Galaxy) software to perform setup on the Titan.*
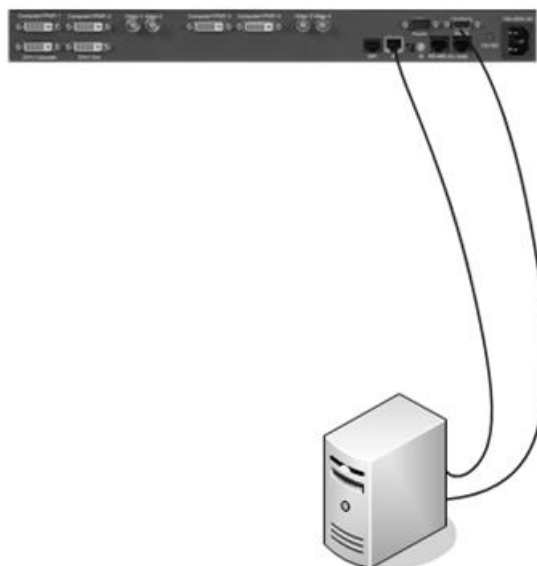

Figure 2-2 Connect RS-232 / Ethernet Signal from Computer

Step 3. *Connect DVI-I cable to **DVI-I Cascade** port for video input to the Titan.*

Multimedia Input

Figure 2-3 Connect DVI-I Cable to **DVI-I Cascade** Port

⚠️
1. *Make sure that resolution of input source (as background image) is the same as resolution of **DVI-I OUTPUT** port for video output to monitor.*
2. *When connecting to computer with NVIDIA™ display card use DVI-to-VGA adapter that came with NVIDIA™ display card instead of the included Avitech DVI-to-VGA adapter.*
3. *HDCP-compliant content is not supported for **DVI-I Cascade** port of Titan.*

Step 4. **Option 1 (module without HDCP function):**
Connect DVI/VGA cable to **DVI-I Out**put port for video output to monitor (you may need to use a DVI-to-VGA adapter for monitor with VGA input).

Option 2 (module with HDCP function):
Connect DVI/HDMI cable to **DVI-I Out**put port for video output to monitor (you may need to use a DVI-to-HDMI adapter for monitor with HDMI input).
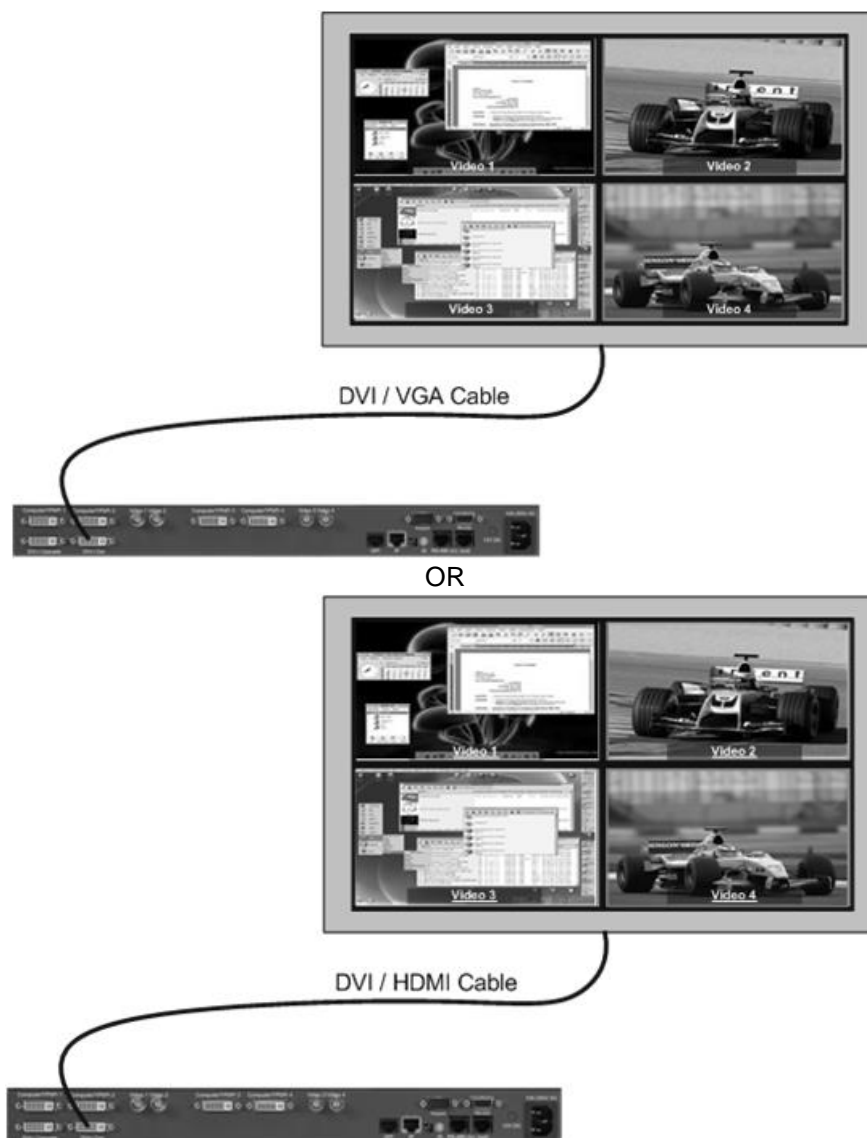

