User's Manual

MCC-8004 series

Revision 1.8.4
(May, 2012)

WARNING

Do not attempt to disassemble your MCC-8004 device. Doing so may void your warranty. There are no serviceable parts inside. Please refer all servicing to qualified personnel.

TRADEMARKS

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If you have any questions regarding the information provided in this guide, call our technical support help line at 425-885-3863, or our toll free help line at 1-877-AVI-TECH. You can also email us at support@avitechvideo.com

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Warranty

Avitech International Corporation (herein after referred to as “Avitech”) warrants to the original purchaser of the products manufactured in its facility (the “Product”), that these products will be free from defects in material and workmanship for a period of one (1) year or fifteen (15) months from the date of shipment of the Product to the purchaser. There is a three (3) month grace period between shipping and installation.

If the Product proves to be defective during the one (1) year warranty period, the purchaser’s exclusive remedy and Avitech’s sole obligation under this warranty is expressly limited, at Avitech’s sole option, to:
(a) repairing the defective Product without charge for parts and labor; or
(b) providing a replacement in exchange for the defective Product; or
(c) if after a reasonable time is unable to correct the defect or provide a replacement Product in good working order, then the purchaser shall be entitled to recover damages subject to the limitation of liability set forth below.

LIMITATION OF LIABILITY: AVITECH’S LIABILITY UNDER THIS WARRANTY SHALL NOT EXCEED THE PURCHASE PRICE PAID FOR THE DEFECTIVE PRODUCT. IN NO EVENT SHALL AVITECH BE LIABLE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOSS OF PROFITS FOR ANY BREACH OF THIS WARRANTY.

If Avitech replaces the defective Product with a replacement Product as provided under the terms of this Warranty, in no event will the term of the warranty on the replacement Product exceed the number of months remaining on the warranty covering the defective Product. Equipment manufactured by other suppliers and supplied by Avitech carries the respective manufacturer’s warranty. Avitech assumes no warranty responsibility either expressed or implied for equipment manufactured by others and supplied by Avitech.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED.

This Hardware Warranty shall not apply to any defect, failure, or damage:
(a) caused by improper use of the Product or inadequate maintenance and care of the Product;
(b) resulting from attempts by other than Avitech representatives to install, repair, or service the Product;
(c) caused by installation of the Product in a hostile operating environment or connection of the Product to incompatible equipment; or
(d) caused by the modification of the Product or integration with other products when the effect of such modification or integration increases the time or difficulties of servicing the Product.

Any Product which fails under conditions other than those specifically covered by the Hardware Warranty, will be repaired at the price of parts and labor in effect at the time of repair. Such repairs are warranted for a period of ninety (90) days from date of reshipment to customer.

Extended Warranty Options

Avitech offers OPTIONAL Extended Warranty plans that provide continuous coverage for the Product after the expiration of the Warranty Period. Contact an Avitech sales representative for details on the options that are available for your Avitech equipment.

Services and Repairs Outside the Warranty Period

Avitech makes its best offer to repair a product that is outside the warranty period, provided the product has not reached its end of life (EOL). The minimum charge for such repair excluding shipping and handling is $200 (US dollars).

Regulatory Information

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

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Avitech is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

European Union CE Marking and Compliance Notices

Statements of Compliance

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

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

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

Finnish
Tämä tuote noudattaa EU-direktiivin 1999/5/EC määräyksiä.

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

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

Greek
Το προϊόν αυτό πληροί τις προβλέψεις της Ευρωπαϊκής Οδηγίας 1999/5/EC.

Icelandic
Þessi vara stenst reglugerð Evrópska Efnahags Bandalagsins númer 1999/5/EC.

Italian
Questo prodotto è conforme alla Direttiva Europea 1999/5/EC.

Norwegian
Dette produktet er i henhold til bestemmelsene i det europeiske direktivet 1999/5/EC.

Portuguese
Este produto cumpre com as normas da Diretiva Européia 1999/5/EC.

Spanish
Este producto cumple con las normas del Directivo Europeo 1999/5/EC.

Swedish
Denna produkt har tillverkats i enlighet med EG-direktiv 1999/5/EC.

Australia and New Zealand C-Tick Marking and Compliance Notice

Statement of Compliance

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

Preface

Welcome

Congratulations on purchasing this Avitech MCC-8004.

The MCC-8004 multiviewer is a multi-image video processor able to combine up to 60 digital and analog video, as well as audio signals in a single display. Depending on the model, MCC-8004 multiviewer can auto-sense up to four HD / SD-SDI / NTSC / PAL (50 / 60 Hz) inputs, with output resolution of up to 1920×1200. This series of multiviewers provides a fully integrated on-screen display (OSD) with labels, borders, alarms, Asian and European UMD characters, and optional audio meters (designed to visually monitor analog stereo and AES / EBU (Audio Engineering Society / European Broadcasting Union) audio inputs.

Allowing you to display up to 60 video inputs on a single monitor (display group), digital and analog video as well as audio signals can be combined in a single display.

The MCC-8004 offer outstanding scalability and flexibility, as individual modules can be combined to create your desired configuration. Modules can be added or removed as the application requires. This flexible architecture eliminates single points of failure that can cripple an entire system. Component failures can be absorbed with simple built-in, software-based procedures.

Using the latest DCDi™ technology from Faroudja, DCDi is a video mode algorithm that stands for Directional Correlation De-interlacing. Its function is to help optimize a full screen mode regardless of the input format.

Your MCC-8004 can be used as a standalone unit, or cascaded (daisy-chained) with MCC-8004 or Titan-8000 (non-HDCP compliant modules), providing highly complex monitoring applications (up to 15 modules).

NOTE: No DVI cascade is available for the MCC-8004Q.

About this Manual

This manual contains comprehensive information about your Avitech MCC-8004 to help you operate the device.

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

NOTE: provides additional hints or information that requires special attention.

CAUTION: identifies important information which, if not followed, may result in loss of data or damage to your device.

Any name of menu, command, icon or button that you can see on the screen is shown in a bold typeset. For example:

On the **Start** menu, select **Settings**.

1 Getting Started

This chapter introduces you to the features and specifications, as well as the external components of your Avitech MCC-8004. It also guides you through the process of setting up your MCC-8004 for use.

> **NOTE:**
> - MCC stands for Media Control Center.
> - Depending on the model you purchased, the cabinet color and the look of the accessories may be different from the ones shown in this manual.

1.1 Package Contents

After unpacking the shipping carton, you should find these standard items:

Avitech MCC-8004

Standard Power Cable (US customers)

Redundant DC Power Supply (optional) *

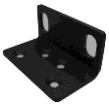
12-inch DVI-I Cascading Cable

10-inch RS-485 Cascading Cable

RJ-50 GPIO / Tally Terminal Block

Utility Disc (contains software and user's manual)

Set of screws (already installed on MCC-8004 upon order for assembly on to rack mount)



Ear (already installed on MCC-8004 upon order for assembly on to rack mount)

DB-25 Audio Terminal (optional)

DVI-I Breakout Cable (optional)

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

Avitech TACP (optional) ***

* This is an optional external power supply along with the associated dual power supply PCBA inside the MCC-8004 to achieve power redundancy. If this optional external power supply is connected, power (AC or DC) can be unplugged on the MCC-8004 without affecting the power supply to the module.
** When using the DVI-I female connector on the MCC-8004, the connector may easily be damaged if the DVI-I plug (male) has bended pins. With this optional DVI-I male-to-female cable permanently connected to the MCC-8004, frequent connection and disconnection will only occur to the female end of this short cable, rather than to the female connector of the MCC-8004.
*** The Avitech TACP can be used with the MCC-8004. Contact your authorized dealer or refer to the TACP User Manual for more details.

1.2 Product Features

- Automatic sensing of HD-SDI / SD-SDI and NTSC / PAL analog input.
- Up to 26 internal configuration presets.
- On-screen display of labels, borders, and video alarms.
- Supports direct TSL tally / UMD interface.
- Eight GPI for tally or recall of preset.
- Communication control via RS-232 or IP.
- Compatibility with Phoenix-G software for configuration, monitor layout, and multiple-system control.
- Avitech ASCII Protocol (AAP) support.
- DCDi™ processing (MCC-8004Q and MCC-8004U).
- Fixed quad-split display (MCC-8004Q).
- 32 channels of embedded audio with phase correlation (MCC-8004Q).
- Audio meters for embedded audio with phase, AES (balanced / unbalanced), analog audio – option.

NOTE:
- Embedded digital audio streams into high definition digital video signals.
- AES (Audio Engineering Society) – Officially known as AES3, it is a digital audio standard used for carrying digital audio signals between various devices. AES was designed primarily to support PCM (pulse-code-modulated) encoded audio in either DAT (digital audio tape) format at 48 kHz or compact disc format at 44.1 kHz.
- Analog audio is superior to digital audio due to the absence of fundamental error mechanisms, which are present in digital audio systems, including aliasing, quantization noise, and supposed limitations in dynamic range.

Specifications

Parts		Specifications
Inputs	Video	Automatic sensing via BNC HD-SDI (1080i/59.94, 1080i/60, 1080i/50, 720p/59.94, 720p/60, 720p/50) SD-SDI (NTSC/525i, PAL/625i, 525p/59.94, 625p/50) NTSC / PAL Number of inputs: (for MCC-8004a / aL / aA / aAL) four automatic detection PAL / NTSC (for MCC-8004d / dL / dE / dEL / dA / dAL / dD / dDL) four automatic detection SD-SDI / PAL / NTSC (for MCC-8004Q / QL) four automatic detection HD / SD-SDI (for MCC-8004U / UL / UE / UEL / UA / UAL / UD / UDL) four automatic detection HD / SD-SDI / PAL / NTSC
	Loop	Available for MCC-8004aL / aAL / dL / dEL / dAL / dDL / QL / UL / UEL / UAL / UDL
Output		Resolution from 800×600 up to 1920×1200 (WUXGA) via DVI-I connector, simultaneous DVI and RGB Number of outputs: 2
Audio	Analog	Available for MCC-8004aA / aAL / dA / dAL / UA / UAL
	AES	Available for MCC-8004dD / dDL / UD / UDL
	Embedded	Available for MCC-8004dE / dEL / dA / dAL / dD / dDL / Q / QL / UE / UEL / UA / UAL / UD / UDL
Terminal block	GPI	8 inputs
	Audio (optional)	Up to 4 AES (unbalanced) inputs Up to 4 pairs of analog audio inputs
Data input / output	Serial port	Number of port: 1 Baud rate: up to 1 Mbaud RS-232
	Ethernet	Network Type: 100Base-T Number of port: 1 RJ-45
	RS-485	Number of ports: 2
DCDi™ processing		Available for MCC-8004Q / QL / U / UL / UE / UEL / UA / UAL / UD / UDL
Power supply		Consumption less than 30 watts Input: 100 ─ 240 V, 50 / 60 Hz; Output: 12 V DC (external)
Housing		Metal
Dimension (W×D)		483×254 mm (19×10 inch)
Weight		3.6 kg (8 lbs)

Parts		Specifications
Environment	Temperature	Operating: 0 °C (32 °F) to 40 °C (104 °F) Storage: –10 °C (–4 °F) to 50 °C (122 °F)
	Humidity	0 % to 80 % relative, non-condensing
Safety regulations		FCC / CE / C-Tick, Class A

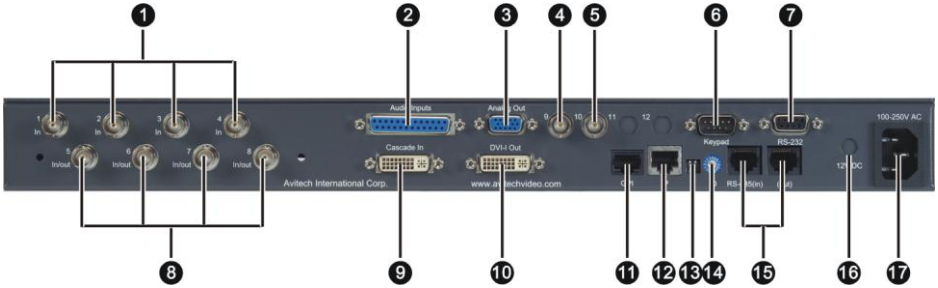
Operating Features

- Standalone operation (single MCC-8004) with control via RS-232 cable / IP or;
  multiple operation [up to 15 MCC-8004 / non-HDCP compliant Titan-8000 via 14 RS-485 and DVI (except MCC-8004Q)].
- One MCC-8004 can fit in a single rack unit space for a maximum of four video inputs.
- RJ-50 GPI terminal block adapter is provided for tally or loading presets.
- Optional audio terminal block is provided for monitoring AES / EBU or analog audio.
- Up to 26 presets / configurations can be saved and recalled from the module's Flash EEPROM.
- Compatible with non-HDCP compliant Titan-8000 modules.

1.3 Identifying the Front Hardware Component

Ref	Component	Description
❶	Power LED	Lights green when the MCC-8004 is powered on.

1.4 Identifying the Rear Hardware Components



Ref	Label / Component	Description
❶	**In 1 / 2 / 3 / 4**	BNC connectors for HD / SD-SDI / NTSC / PAL video inputs.
❷	**Audio Input**	Connector for up to four analog stereo pairs / AES audio inputs.
❸	**Analog Out**	VGA connector for output to monitor display.
❹	**Audio Monitoring Cascade Input (BNC 9)**	BNC connector for audio cascading input.
❺	**Audio Monitoring Cascade Output (BNC 10)**	BNC connector for analog audio output.
❻	**Keypad**	RS-232 connector for signal from optional TACP (Touch-Screen Control Panel) or numerical Simplified Control Panel (SCP) keypad.
❼	**RS-232**	RS-232 connector for signal from the computer.
❽	**In/out 5 / 6 / 7 / 8**	BNC connectors for HD / SD-SDI / NTSC / PAL video input loop (passive for analog video, active for digital video).
❾	**Cascade In**	DVI-I connector for multimedia input (cascade from other MCC-8004 / non-HDCP compliant Titan-8000 device).
❿	**DVI-I Out**	DVI-I connector for output to monitor display.
⓫	**GPI**	RJ-50 connector for GP input / output.
⓬	**IP**	Ethernet connector for using the computer's Phoenix-G software to perform setup on the MCC-8004.

Ref	Label / Component	Description
⓭	**Dip switches**	The left dip switch is for updating the firmware, while the right dip switch is for returning the MCC-8004 to the factory-default setting.
⓮	**ID**	Rotary dial to assign unique addresses in systems with two or more units.
⓯	**RS-485 (in) (out)**	RS-485 connectors for serial cascading input / output.
⓰	**12V DC** (optional)	Power connector for connecting the optional power adapter.
⓱	**100-250V AC**	Power jack for connecting the AC power cord.

1.5 Getting Your MCC-8004 Ready for Use

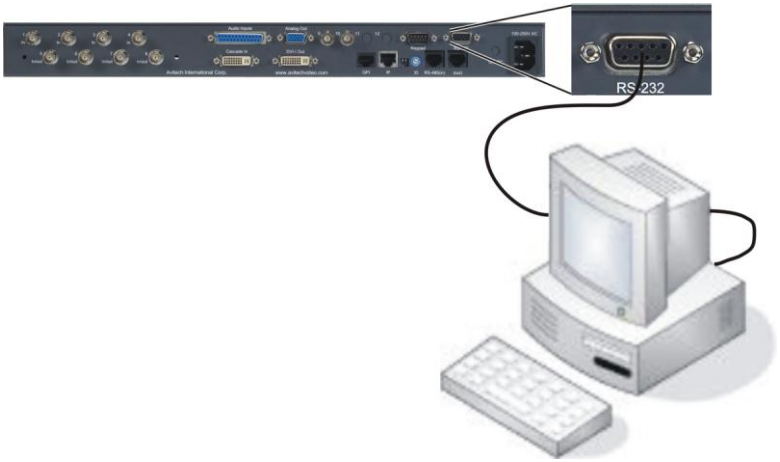
Basic Hardware Connections

Perform the following steps to get your MCC-8004 set up and ready to use:

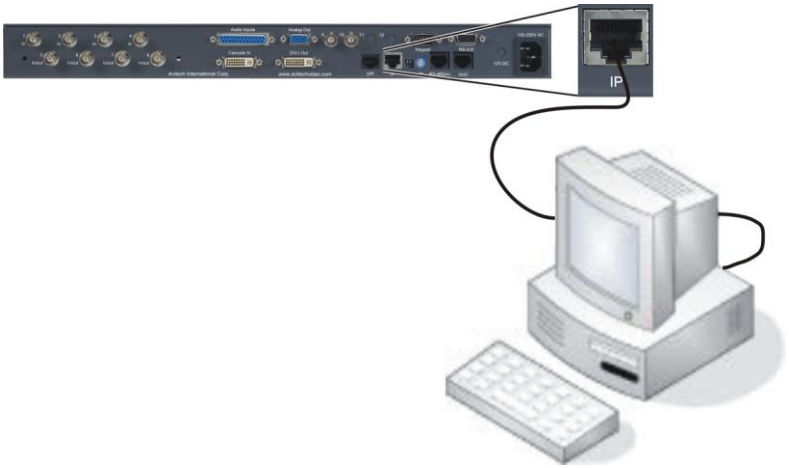
> **NOTE:** The steps outlined next would depend on the type of configuration you wish to set up.

1. Connect up to four BNC cables to the four video **In**put **1** / **2** / **3** / **4** ports for:
   – HD / SD-SDI video inputs or;
   – NTSC / PAL video inputs or;
   – SD-SDI / NTSC / PAL video inputs or;
   – HD / SD-SDI / NTSC / PAL video inputs.

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



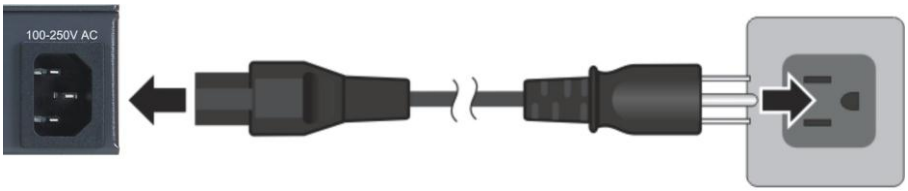
Or, connect the Ethernet cable to the **IP** port for using the computer's Phoenix-G software to perform setup on the MCC-8004.



3. Connect the DVI-I cable to the **DVI-I Out** port for video output to the monitor.

4. Make sure to assign a unique address to your MCC-8004 **ID** rotary dial when connecting to systems with two or more units.

5. Connect the AC power cord to the **100-250V AC** power jack.



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

Cascading

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

Cascading Two or More MCC-8004

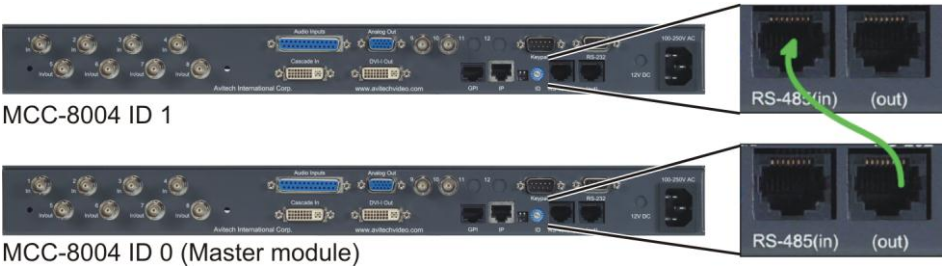
To cascade two or more MCC-8004, perform the following steps:

1. Set the rotary **ID** on the first MCC-8004 to **0**, set the rotary **ID** on the second MCC-8004 to **1**, set the rotary **ID** on the third MCC-8004 to **2**, and so forth (can be other values as long as they are different from each other's setting).

> **IMPORTANT:** When cascading two or more modules (up to 15 maximum), make sure each module gets assigned a unique rotary ID, or it will cause input conflicts.

2. To display video overlay from each module, all units must be connected to each other via male-to-male short DVI cascading cable. Take a DVI cascading cable and connect one end to the **DVI-I Out** port on the Master (first) module (N), and the other end to the **Cascade In** port of the next module in the chain (N+1). Refer to the sample module combination as follows:

3. Module interface is cascaded through RJ-45 (RS-485) which is used to loop communication from one module to the next. The data stream carries control and configuration information. Take the RS-485 cascading cable and connect one end to the **RS-485 (out)** of the Master (first) module (N) and the other end to **RS-485 (in)** of the next module up (N+1). Refer to the sample module combination as follows:

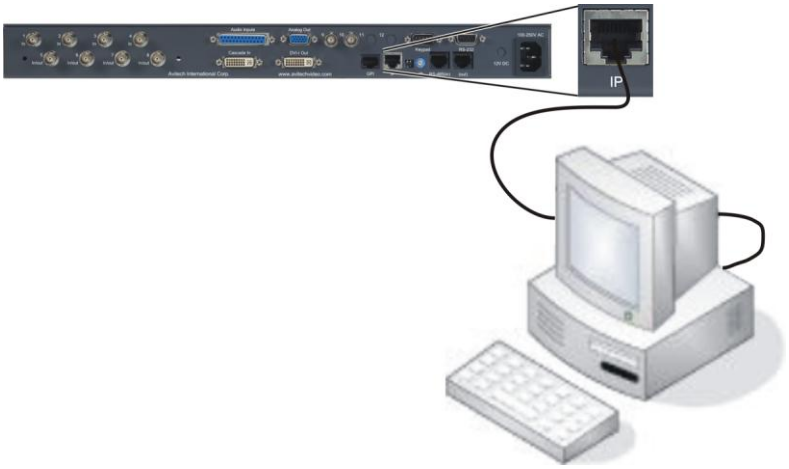


4. The output from **DVI-I Out** port on the last module cascaded should go to the group output monitor display via single-link DVI-D cable.

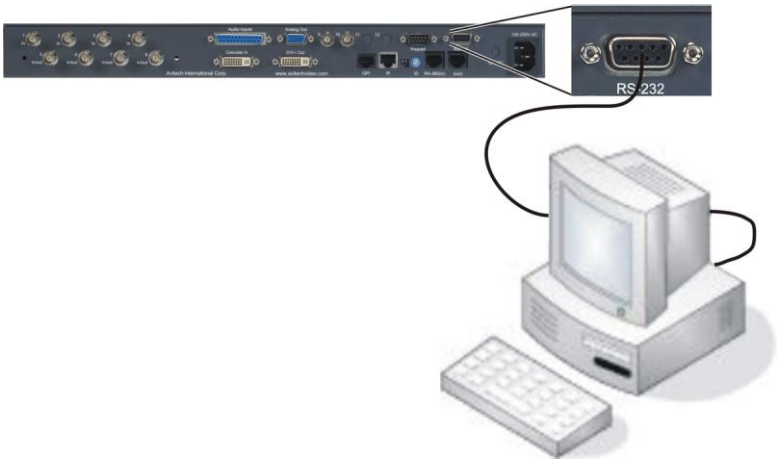
Or, for monitor display with VGA input, connect one end of the VGA cable to the **Analog Out** port of the last cascaded MCC-8004 ID # and the other end to the monitor display.

NOTE: The analog part of the **Cascade In** port is bypassed (relays) in case the module 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.

5. Connect the computer that is running the Phoenix-G software to the Master module. If using an IP connection, connect a straight-through or a cross-over RJ-45 cable from the computer to the **IP** port on the module. If using a serial connection, connect a DB9 straight-through serial cable from the computer to the module's **RS-232** port.

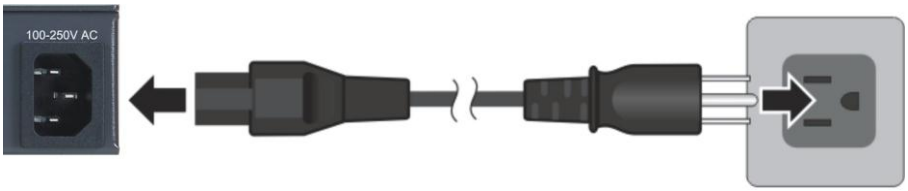


OR



6. If the computer application uses multimedia input, connect one end of the DVI cable to the computer's DVI port and the other end to the **Cascade In** port of MCC-8004 ID 0 (Master module).

7. Connect the power cables to the Avitech multiviewer modules and make sure that power is available.



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

Cascading a MCC-8004 With a Titan-8000

IMPORTANT:

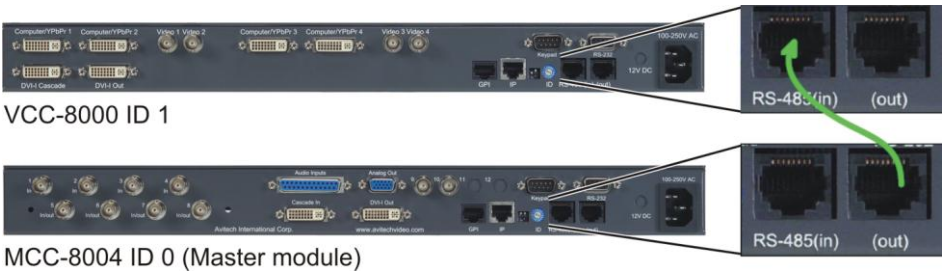
- Cascading the Titan-8000 with HDCP function and MCC-8004 is not allowed. This is because the MCC-8004 does not support outputting video with HDCP-compliant content.
- Cascading the Titan-8000 without HDCP function and MCC-8004 is allowed. When cascading multiple Titan-8000s without HDCP function and MCC-8004s, make sure to connect the Titan-8000(s) without HDCP function together in sequence and the MCC-8004(s) connected together in sequence. The Titan-8000 without HDCP function must be the last module that connects to the monitor display.
- Make sure to set the same baud rate for the MCC-8004 and Titan-8000 (refer to the later sections for setting the baud rate).

To cascade a MCC-8004 with a Titan-8000, perform the following steps:

1. Set the rotary **ID** on the MCC-8004 to **0** and set the rotary **ID** on the Titan-8000 to **1** (can be other values as long as both are different from each other's setting).

2. Connect one end of DVI cable to the **DVI-I Out** port of MCC-8004 ID 0 and the other end to the **DVI-I Cascade** port of Titan-8000 ID 1.

3. Connect one end of the RS-485 cable to the **RS-485 (out)** port of MCC-8004 ID 0 and the other end to the **RS-485 (in)** port of Titan-8000 ID1.



4. Connect one end of the DVI / VGA cable to the **DVI-I Out** port of Titan-8000 ID 1 and the other end to the monitor display (you may need to use a DVI-to-VGA adapter for monitor display with VGA input).

VCC-8000 ID 1

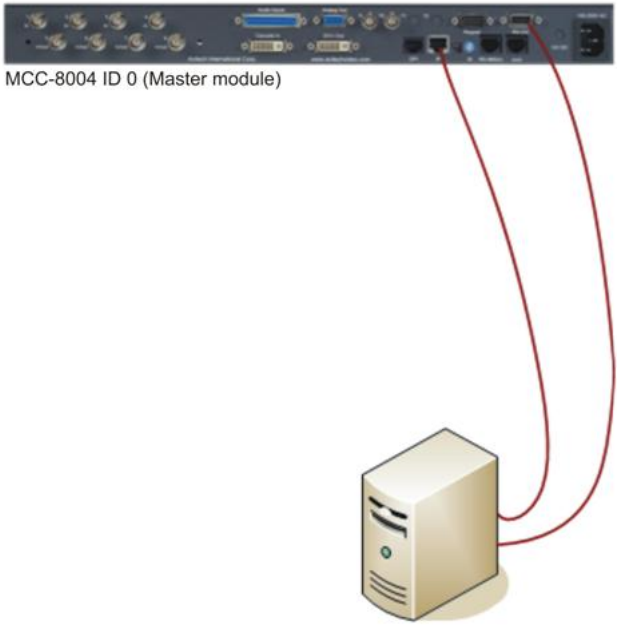
MCC-8004 ID 0 (Master module)

IMPORTANT:

- When cascading multiple MCC-8004s and Titan-8000s (must be non-HDCP compliant), make sure to configure the Titan-8000 as the last module that connects to the monitor display.
- Do not use a DVI splitter to connect to the Titan-8000 module as well as output HDCP-compliant content to the monitor display.
- When displaying non-HDCP-compliant content, the analog part of the **DVI-I Cascade** port is bypassed (relays) in case any of the 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.
- Display of HDCP-compliant content is not possible when using a DVI-VGA Y-cable.

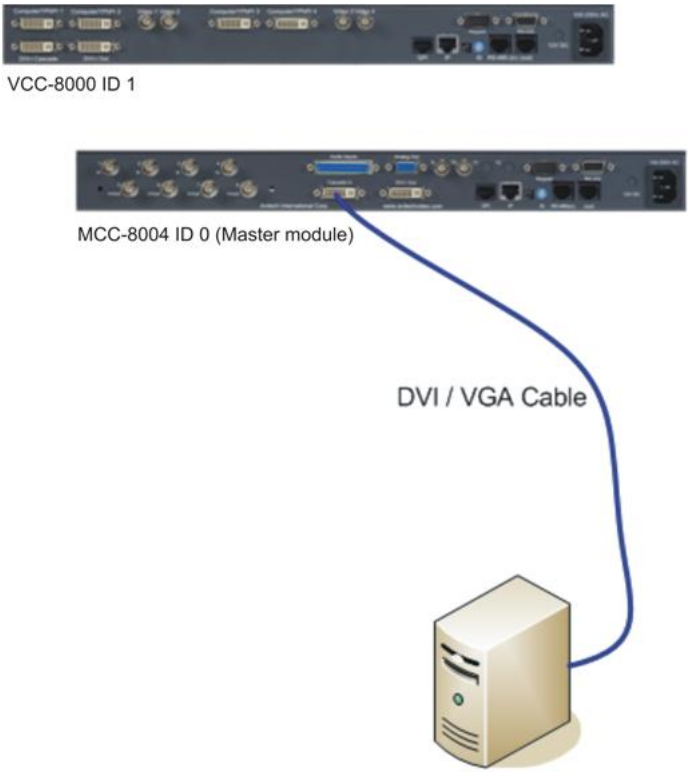
5. Connect one end of the RS-232 cable to the computer's RS-232 port and the other end to the **RS-232** port of MCC-8004 ID 0.
   Or, connect the Ethernet cable between the MCC-8004 ID 0 **IP** port to the computer's RJ-45 port.

VCC-8000 ID 1

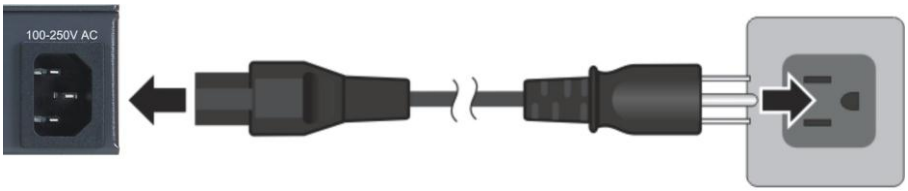


MCC-8004 ID 0 (Master module)

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



7. Connect the power cables to the MCC-8004 and Titan-8000 and make sure that power is available.



1.6 Using the Phoenix-G Software

The Phoenix-G configuration software is designed for all Avitech multiviewer modules. This program requires no installation, and should not be run from a "read-only" device, such as an optical disc. This section introduces the Phoenix-G software for setting up your system.