OR

Figure 2-4 Connect to Output Monitor

1. *To display HDCP-compliant content, make sure that monitor is also HDCP-compliant.*
2. *Display of HDCP-compliant content is not possible when using a DVI-VGA Y-cable.*

*Step 5.   Make sure to assign a unique address to your Titan **ID** rotary dial when connecting to systems with two or more units.*

Figure 2-5 Assign Unique Address to Titan **ID** Rotary Dial

*Step 6.   Connect AC power cord to **100~250V** power jack.*
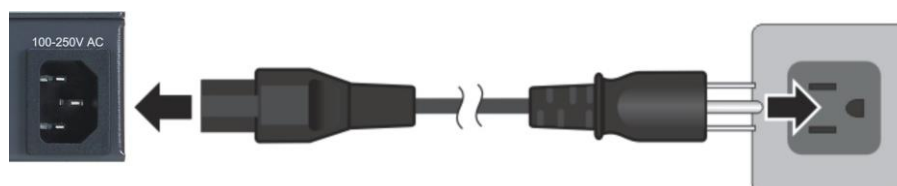
Figure 2-6 Connect the AC Power Cord

Connect optional 12 V DC power adapter if available to achieve power redundancy. Power (AC or DC) can then be unplugged without affecting power supply to module.

2.1 Cascading

Cascading is the technique of "daisy-chaining" 2 or more Titan 8000 modules through a DVI display and a digital control backbone. This connection allows combined modules to operate as a single integrated system. Up to 8 different modules can be combined in this fashion to create extremely large and complex systems with ability to simultaneously monitor audio, video, and computer signals on same display. If a module should fail, then control and video information is passed through to allow continued operation of system.

2.1.1 Cascading 2 or More Titan 8000

⚠️ *When cascading multiple Titans with and without HDCP function, make sure to connect Titan(s) with HDCP function together in sequence and Titan(s) without HDCP function connected together in sequence. Titan with HDCP function must be the last module that connects to monitor. This is necessary for outputting video with HDCP-compliant content.*

*Step 1. Set rotary **ID** on first Avitech Titan to **0** and set rotary **ID** on second Avitech Titan to **1**, and so forth (can be other values as long as both are different from each other's setting).*

Figure 2-7 Set Rotary ID in Cascaded Titan 8000

*Step 2. To display video overlay from each module, all units must be connected to each other via male-to-male short DVI cascading cable. Connect DVI cascading cable to **DVI-I Out** port on Master (first) module (N) and **DVI-I Cascade** port of next module in chain (N+1).*
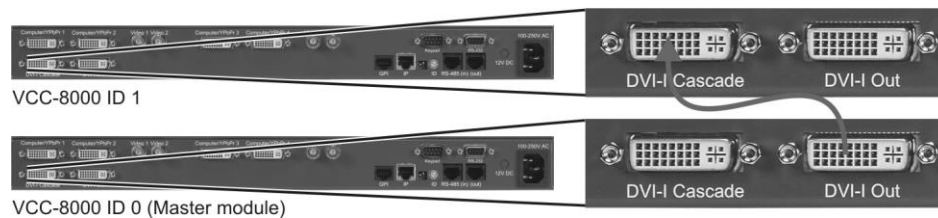
Figure 2-8 Connect Via DVI Cascading Cable

*Step 3. Module interface is cascaded through RJ-45 (RS-485) which is used to loop communication from one module to the next. Data stream carries control and configuration information. Connect RS-485 cascading cable to **RS-485 (out)** of Master (first) module (N) and **RS-485 (in)** of next module up (N+1).*
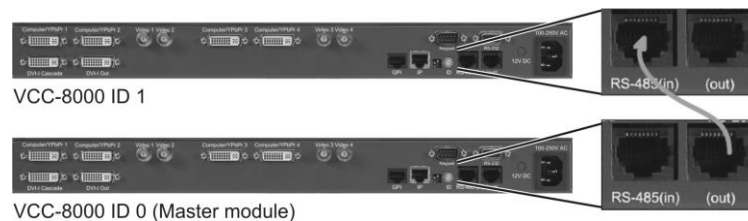

Figure 2-9 Connect Via RS-485 Cascading Cable

Step 4. **Option 1 (module without HDCP function):**
*Output from **DVI-I Out** port on last module cascaded should go to group output monitor via single-link DVI/VGA cable (you may need to use a DVI-to-VGA adapter for monitor with VGA input).*
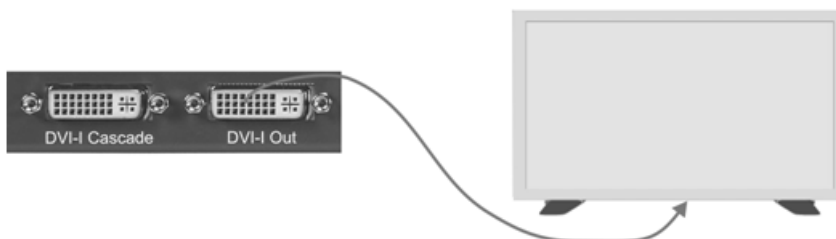
Option 2 (module with HDCP function):
*Output from **DVI-I Out** port on last module cascaded should go to group output monitor via single-link DVI/HDMI cable (you may need to use a DVI-to-HDMI adapter for monitor with HDMI input).*

Figure 2-10 Connect Last Module Cascaded to Output Monitor

*1. When displaying non-HDCP-compliant content, analog part of **DVI-I Cascade** port is bypassed (relays) in case any of cascaded modules has no power or is defective. A powered down or a defective unit in the chain **WILL NOT** compromise the whole system, other modules in the chain will display properly.*
*2. To display HDCP-compliant content, make sure that monitor is also HDCP-compliant. A powered down or a defective unit in the chain **WILL** compromise the whole system causing inability to display properly (HDCP encryption feature).*
3. Display of HDCP-compliant content is not possible when using a DVI-VGA Y-cable.

Step 5. *Connect RS-232 cable to computer's RS-232 port and **RS-232** port of Titan ID 0 (Master module).*
*Or, connect Ethernet cable between Titan ID 0 (Master module) **IP** port to computer's RJ-45 port.*
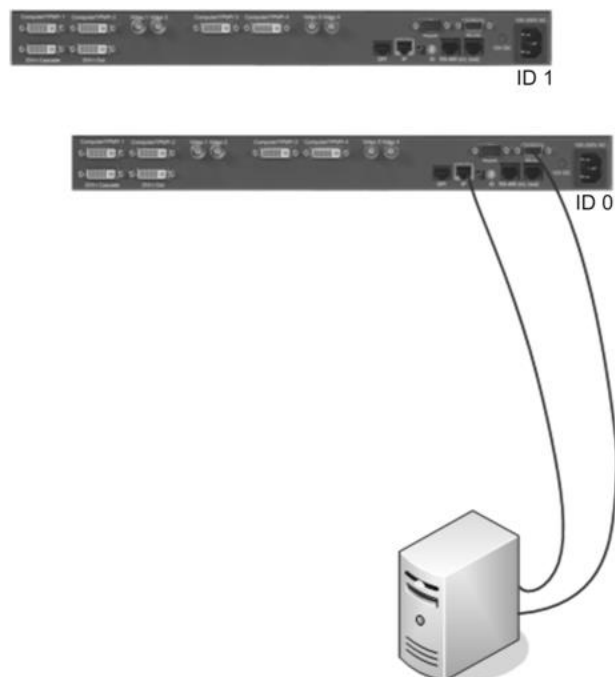

Figure 2-11 Connect RS-232 or Ethernet Cable Between Computer and Titan

*Step 6. If computer application uses multimedia input, connect DVI/VGA cable to computer's DVI port
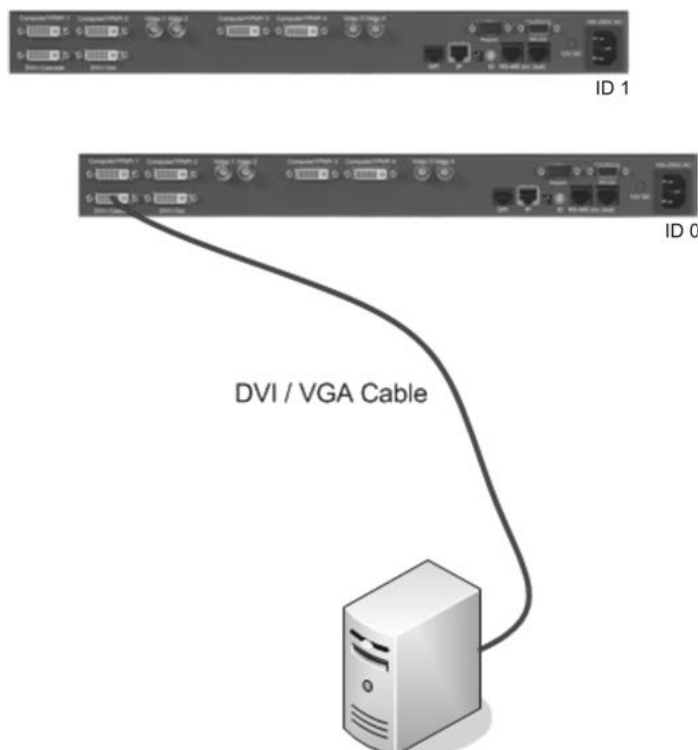and **DVI-I Cascade** port of Titan ID 0 (you may need to use a DVI-to-VGA adapter).*