> **NOTE:** Make sure the MCC-8004 is powered on and connected properly to your computer (see previous section) before launching the Phoenix-G software.

Connection Methods

There are two ways your MCC-8004 can connect to the controlling computer:

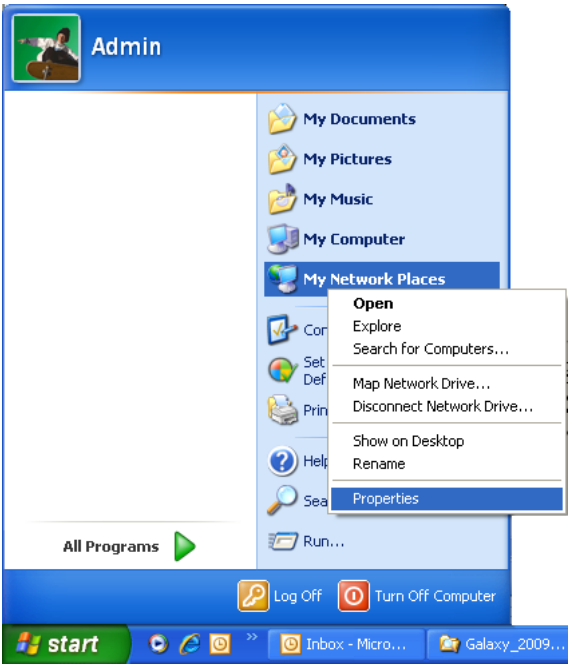
- Use the Ethernet cable (IP address) to connect (refer to the next section "Setting Up Static IP").
- Use the serial cable to connect (refer to a later section "Setting Up COM Port").

Setting Up Static IP

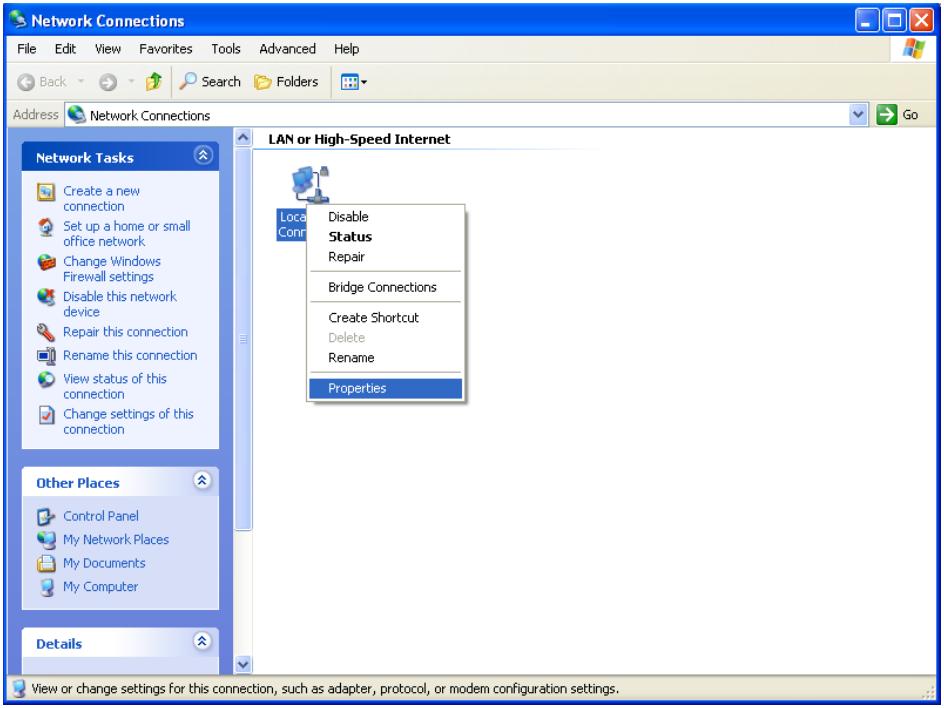
Before connecting the computers / controllers network to the MCC-8004 modules, computers with DHCP LAN connection will need to be changed to static IP, similar range as the Avitech MCC-8004 modules (e.g., "210.100.100.151" – factory-default setting). Or, change the IP address of the MCC-8004 Master module, similar range as the controlling computer.

Method 1: Change the IP Address of the Controlling Computer

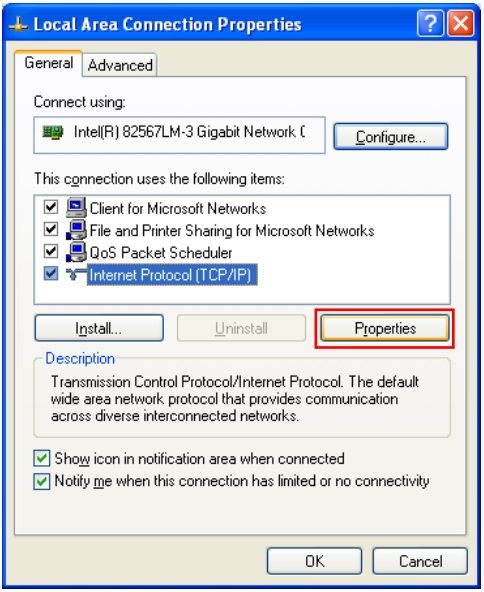
1. On your computer, click **Start**, and then right-click the mouse on **My Network Places**, and click **Properties**.



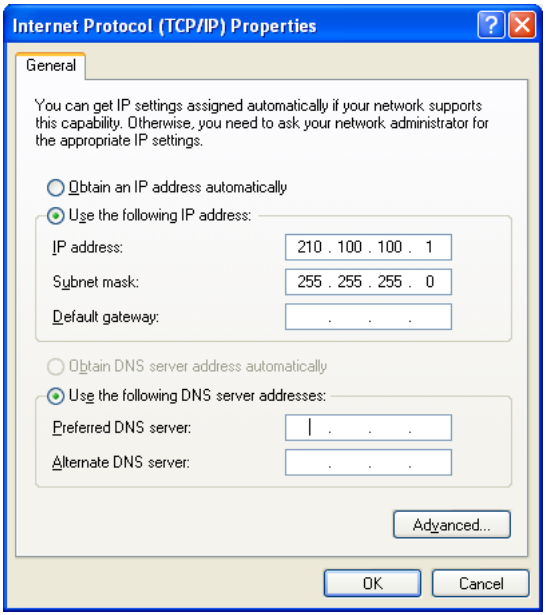
2. When the next screen appears, right-click the **Local Area Connection** icon, and click **Properties**.



3. When the next screen appears, click to highlight **Internet Protocol (TCP/IP)**, and click **Properties**.



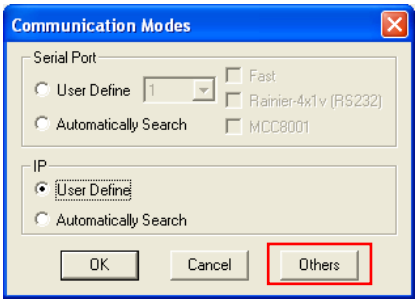
4. When the next screen appears, click the radio button to select **Use the following IP address:**, and then enter the **IP address: 210 . 100 . 100 . x** (where **x** is any value from **1** – **253**), and **Subnet mask: 255 . 255 . 255 . 0**.



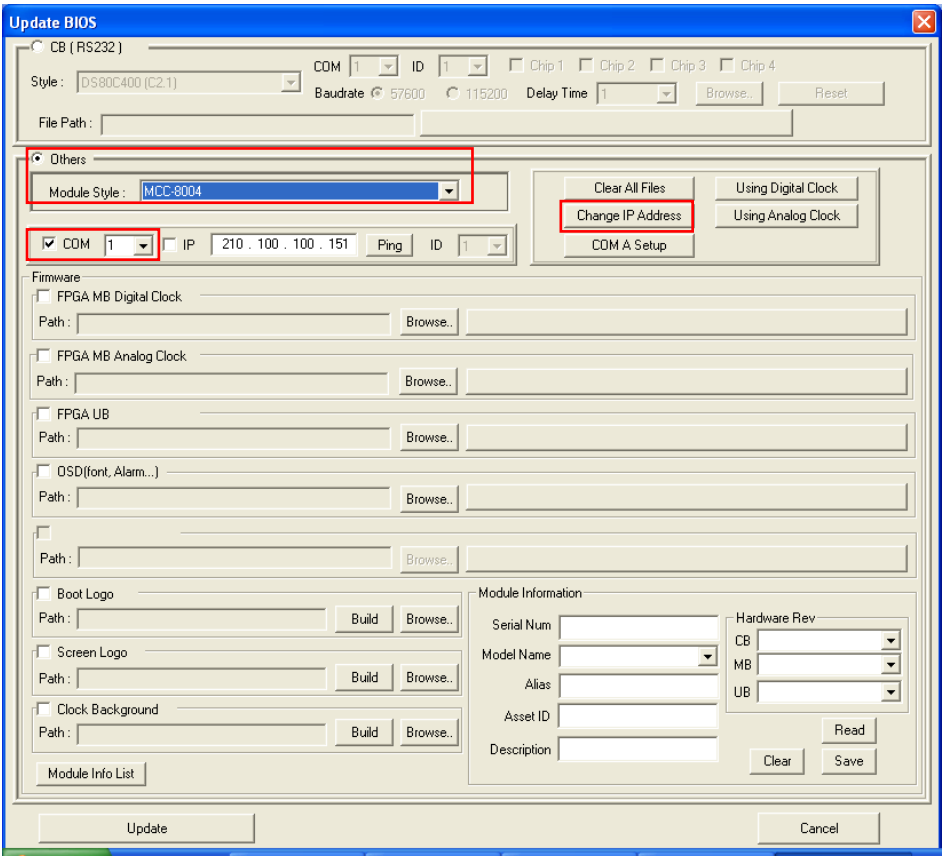
5. Click **OK** to exit.

Method 2: Change the IP Address of the MCC-8004 Master Module

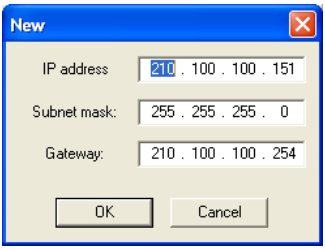
1. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file (located in the included utility disc). When the following screen appears, click **Others**.



2. When the following screen appears, click to select the **Others** radio button, and on the **Module Style** drop-down menu, select **MCC-8004**. Then, select **COM 1** (must be the same as the COM port setting of your computer).



3. Click **Change IP Address**. When the following screen appears, enter the new **IP address**, **Subnet mask**, and **Gateway**, to match the value of the controlling computer. Then, click **OK**.

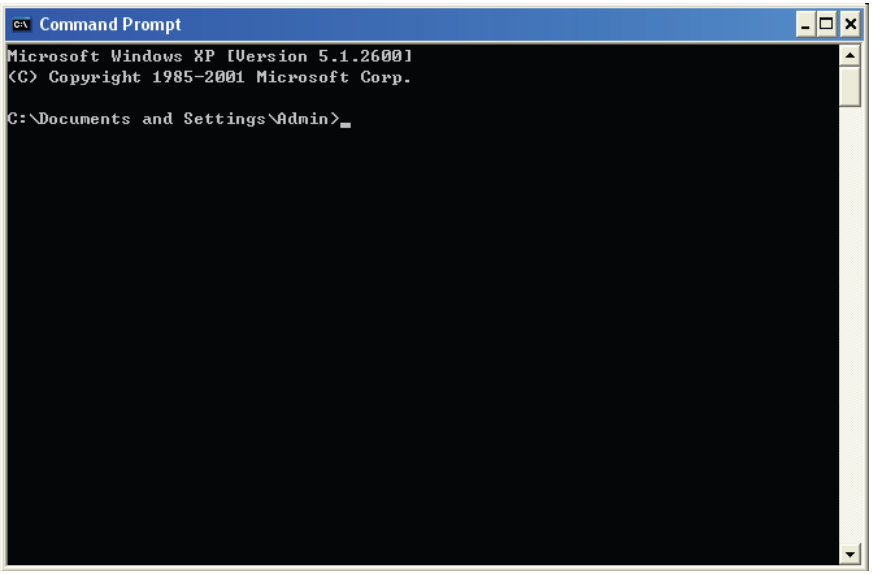


4. Click **Update** on the lower left portion of the **Update BIOS** window to exit.

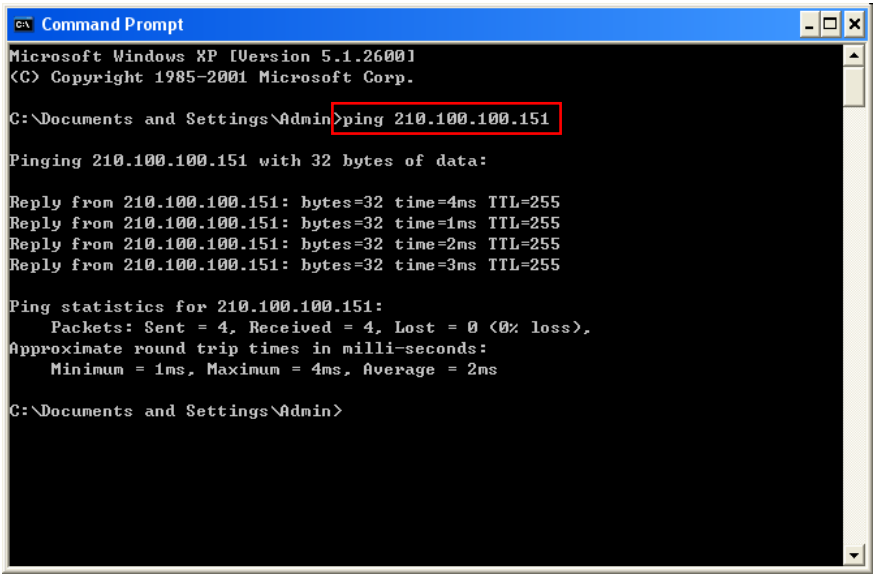
Pinging the MCC-8004 Module

If you decide to use the Ethernet cable to connect, make sure you can ping the module at "210.100.100.151" (factory-default IP address), by performing the following steps:

1. Click **Start→All Programs→Accessories→Command Prompt**. The following screen appears.



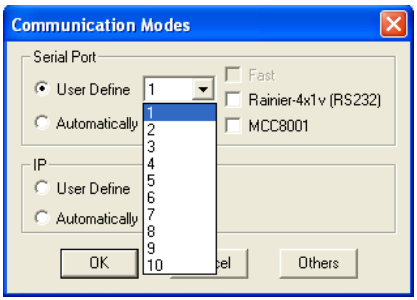
2. Type “ping 210.100.100.151” and the following screen appears to signify a successful communication.



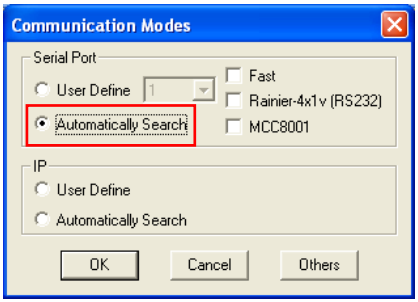
3. Type “exit” to exit the **Command Prompt** screen.

Setting Up COM Port

If you use the serial cable to connect, configure your computer’s COM port to be **1 – 10**. Upon starting up the Phoenix-G configuration software, make sure to specify the same COM port setting as your controlling computer.



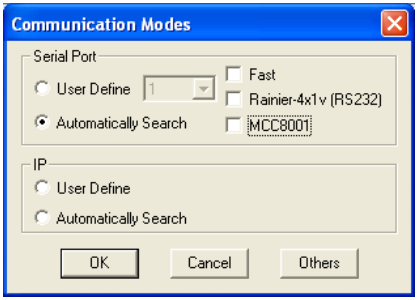
Or, click to select **Automatically Search** (may be slower on some systems).



Starting the Phoenix-G Configuration Software

To optimize the usage of your Avitech MCC-8004, perform the following steps to configure it using the Phoenix-G software:

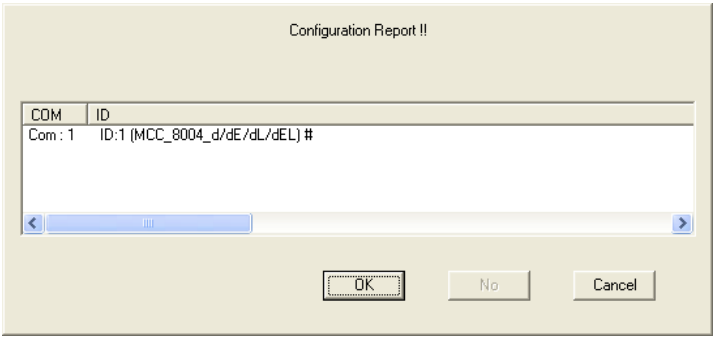
1. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file. When the following screen appears, under **Serial Port** select **Automatically Search**. Or, under **IP** select **User Define** if you know the IP address assigned to your MCC-8004.



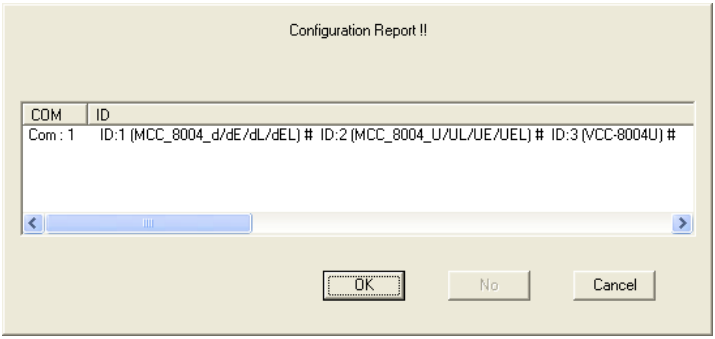
2. Click **OK** and your computer will start to search for your MCC-8004.

> **NOTE:**
> - If you have two or more modules cascaded, they should also be detected.
> - Make sure that the slave module's baud rate and resolution is the same as the master module's.

3. Upon finding your device, the following screen will appear to confirm connection to your MCC-8004.



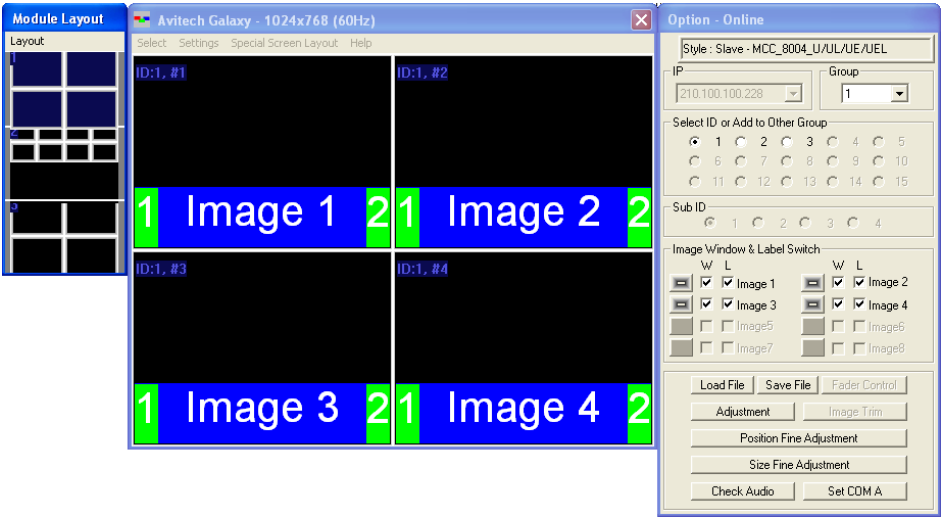
For standalone module



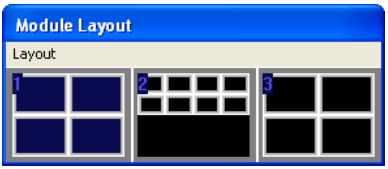
For cascaded modules

NOTE: Make sure the cascaded modules have different rotary ID settings (e.g., **1** – **2** – **3**) on their rear panels.

4. Click **OK** and the following screens appear: **Module Layout** window, **Phoenix-G** control window, and **Option** window.



- **Module Layout** window contains the bird's eye view of the module layout belonging to each ID in the system. In this example, the left window displays the layout belonging to ID:1 on the Phoenix-G control window; the middle window displays the layout belonging to ID:2, while the right window displays the layout belonging to ID3.

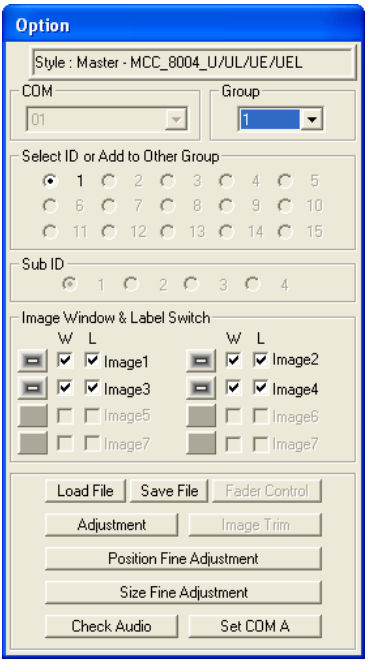


- **Phoenix-G** control window is for creating and configuring the layout.

On the title bar portion the following items can be found:

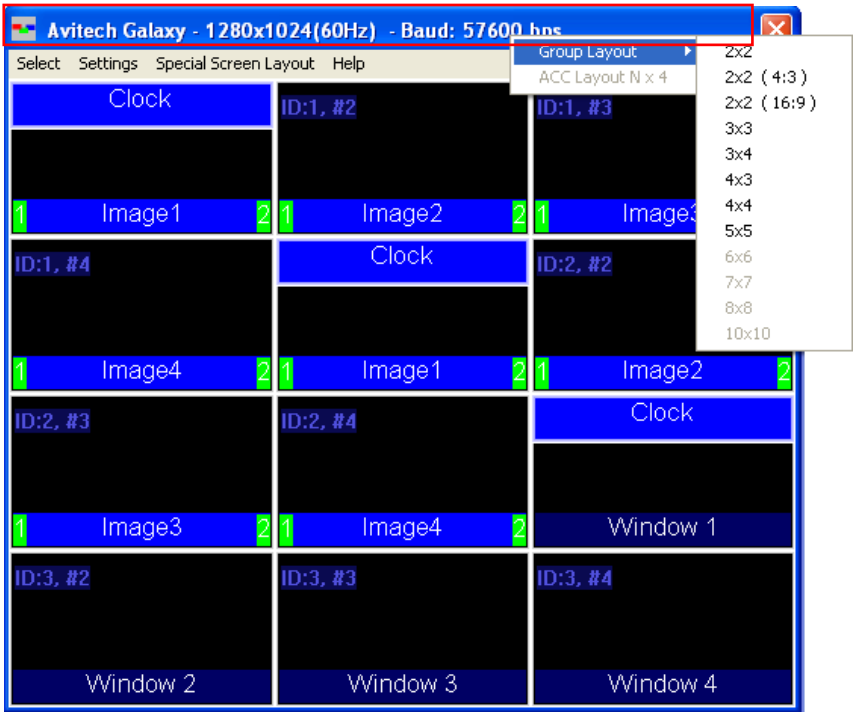
- *Logo icon* **Avitech Phoenix-G**: proprietary logo and the name of the software.
- **1024×768 (60Hz)**: shows the current output resolution and frequency.

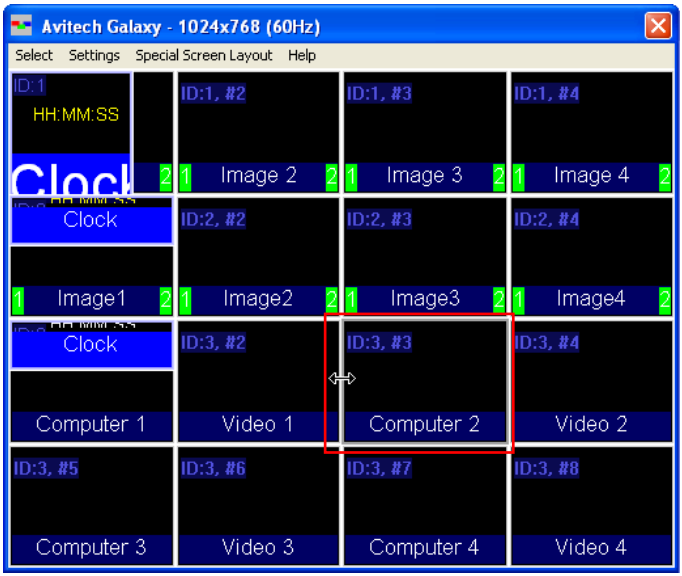
- **Option** window is for: group and video window / label setup; save / load file; adjust image; window size / position setting, monitor audio; and COM port setting.



5. Right-click the mouse on the title bar to access the **Group Layout** menu. Select from **2**×**2** up to **7**×**7** as possible grid positions on the monitor display.

> **NOTE:**
> - The layout size available for your particular model will depend on the monitor display's resolution as well as the smallest window size limitation (MCC-8004 smallest window size is 144×128 pixel).
> - An **8**×**8** grid position is possible when the OSD (on screen display) is turned off.

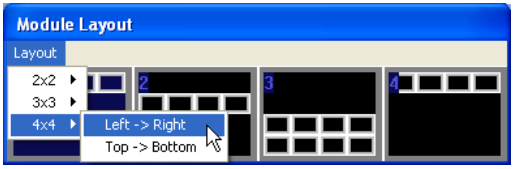




IMPORTANT: Upon enlarging / shrinking or changing the position of a particular window inside the Phoenix-G control window, a 1 / 2-pixel gap may be seen afterwards between the particular window and its neighboring windows appearing on the monitor display output. This is normal due to the difference in resolution setting of monitor display running the Phoenix-G program vis-à-vis the resolution setting of the monitor display output. It is most noticeable when the overall Phoenix-G control window is small.

Module Layout Window

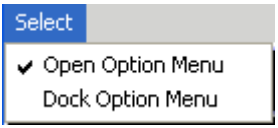
Layout Menu



Select from **2**×**2** up to **4**×**4** (left to right or top to bottom) as possible grid positions on the **Module Layout** window.

Phoenix-G Control Window

Select Menu



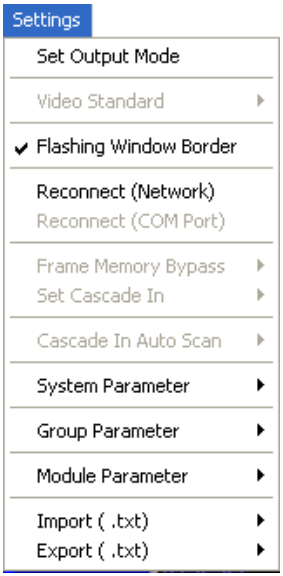
Open Option Menu

This toggles the **Option** window display on / off.

Dock Option Menu

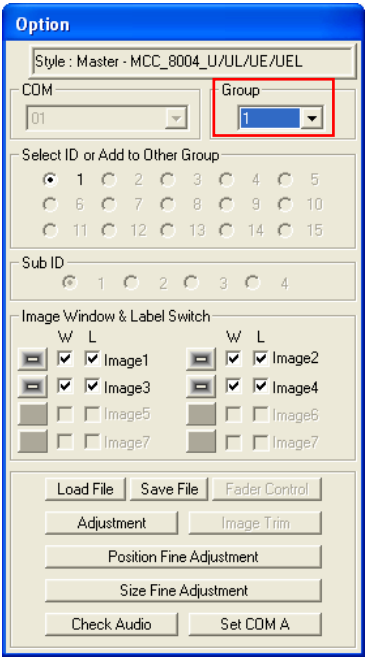
This returns the **Option** window display to its default position on the right side of the Phoenix-G control window. This option is not available (grayed-out) if the previous item **Open Option Menu** is disabled.

Settings Menu

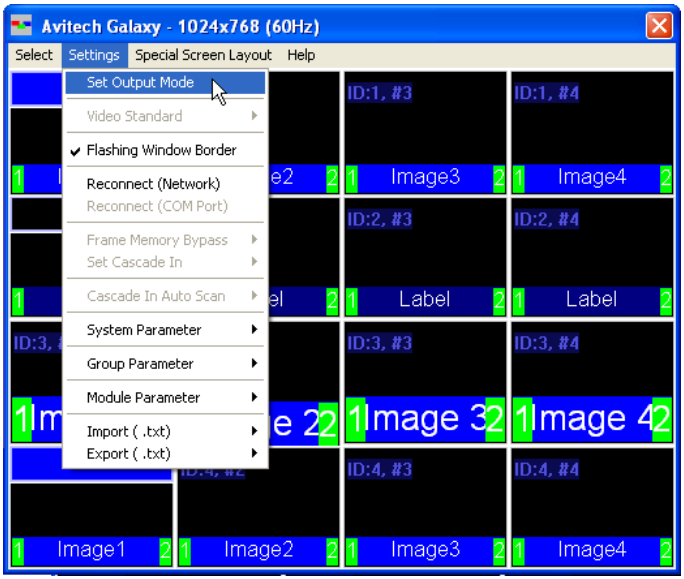


Set Output Mode

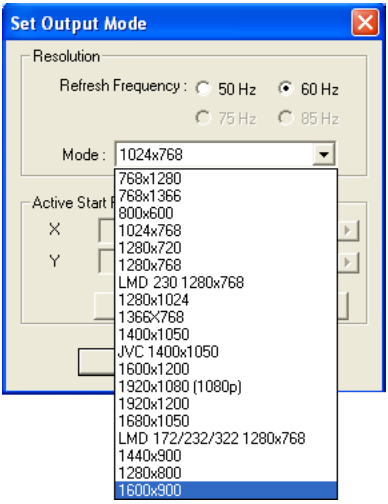
Changing the output resolution affects all the modules in the selected group. If you have more than one group, make sure you select the correct **Group** on the drop-down menu. The MCC-8004 default output resolution is 1024×768 / 60 Hz.



1. Click **Settings**, and then click **Set Output Mode**.

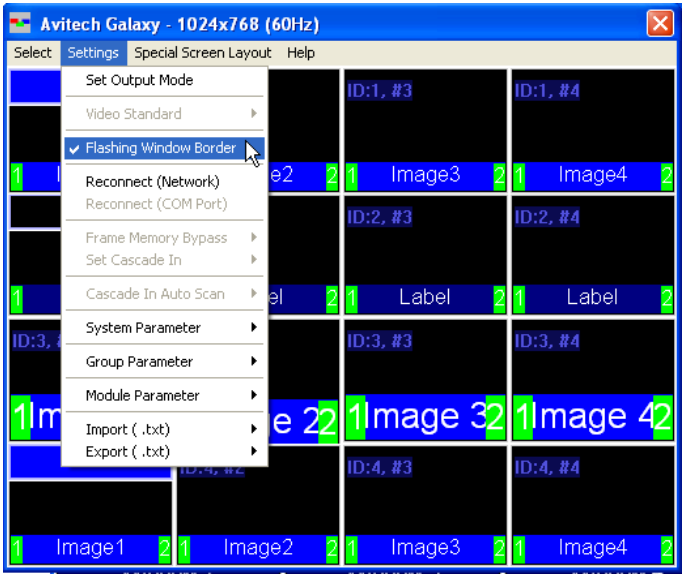


2. When the following screen appears, set the output resolution to match the monitor display's. Select the **Refresh Frequency**, select the **Mode** from the drop-down menu, and then click **OK**. You will notice that the selected resolution is displayed on the title bar of your Phoenix-G software.



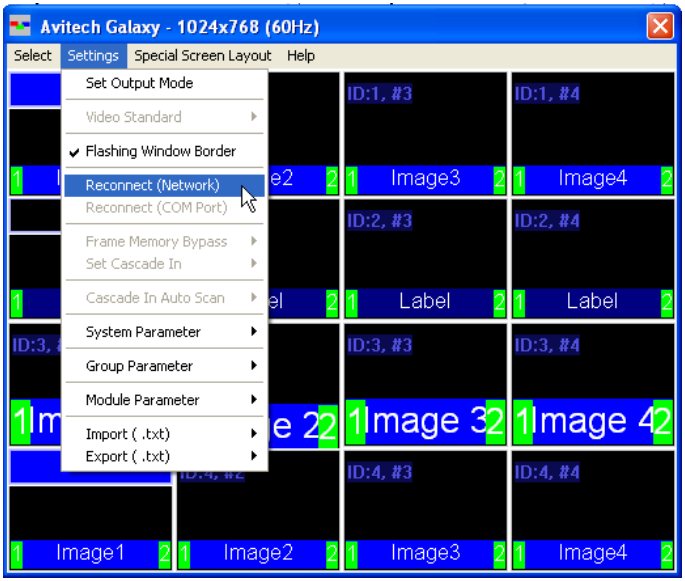
Flashing Window Border

When the **Flashing Window Border** option is enabled (with checkmark), the border of the window where the mouse cursor just resided will blink twice to notify you of its location.



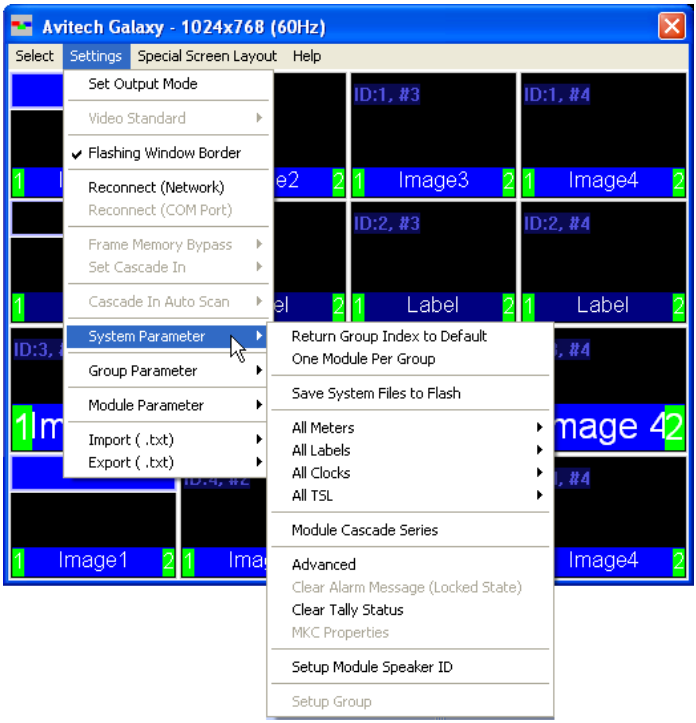
Reconnect (Network) / (COM Port)

When you have unplugged the IP cable and re-connected it, click **Reconnect (Network)** to continue the configuration process. Or, when using the serial cable, click **Reconnect (COM Port)** instead.



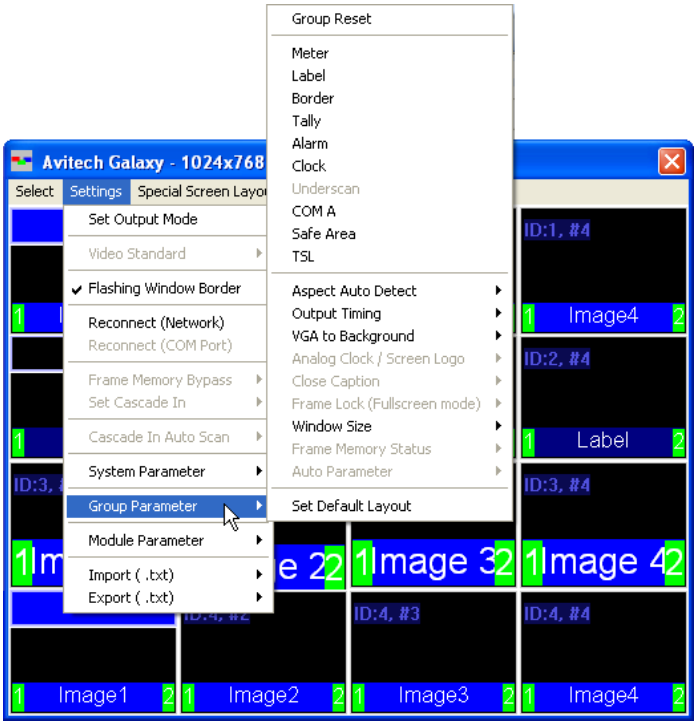
System Parameter

The following affect all the modules of all the groups. Upon clicking **System Parameter**, the menu appears as shown below:



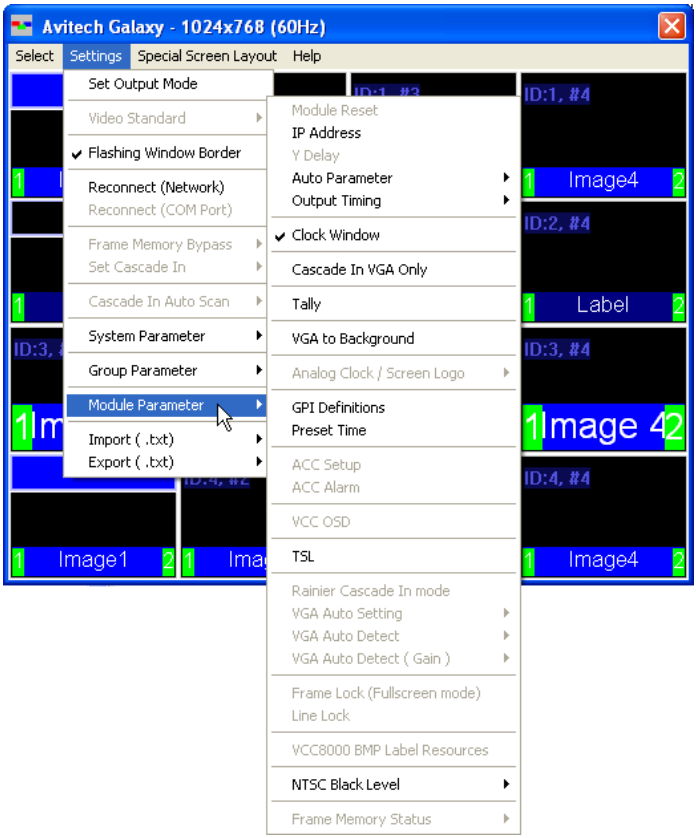
Group Parameter

The following affect all the modules in the selected group only. Upon clicking **Group Parameter**, the menu appears as shown below:



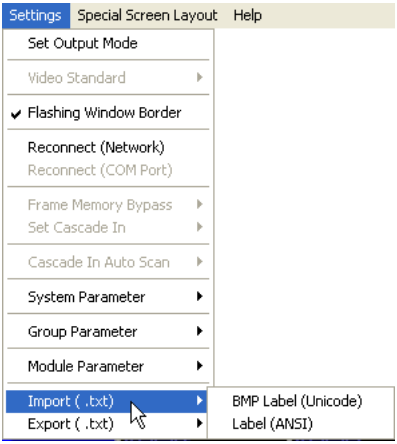
Module Parameter

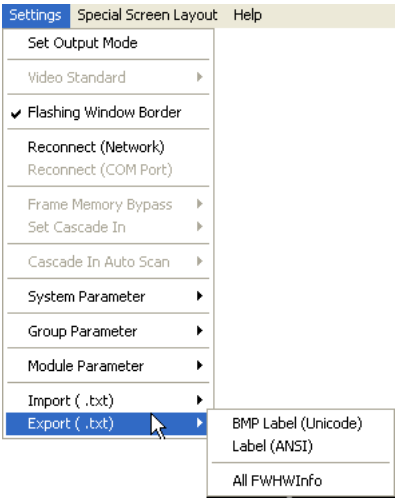
The following affect the selected module only. Upon clicking **Module Parameter**, the menu appears as shown below:



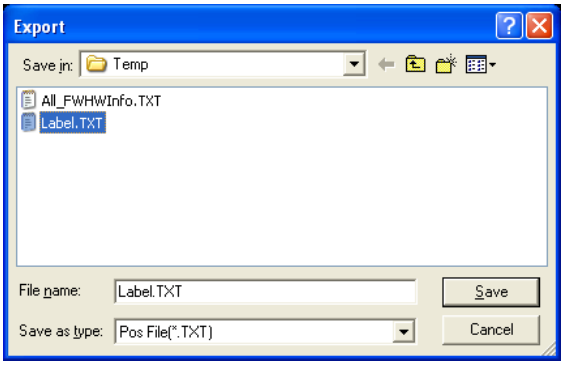
Importing / Exporting Label

This allows you to import label from / export label to Microsoft® Notepad to be edited externally.

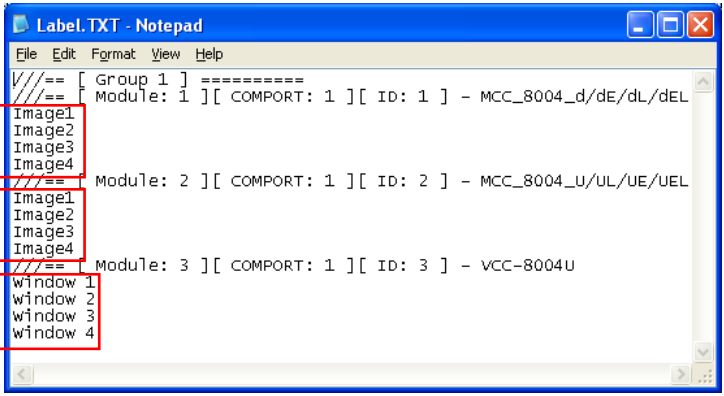




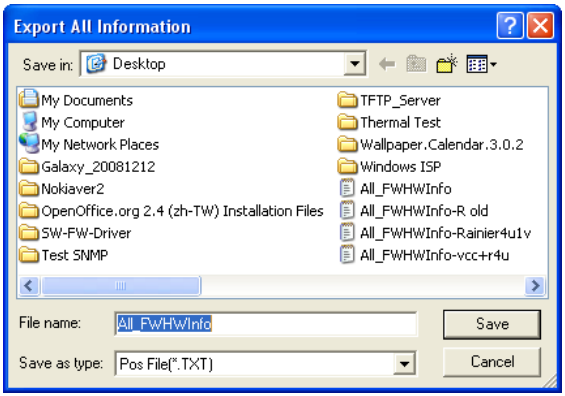
The most convenient way is to export the file (label) as a **BMP Label (Unicode)** or **Label (ANSI)** **`txt`** file by assigning a filename when the next screen appears.



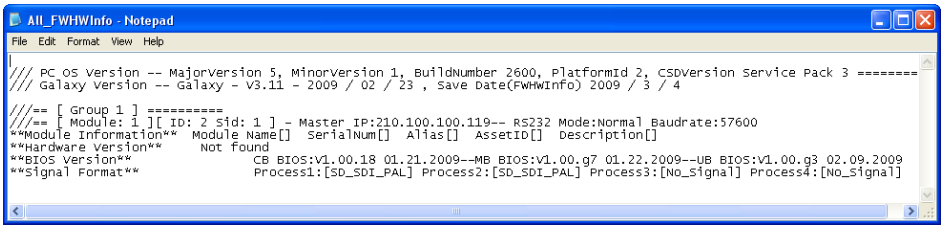
Using Microsoft® Notepad, edit the text in the file, starting with **Group 1** and **Module 1**. When you are done editing the label (highlighted in red as shown below), save the **`txt`** file and import it. The on screen labels will be updated.



To export all firmware / hardware information to a text file, click **Export (.txt)** and assign a filename when the next screen appears.



Click **Save**. The next screen shows the text file opened using **Notepad**.

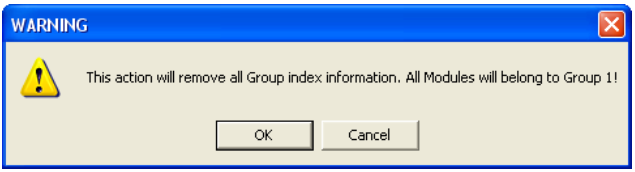


System Parameter

The following are the items appearing on **System Parameter**.

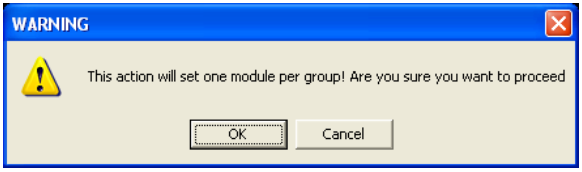
Return Group Index to Default

This allows you to return all groups to their default setting, as well as combine all modules into one group. Click **OK** when the next screen appears to complete the configuration change.

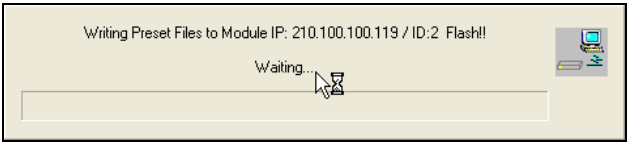


One Module Per Group

By default, the Phoenix-G software will combine all available modules into one large group. To quickly divide modules into different groups, each module can be treated as a group. For example, if cascading four modules, it will divide into four groups. When the next screen appears, click **OK** to finalize the changes.



The configuration progress will be shown on the screen.



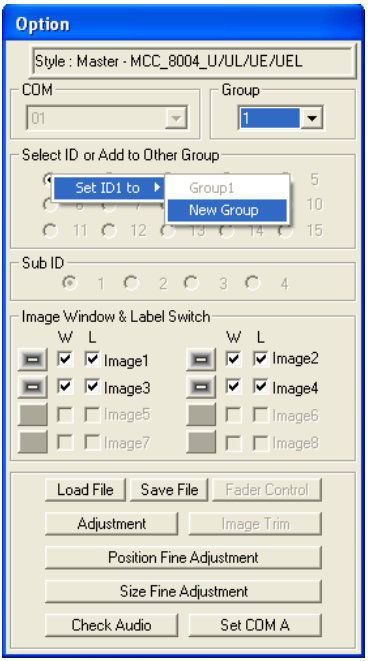
NOTE:

- The group's sequence is set according to the rotary ID number in an ascending order.
- When in full screen mode, the window layout prior to full screen mode would automatically be restored before grouping.

- After grouping, the module's preset file will be cleared. The MCC-8004's **`system.agi`** (new configuration file), **`module.sys`**, and **`software.ini`** files will be updated.

An alternative method for creating a new group is:

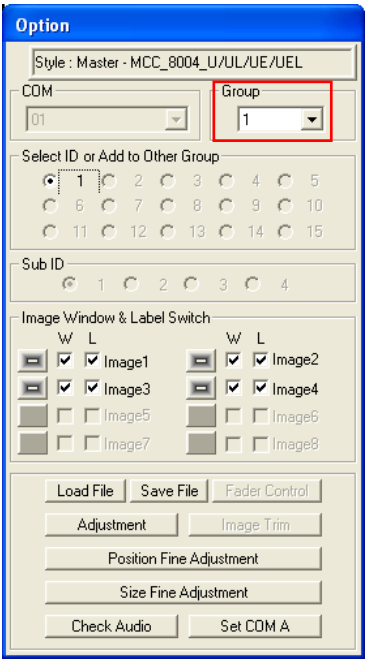
1. Right-click the mouse on the module you wish to add to the new group. Then click **Set ID# to→New Group**.



2. Repeat for all additional modules (you can either add additional modules to the new group or create additional groups).

NOTE: You are highly recommended to create a new group for the MCC-8004 with available monitoring function for analog stereo and AES / EBU audio inputs (selected modules only).

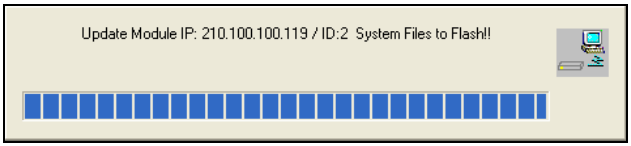
3. To switch between the different groups, use the **Group** drop-down menu.



4. Exit the Phoenix-G software and select **Yes** when prompted to save to flash memory.

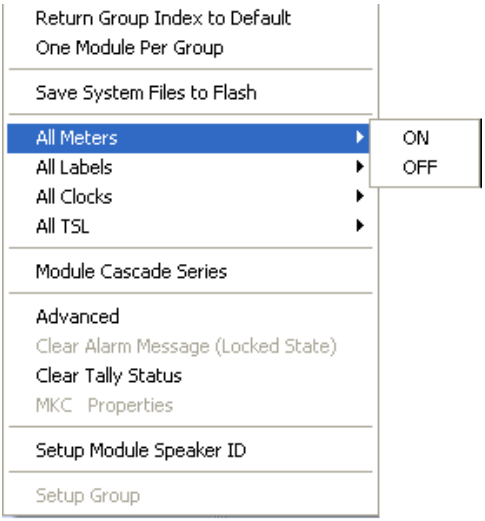
Save System Files to Flash

This allows you to save all configuration settings to flash memory. If the system configuration has been changed, save the changes first before continuing the other configuration settings. The progress of saving to flash memory will be displayed.



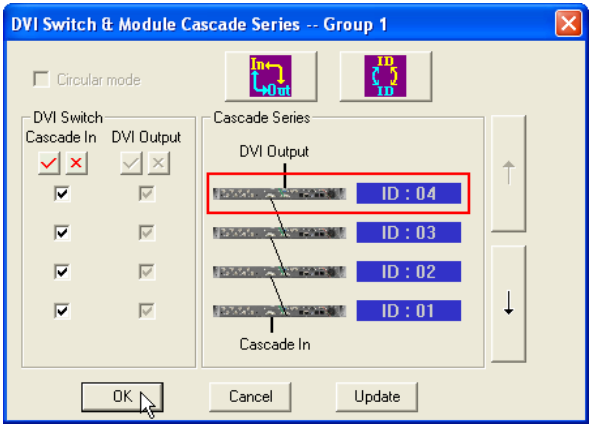
Turning On / Off All Meters / Labels / Clocks / TSL

To turn on / off all meters / labels / clocks / TSL for all the modules, regardless of the group it belongs to, click **ON** / **OFF**.



Module Cascade Series

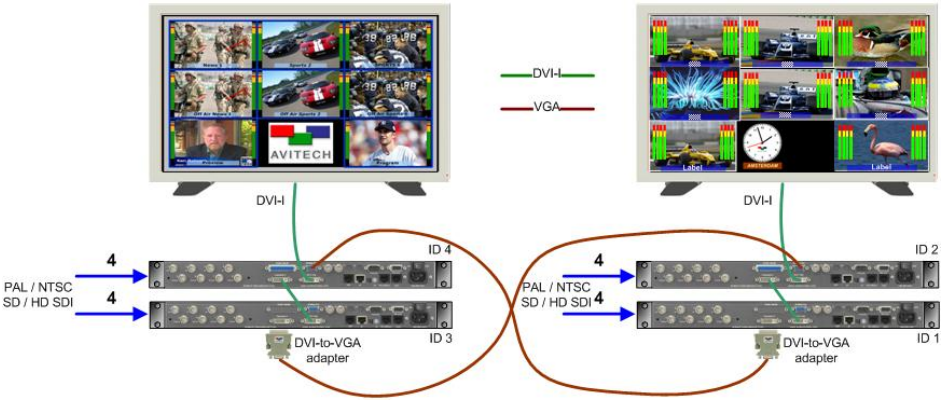
Use the **DVI Switch** function to enable or disable **Cascade In** for each ID number. Use the **Cascade Series** function to change the ID number designation only; this will not affect the actual physical connection of the MCC-8004.



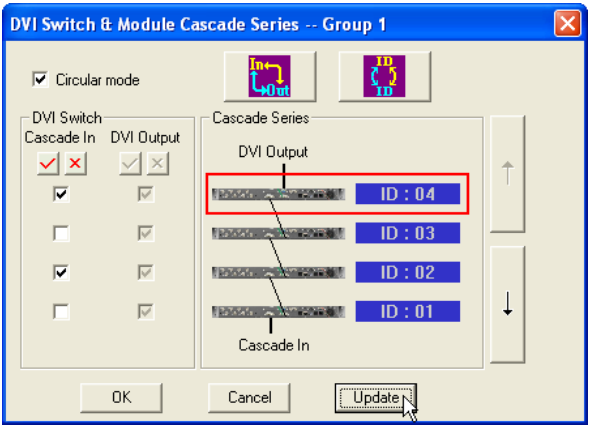
IMPORTANT: Make sure the ID number designation on the **Cascade Series** section must match the actual physical connection of the cascaded MCC-8004.

Example

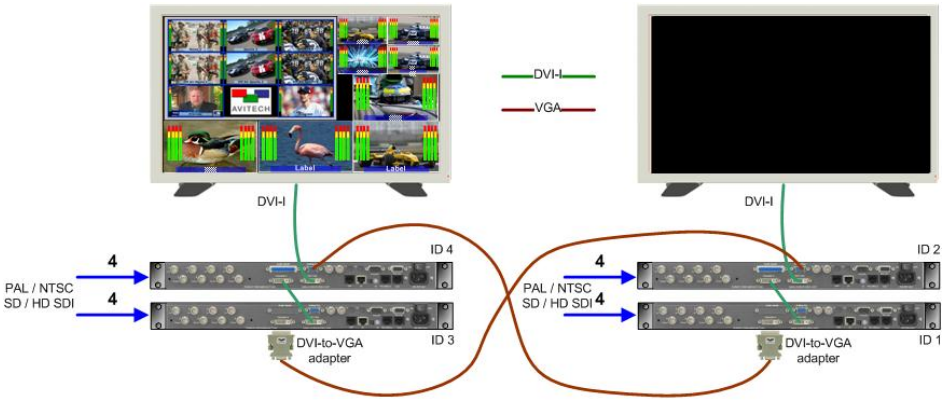
The DVI output of the last module of each group is feeding the monitor display. The VGA output of the last module of each group is also connected to the background input of the first module of the other group. During normal operation the input of the first module of each group is disabled (switched to default black background).



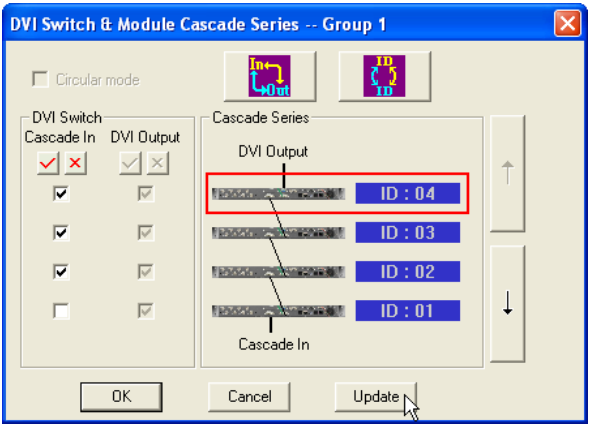
The following setting is shown to effect the above sample scenario. Take note that the **Circular Mode** item must be enabled.



In case one monitor display fails, a preset combining all the inputs of both groups can be recalled through the looping cable. In case the other monitor display fails, another preset addressing this situation can be recalled. The same concept can be extended to more than two groups.

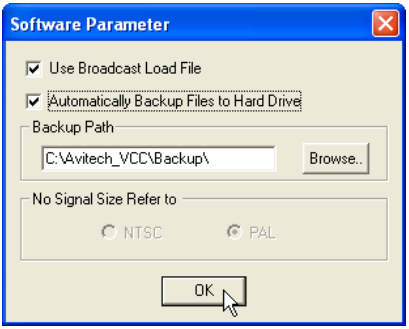


The following setting is shown to effect the above sample scenario.



Advanced

Upon clicking **Advanced**, the following screen appears:



- **Use Broadcast Load File**
  For loading presets / switching resolution / group reset. When this option is enabled (with checkmark), the Phoenix-G software will broadcast the command to every module, allowing for simultaneous execution of the command.

NOTE: This feature should always be enabled.

- **Automatically Backup Files to Hard Drive**
  When enabled (with checkmark), the Phoenix-G software will save all backup files to the computer hard drive's "c:\Avitech_VCC\Backup\" folder. You may change this by clicking **Browse** to select a different location to save the backup information.

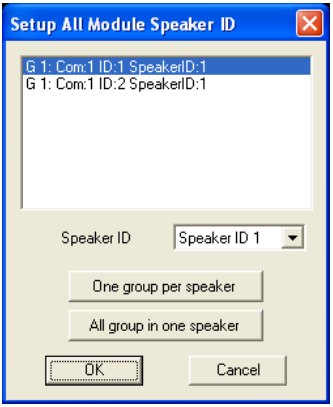
- **No Signal Size Refer to**
  When the window is unable to detect a signal, this will serve as the basis for the Phoenix-G software to adjust the window size. **NTSC**: maximum window size is 816×465. **PAL**: maximum window size is 816×560.

Clear Tally Status

When running tally via RS-232, use this function in the Phoenix-G software to close it. Alternatively, use the ASCII Z command to close tally via RS-232.

Setup Module Speaker ID

Upon clicking **Setup Module Speaker ID** the following screen appears:



Use this function to set up the speaker to monitor the audio source by assigning the **Speaker ID** number (**1** to **60**) for each module ID. Click to assign **One group per speaker** or to assign **All group in one speaker**. Then click **OK** to exit.

Group Parameter

The following are the items appearing on **Group Parameter**.

Group Reset

This allows you to refresh all modules belonging to the same group.

Meter

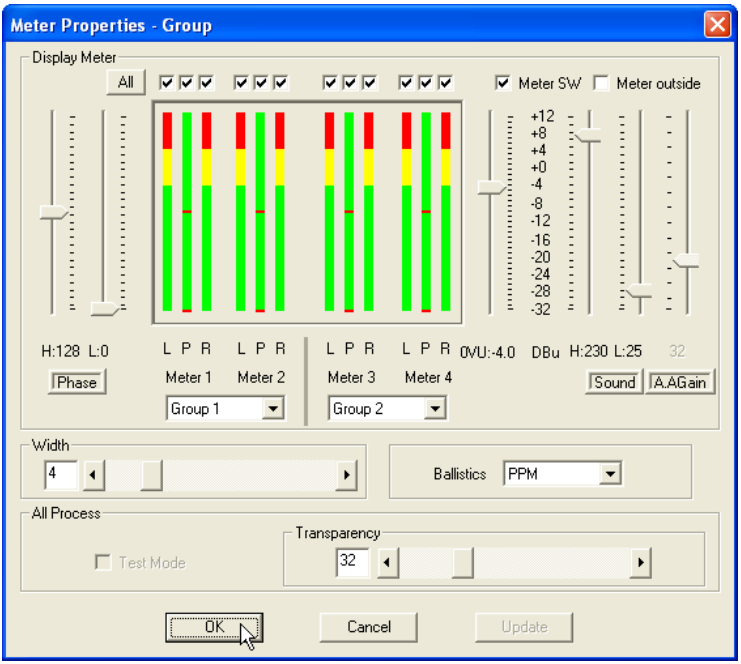
There are two hierarchies for setting the **Meter** properties. One can affect the entire group, while the other affects a single window.

For an Entire Group

To change the audio meter properties for an entire group, perform the following steps:

> **NOTE:** Make sure to turn on all audio meters (see previous section) before setting the audio meter properties.

1. Upon clicking **Meter**, the following screen appears:



The MCC-8004 is capable of displaying embedded audio as VU (volume unit) meters inside the video window. Embedded audio is divided into four groups, with a master and secondary channel for each group. This allows you to display the left and right VU meter of either the master or secondary channel on the left and right side of the window just as the menu depicts.

2. Click the **All** button to display all meters or click the checkbox individually to display the desired meter only. Click the **Meter SW** checkbox to open / close the meter switch. Then click the **Meter outside** checkbox to enable the meter to be displayed outside the image area.

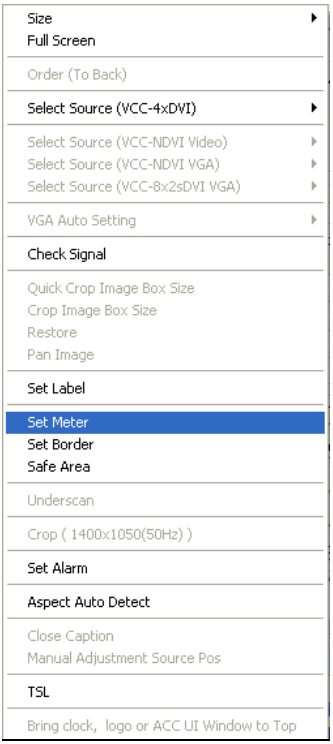
3. Use the sliders to adjust the **Phase** (**H** / **L** sliders), **VU** (one slider), **Sound** (**H** / **L** sliders), **A. A Gain** for analog audio signal (one slider).
4. Change the group by selecting it from the drop-down menu.

NOTE: When there is no audio detected, you will NOT see any VU meters.

5. Use the slider to adjust the **Width**, then the **Transparency** of the meter appearing onscreen.
6. On the **Ballistics** (absolute movement of the meter's pointer) drop-down menu, select **PPM** (shorter integration time so that only peaks wide enough to be audible are displayed) or **VU** (relatively slower response and is driven from a full-wave averaging circuit).

For an Individual Window

To change the audio meter properties for a single window, use the mouse to right-click on a window, and then click **Set Meter**.