Figure 2-12 Connect DVI/VGA Cable Between Computer and Titan

*1. Make sure that resolution of input source (as background image) is the same as resolution of **DVI-I
Output** port for video output to monitor.
2. When connecting to computer with NVIDIA™ display card, use DVI-to-VGA adapter that came with
NVIDIA™ display card instead of included Avitech DVI-to-VGA adapter.
3. Display of HDCP-compliant content is not supported for **DVI-I Cascade** port of Titan.*

*Step 7. Connect AC power cord to **100~250V** power jack.*
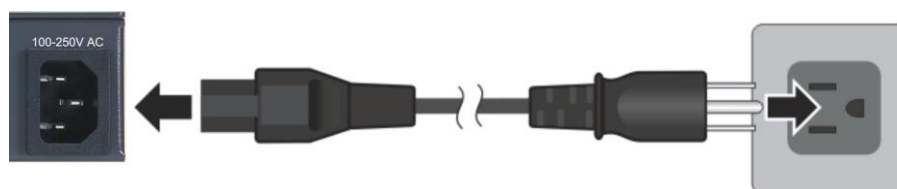
Figure 2-13 Connect the AC Power Cord

*Connect optional 12 V DC power adapter if available to achieve power redundancy. Power (AC
or DC) can then be unplugged without affecting power supply to module.*

2.1.2 Cascading Titan 8000 With MCC 8004

⚠️ *1. Cascading Titan with HDCP function and MCC 8004 is not allowed.*
This is because MCC 8004 does not support outputting video with HDCP-compliant content.
2. Cascading Titan without HDCP function and MCC 8004 is allowed.
When cascading multiple Titans without HDCP function with MCC 8004s, make sure to connect Titan(s) without HDCP function together in sequence and MCC 8004(s) connected together in sequence. Titan without HDCP function must be last module that connects to monitor.
3. Make sure to set same baud rate for MCC 8004 and Titan (refer to later sections for setting baud rate).

*Step 1. Set rotary **ID** on MCC 8004 to **0** and set rotary **ID** on Titan to **1** (can be other values as long as both are different from each other's setting).*

Figure 2-14 Set Rotary ID in Cascaded MCC 8004 and Titan 8000

*Step 2. Connect DVI cable to **DVI-I Out** port of MCC 8004 ID 0 and **DVI-I Cascade** port of Titan ID 1.*
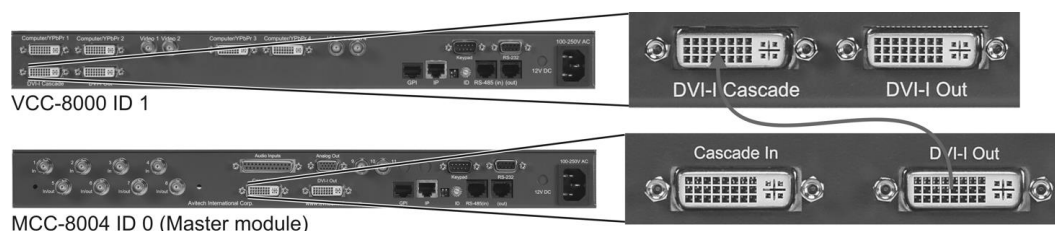

Figure 2-15 Connect Via DVI Cascading Cable

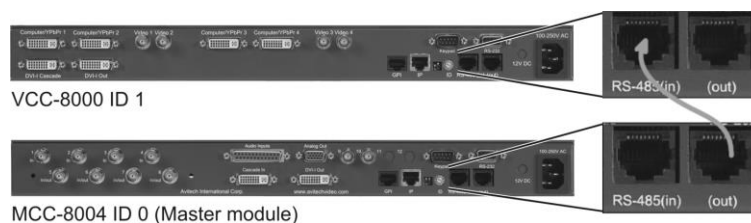*Step 3. Connect RS-485 cable to **RS-485 (out)** port of MCC 8004 ID 0 and **RS-485 (in)** port of Titan ID1.*

Figure 2-16 Connect Via RS-485 Cascading Cable

Step 4. *Connect DVI/VGA cable to **DVI-I Out** port of Titan ID 1 (must be without support for HDCP function) and monitor (you may need to use a DVI-to-VGA adapter for monitor with VGA input).*
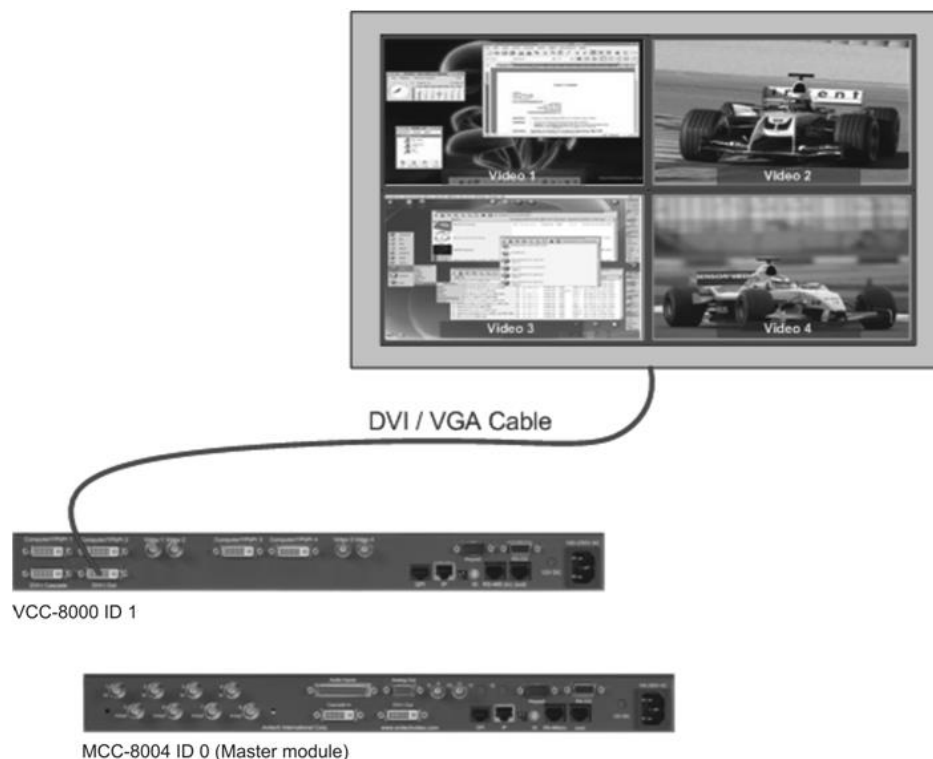

VCC-8000 ID 1

MCC-8004 ID 0 (Master module)

Figure 2-17 Connect Last Module Cascaded to Output Monitor

⚠️ *1. When cascading multiple MCC 8004s and Titans (without HDCP function), make sure to configure Titan as last module that connects to monitor.*
2. Do not use a DVI splitter to connect to Titan as well as output HDCP-compliant content to monitor.
*3. When displaying non-HDCP-compliant content, analog part of **DVI-I Cascade** port is bypassed (relays) in case any of cascaded modules has no power or is defective. A powered down or a defective unit in the chain **WILL NOT** compromise whole system, other modules in the chain will display properly.*
*4. To display HDCP-compliant content, make sure that monitor is also HDCP-compliant. A powered down or a defective unit in the chain **WILL** compromise whole system causing inability to display properly (HDCP encryption feature).*
5. Display of HDCP-compliant content is not possible when using a DVI-VGA Y-cable.

Step 5. *Connect RS-232 cable to computer's RS-232 port and **RS-232** port of MCC 8004 ID 0.*
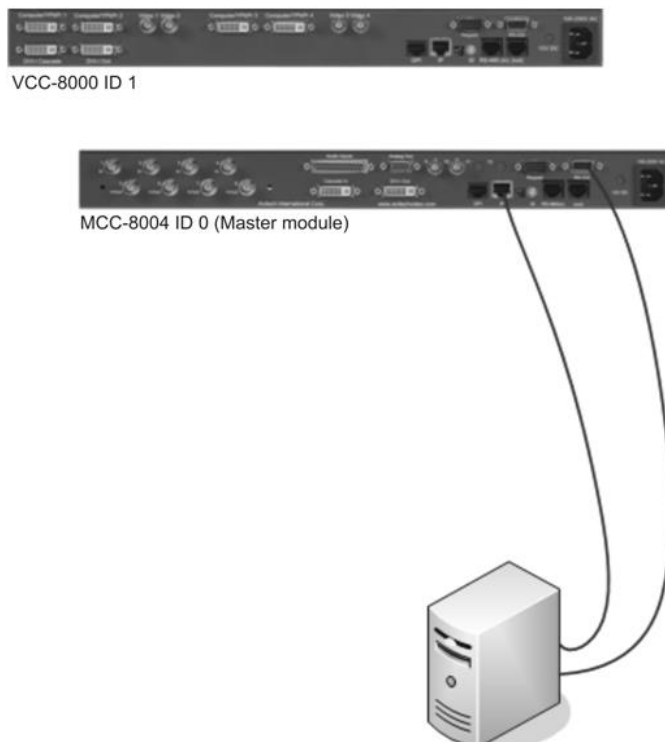*Or, connect Ethernet cable between MCC 8004 ID 0 **IP** port to computer's RJ-45 port.*