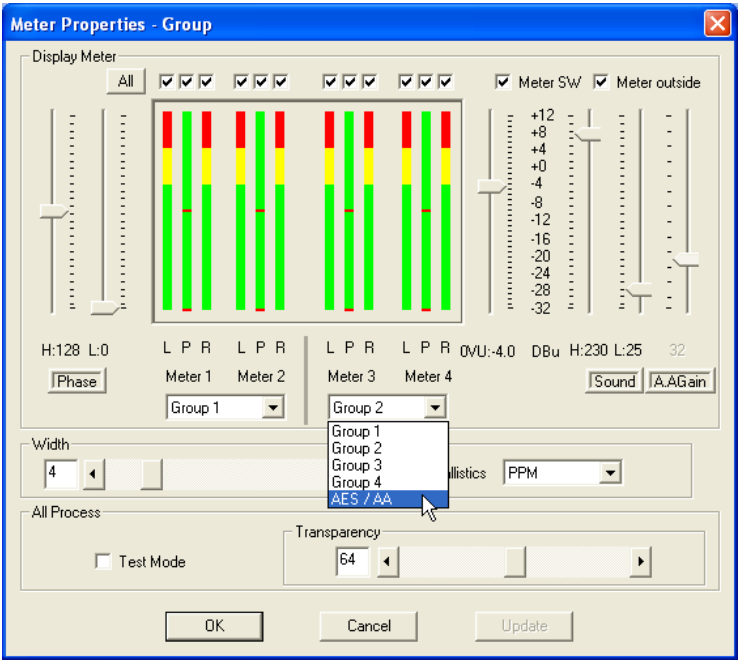


Making the Connections (for Analog / AES audio equipped modules)

The MCC-8004 module that comes with analog audio or AES audio are listed next:

Analog	Available for MCC-8004aA / aAL / dA / dAL / UA / UAL
AES	Available for MCC-8004dD / dDL / UD / UDL

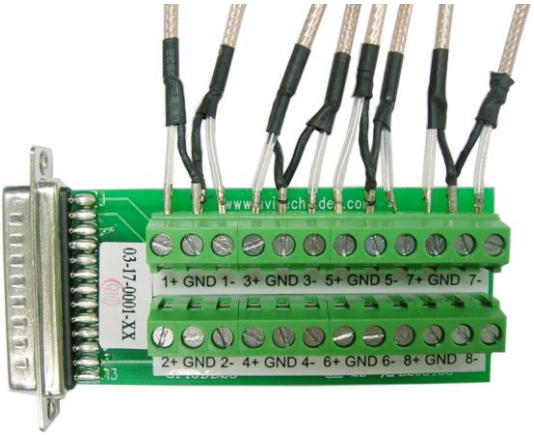
Before making the connections, make sure to select **AES / AA** on the drop-down menu. Then click **OK**.



For AES Audio Equipped Module

1. Connect the BNC cable “signal +” to **1+** connector.
   Connect another BNC cable “signal –” to **1–** connector.
   Share the **GND** (ground) connector for the first audio source’s (window 1 display) “signal +” and “signal –” ground.

Side View



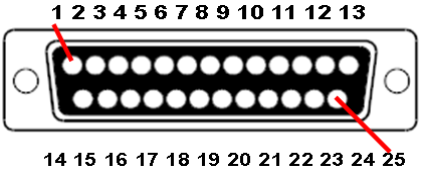
Top View

2. Connect the BNC cable “signal +” to **3+** connector.
   Connect another BNC cable “signal –” to **3–** connector.
   Share the **GND** (ground) connector for the second audio source’s (window 2 display) “signal +” and “signal –” ground.

3. Connect the BNC cable “signal +” to **5+** connector.
   Connect another BNC cable “signal –” to **5–** connector.
   Share the **GND** (ground) connector for the third audio source’s (window 3 display) “signal +” and “signal –” ground.

4. Connect the BNC cable “signal +” to **7+** connector.
   Connect another BNC cable “signal –” to **7–** connector.
   Share the **GND** (ground) connector for the fourth audio source’s (window 4 display) “signal +” and “signal –” ground.

5. Then connect the audio terminal block to the **Audio Inputs** connector located on the rear panel of the MCC-8004 module. The following figure and table shows the pinout assignment and corresponding audio source.



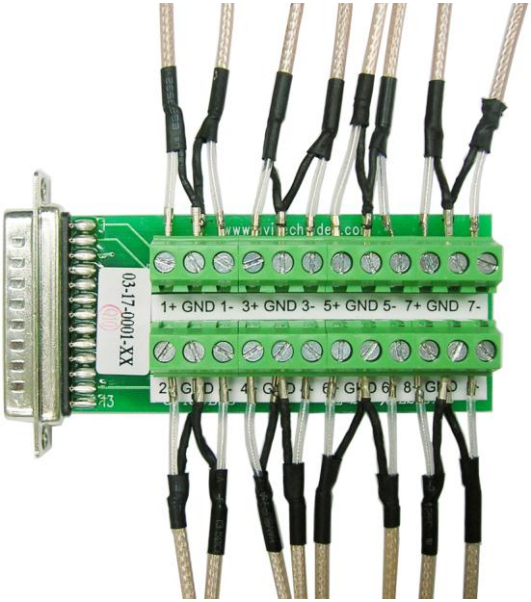
Pin Assignment	Audio Source	Pin Assignment	Audio Source
1	1+	14	GND
2	1–	15	2+
3	GND	16	2–
4	3+	17	GND
5	3–	18	4+
6	GND	19	4–
7	5+	20	GND
8	5–	21	6+
9	GND	22	6–
10	7+	23	GND

Pin Assignment	Audio Source	Pin Assignment	Audio Source
11	7–	24	8+
12	GND	25	8–
13	—	—	—

For Analog Audio Equipped Module

1. Connect the BNC cable “left signal +” to **1+** connector.
   Connect another BNC cable “left signal –” to **1–** connector.
   Share the **GND** (ground) connector for the first audio source’s (window 1 display) left “signal +” and “signal –” ground.
   It will be recognized as input 1 left channel.
   Connect another BNC cable “right signal +” to **2+** connector.
   Connect another BNC cable “right signal –” to **2–** connector.
   Share the **GND** (ground) connector for the first audio source’s (window 1 display) right “signal +” and “signal –” ground.
   It will be recognized as input 1 right channel.

Side View



Top View

2. Connect the BNC cable “left signal +” to **3+** connector.
   Connect another BNC cable “left signal –” to **3–** connector.
   Share the **GND** (ground) connector for the second audio source’s (window 2 display) left “signal +” and “signal –” ground.
   It will be recognized as input 2 left channel.
   Connect another BNC cable “right signal +” to **4+** connector.
   Connect another BNC cable “right signal –” to **4–** connector.
   Share the **GND** (ground) connector for the second audio source’s (window 2 display) right “signal +” and “signal –” ground.
   It will be recognized as input 2 right channel.

3. Connect the BNC cable “left signal +” to **5+** connector.
   Connect another BNC cable “left signal –” to **5–** connector.
   Share the **GND** (ground) connector for the third audio source’s (window 3 display) left “signal +” and “signal –” ground.
   It will be recognized as input 3 left channel.
   Connect another BNC cable “right signal +” to **6+** connector.
   Connect another BNC cable “right signal –” to **6–** connector.
   Share the **GND** (ground) connector for the third audio source’s (window 3 display) right “signal +” and “signal –” ground.
   It will be recognized as input 3 right channel.

4. Connect the BNC cable “left signal +” to **7+** connector.
   Connect another BNC cable “left signal –” to **7–** connector.
   Share the **GND** (ground) connector for the fourth audio source’s (window 4 display) left “signal +” and “signal –” ground.
   It will be recognized as input 4 left channel.
   Connect another BNC cable “right signal +” to **8+** connector.
   Connect another BNC cable “right signal –” to **8–** connector.
   Share the **GND** (ground) connector for the fourth audio source’s (window 4 display) right “signal +” and “signal –” ground.
   It will be recognized as input 4 right channel.

5. Then connect the audio terminal block to the **Audio Inputs** connector located on the rear panel of the MCC-8004 module.

Label

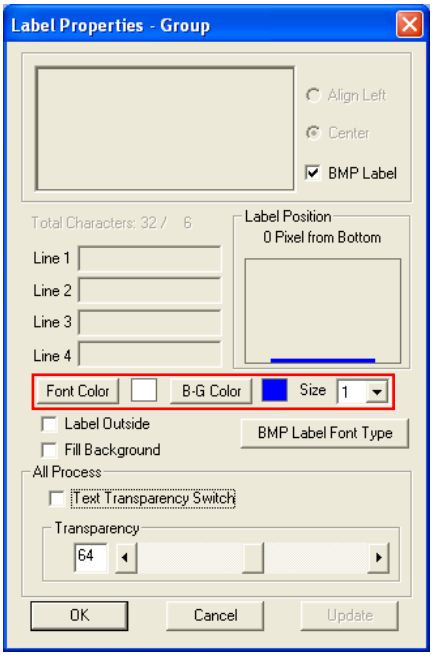
There are two hierarchies for setting the **Label** properties. One can affect the entire group, while the other affects a single window.

For an Entire Group

To set the label properties, perform the following steps:

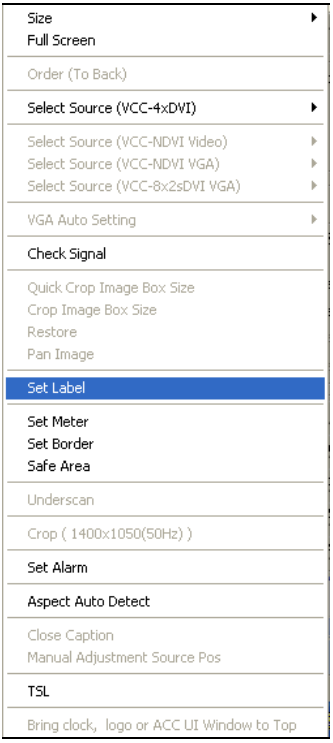
> **NOTE:** Make sure to turn on all labels (see previous section) before setting the label properties.

This allows you to adjust the **Font Color**, **B-G** (background) **Color**, **Label Position** (distance in number of pixels from the bottom of image window), **Text Transparency Switch** (**Transparency** level), and font **Size** for all labels in the group.

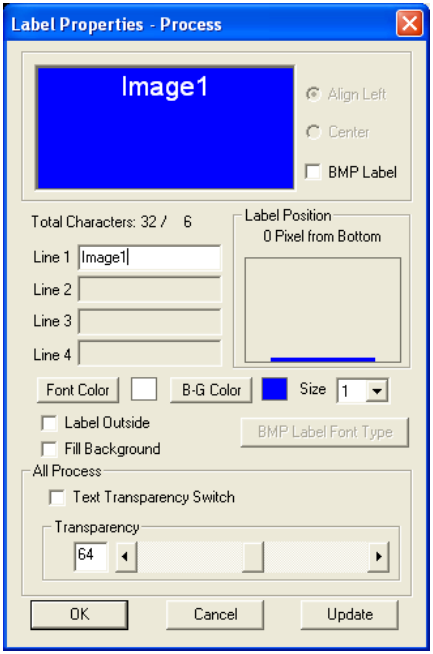


For an Individual Window

1. Right-click the mouse on a window and select **Set Label** to enter text.



2. Keep in mind that each window supports one line of text, (up to 32 characters).



- **Label Position**: allows you to change the vertical position of the label by clicking above or below the blue line (default is **0**).
- **Label Outside**: allows you to place the label outside the window.
- **Fill Background**: allows the label background to fill the entire width of the window.
- **Text Transparency Switch**: allows you to set the transparency level of the entire label, including the background.

- **BMP Label**: allows you to activate the universal fonts for labels by performing the following steps:
  1. Click to enable the **BMP Label** checkbox (with checkmark).
  2. Click the **BMP Label Font Type** button.
  3. When the Font window appears, set the **Font**, **Font style**, and **Size**. Then click **OK**.
  4. On the **Line 1** window enter a label in the desired language by first selecting the language on the Windows taskbar.

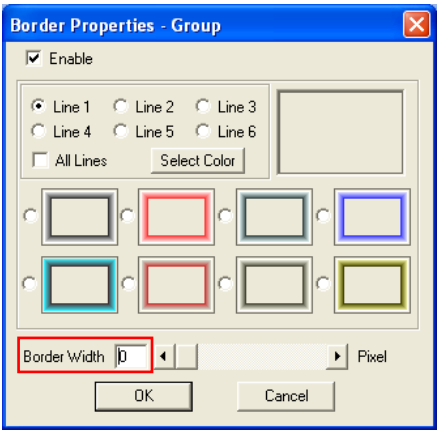
  5. Repeat the above steps for all the other windows.

Setting Border Properties

Borders are turned on by default. To turn off the border perform the following steps:

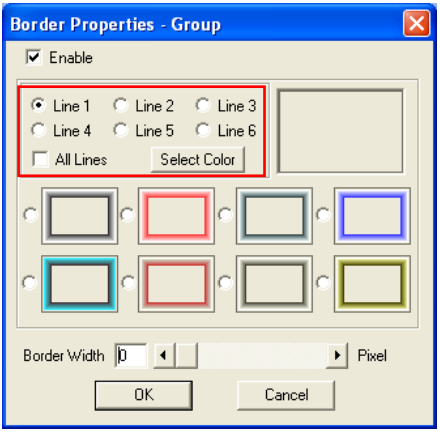
For an Entire Group

1. Upon clicking **Border** the following screen appears. Change the **Border Width** to **0**.

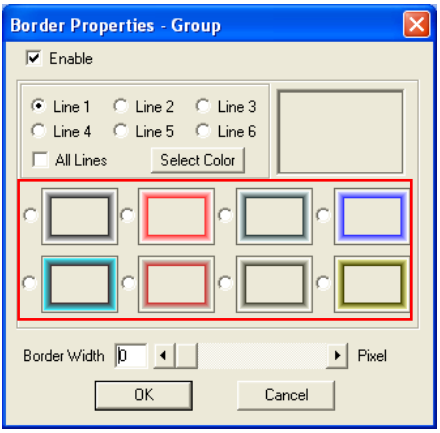


2. You can also change the border color.

   - Each pixel / line can be a different color



   - 3D border



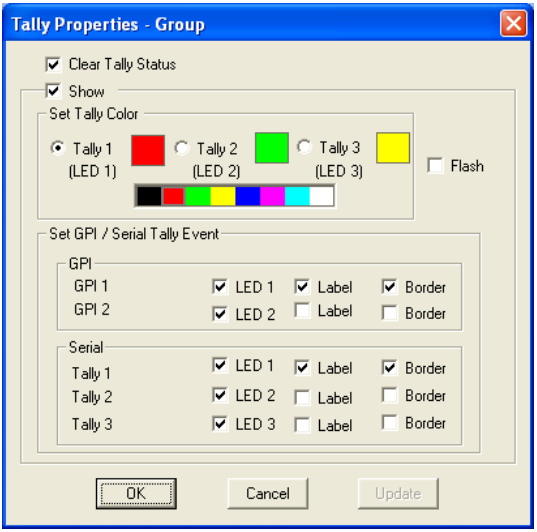
For an Individual Window

To change the border properties for an individual window, right-click the mouse on the window and select **Set Border**, then select the desired color and size.

Activating Tally

The RJ-50-to-GPI terminal block allows for a total of eight inputs to activate tally, two per window. You can also use the serial port with ASCII, TSI, or TSL to activate tally. To change the appearance of tally, perform the following steps:

1. Upon clicking **Tally** the following window appears.



   Tally 1 and **2** are triggered by GPIO while **Tally 3** is triggered via serial communication.

2. The settings that can be adjusted include **Tally Color**, **LED**, **Label**, **Border**, and **Flash.**

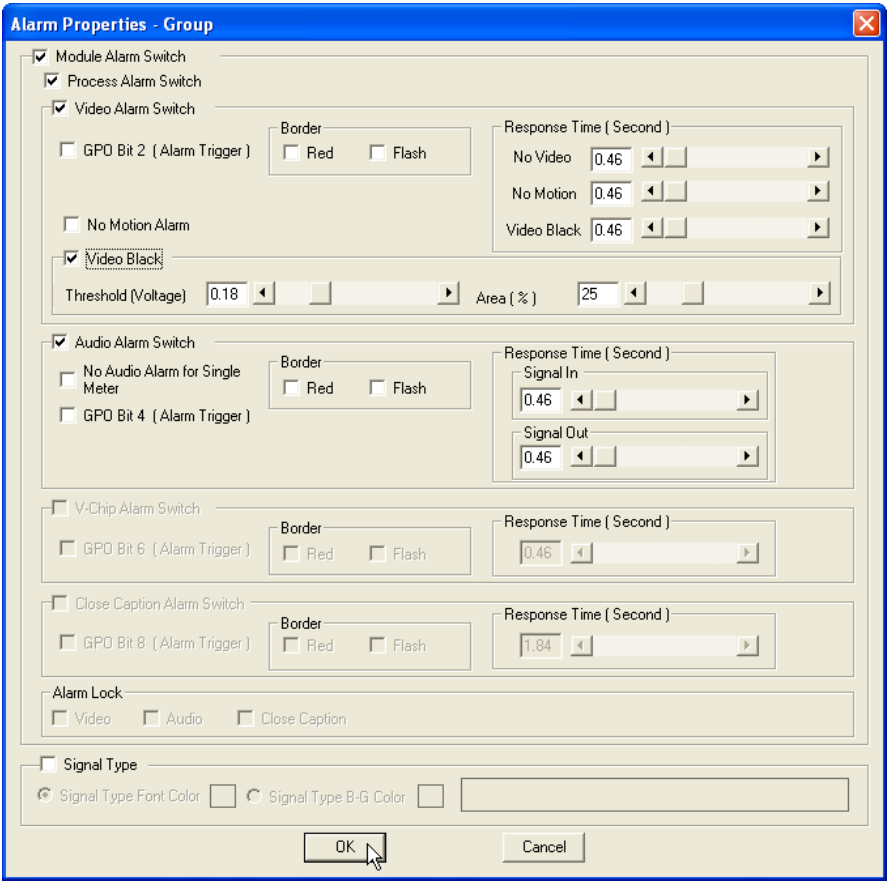
> **NOTE:** Tally 1 / 2 / 3 can trigger either Label or Border, but there is only one border or label. If tally 1 / 2 / 3 are triggered simultaneously, the display priority will be tally 1, then tally 2, then tally 3.

Setting Alarm Properties

This allows you to setup the notification when a signal is missing.

For an Entire Group

To set the alarm properties, click **Alarm** and the following screen appears. By clicking **Module Alarm Switch**, you will set the **Process** / **Video** / **Audio Alarm Switch** and adjust the **Signal Type**'s **Font Color** and **B-G** (background) **Color** for alarms in the group.



For an Individual Window

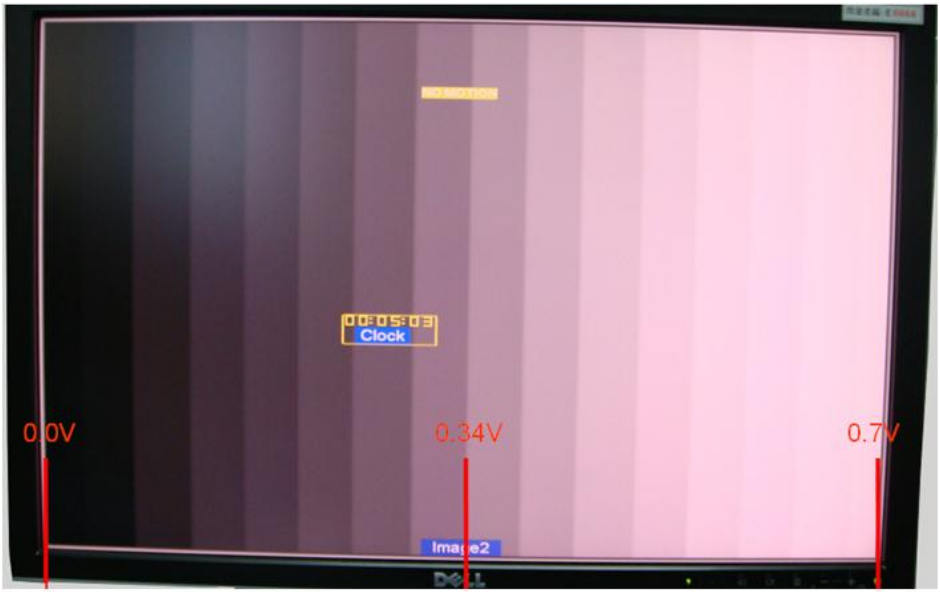
To set the alarm properties for an individual window, right-click the mouse on the window and select **Set Alarm**.

- **Module / Process Alarm Switch**: to turn on the alarm setting, make sure that both options are enabled (with checkmark).

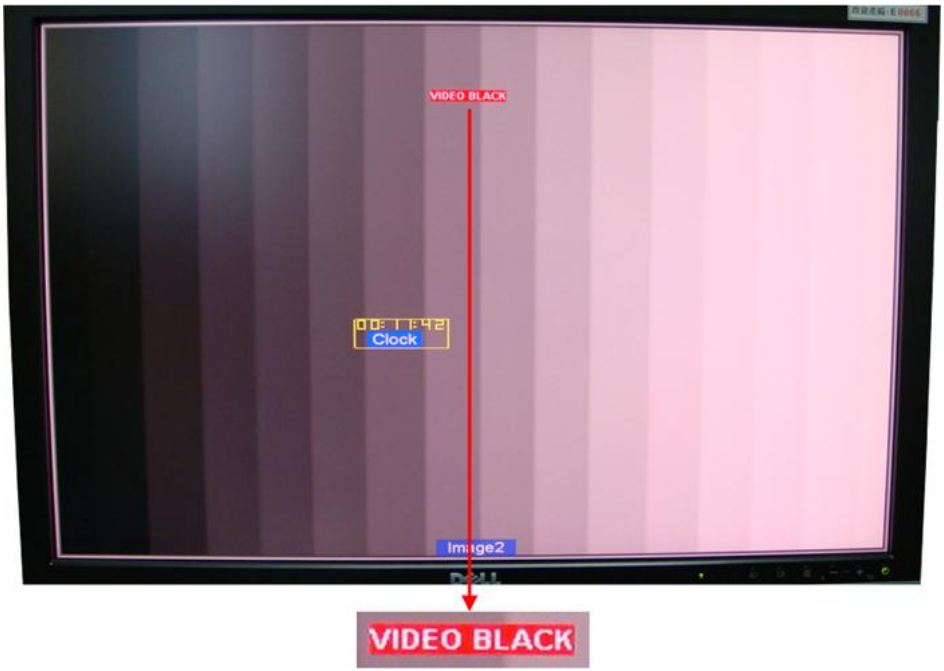
- **Video Alarm Switch**: to turn on / off the "no video" signal. You may set the image border to the color **Red**, or to **Flash** as warning.
- **GPO**: to assign a GPO contact closure to alarm so that the alarm creates a voltage (supports up to 5 V) on the contact when it is triggered.
- **Response Time**: to set the **No Video** / **Motion** alarm response time from **0.23** to **23** seconds.
- **No Motion Alarm**: to disable the alarm that is triggered when no motion is detected.
- **Video Black** (only available for MCC-8004d): to turn on / off the "video black" alarm that is triggered by setting the **Threshold** (brightness level of image) in relation to the **Area** (percent).

> **NOTE: No Motion Alarm** / **Video Black** signal format cannot happen simultaneously. When both conditions exist, **Video Black** has a higher priority than **No Motion Alarm**.

The following figure shows the **Threshold** range (degree of blackness) from **0.0 V** (completely black – leftmost portion) to **0.7 V** (no black – rightmost portion).



For example, when setting the **Threshold** at **0.34 V** and the **Area** at **50 %** would cause the **VIDEO BLACK** alarm to be displayed because one-half (**50 %**) of the total window area has already reached the **Threshold** value. Correspondingly if the total area of the window with **0.34 V Threshold** is less than **50 %** then the **VIDEO BLACK** alarm will not be displayed.



- **Audio Alarm Switch:** audio loss detection can be monitored by a single channel or group.
- **No Audio Alarm for Single Meter**: to disable the alarm that is triggered when no audio is detected.
- **Response Time**: to set the **Signal In** / **Out** alarm response time, such as when inputting the signal or change of status from "abnormal" to "normal" (**0.23** to **23** seconds).

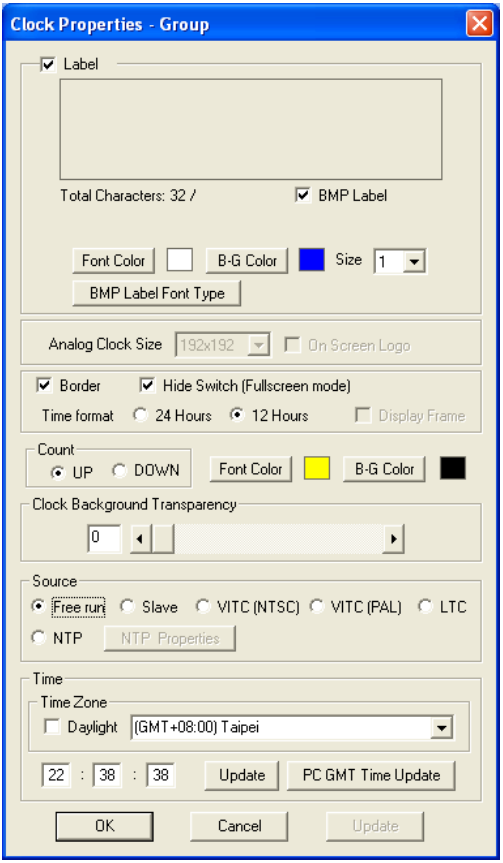
- **Signal Type**: sets the signal's font and background color. When this option is enabled, the video's signal type will be displayed on the monitor display.

Setting Clock Properties

NOTE: Make sure to turn on all clocks before setting the clock properties.

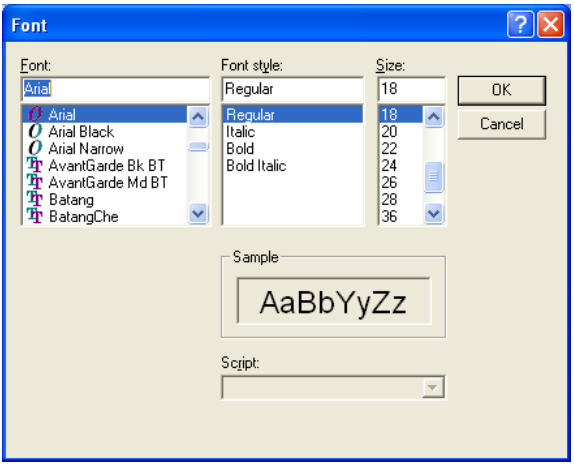
For an Entire Group

To set the clock properties, click **Clock** to adjust the **Font Color**, **B-G** (background) **Color**, and font **Size** for all clocks in the group. You can also set the **Analog Clock Size**, **Border**, **Hide Switch** (full screen mode), **Time format** (24 / 12 hours), **Count** (up / down), **Font Color**, **B-G** (background) **Color**, **Clock Background Transparency**, **Source**, and **Time Zone**.



BMP Label allows you to activate the universal fonts for the on-screen clock by performing the following steps:

1. Click to enable the **BMP Label** checkbox (with checkmark).
2. Click the **BMP Label Font Type** button.
3. When the **Font** window appears, set the **Font**, **Font style**, and **Size**. Then click **OK**.



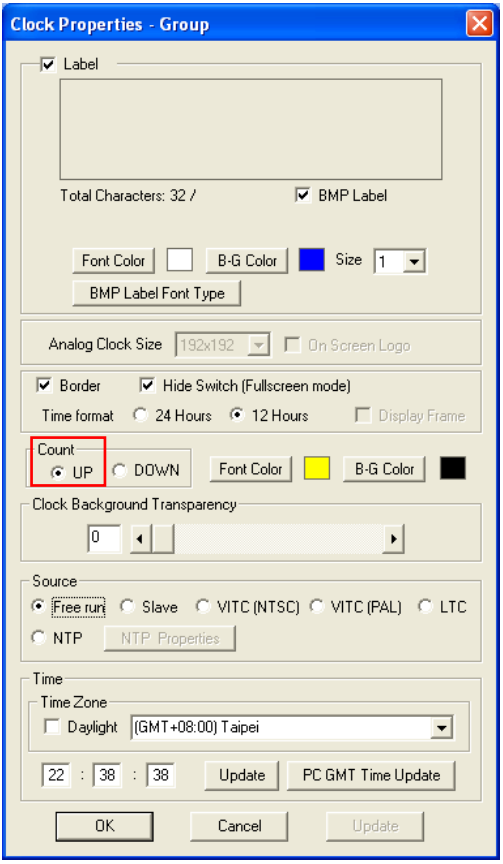
The analog clock works differently, compared to the digital clock, in that you cannot use the drag-and-drop feature to re-size. You can only select from the following: **192×192**, **224×224**, **256×256**, **320×320**, or **384×384**.

To activate the time code feature, in the **Source** portion click the mouse to select **Free Run**, **LTC**, or **VITC (NTSC / PAL)**. You can also synchronize the clock from the slave module by clicking the mouse on **Slave** to select it. Then click the **Update** button (on the lower right portion) and then click **OK**.

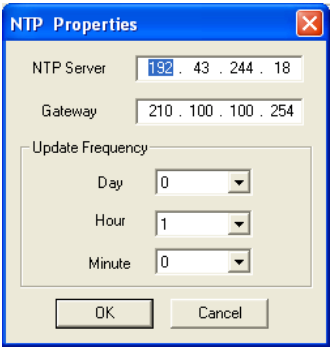
The **NTP** time code feature allows the MCC-8004 to synchronize the clock with an external NTP time server. The **IP** port on the rear of the MCC-8004 can control, as well as receive, time code information simultaneously.

To set up the NTP time code, perform the following steps:

1. Make sure that **Count→Up** is selected.



2. On the **Source** portion click the mouse on **NTP** to select it. Then click the **NTP Properties** button; the following screen appears.



3. Enter the IP address of the **NTP Server**, the default **Gateway** (use "ipconfig" in Windows DOS mode to find out), then set the update frequency time interval.

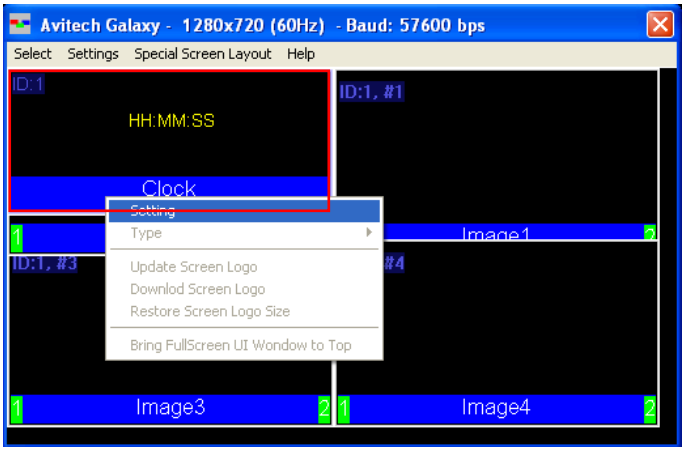
4. Select the **Time Zone** in the drop-down menu and click the mouse on the **Daylight** checkbox to select DST (daylight saving time) when applicable.

5. Click **Update** (on the lower middle portion) and then the **OK** button.

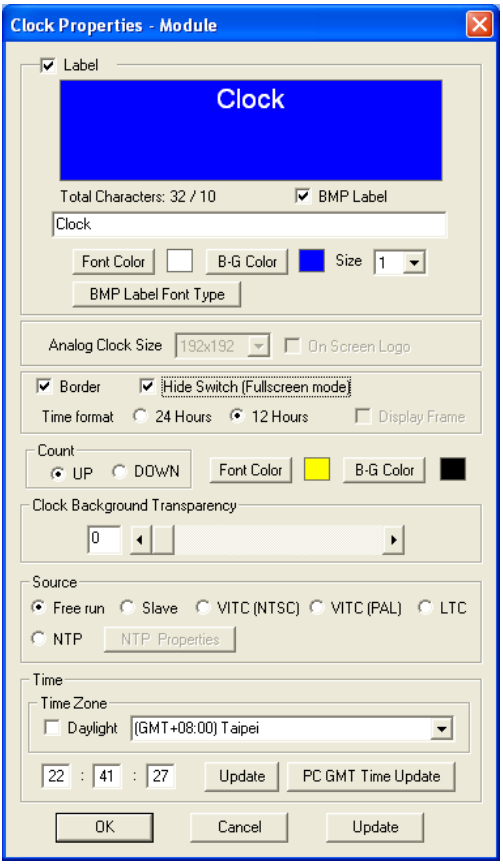
NOTE: You may be required to exit the Phoenix-G software by first saving the new settings to flash memory, then restarting the Phoenix-G software before the clock can be updated.

For an Individual Module

To set the alarm properties for an individual module, right-click the mouse anywhere on the **Clock** window and click **Setting**.



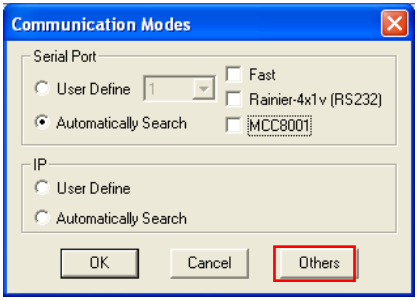
The following screen appears.



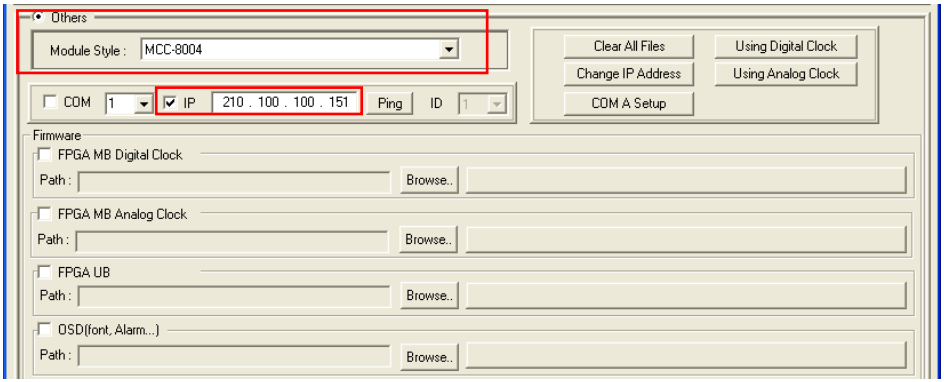
Switching Digital Clock to Analog Clock Display (and vice versa)

To change the digital clock display to analog clock display, perform the following steps:

1. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file. Click **Others** when the following screen appears.



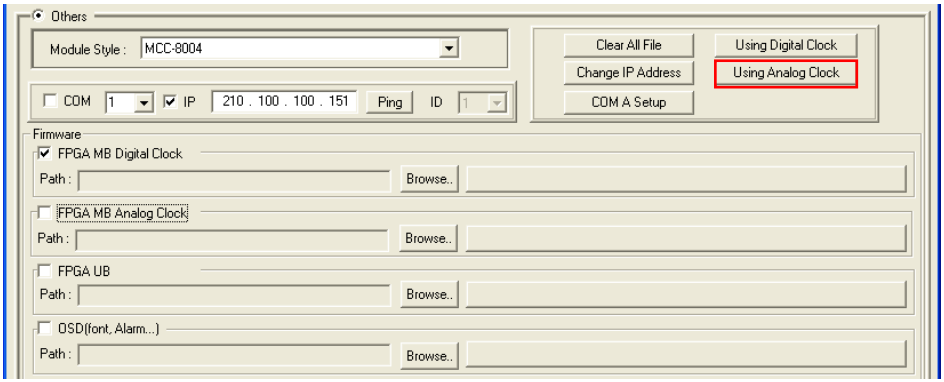
2. When the following screen appears, select **Others** and on the **Module Style** drop-down menu select **MCC-8004**.



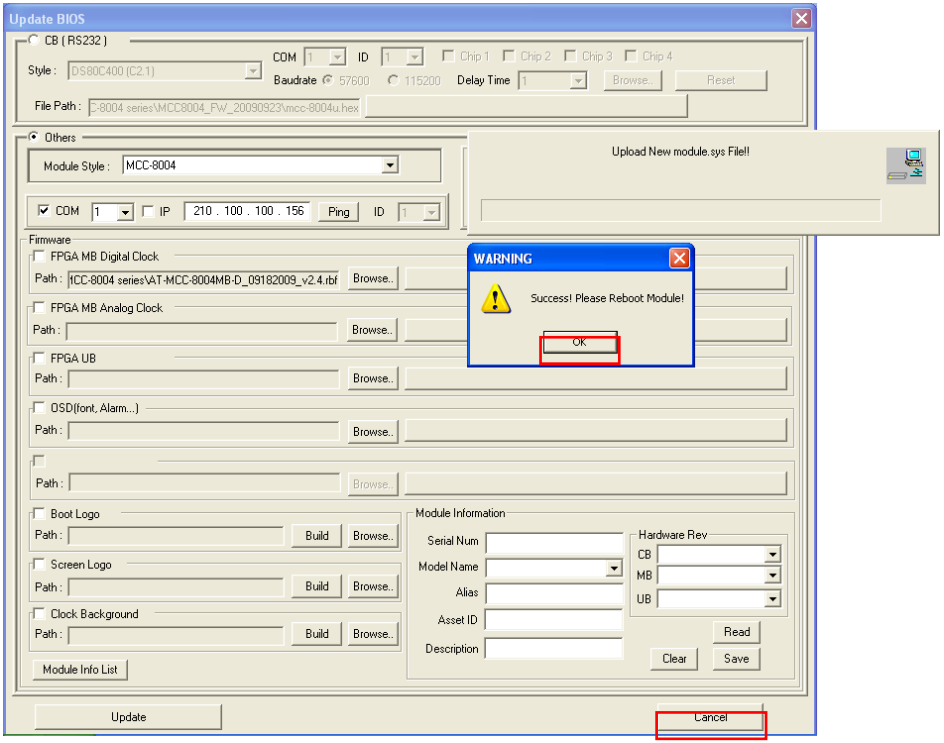
3. Click to select the **IP** checkbox with the factory-default **210.100.100.151** value. In case you have changed the IP address of your MCC-8004, make sure to enter the correct IP address.

> **NOTE:** In case you are not sure of your module's IP address and want to find out, click **COM** and make sure that the COM port number is the same as the connected computer, then click the **Change IP Address** button to find out the IP address. Afterwards, click **Cancel** to exit.

4. To change to an analog clock display, click **Using Analog Clock** (or click **Using Digital Clock** to change to a digital clock display). The Phoenix-G software would start to detect the MCC-8004 module.



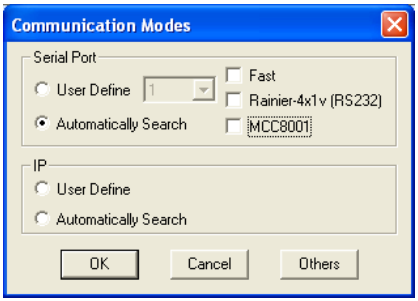
5. When the MCC-8004 module is detected, click **OK**.



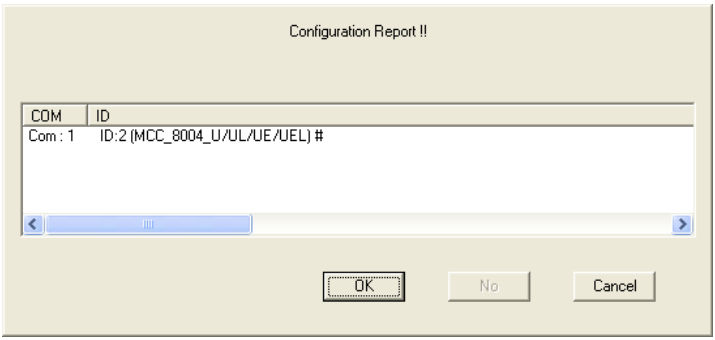
6. Click **Cancel** on the lower right bottom part of the screen to exit.

7. Re-boot the MCC-8004 module by unplugging the power cord and plugging in the power cord.

8. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file. When the following screen appears, under **Serial Port** select **Automatically Search**. Or, under **IP** select **User Define** if you know the IP address assigned to your MCC-8004.

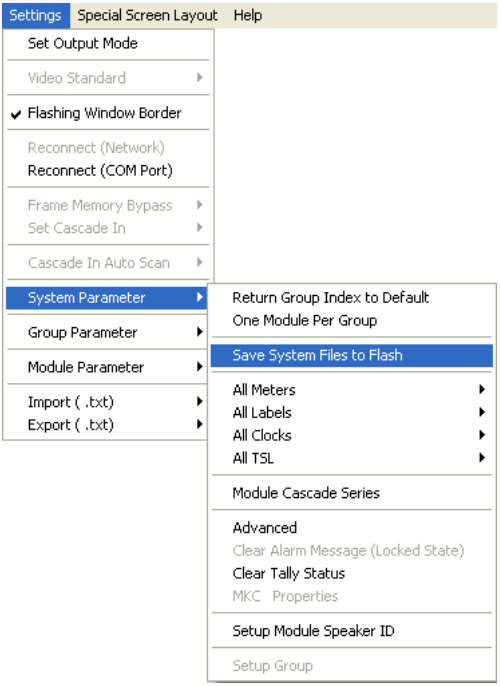


9. Click **OK** and your computer would start to search for your MCC-8004.
10. Upon finding your device, the following screen will appear to confirm connection to your MCC-8004.



11. Click **OK** and the Phoenix-G software screens will appear (**Module Layout** window, **Phoenix-G** control window, and **Option** window).

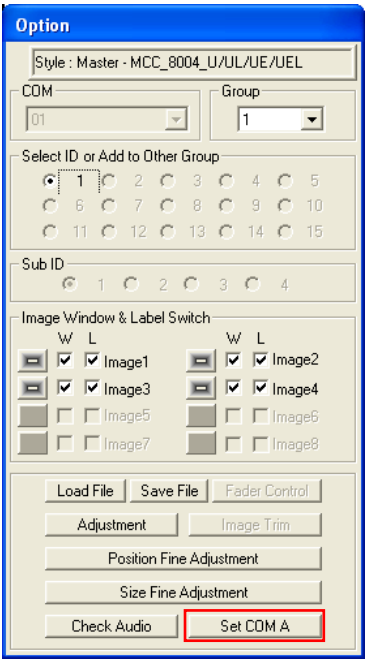
12. Click **Settings→System Parameter→Save System Files to Flash** to save the changes.



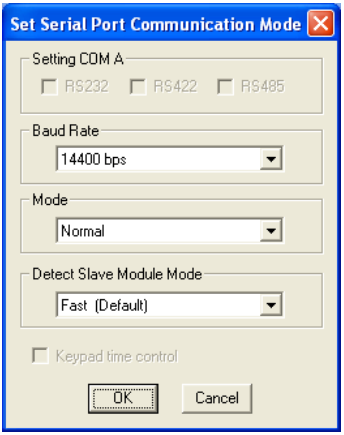
Setting COM Ports

This allows you to configure the serial port of the module with the computer for configuration and control. To set the COM port, perform the following steps: (By default the COM port is set to normal and baud rate set to 14400 bps.)

1. There are two methods for setting COM port. Click **COM A**, or in the **Option** window click **Set COM A**.



2. The following screen appears. Select the **Setting COM A** option (if available).

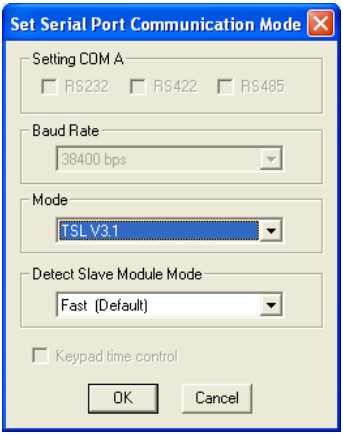


3. Set the **Baud Rate**.
4. Select the **Mode**.
   - **Normal** – for configuring the serial port of the module with the computer configuration and control.
   - **AVR** – for configuring the serial port of the module with AVR connection.
   - **Load File** – for use with the SCP (Simplified Control Panel) keypad.
   - **TSL V3.1** – for configuring the serial port of the module with TSL connection. The initialization process is different, so the same TSL connection for other Avitech products may not function correctly with the MCC-8004 without additional changes.
5. Select the **Detect Slave Module Mode**.
   - **Fast** – default.
   - **Slow** – when cascading the MCC-8004 with Titan-8000, because Titan-8000 has a slower response time than MCC-8004, then you need to set it at **Slow**.
6. After setting COM A, you may be prompted to close the Phoenix-G software and power cycle (shutdown and restart) the module.

TSL

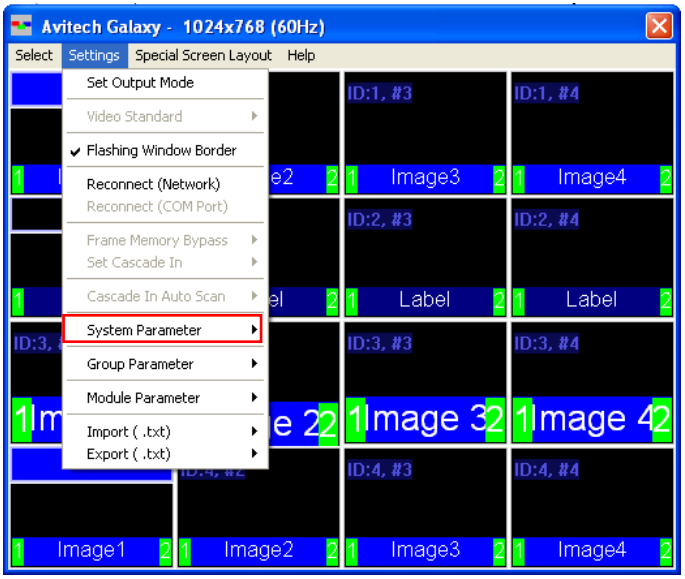
The MCC-8004 includes one RS-232 port that is used for connecting to a computer for configuration control, and connecting to TSL controller. One TSL port of the TSL controller is needed for connecting to the first module of each group. To setup the configuration, perform the following steps:

1. Select **Settings→Group Parameter→COM A**.
2. On the **Mode** drop-down menu, select **TSL V3.1**. The **Baud Rate** will automatically adjust to **38400 bps** (according to TSL specifications).

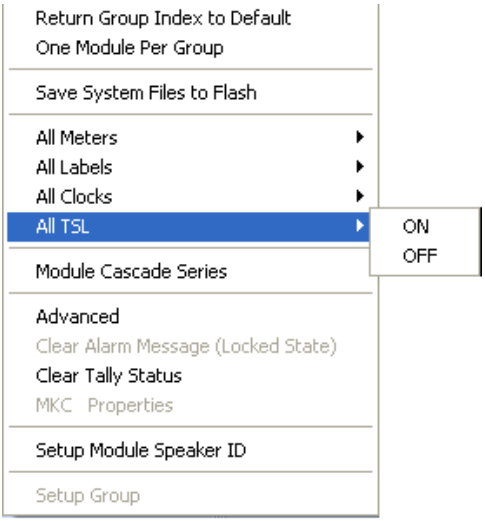


3. Save and exit the Phoenix-G software – this can also be done once all the parameters have been configured.

4. By default, all windows are enabled for the TSL protocol. This can be changed for an individual window, on a group basis, or at the system level by clicking **Settings→System Parameter**.

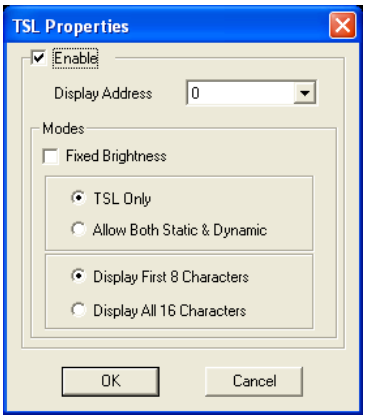


5. Click **All TSL**, and then select **ON** / **OFF**.



For an Entire Group

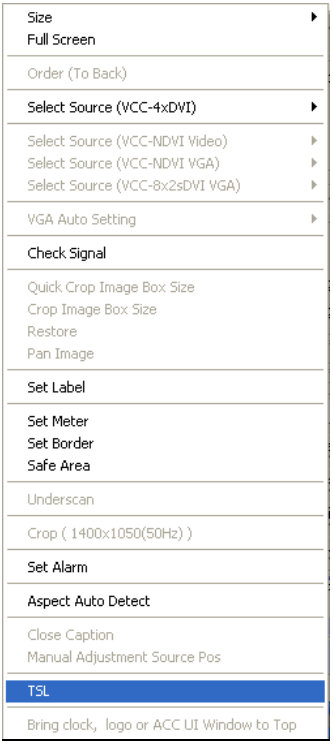
1. Select **Settings→Group Parameter→TSL**.
2. Ensure that **Enable** is selected (with checkmark). If it is unchecked, only static labels will be displayed.



3. Specify the **Display Address** (ranges from **0** to **126**). The address should match the TSL controller configured address corresponding to the router output feeding the corresponding Avitech input.
4. If you want to display dynamic labels, click the radio button to select **TSL Only**. If you want to display both the static and dynamic labels, click the radio button to select **Allow Both Static & Dynamic**.
5. To display 8 or 16 dynamic characters (if the TSL implementation allows it), click the radio button to select the corresponding options. This concludes the TSL setup on the group level.

For an individual window

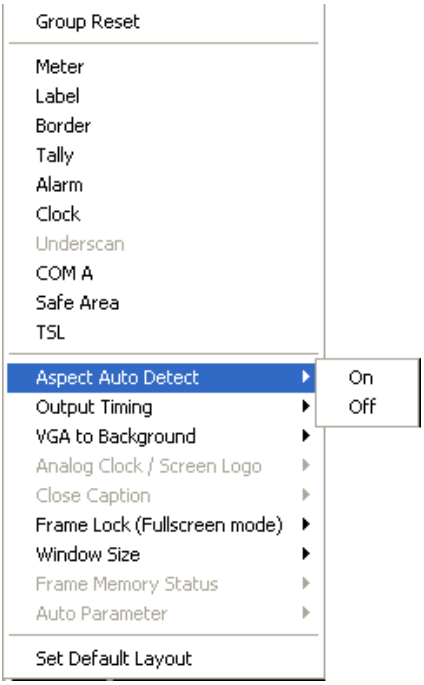
Perform the above same steps for each window by right-clicking the mouse on each individual window, then clicking **TSL** to set the **TSL Display Address**.



NOTE: When dynamic labels are displayed, bitmap fonts cannot be used for displaying static and / or dynamic labels.

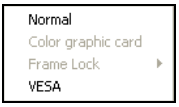
Aspect Auto Detect

This allows you to turn on / off automatic detection of the input signal's aspect ratio. For HD-SDI input signal, the aspect ratio will be 16:9; for SD-SDI / NTSC / PAL, the aspect ratio default setting is 4:3.



Output Timing

There are two output timings namely **Normal** and **VESA**. **Normal** output timing is designed for some brands of monitor display that do not support the **VESA** standard. The default setting for output timing is **Normal**.

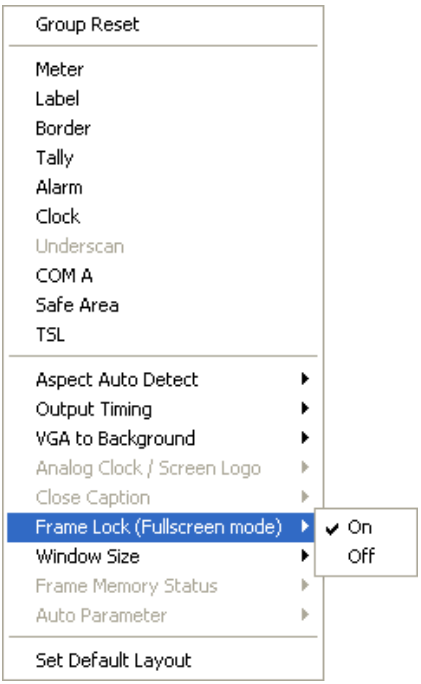


VGA to Background

This allows you to alter the sequence of a particular cascading window that appears on the monitor display. By default, Window 1 should appear on top of Window 2 but you can move it to be behind Window 2 into the background.

Frame Lock (Full Screen Mode)

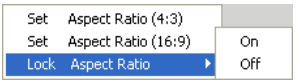
To prevent the occurrence of “black line” or “upper and lower image split” when displaying in full screen mode (output resolution is higher than 1280×1024), turn on the **Frame Lock** function.



NOTE: Upon switching to full screen mode the image may briefly appear unstable, this is normal and the image should stabilize shortly.

Window Size

There are three sizes that can display all the windows in a group: **4:3**, **16:9**, or **Lock Aspect Ratio**.



When changing the width of the window, the height will automatically adjust to match the aspect ratio. When **Lock Aspect Ratio** is set to **On**, the aspect ratio of the video display will be maintained, even if the window is stretched. If the image is **4:3** and it is stretched to **16:9**, the result is two vertical black bars appearing on either side of the display. If the image is **16:9** and it is scaled down to **4:3**, then it will have a letterbox effect.

Set Default Layout

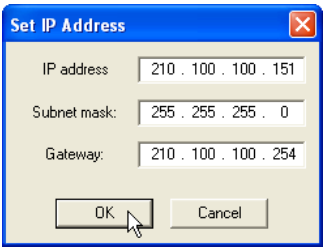
When you have multiple units cascaded together, you can quickly show all the windows by selecting **Set Default Layout**.

Module Parameter

The following are the items appearing on **Module Parameter**.

IP Address

This allows you to change to an IP address different from the default one.



Auto Parameter

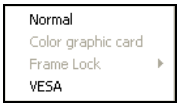
The MCC-8004 can automatically detect the display's optimum aspect ratio. To enable or disable this feature, perform the following steps:

1. Click **Auto Parameter**.
2. Click **Aspect Detect**, then select **On** / **Off** (default setting is **Off**).

NOTE: When the **Aspect Detect** option is set to **On**, all the presets will be displayed in the optimum aspect ratio.

Output Timing

There are two output timings namely **Normal** and **VESA**. **Normal** output timing is designed for some brands of monitor displays that do not support the **VESA** standard. The default setting for output timing is **Normal**.



Clock Window

When the item **All Clocks** under **System Parameter** is set to **On**, a checkmark appears on this item. You can turn on (with checkmark) or off the clock window display. Click on the item to toggle between on / off.

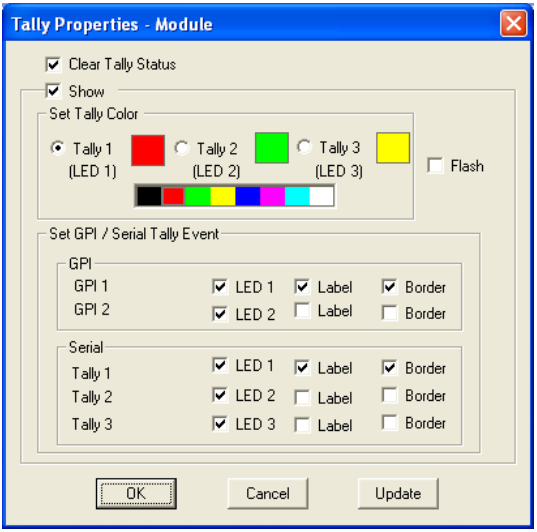
Cascade in VGA Only

You can turn on (with checkmark) or off the cascade mode with VGA signal only. Click on the item to toggle between on / off.

Activating Tally

The RJ-50-to-GPI terminal block allows for a total of eight inputs to activate tally, two per window. You can also use the serial port with ASCII, TSI, or TSL to activate tally. To change the appearance of tally, perform the following steps:

1. Click **Tally** and the following screen appears:



   Tally 1 and **2** are triggered by GPIO while **Tally 3** is triggered via serial communication.

2. The settings that can be adjusted include **Tally Color**, **LED**, **Label**, **Border**, and **Flash**.

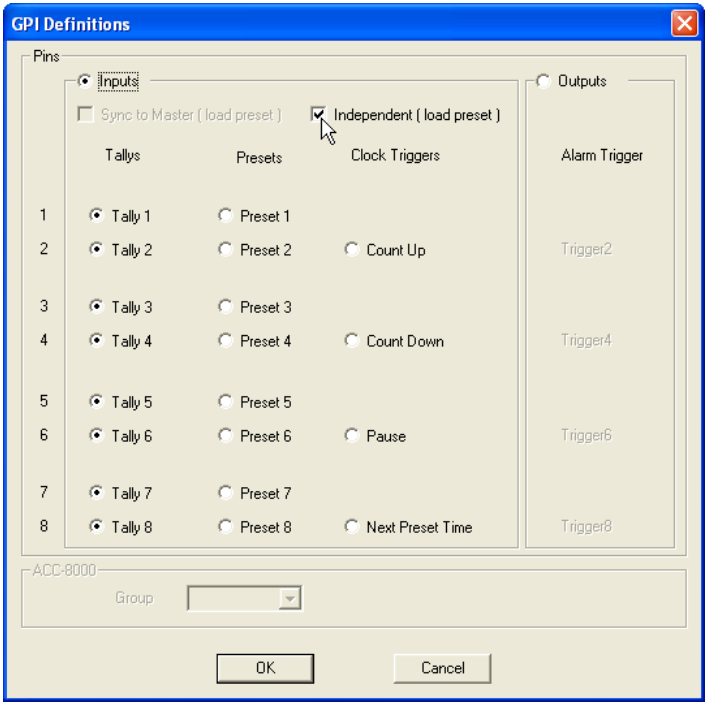
VGA to Background

When the item **VGA to Background** under **Group Parameter** is set to **On**, a checkmark appears on this item. This allows you to alter the sequence of a particular cascading window that appears on the monitor display. By default, Window 1 should appear on top of Window 2 but you can move it to be behind Window 2 into the background. Click on the item to toggle between on / off.

GPI Definitions

Eight positions can be found on the RJ-50-to-GPI terminal block that are assignable to either activate tally (two per video input) or to load presets, but each pin can only be assigned to one task. To assign the definition of each GPI, perform the following steps:

1. Upon clicking **GPI Definitions**, the following screen appears:



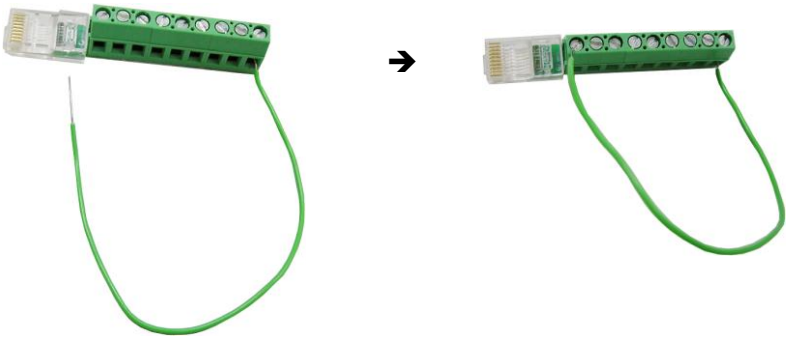
2. Click to select (enable) **Independent (load preset)** option to allow the MCC-8004 Slave module not to follow (independent) the Master module when GPI will load preset.

3. After you have finished assigning tasks to each GPI, click **OK** to finalize the changes.

NOTE:

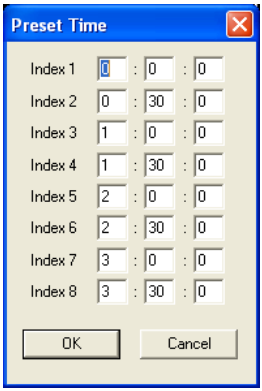
- The RJ-50-to-GPI terminal block adapter has eight positions that can each be used for setting tally and loading presets.
- By default, the terminal block is used to turn on / off the tally for each window:
  – Position 1 + GND = turns on main tally for window 1.
  – Position 2 + GND = turns on secondary tally for window 1.
  – Position 3 + GND = turns on main tally for window 2.
  – Position 4 + GND = turns on secondary tally for window 2.
  – Position 5 + GND = turns on main tally for window 3.
  – Position 6 + GND = turns on secondary tally for window 3.
  – Position 7 + GND = turns on main tally for window 4.
  – Position 8 + GND = turns on secondary tally for window 4.

Make sure that the RJ-50 GPI terminal block is inserted into the **GPI** port on the rear panel. The sample pictures below illustrate tapping the wire on position 1 to turn on the main tally for window 1.



Preset Time

Users can set the preset time (1 – 8), for count up or down, which can be recalled using GPIO.

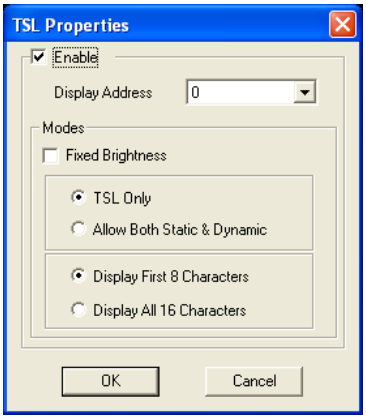


TSL

> **NOTE:** Make sure that you have selected the **TSL** configuration on the previous settings, under **Group Parameter** (see previous section).