Figure 2-18 Connect RS-232 or Ethernet Cable Between Computer and MCC 8004

Step 6. *If computer application uses multimedia input, connect DVI/VGA cable to computer's DVI port*
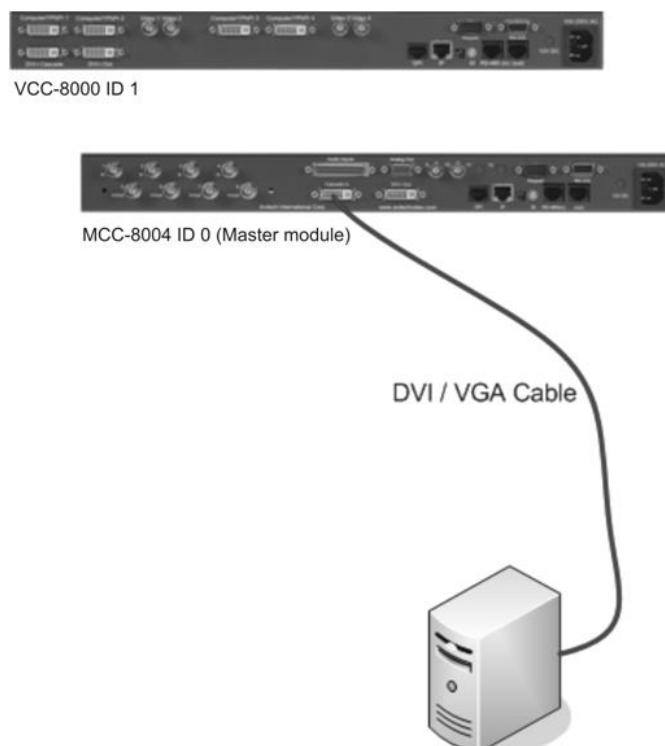*and **Cascade In** port of MCC 8004 ID 0 (you may need to use a DVI-to-VGA adapter).*

Figure 2-19 Connect DVI/VGA Cable Between Computer and MCC 8004

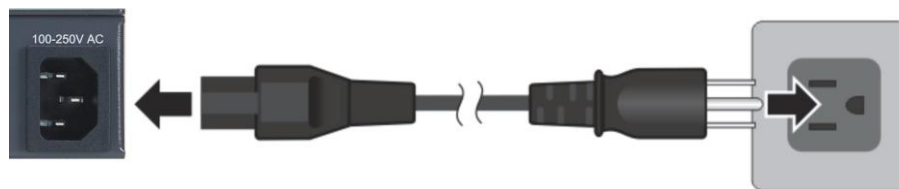*Step 7. Connect AC power cord to MCC 8004 and Titan 8000 **100~250V** power jacks.*

Figure 2-20 Connect the AC Power Cord

Connect optional 12 V DC power adapter if available to achieve power redundancy. Power (AC or DC) can then be unplugged without affecting power supply to module.

Appendix A   Simplified Control Panel (SCP)

Aside from using Phoenix-G (former Galaxy) software, you can use optional numerical Simplified Control Panel keypad that allows you to quickly recall presets, without having to use a computer. This chapter familiarizes you with using Simplified Control Panel to load up to 10 presets, saved in the flash memory of Titan 8000.

Figure A-1 Simplified Control Panel Keypad

A.1 Using the Simplified Control Panel

A single SCP can support multiple modules, as well as support up to 26 presets on 10 displays. For example:

- ✓ *"11" signifies Display 1, Preset 1*
- ✓ *"19" signifies Display 1, Preset 9*
- ✓ *"99" signifies Display 9, Preset 9*

A.2 Preparing Titan for Use With SCP Keypad

*Step 1. Create up to 10 presets with filenames **0 – 9** (up to 10 groups). Refer to Phoenix-G Reference Guide for details on saving presets.*
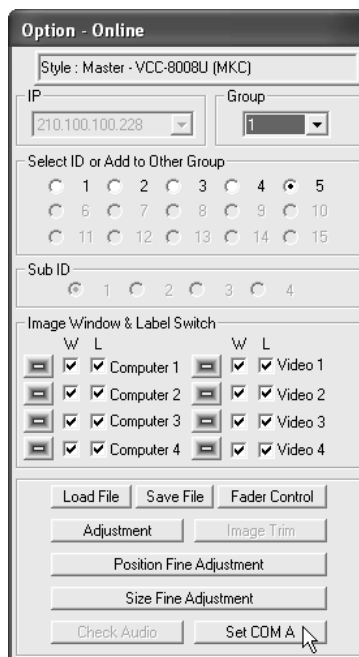
*Step 2. On **Option** window, click **Set COM A**.*