To change the TSL configuration of a particular module, perform the following steps:

1. Click **TSL** and when the following screen appears, ensure that **Enable** is selected (with checkmark). If it is unchecked, only static labels will be displayed.



2. Specify the **Display Address** (ranges from **0** to **126**). The address should match the TSL controller configured address corresponding to the router output feeding the corresponding Avitech input.
3. If you want to display dynamic labels, click the radio button to select **TSL Only**. If you want to display both the static and dynamic labels, click the radio button to select **Allow Both Static & Dynamic**.
4. To display 8 or 16 dynamic characters (if the TSL implementation allows it), click the radio button to select the corresponding options. This concludes the TSL setup on the module level.

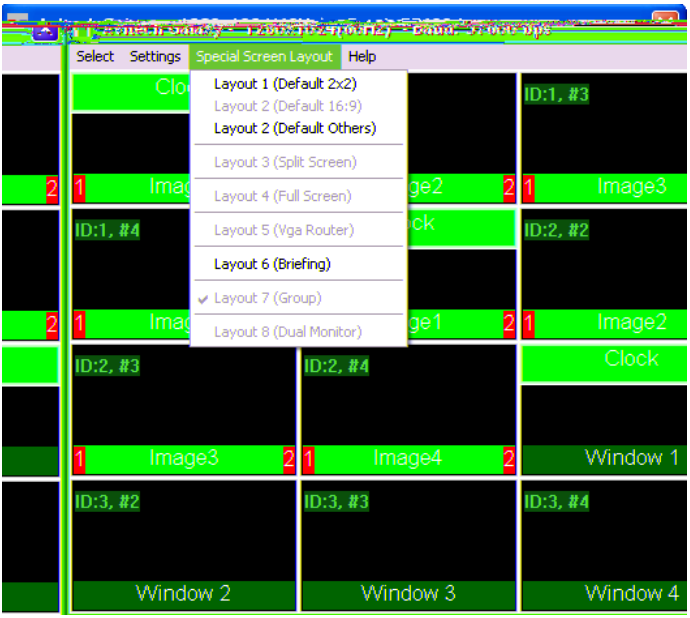
Composite Black Level

This allows you to set the composite (NTSC) black level by selecting **0 %** or **7.5 %**. Default setting for the **Composite Black Level** is **7.5 %**.

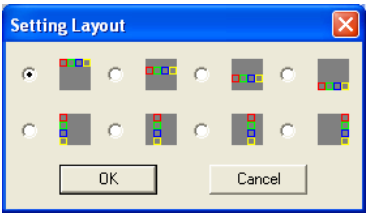
NOTE: Only supports composite video input source.

Special Screen Layout Menu

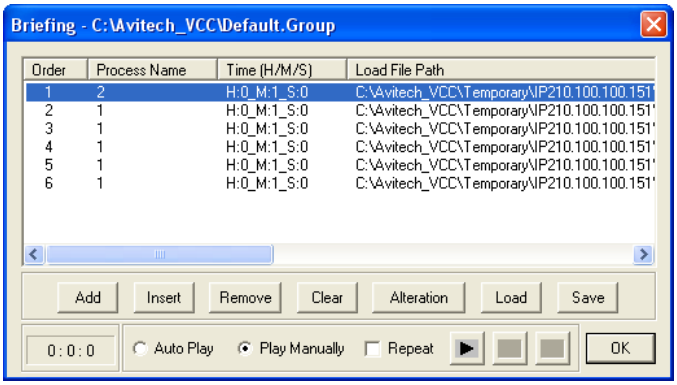
Some special screen layouts are available for the MCC-8004 (layouts that are grayed-out signify non-availability for your particular configuration):



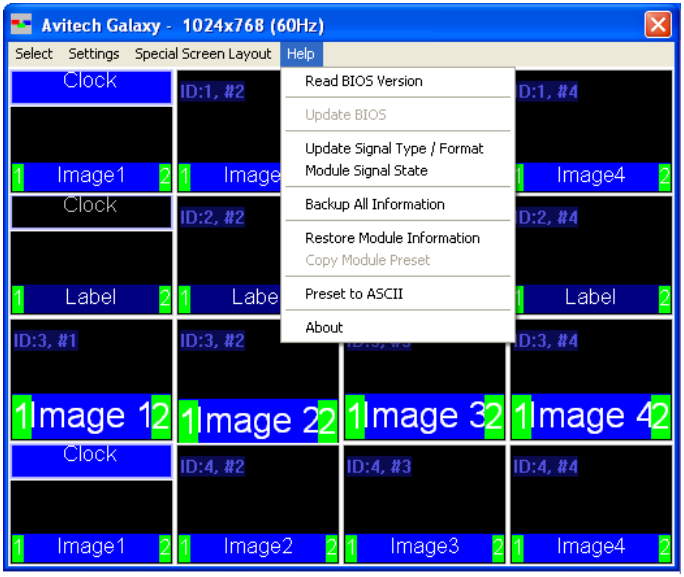
- **Layout 1 (Default 2×2)** – quad split mode.
- **Layout 2 (Default Others)** – rows or columns of four windows. Upon clicking the item, select from the following layout as shown below.



- **Layout 6 (Briefing)** – cycle between presets for a slideshow effect.



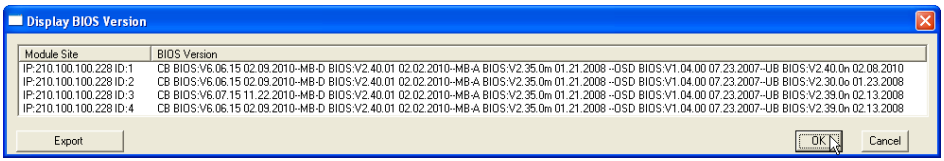
Help Menu



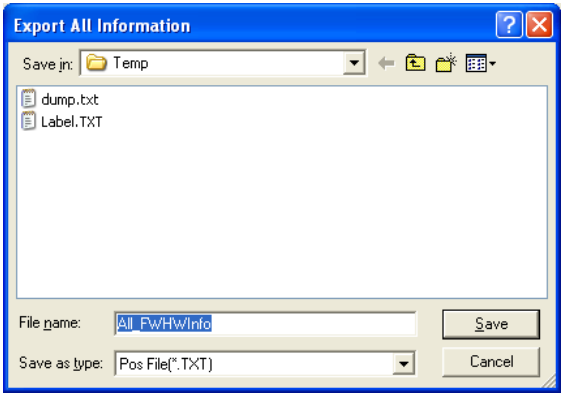
Read BIOS Version

To find out the Avitech MCC-8004 module firmware version, perform the following steps:

1. Click **Read BIOS Version**. When the following screen appears, click **Export**.

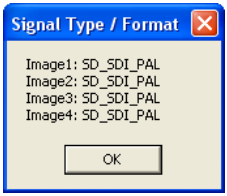


2. Assign a filename and click **Save** to save the data.



Update Signal Type / Format

To update signal type / format, click **Update Signal Type / Format** and the next sample screen shows the entire image's signal type / format.



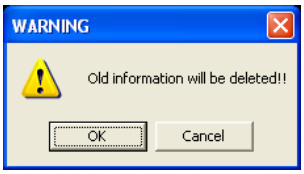
Module Signal State

To find out the module's signal state, click **Module Signal State**.

Backing Up Presets

To backup a preset to your computer's hard drive, perform the following steps:

1. Click **Backup All Information**, the following warning message appears. Click **OK** to continue.



2. The following message appears when back-up is successful, click **OK** to continue.

This will backup all saved presets and system configuration files to your computer hard drive's "c:\Avitech_VCC\Backup\IPxxx.xxx.xxx.xxx\xxxx#_#" or "c:\Avitech_VCC\Backup\COM_1\xxxx#_#" folder.

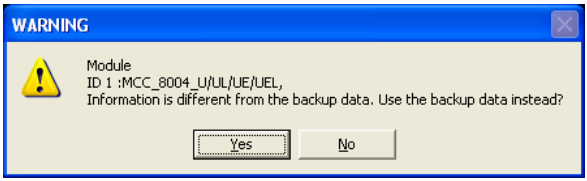
> **WARNING:** Everything in the **Backup** folder will be erased. If you have previously backed up presets, they will all be written over when you backup presets again. If you want to keep the old presets, move the entire **Backup** folder to a temporary directory (e.g., **`c:\temp`**).

This will create the following directories:
– "c:\Avitech_VCC\Backup\"
– "c:\Avitech_VCC\Temporary"

Restoring Presets

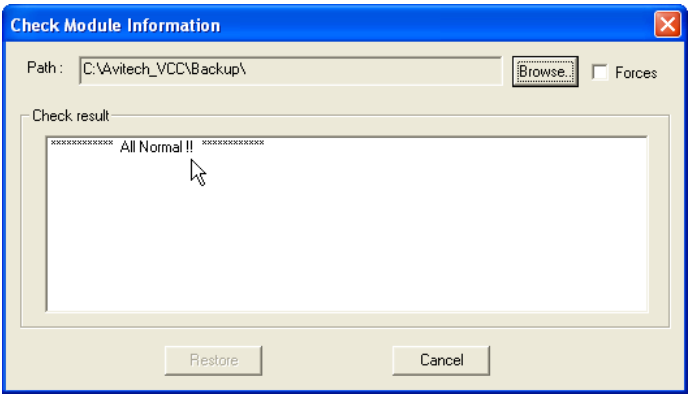
To manually restore a preset, perform the following steps:

1. Set the MCC-8004 to the factory-default value (refer to Chapter 4 **Resetting to the Factory-Default State** for details).
2. Make sure that the rotary **ID** of the MCC-8004 being restored matches the old module (if the same module is not being restored), and that the form of communication is the same (IP or RS-232).
3. If the backup content is somewhere else other than at the "c:\Avitech_VCC\Backup\IPxxx.xxx.xxx.xxx\xxxx#_#" or "c:\Avitech_VCC\Backup\COM_1\xxxx#_#", copy the backup data "xxxx#_#" into the "c:\Avitech_VCC\Backup\IPxxx.xxx.xxx.xxx\" or "c:\Avitech_VCC\Backup\COM_1\" location.
4. Run the Phoenix-G software and select **Yes** when prompted whether to restore the module using the backup data.



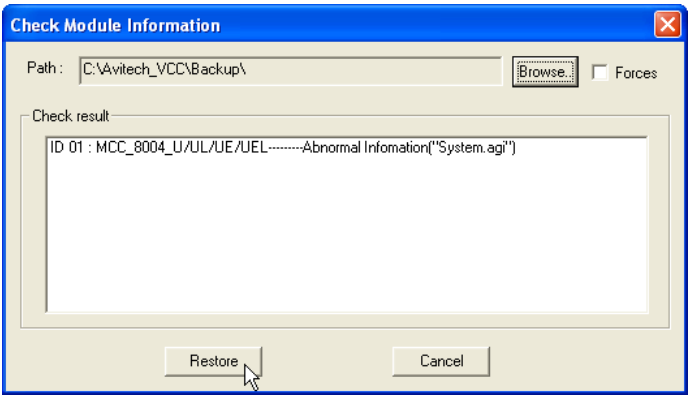
5. Upon clicking **Restore Module Information** on the **Help** menu, you should see a progress bar showing the preset being loaded into the MCC-8004.

6. When the following screen appears, the checking result confirms that everything is normal. If that is the case, click **Cancel** to exit restoring of preset(s). You may skip steps 7 and 8.



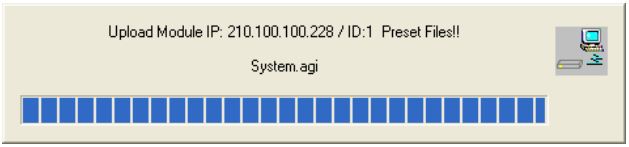
NOTE: You can click to enable the **Forces** checkbox (located on the upper right corner) that allows the backup information to be written to all the module(s) flash memory. The **Restore** button will then be enabled so you can click on it.

If the checking results shows an **Abnormal** report, confirm if the backup **Path** is correct. Then click **Restore**.

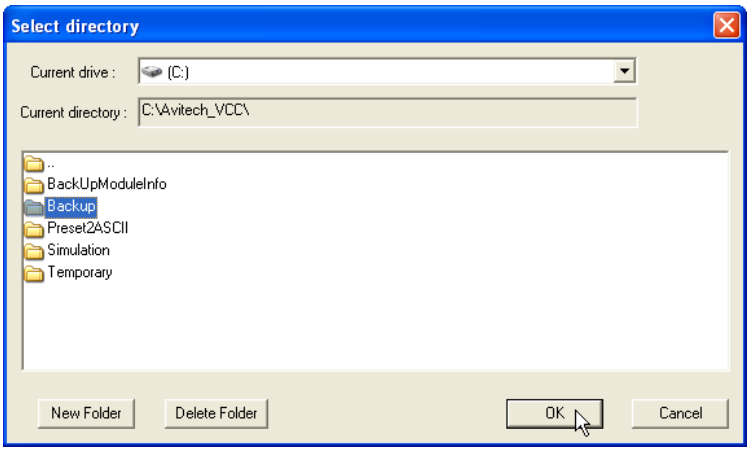


NOTE: You can click to enable the **Forces** checkbox (located on the upper right corner) that allows the backup information to be written to all the module(s) flash memory.

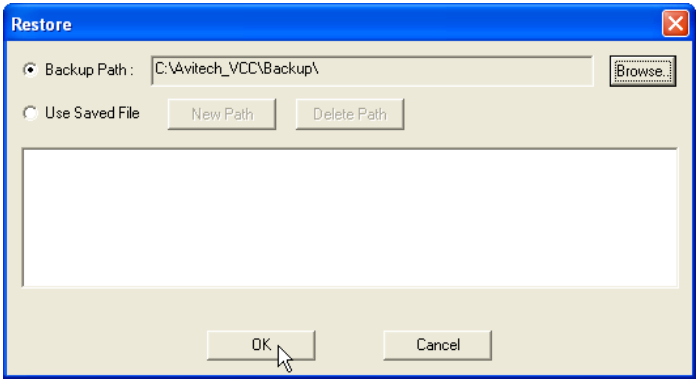
The progress of the restore process will be shown.



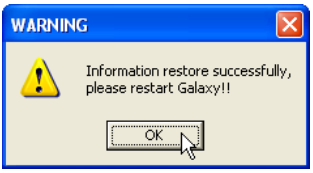
If the backup **Path** is incorrect, click **Browse** to select the correct location. Then click **OK** to continue.



7. Click **OK** when the next screen appears to continue.

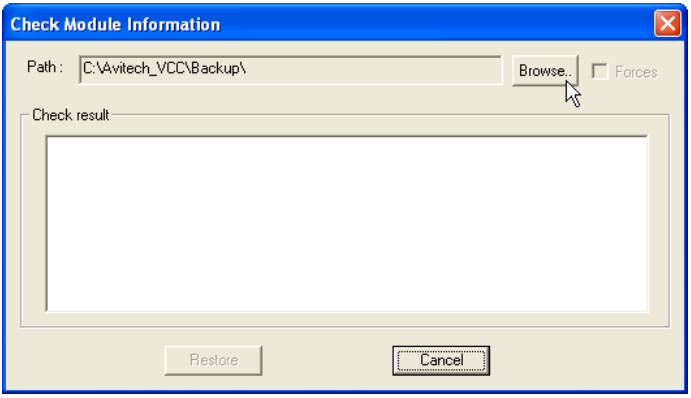


8. Click **OK** when the next screen appears to restart the Phoenix-G software.

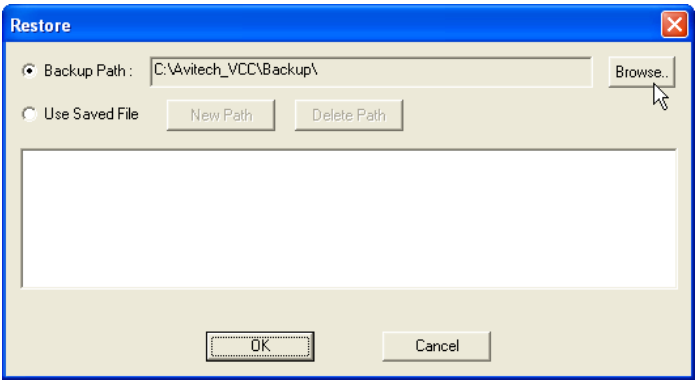


NOTE: If upon clicking **Restore Module Information** on the **Help** menu and the following error message appears, click **OK**.

On the next screen, click **Browse**.

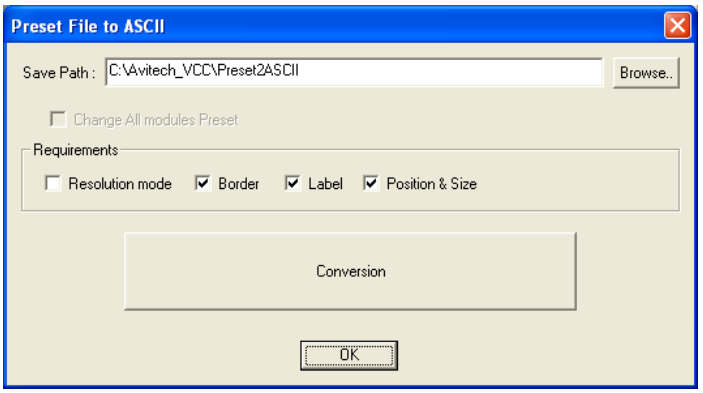


On the next screen, click **Browse** again to specify the correct backup **Path**.



Converting Preset File to ASCII Format

1. Click **Preset File to ASCII**. When the following screen appears, confirm if the **Save Path** is correct. If incorrect, click **Browse** to select the correct location.



2. Select the **Requirements**, and then click **Conversion**.
3. Click **OK** to exit.

Read Phoenix-G Information

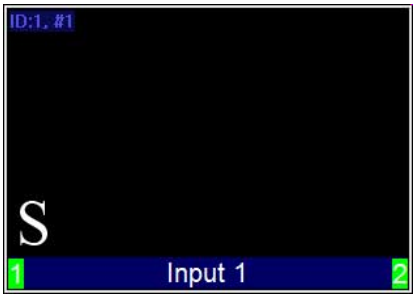
Click **About**. You should see a pop-up box showing the Phoenix-G software information.

Quick Keys – Change Window to / from Full Screen Mode; Swap Window Contents

Two quick keys are available, that allows you to quickly bring a window to / from full screen mode, as well as swap the contents from one window to another, by performing the following steps:

1. To change to full screen mode, double-click the mouse on a window. Double-click again to return from full screen mode.

2. To access the swap window quick key, move your cursor to the bottom left corner of a window until a capital letter **S** appears.



3. Click on the capital letter **S** to select the source window and then click again at a destination window where you want to swap the contents from the source. This will swap all the contents and properties of the source window to the destination window.

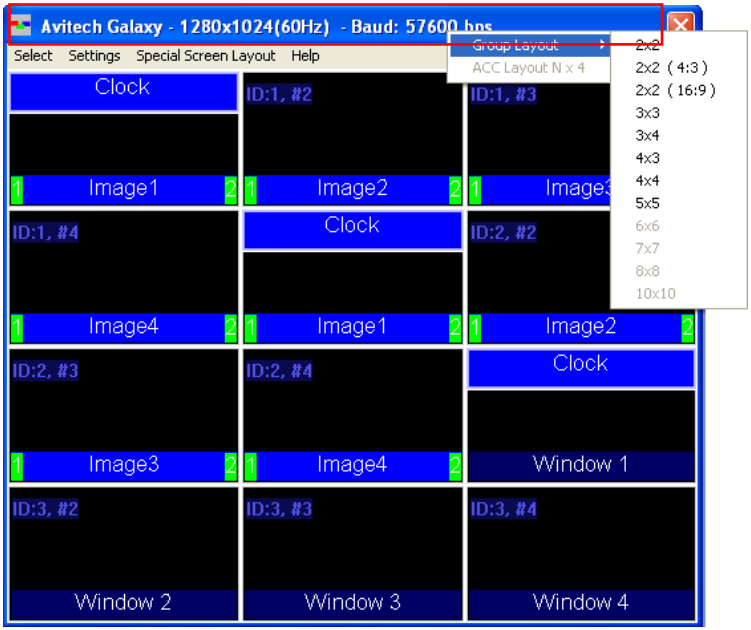
Window Layout

Setting the Default Layout (by Group)

When you have multiple units cascaded together, you can quickly show all the windows by selecting **Settings→Group Parameter→Set Default Layout**.

Arranging Windows (by Group)

To quickly setup the layout for your video windows, right-click the mouse on the title bar to access the **Group Layout** menu. Select from **2×2** up to **5×5** as possible grid positions on the monitor display.



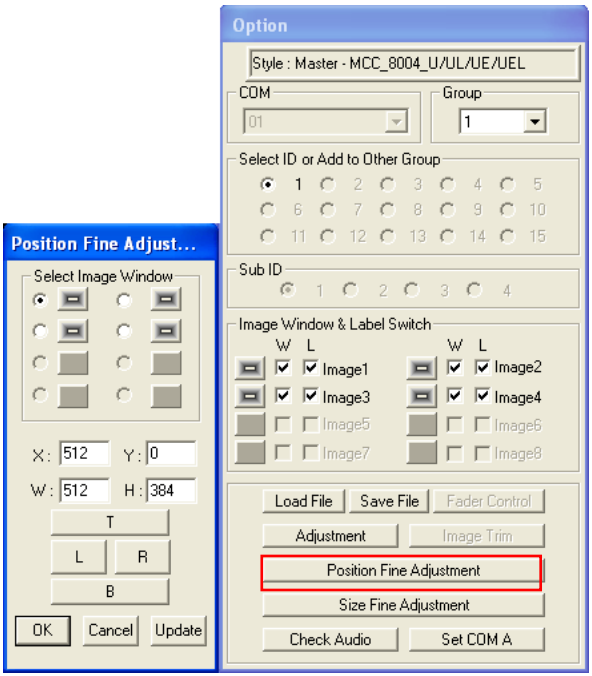
Repositioning an Individual Window

To reposition a window, perform the following steps:

1. Drag the center of a window and drop to a new position and it will update on the monitor display. Or,

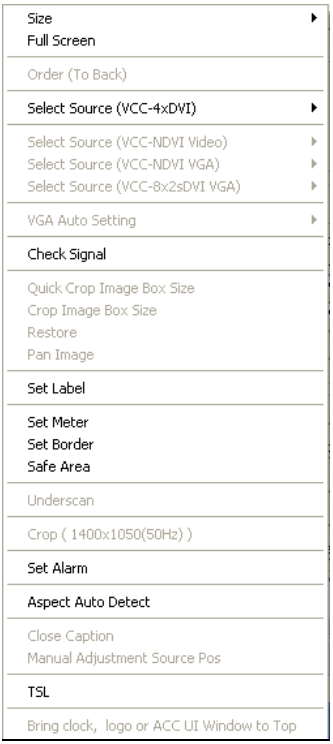
Option Window

2. Use the **Position Fine Adjustment** menu to adjust the position of any window on a pixel by pixel basis. Keep in mind that the width increases in 16 pixel increments and the height in 1 pixel increments.



Mouse Right-click Menu

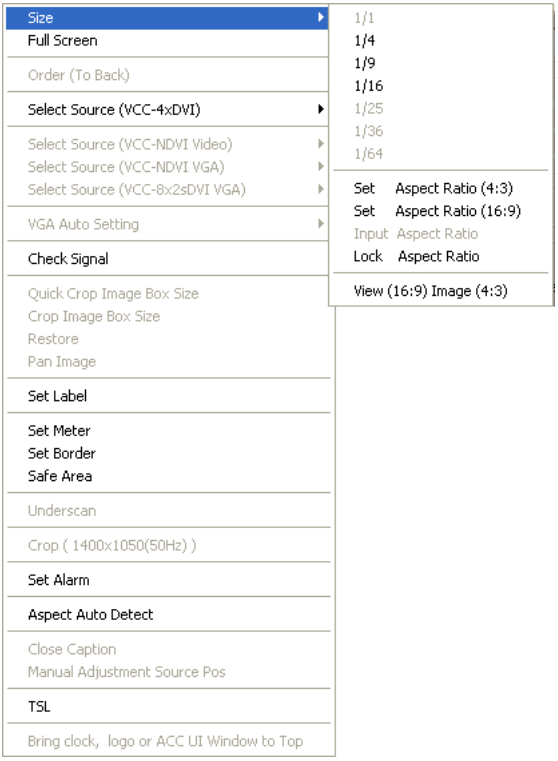
To change the properties of an individual window, right-click the mouse on the particular window to access the window's menu.



Resizing Window

To resize a single window to one of the preset sizes, perform the following steps:

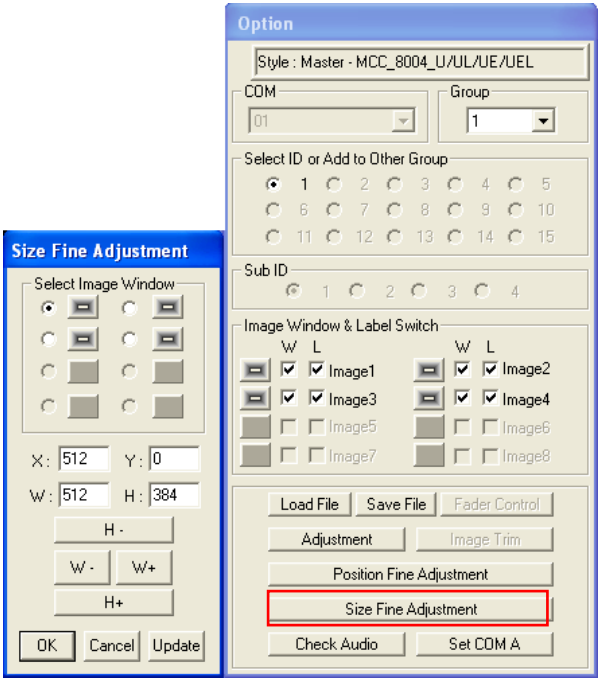
1. Right-click the mouse on a particular window and select **Size**, followed by the desired preset size selection.



NOTE: This option is not available for the scaleable DVI input.

2. Alternatively, resize a window by dragging the border of a window to the desired size. Keep in mind that there is a scaling limitation for each window that limits the maximum scaleable size to 816×465 pixels for NTSC video and 816×560 for PAL video.

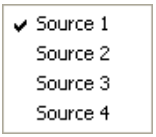
3. Another option is to use the **Size Fine Adjustment** menu to adjust each window on a pixel by pixel basis. Keep in mind that the width increases in 16 pixel increments and the height in 1 pixel increments.



4. On a particular window select **Full Screen** to maximize the image and fill up the whole screen.

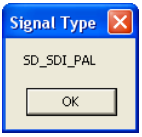
Select Source

This allows you to copy the input signal source from one process window (e.g., Window 1) to another process window (e.g., Window 2), within the same module only. Window 2 will then display the same image as Window 1. Right-click the mouse on a particular window, then click **Select Source**. The following menu appears. The selected source will have a checkmark.



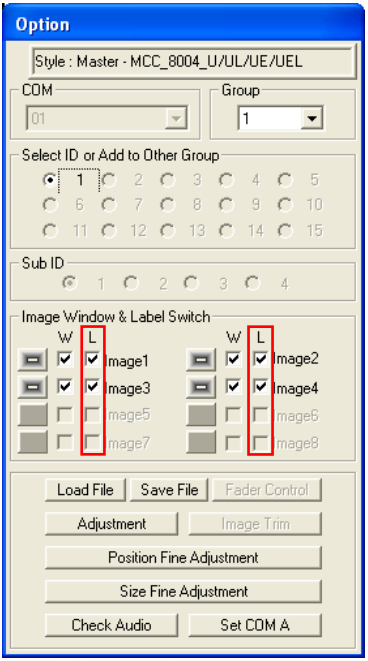
Check Signal

To determine if the video signal is being fed into the selected window, right-click the mouse on a particular window and click **Check Signal**. The following screen appears.



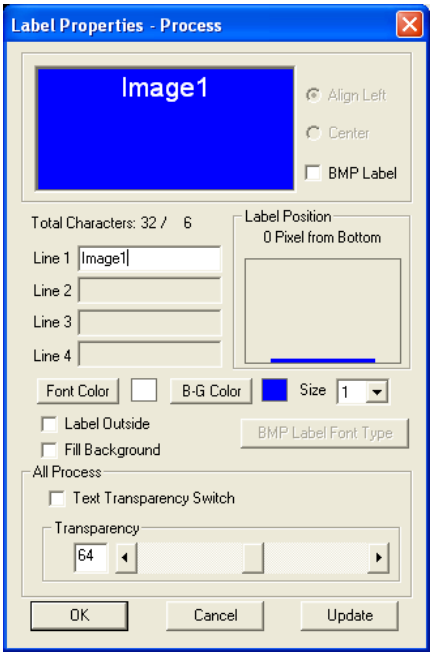
Turning On / Off the Label

1. The **Option** window has a checkbox that can be used to turn off the label (**L**) for each window.



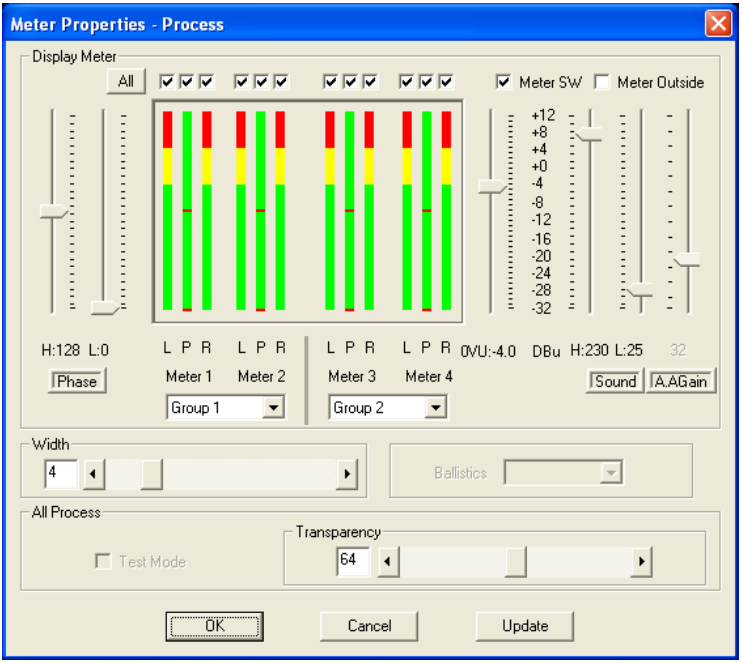
2. To turn off a label, find the checkbox that represents the selected window and check to enable or un-check to disable the **L**abel.

3. Upon right-clicking on a particular window, select **Set Label**, and the following screen appears. Refer to a previous section (“Label”) for details on setting **Label Properties**.



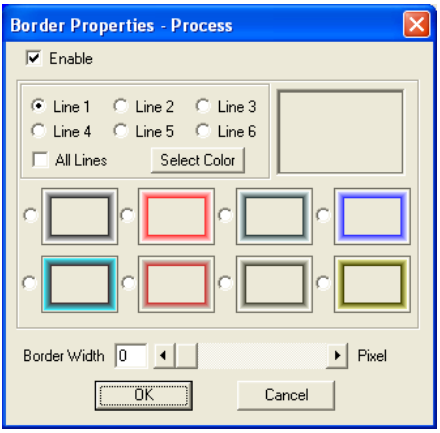
Setting the Meter Properties

This allows you to change the audio meter properties. Upon right-clicking a particular window, select **Set Meter**, and the following screen appears. Refer to a previous section (“Meter”) for details on setting the **Meter Properties**.



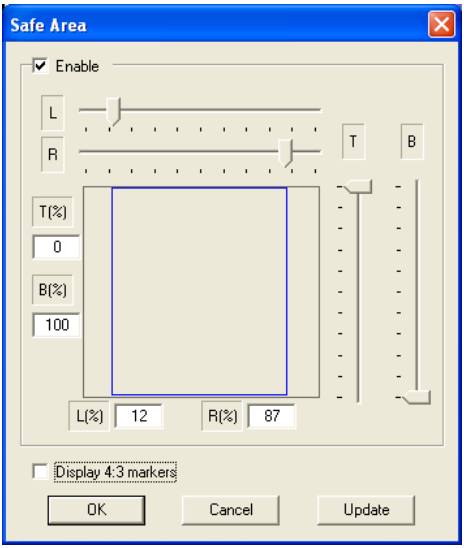
Turning On / Off the Border

This allows you to change the properties for the border. Upon right-clicking on a particular window, select **Set Border**, and the following screen appears. Refer to a previous section (“Setting Border Properties”) for details on setting the **Border Properties**.



Safe Area

Upon right-clicking on a particular window, select **Safe Area**, and the following screen appears.



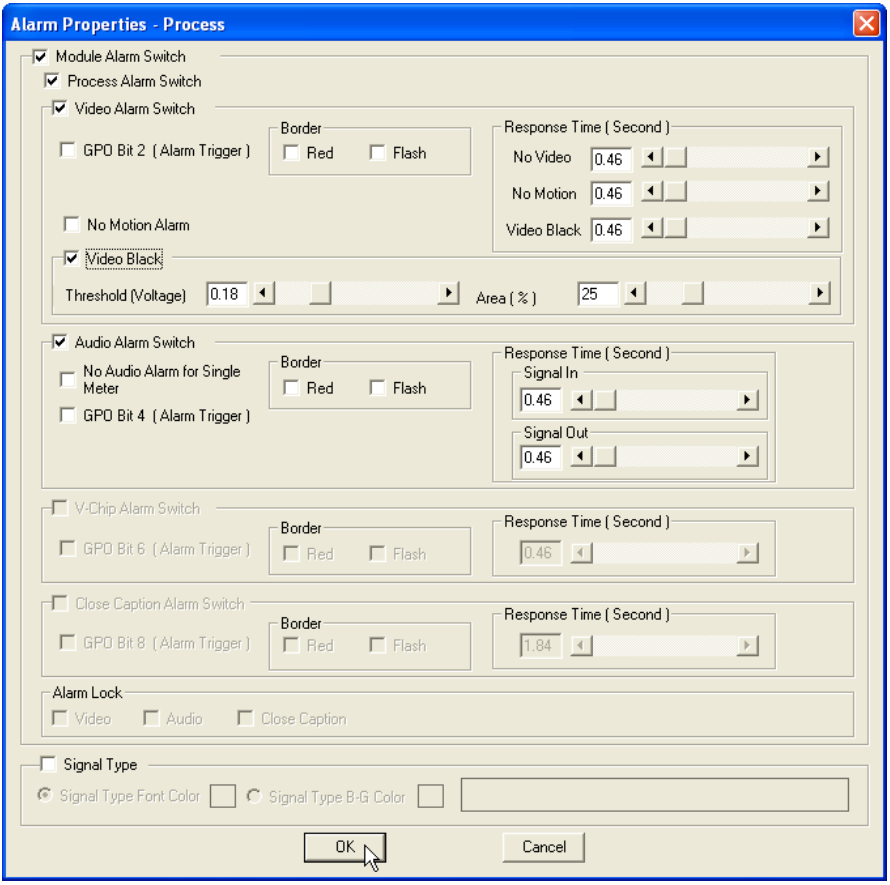
The following should be noted when setting the safe area:

- Luminance is reduced outside the safe area.
- **Enable** – can be enabled / disabled for each source window. By using the slider, freely adjust the horizontal (**L**eft and **R**ight) and vertical (**T**op and **B**ottom) markers.

- **Display 4:3 markers** – fixed 4:3 markers (vertical yellow lines) delineates the 4:3 area in a 16:9 window.

Set Alarm

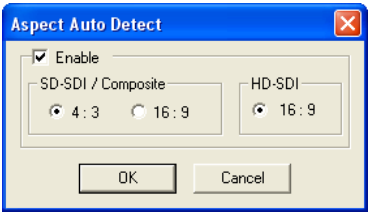
Upon right-clicking a particular window, select **Set Alarm** and the following screen appears. Refer to a previous section ("Setting Alarm Properties") for details on setting the **Alarm Properties**.



Aspect Auto Detect

This allows you to set the input signal's aspect ratio for a particular window. If the input signal is a different aspect ratio than the monitor in which it is displayed, you may change the monitor's aspect ratio to display the signal, without deformation.

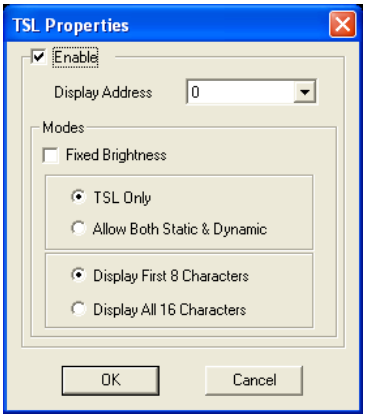
1. Right-click the mouse on a particular window and click **Aspect Auto Detect**. When the next screen appears, click the mouse to select **Enable**, and then select the desired aspect ratio.



2. Then click **OK**. The available selection for HD-SDI is **16:9**; while for **SD-SDI / Composite** you can switch between **4:3** and **16:9**.

Displaying Static / Dynamic Labels

This allows you to display static / dynamic labels by right-clicking a particular window, select **TSL**, and the following screen appears. Refer to a previous section ("TSL") for details on setting the **TSL Properties**.



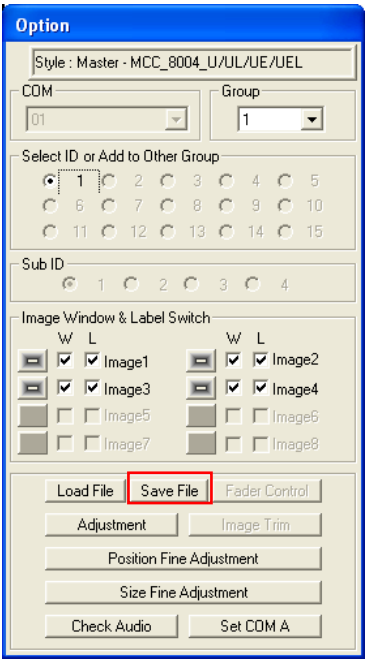
Saving to a Flash File

There are two instances that you will need to use the save to flash feature:

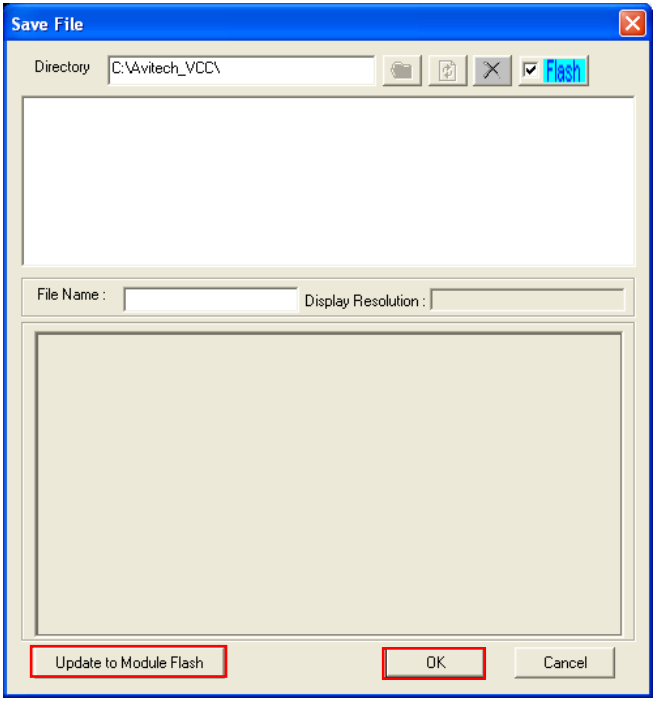
- After creating the master layout and you want the MCC-8004 to load it again when the unit is power cycled (shutdown and restart).
- After you are done saving presets and you want to save all the presets that were created into the internal flash memory of the module. If this action is skipped, the module will lose all the presets that were created.

To save to flash, perform the following steps:

1. Click **Save File** in the **Option** window.



2. When the following screen appears, click **Update to Module Flash**, and then click **OK**.



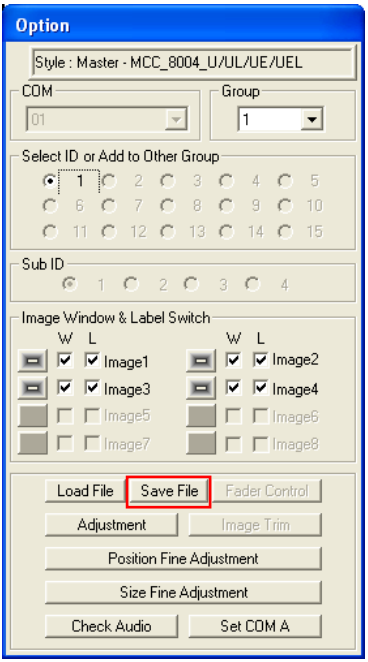
Or, close the Phoenix-G software and select **Yes** when prompted to save.

Saving a Preset

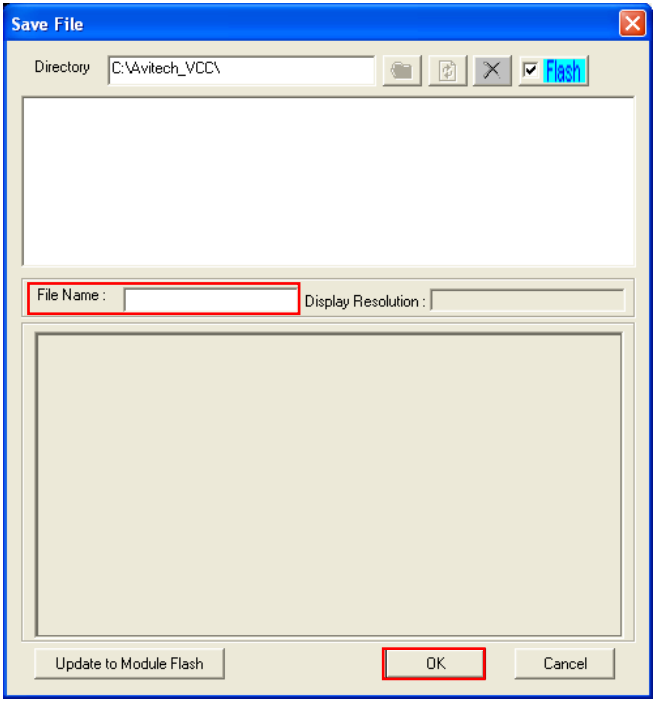
All the presets you create are stored in the MCC-8004 and not in the computer that is running the Phoenix-G software. In order to write all the presets into the internal flash memory of the MCC-8004 after creating it, you will need to save to flash. To save a preset, perform the following steps:

1. Configure the layout to how you want it to display.

2. Click **Save File** on the **Option** window.



3. When the next screen appears, enter a unique filename for the preset, and select **OK** to save.



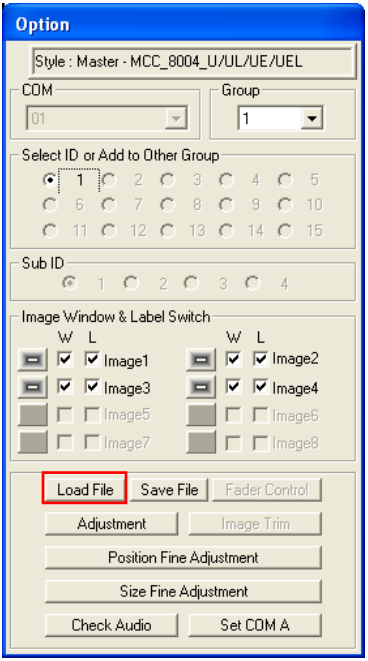
- When using a keypad, use the numbers **0** – **9** for your preset names.
- When using the GPI, use the numbers **1** – **8** for your preset names.

The file extension **GP#** will be automatically added to the filename.

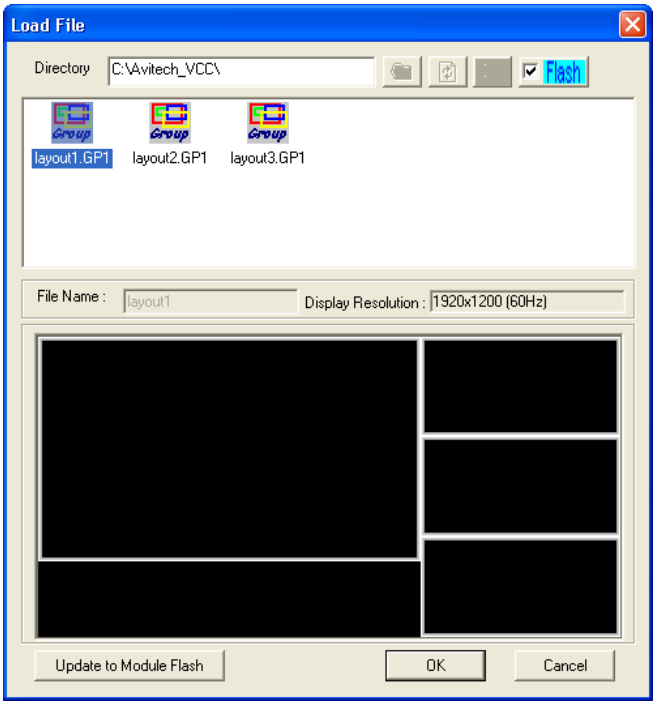
4. Repeat the above steps for each additional preset.
5. After you are done creating presets, load the file that you want to be the master layout, which gets loaded when the MCC-8004 is powered on.
6. Close the Phoenix-G software and select **Yes** when prompted to save to flash.

Loading File

1. In the **Option** menu, click **Load File**.

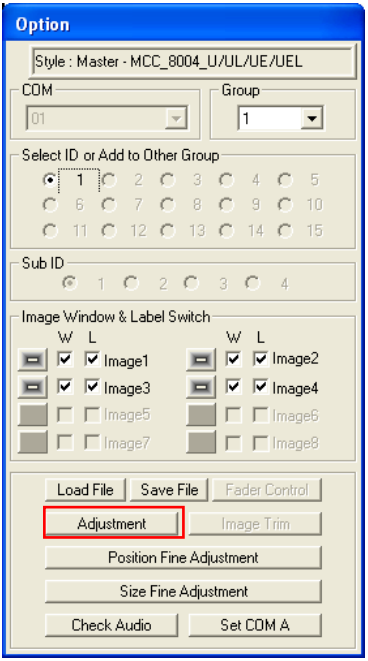


2. Select a saved file, and then click **OK** to load the preset.

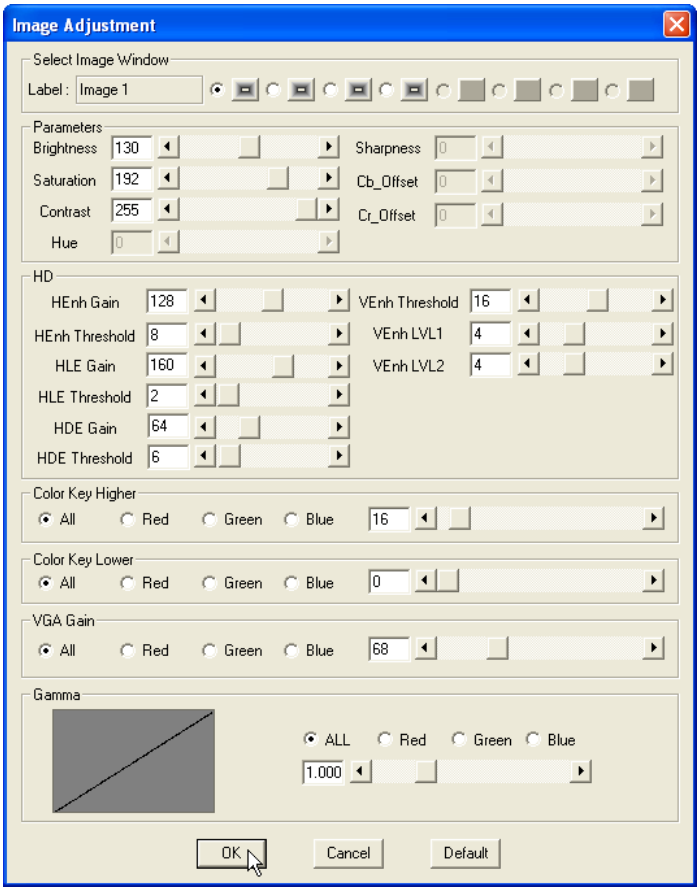


Making Adjustments

1. In the **Option** menu, click **Adjustment**.



2. The following screen appears.



3. **Select** the particular **Image Window**, then you can adjust the parameters directly by using the sliders or clicking the radio button. Click the **Default** button on the lower right portion of the screen to reset the values to the factory-default.

   Brightness – controls the brightness of the output video.

   Saturation – controls the color saturation of the output video.

   Contrast – controls the contrast of the output video.

   Hue – controls the hue of the output video.

   NOTE: **Hue** control is only available for MCC-8004a and MCC-8004d.

   HEnh Gain (horizontal overall enhancement gain) – sets the base enhancement level for horizontal enhancer affecting horizontal large edge and detail enhancer gains in the luma channel.

   HEnh Threshold (horizontal overall enhancement threshold) – sets the base enhancement threshold levels for horizontal enhancer affecting horizontal large edge and detail enhancer thresholds in the luma channel.

   HLE Gain (horizontal large edge enhancement level) – sets the enhancement level for horizontal large edge enhancement along with the value of HEnh Gain. The final enhancement level is the result of multiplication of these two values.

   HLE Threshold (horizontal large edge enhancement threshold) – sets the enhancement threshold for horizontal large edge enhancement along with the value of HEnh Threshold. The sum of these two values, clipped to 8 bits forms the final threshold.

   HDE Gain (horizontal detail enhancement level) – sets the enhancement level for horizontal detail enhancement along with the value of HEnh Gain. The final enhancement level is the result of multiplication of these two values.

   HDE Threshold (horizontal detail enhancement threshold) – sets the enhancement threshold for horizontal large edge detail along with the value of HEnh Threshold. The sum of these two values, clipped to 8 bits forms the final threshold.

VEnh Threshold (vertical enhancer threshold) – defines the threshold above which vertical enhancement occurs.

VEnh LVL1 (vertical enhancer level) – defines the level of vertical enhancement in conjunction with the value of **VEnh LVL2**.

VEnh LVL2 (enhancement level) – defines the level of vertical enhancement in conjunction with the value of **VEnh LVL1**.Vertical enhancement level is the result of multiplication of values in **VEnh LVL1** and **VEnh LVL2**.

> NOTE: **HEnh Gain**, **HEnh Threshold**, **HLE Gain**, **HLE Threshold**, **HDE Gain**, **HDE Threshold**, **VEnh Threshold**, **VEnh LVL1**, and **VEnh LVL2** controls are not available for MCC-8004a and MCC-8004d.

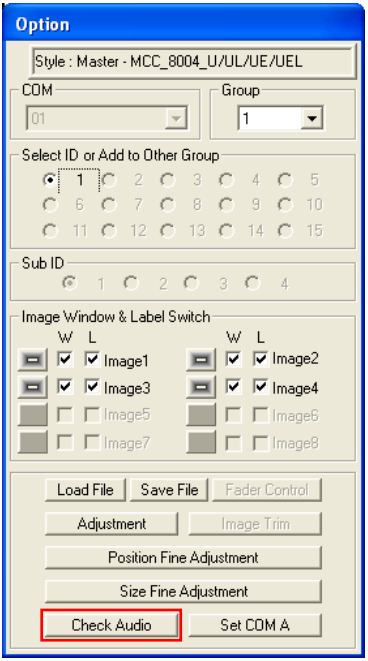
Color Key Higher / **Lower** (**All** / **Red** / **Green** / **Blue**) – also called "chroma key," it is a technique for compositing two images or frames together in which a color (or a small color range) from one image is removed (or made transparent), revealing another image behind it.

VGA Gain (**All** / **Red** / **Green** / **Blue**) – gain controls are like contrast controls, they primarily affect the light end of the scale (for VGA video signal only).

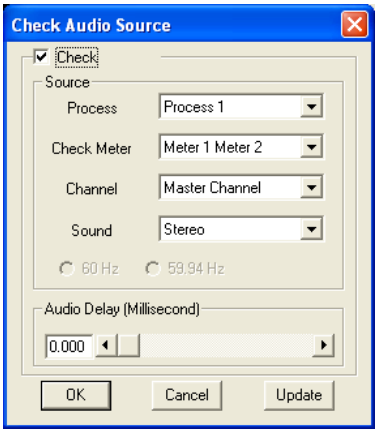
Gamma (**All** / **Red** / **Green** / **Blue**) – gamma compression, also known as gamma encoding, is used to encode linear luminance or RGB values into video signals or digital video file values. A color CRT receives three video signals (red, green, and blue) and in general each color has its own value of gamma.

Audio Delay

1. In the **Option** menu, click **Check Audio**.



2. When the following screen appears, click the audio **Check** option.



3. Use the slider to set the **Audio Delay** time **(Millisecond)**.
4. Click on the radio button to select **60** or **59.94 Hz** frequency (if available). Select **60 Hz** when the signal is for HD (high definition); select **59.94 Hz** when it is for 59.94 Hz (1/1.001) to prevent interference on the waveform output.
5. Click the **Sound** drop-down menu to select between **Stereo**, **Mono Left**, or **Mono Right**.

2 Simplified Control Panel

Aside from using the Phoenix-G software, you can use the optional numerical Simplified Control Panel (SCP) keypad that allows you to quickly recall presets, without having to use a computer. This chapter familiarizes you with using the Simplified Control Panel to load up to ten presets, saved in the flash memory of the MCC-8004 module.

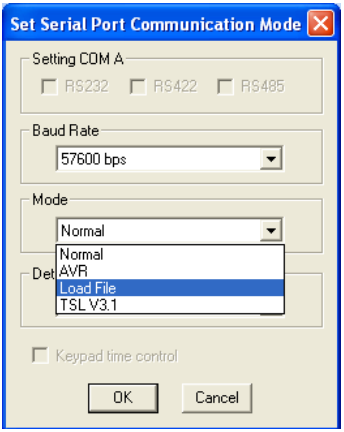
2.1 Using the Simplified Control Panel (Optional)

Preparing the MCC-8004 For Use With the SCP Keypad

To prepare the MCC-8004 for use with the Simplified Control Panel, perform the following steps:

1. Create up to ten presets with filenames **0** – **9** (up to ten groups). Refer to the previous chapter on saving presets.

2. Click **Settings→Group Parameter→COM A**. When the next screen appears, select **Load File** on the **Mode** drop-down menu. Then click **OK**.



3. You will be prompted to shutdown the Phoenix-G software and save to flash.
4. Power off the MCC-8004 by unplugging the power cord. Then, plug in the SCP keypad to the rear panel's **Keypad** port.

   NOTE: If you need to connect again using the Phoenix-G software, you must first disconnect the SCP keypad.

5. Connect the power cord back to the MCC-8004 to power on.

Recalling Presets

The MCC-8004 COM port is automatically set to the following parameters:

- RS-232
- 8-bit data
- 1-stop
- No parity
- 14400 bps baud rate

To recall the presets, perform the following steps:

1. To login to the Simple Control Panel mode press **Enter**.
2. Use the Phoenix-G software's preset files saved in the MCC-8004 flash memory.

   The preset filename format is: **X.GPY**
   where **X** = **1** – **26**, this refers to preset **1** – preset **26**
   where **Y** = **1** – **9**, this refers to group **1** – group **9**
3. Recall preset mode 1:
   To recall the next preset file, press the **+** (plus) key.
   To recall the previous preset file, press the **–** (minus) key.
4. Recall preset mode 2:
   To recall a specific preset file, press the two number keys. The first number signifies the Group number; the second number signifies the preset number. For example: pressing the **19** number keys would allow the MCC-8004 to recall the "**9.GP1**" preset file.
5. Recall preset mode 3 (supports recall of preset files **0** – **26**):
   Example 1: pressing **1** (one) → **.** (point or period) → **1** (one) → **Enter** (total of four keys) would allow MCC-8004 to recall the "**1.GP1**" file.
   Example 2: pressing **2** (two) → **.** (point or period) → **1** (one) → **7** (seven) → **Enter** (total of five keys) would allow MCC-8004 to recall the "**17.GP2**" file.
   Example 3: pressing **3** (three) → **.** (point or period) → **2** (two) → **6** (six) → **Enter** (total of five keys) would allow the MCC-8004 to recall the "**26.GP3**" file.
6. To save the MCC-8004 present configuration: press ***** (star or asterisk) → **/** (slash) → **Enter** (total of three keys). During this process (approximately five seconds), make sure that your MCC-8004 has a stable and uninterrupted power supply.
7. When the DVI-I port has an analog VGA input, the MCC-8004 can do automatic image adjustment by pressing the following three keys:
   . (point or period) → ***** (star or asterisk) → **Enter**.
8. When the DVI-I port has an analog VGA input, the MCC-8004 can do automatic gain adjustment by pressing the following three keys:
   . (point or period) → **/** (slash) → **Enter**.

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

3 Avitech ASCII Protocol

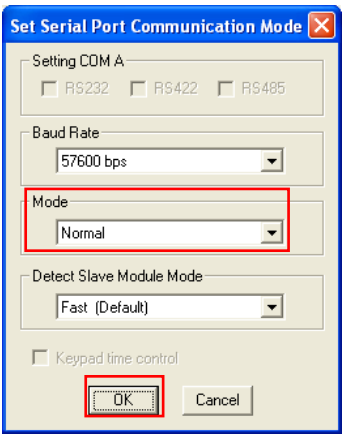
The MCC-8004 supports the ASCII command prompt interface. You can use HyperTerminal to control your MCC-8004. The serial port (**RS-232**) or Ethernet port (**IP**) on the MCC-8004 can also be used to interface with a third-party controller for control over RS-232 / IP. This chapter familiarizes you with using the Avitech ASCII Protocol (AAP) of the MCC-8004 via Microsoft® Windows HyperTerminal function as an example.

3.1 Setting the RS-232 Port

Before using the ASCII Z command interface, make sure that the COM A (RS-232) port on the MCC-8004 is set at Normal (8-bit data, 1 stop bit, no parity, and no flow control). The default baud rate is 14400 bps (should be set at 57600 bps). To correctly use the ASCII Z commands, use the Phoenix-G software's default Group and Module number for the MCC-8004.

NOTE:

- To set **COM A** to **Normal**. Click **Settings→Group Parameter→COM A**. When the next screen appears, select **Normal** on the **Mode** drop-down menu. Then click **OK**.
- Disconnect the SCP keypad if that is connected.