Figure A-2 Phoenix-G Software: Click "Set COM A"

*Step 3. Select **Load File** on **Mode** drop-down menu. Then click **OK**.*
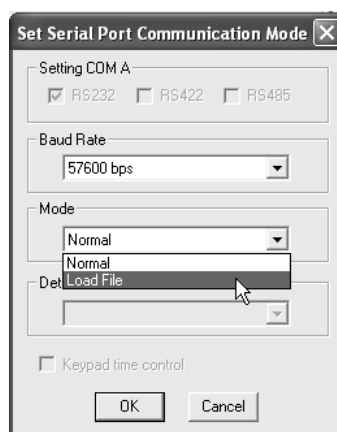

Figure A-3 Phoenix-G Software: Select "Load File"

Step 4. You will be prompted to shutdown the Phoenix-G (formerly Galaxy) software and save to flash.

*Step 5. Turn off power from power strip to the Titan. Then, plug in the SCP keypad to the rear panel's **Keypad** port.*

⚠ | *If you need to connect again using Phoenix-G (formerly Galaxy) software, you must first disconnect SCP keypad.*

Step 6.   Turn on power from power strip to the Titan.

A.3 Recalling Presets

Titan's COM port must be set to the following parameters:

- ✓ *RS-232*
- ✓ *8-bit data*
- ✓ *1-stop*
- ✓ *No parity*
- ✓ *9600 bps baud rate*

⚠ | ***Num Lock*** *must be ON when using the SCP keypad.*

*Step 1.   Press **Enter** to login to Simple Control Panel mode (takes around 15 seconds to collect necessary information). Titan will not respond to any other keys if it is not in SCP mode.*

Step 2.   Use Phoenix-G (formerly Galaxy) software's preset files saved in Titan flash memory.

*Step 3.   When the next window appears, click **OK** to exit.*

*Preset filename format is: **X.GPY***
*where **X** = **1** – **26**, this refers to preset **1** to preset **26***
*where **Y** = **1** – **n**, this refers to group **1** to group **n**.*

Step 3.   Recall preset mode 1:
*To recall next preset file, press "**+**" (plus) key.*
*To recall previous preset file, press "**–**" (minus) key.*
Preset files within a group are loaded in a circular sequential order.
(e.g., 11→12→17→18 --- →11→12……)
*To switch to Display mode, press / (slash) → / (slash) → **Enter** (total of 3 keys).*

Step 4.   Recall preset mode 2:
To recall a specific preset file, press the 2 number keys. First number signifies display number, second number signifies preset number.
For example: pressing the "19" number keys would allow Titan to recall display 1, preset 9 ("9.GP1" preset filename).

⚠ | *Available hot-keys and filename ranges from "00" = "0.GP0" to "99**"** = "9.GP9."*

*Step 5.   Recall preset mode 3 (supports recall of preset files **0** to **26**):*
*Example 1: pressing **1** (one) → **.** (point or period) → **1** (one) → **Enter** (total of 4 keys) would allow Titan to recall "1.GP1" file.*
*Example 2: pressing **2** (two) → **.** (point or period) → **1** (one) → **7** (seven) → **Enter** (total of 5 keys) would allow Titan to recall "17.GP2" file.*
*Example 3: pressing **3** (three) → **.** (point or period) → **2** (two) → **6** (six) → **Enter** (total of 5 keys) would allow Titan to recall "26.GP3" file.*

*Step 6. To save Titan preset configuration: press * (star or asterisk) → / (slash) → **Enter** (total of 3 keys). During this process (approximately 5 seconds), make sure that your Titan has a stable and uninterrupted power supply.*

*Step 7. When DVI-I port has an analog VGA input signal, Titan can do automatic image adjustment by pressing the following three keys: . (point or period) → * (star or asterisk) → **Enter**.*

*Step 8. When DVI-I port has an analog VGA input signal, Titan can do automatic gain adjustment by pressing the following three keys: . (point or period) → / (slash) → **Enter**.*

*Step 9. To logout from Simple Control Panel mode, unplug SCP keypad from rear panel's **Keypad** port.*

Appendix B   Resetting to the Factory-Default State (Clearing the Flash Memory)

Method 1

Step 1. Turn off power from the power strip to the Titan 8000.

*Step 2. Push the number **2** dip switch located on the Titan rear panel downward to the **ON** position.*

Figure B-1 Push the Number 2 Dip Switch

Step 3. Restore power from the power strip to the Titan 8000.

*Step 4. Push back the number **2** dip switch upward to the default position.*

Method 2

*Step 1. Run the Phoenix-G (formerly Galaxy) software by double-clicking the "Phoenix-G-Vxxx.exe" file. Click **Others**.*
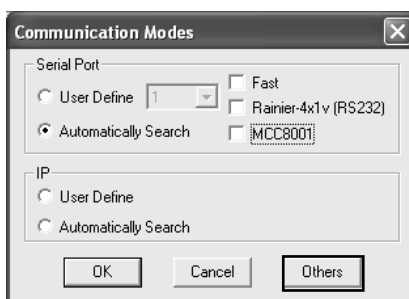
Figure B-2 Phoenix-G Software: Click "Others"

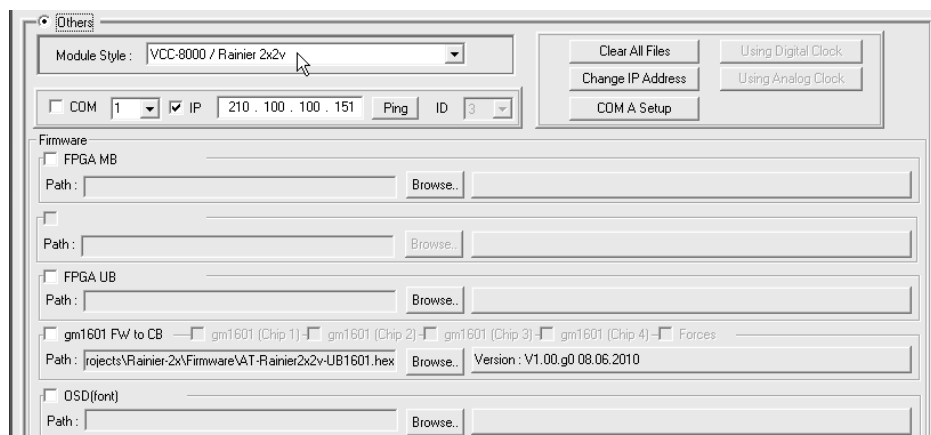*Step 2. Select **Others** and on the **Module Style** drop-down menu select **Titan** (formerly VCC 8000).*

Figure B-3 Phoenix-G Software: Select the Module Style
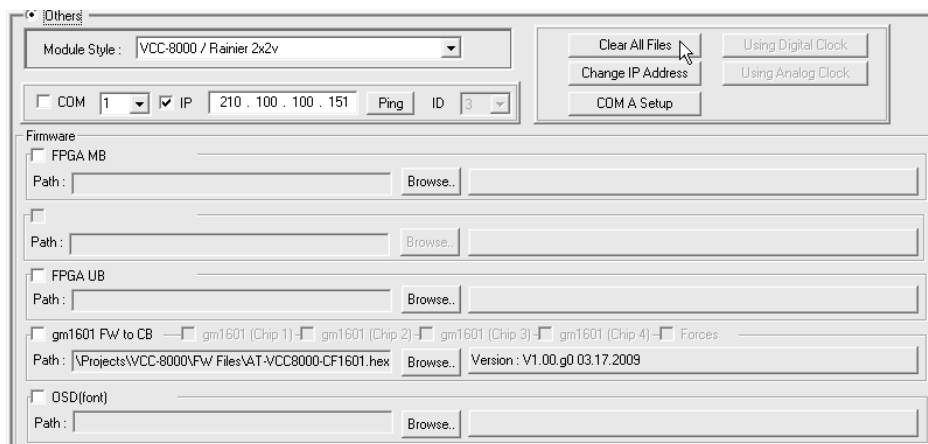
*Step 3. Click **Clear All Files**.*

Figure B-4 Phoenix-G Software: Click "Clear All Files"
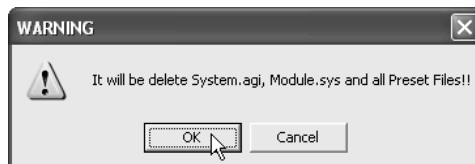
*Step 4. Click **OK** to continue.*

Figure B-5 Phoenix-G Software: Click "OK"

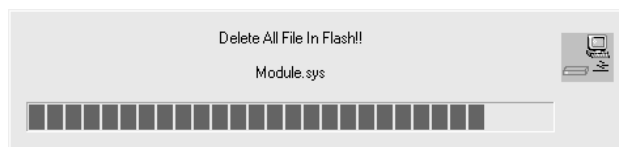*The progress of deleting the files will be shown onscreen.*

Figure B-6 Phoenix-G Software: Progress of Deleting Files

Step 5. Reboot the module by turning off power from the power strip to the Titan 8000 and then turning it back on to completely clear the flash memory and return it to the default state.
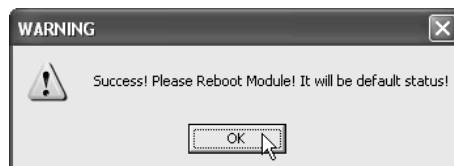

Figure B-7 Reboot Titan 8000