3.2 Setting the HyperTerminal's COM Port

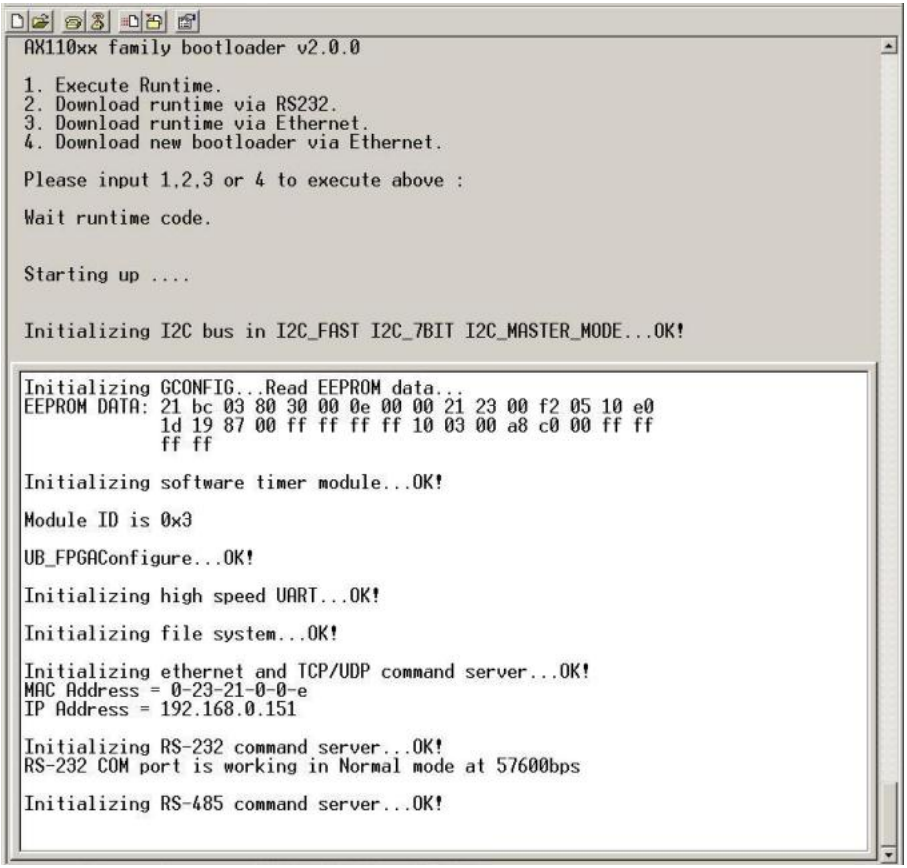
To set the HyperTerminal's COM Port, perform the following steps:

1. Click **Start→All Programs→Accessories→Communications→ HyperTerminal** to startup the Windows HyperTerminal function.
2. Set the HyperTerminal's COM port to the following settings (same as RS-232 port setting):
   - Baud Rate: 57600
   - Data Bits: 8
   - Parity: None
   - Stop Bits: 1
   - Flow Control: None

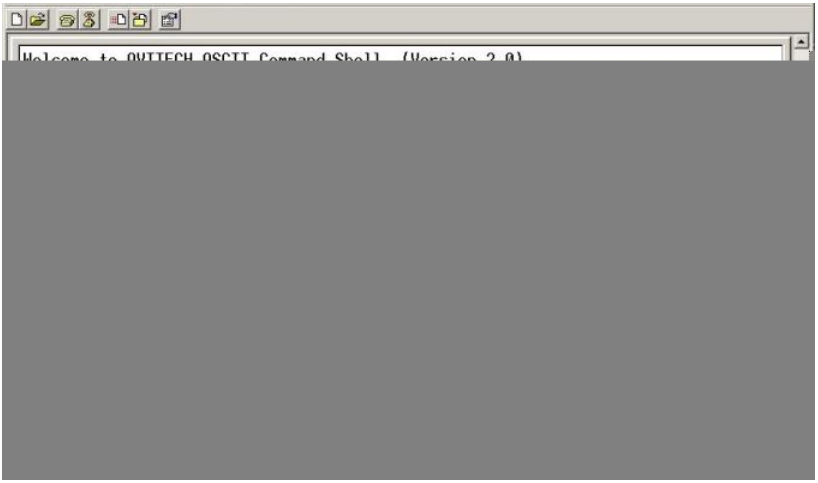
3.3 Entering the ASCII Z Command Interface (via RS-232)

To startup the ASCII Z command interface, perform the following steps:

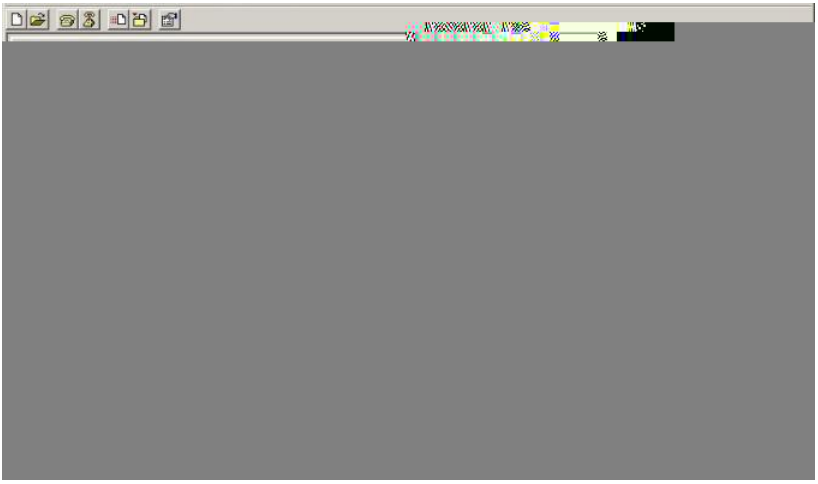
1. Connect the HyperTerminal's COM port (computer) to the MCC-8004 RS-232 port, and make sure that power supply is available.
2. Connect the power cord to the MCC-8004 so that it will use the 57600 bps baud rate to transmit the startup signal.



3. Press **Enter** to login to the ASCII Z command interface. When the HyperTerminal's command prompt "**>**" symbol appears, you can start entering ASCII Z commands.



4. To logout of the ASCII Z command interface, type "exit" and press **Enter**.



3.4 Entering the ASCII Z Command Interface (via IP)

To startup the ASCII Z command interface, perform the following steps:

1. Make sure you have a binary file editing program installed in your computer.
2. Run the binary file editing program and use the following command syntax to create and save the sample binary file–

```
unsigned char 0x55,0xAA;                              //command head
unsigned char 0xF8,~0xF8;                             //command ID
unsigned char strlen(prompt$)+2,~(strlen(prompt$)+2); //command length
unsigned char FunctionID;                             //must be 0x07
unsigned char prompt$[];                              //must end by 0x00 !!!
unsigned char 0x00;                                   //command tail
```

Using the below binary text string as an example–

0x55 0xAA 0xF8 0x07 0x0B 0xF4 0x07 “ZA 000000” 0x00

Execute “ZA 000000” = arranges all windows to its proper size and position

> **NOTE:** The double-quote “” of sample string “ZA 000000” is just for string expression, there are no quote characters (0x22) in the command contents (actual memory dump of command).

Going back to our sample binary text string listed above–

0x55 0xAA 0xF8 0x07 0x0B 0xF4 0x07 “ZA 000000” 0x00

It is therefore composed of the following parts (follow the color coding)–

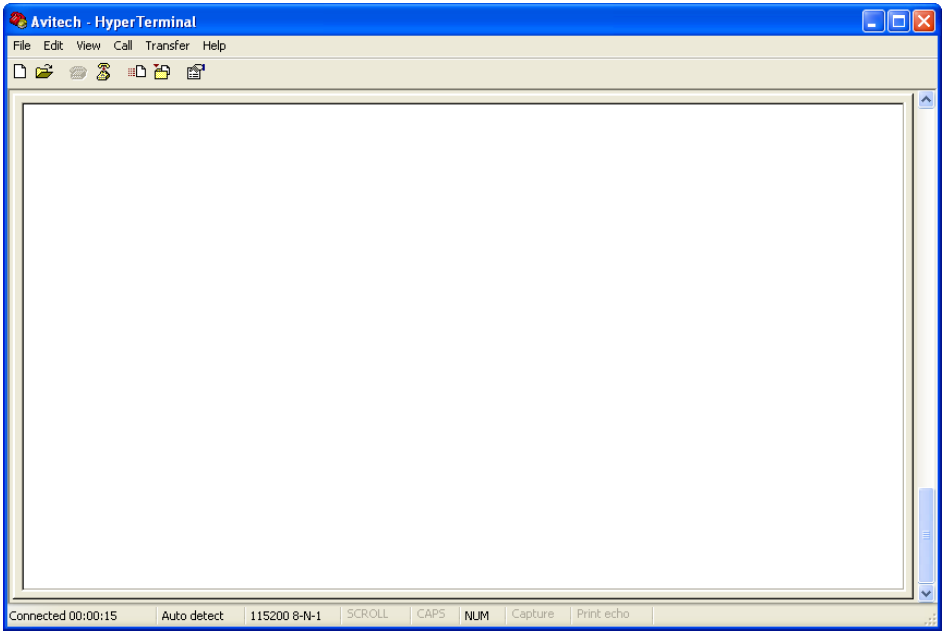
0x55 0xAA 0xF8 0x07 0x0B 0xF4 0x07

0x5A 0x41 0x20 0x30 0x30 0x30 0x30 0x30 0x30 0x00(End of string)

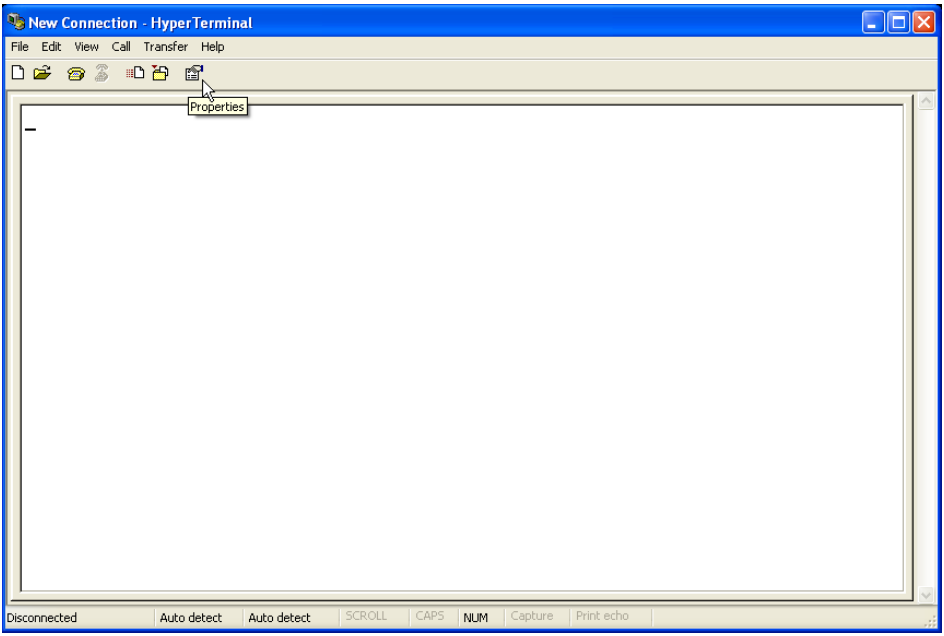
0x00(command tail)

3. Connect the HyperTerminal’s RJ-45 port (computer) to the MCC-8004 **IP** port.

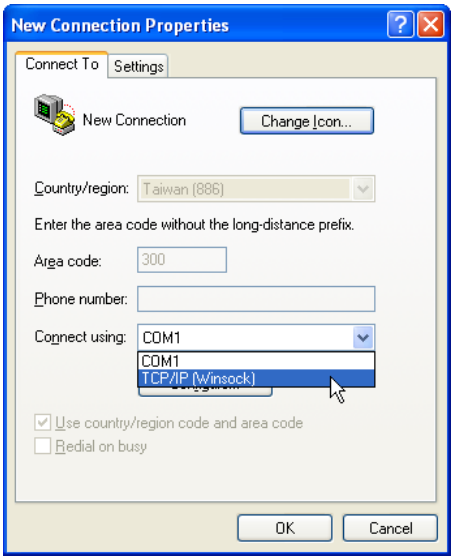
4. On your computer, click **Start→All Programs→Accessories→ Communications→HyperTerminal**. The following screen will appear.



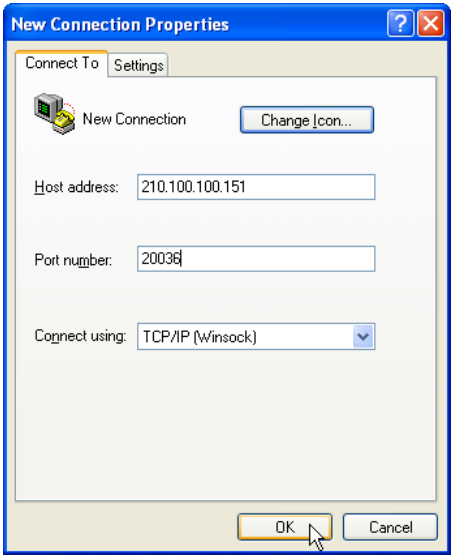
5. Click the **Properties** icon.



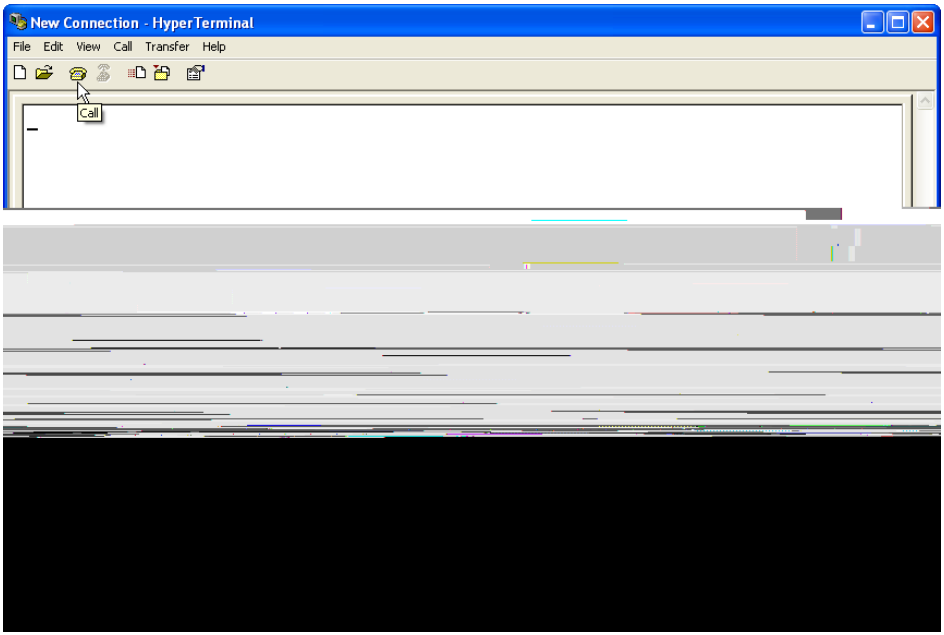
6. The following screen will appear. Select **TCP/IP (Winsock)**.



7. Enter “210.100.100.151” for **Host address** and “20036” for **Port number**. Then click **OK** to continue.

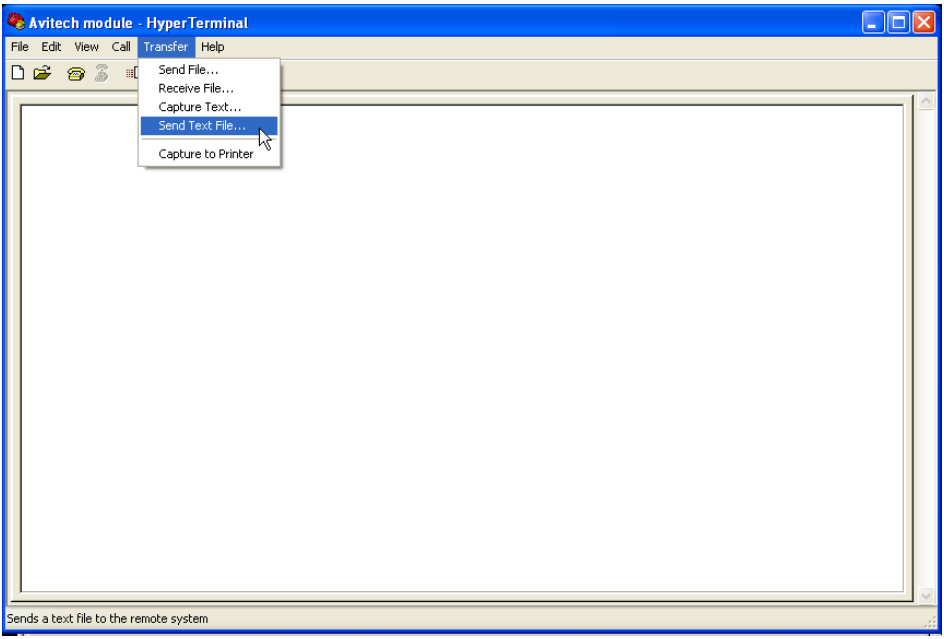


8. Click the **Call** icon.



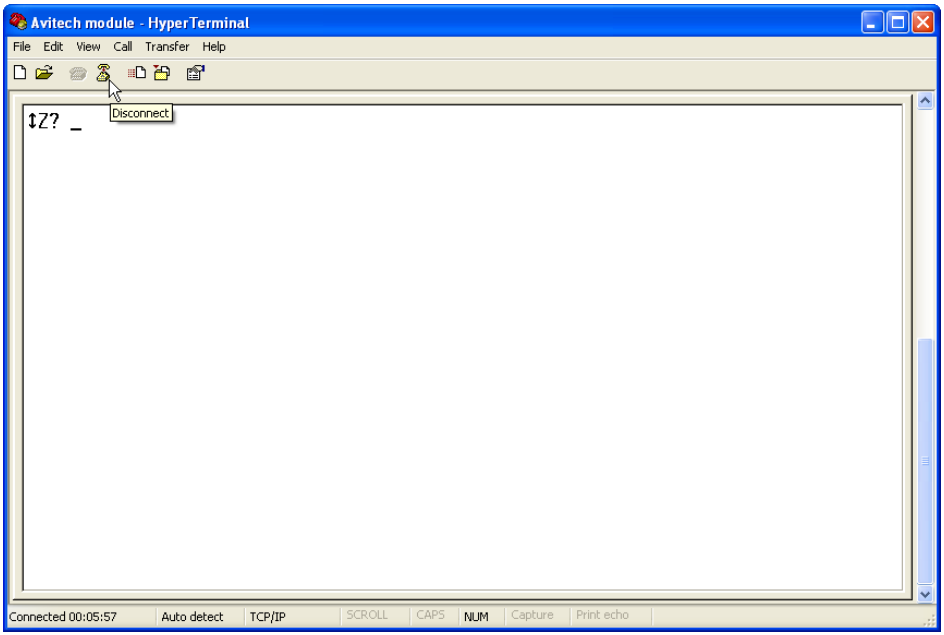
9. When the next screen appears, assign a **Name** to the connection. Then click **OK**.

10. Click **Transfer→Send Text File**.



11. When the next screen appears select the binary file and then click **Open**.

12. After sending the text file, click the **Disconnect** button to end the call.



3.5 ASCII Z Command Format

The ASCII Z command is comprised of the following parts:

Header	Group/Module/Window Assignment	Parameter 1	Parameter 2	. . .

The following is a list of rules to follow when entering the ASCII Z command:

- It is acceptable to enter commands in small or capital letters, and the five columns are separated by a space.
- **Header** = **z** + command character

- **Group/Module/Window Assignment (GGMMPP)** = is comprised of six Arabic numerals. This is used in designating the device's Group / Module / Window assignment.

  Group = is comprised of the first two numbers (**01** – **99**), **00** is used to pertain to all groups.

  Module = is comprised of the middle two numbers (**01** – **15**), **00** is used to pertain to all modules.

  Window Assignment = is comprised of the last two numbers (**01** – **04**), **00** is used to pertain to all window assignments.

- **Parameter 1** of color assignment (**RRRGGGBBB**) = is comprised of nine Arabic numerals, this is used in designating the color.
- **Parameter 2** of on / off switch = "**1**" signifies ON while "**0**" signifies OFF.

The following is a list of available ASCII Z commands for the MCC-8004:

ZA

Format: **ZA GGMMPP** (accept clock) [NByN(**2**,**3**,……)] [Nth(**1**,**2**,……)]

Function: to set the automatic arrangement of windows.

Examples: **ZA 010900 2 1**
Set group 1 module 9 to a 2×2 map position 1,2,3,4 (quad).
ZA 010000 2 1
Set group 1's all modules to quad.
ZA 010202 3 2
Place window 010202 to a 3×3 map position 2.
ZA 010200 6 13
Place group 1 module 2 to a 6×6 map position 13,14,15,16.
ZA 000000
Automatically arrange all groups' windows to the optimum size and position.

ZB

Format: **ZB GGMMPP B**[order]/**L**[abel] **1** (on) / **0** (off)

Function: to turn on / off blinking of border or label.

Examples: **ZB GGMMPP L 0**
GGMMPP turn blinking label off.
ZB GGMMPP B 1
GGMMPP turn blinking border on.

ZC

Format: **ZC GGMMPP** (accept clock) **B**[order]/**L**[abel] **RRRGGGBBB** (red ratio **000** – **255**, green ratio **000** – **255**, blue ratio **000** – **255**) (**N**o**D**im**C**olor)

Function: to set the border of the window (with / without 3D effect), clock, and the label's background color.

Description: **B**[order] to signify the border of the window.
L[abel] to signify the label's background color.
[**N**o**D**im**C**olor] to signify the border's 3D effect. You can add [**N**o**D**im**C**olor] to remove the border's 3D effect. Just enter **NDC** to signify **N**o**D**im**C**olor.

Examples: **ZC 010101 B 000255000**
sets the border color of group 1, module 1, window 1, as green with 3D effect.
ZC 020202 B 255000000 ndc
sets the border color of group 2, module 2, window 2, as red but without 3D effect.
ZC 030303 L 000000255
sets the label color of group 3, module 3, window 3, as blue with 3D effect.
ZC 010101 B 000000000
turns the border of group 1, module 1, window 1, off.
ZC 020299 B 255000255
sets the digital clock color of group 2, module 2, as pink.
ZC 010199 L 255000255
sets the clock label background color of group 1, module 1, as pink.

ZE

Format: **ZE GGMM 1** (on) / **0** (off)

Function: to turn on / off echo, command response time would be much faster when echo is turned off.

Examples: **ZE GGMM 0**
Turn echo off for module GGMM RS-232.

ZF

Format: **ZF GGMMPP 1** (on) / **0** (off)

Function: to turn on / off the video window's full screen mode.

Examples: **ZF 010104 1**
sets group 1, module 1, window 4, to full screen mode display.
ZF 010104 0
disables full screen mode for group 1, module 1, window 4, and reverts it back to its former display size.

ZI

Format: **ZI GGMMPP** (if **PP** is **99** = clock) channel

Function: to set the input channel.

Description: For the video window, the channel values are **1** – **4**.
For the clock, the channel values are **1** = internal, **2** = DVI, **3** = VITC-NTSC, **4** = LTC, **5** = VITC-PAL, **6** = NTP (Network Time Protocol).

Examples: **ZI GGMM00 1**
sets GGMM to have all window sources from internal channel 1.
ZI GGMM99 2
sets GGMM clock to synchronize with DVI.

To allow the clock input source to trigger NTP in order to synchronize the time instantly:
ZI GGMM99 1/2/.....
sets GGMM clock to sync to any other source except NTP.
ZI GGMM99 6
sets GGMM clock to sync to NTP.

ZK

Format 1: **ZK GGMM P**[reset] **S**[et]/**L**[oad]/**1** – **5**[ID of analog clock] Preset ID (**1** – **8**) **HH MM SS**

Function: to set the time and method of counting.

Examples: **ZK GGMM P S 1 11 22 33**
sets GGMM's preset time ID1 = 11:22:33.
ZK GGMM P L 1
sets GGMM's time to be the same as preset time of ID1.
ZK GGMM P 2
use analog clock shape #2.

Format 2: **ZK GGMM C**[alibrate] **HH MM**

Function: to set the NTP calibration time.

Examples: **ZK GGMM C 2 30**
execute NTP calibration every 2.5 hours.
This setting will trigger NTP calibration instantly.

Format 3: **ZK GGMM O**[thers] transparency text **RRRGGGBBB** background **RRRGGGBBB** time format display frame
where transparency text (**0**, **16**, **32**, **64**, **80**, **96**, **112**, **128**):
pertains to digital clock background transparency
where text **RRRGGGBBB**:
pertains to digital clock font color
where background **RRRGGGBBB**:
pertains to digital clock background color
where time format:
pertains to 24 hour format = **1**, 12 hour format = **0**
where display frame:
pertains to On = **1**, Off = **0** (when source is set as DVI, VITC-NTSC, LTC, VITC-PAL)

Function: to set the digital clock color.

Examples: **ZK GGMM O 0 255255255 000000255 1 1**
sets GGMM digital clock to no transparency, text color is white, background color is blue, 24 hour format, and display frame is on.

> **NOTE:** Make sure to specify the correct ZI command (see previous section) clock input value 2 – 5 (**2** = DVI, **3** = VITC-NTSC, **4** = LTC, **5** = VITC-PAL) to display the frame number correctly.

Format 4: **ZK GGMM** [**HH MM SS**] **0** (count down) / **1** (count up) / **2** (pause) / **3** (do not pause) / **4** (invert pause status) [counting method]

Function: to set the format for control.

Examples: **ZK GGMM 11 22 33**
sets GGMM time to 11:22:33.
ZK GGMM 11 22 33 0
sets GGMM time to 11:22:33 and counting down.
ZK GGMM 1
sets GGMM clock to start counting upwards.

ZL

Format: **ZL GGMMPP** (clock) **00** – **255** (transparency) **000000000** (RRRGGGBBB set text color) **000000000** (RRRGGGBBB set label color) "**TEXT**" (label text string 32 ASCII characters maximum)

Function: to set the label's transparency, text color, and label color.

Examples: **ZL GGMMPP 0 255000000 000000255 " CNN News Station "** sets GGMMPP to no transparency, text color red, label color blue, with text " CNN News Station ".

> **NOTE:** All windows will share the same label transparency setting. That is, upon changing one window's label transparency, all other window's label transparency will also be changed simultaneously.

ZM

Format: **ZM GGMMPP ##** (resolution number) [**N**o **A**utomatic arrangement]

Function: to change the output resolution, the resolution number refers to the list of resolutions that the MCC-8004 supports.

Description:

Resolution	Vertical Frequency	
	50 Hz	60 Hz
800 × 600	42	1
1024 × 768	31	2
1280 × 720	30	15
1280 × 768	32	22
1280 × 1024	29	9
1280 × 768 SONY LMD230	N/A	23
1280 × 768 SONY LMD172	N/A	43
1280 × 768 SONY LMD322	N/A	44

Resolution	Vertical Frequency	
	50 Hz	60 Hz
1360 × 768	38	20
1400 × 1050	34	35
1400 × 1050 JVC	33	27
1440 × 900	46	45
1600 × 900	N/A	57
1600 × 1200	39	10
1680 × 1050	41	40
1920 × 1080 (1080p)	28	26
1920 × 1200	37	36
1280 × 800 Apple monitor	N/A	56

252: VESA timing
253: color graphic card timing
254: frame lock timing
255: normal timing

Examples: **ZM 010000 10**
sets all the modules in group 1 to display at 1600×1200 resolution at 60 Hz vertical frequency and automatically arrange all windows to the optimum size and position.
ZM 000000 9 NA
sets all the modules in all the groups to have a 1280×1024 resolution at 60 Hz vertical frequency with no automatic arrangement.

ZN

Format: For turning on / off various options: **ZN GGMMPP** option (**A**[larm]/ **B**[order]/**C**[lock control]/**D**[isplay closed caption]/**E**[xtend label background]/**F**[PGA selection] **0** (digital clock) / **1** (analog clock) /**L**[abel]/**M**[eter]/**N**[eedle of clock]/**R**[atio aspect]/**S**[afe area]/ **V**[ideo format display]/**W**[indow]) **1** (on) / **0** (off).

Function: to turn on / off various options.

Examples: **ZN GGMM99 W 0**
turns GGMM clock off.
ZN GGMMPP B 1
turns GGMMPP border on.
ZN GGMMPP F 0
selects mainboard FPGA 0.

ZO

Format: For initializing the audio source: **ZO GGMMPP I**[nitialize] **1** – **4** (Lgroup) **AES** (Rgroup) **60** (frequency is 60 Hz or else it is 59.94 Hz) **1** (PPM) / **2** (VU ballistics).
For setting the audio output: **ZO GGMMPP 1** (on) / **0** (off) [channel] **1** (stereo) / **2** (mono left) / **3** (mono right sound).

Function: to initialize the audio source, as well as set the audio output.

Examples: **ZO GGMMPP I 1 AES 60 1**
sets GGMMPP Lgroup = 1 Rgroup = AES 60 Hz PPM.
ZO 000000 0
turns the audio off.
ZO 020100 1
turns group 2, module 1, audio on.
ZO 000203 1 4
turns the audio on for all groups in module 2, window 3, to channel 4.
ZO 020201 1 2 3
sets group 2, module 2, window 1, channel 2, to output audio on mono right.

> **NOTE:** **PP** can only be **00**, when outputting to a particular window and particular channel's audio; it will be based on the device's saved setting. When it cannot be determined then enter the value directly.

ZP

Format: **ZP GGMMPP L**[oad] / **S**[ave] "filename**.GP#"**

ZP GGMM (List preset(s). This command only works in HyperTerminal, ACP does not support this format. **GG** = **00** or **MM** = **00** represents the Master module)

Function: load a previously saved preset or save current layout to a preset.

Description: If the filename includes space(s), use double quotation marks to signify the complete filename.
If the filename is not specified when saving the file, system will backup the file into flash memory.

Examples: **ZP 010000 L "Stage 1.GP1"**
sets all the modules in group 1 to load the previously saved "Stage 1.GP1" preset file.
ZP 020000 S "File 2.GP2"
saves the current layout of all modules in group 2 to a preset file "File 2.GP2"
ZP 000000 S
saves the file of all modules in all the groups into flash memory.
ZP 000000 L Latest
load the latest saved file from flash memory.
ZP 0000
list master presets (ACP does not support this command).
ZP 0203
list group 2 third module's presets (ACP does not support this command).

ZR

Format: **ZR GGMMPP SD** (width rate) **SD** (height rate) **HD** (width ratio) **HD** (height ratio)

Function: to lock and adjust the video ratio.

Examples: **ZR GGMM01 4 3 16 9**
sets GGMM01 SD video ratio as 4:3, HD video as 16:9.
ZR 000000 16 9 4 3
sets all windows' SD video ratio as 16:9, HD video as 4:3.
ZR GGMMPP 7 12 7 12
sets GGMMPP's SD and HD video ratio as 7:12.
ZR GGMMPP 0 0 0 0
disables the function by setting the width rate or height rate = 0.

ZT

Format: **ZT GGMMPP 1** [tally 1] / **2** [tally 2] / **3** [tally 3] **1** (on) / **0** (off) **#** (color index number)

Function: turn on or off tally for a window or all the windows in a group. The color index number is a list of colors that tally can be.

Description: Designate the action of tally. The following table shows the color index.

Index	Color
1	Null
2	Red
3	Green
4	Yellow
5	Blue
6	Pink
7	Light Blue
8	White

Examples: **ZT 000000 2 1 6**
activate tally 2 for all the window(s) in all the module(s) for all the group(s) with pink color.
ZT 010203 1 0
close tally 1 for group 1, module 2, window 3.

NOTE: Upon changing a tally color, the same color is applied to the other tally of the same module.

ZV

Format: **ZV GGMMPP** volume (default = **32**, range **0** – **127**)

Function: to set the analog audio's volume level.

Examples: **ZV GGMM01 0**
turns GGMM's window 1 analog audio to mute.

ZW

Format: **ZW GGMMPP** (accept clock) **X** position **Y** position **W**(idth) **H**(eight)

Function: to set the window's position and size, or appear as the topmost window of a module.

Examples: **ZW GGMM01**
sets GGMM's window 1 as the top window.
ZW GGMMPP 100 200 300 400
sets GGMMPP window at (100,200) top-left position and (300,400) bottom-right position.

ZX

Format: **ZX GGMMPP** (accept clock) **"**label text**"** (supports ASCII characters only – include the quotation marks) **#** (font size (where **0** is the current font size, **1** – **4** are the available font size)) + background extend (**0** is do not extend, **64** is extend) + outside video (**0** is inside video, **128** is outside video)

Function: to change the label text and font size as well as specify the inner / outer video.

Examples: **ZX 000000 "Input 1"**
Input 1 will appear as the label for all the window(s) in all the module(s) of all the group(s).
ZX 000000 3
sets all window's label font size to 3.
ZX 000000 " Outside video " 128
Set all windows' label as " Outside video " with outside video.

4 Firmware Upgrade

This chapter familiarizes you with updating the firmware of your Avitech MCC-8004, as well as resetting it to the factory-default value.

4.1 Updating the Firmware

The firmware for MCC-8004 is divided into:

- DS80C400 (C2.1) firmware
- FPGA MB digital clock firmware
- FPGA MB analog clock firmware
- FPGA UB firmware
- OSD firmware

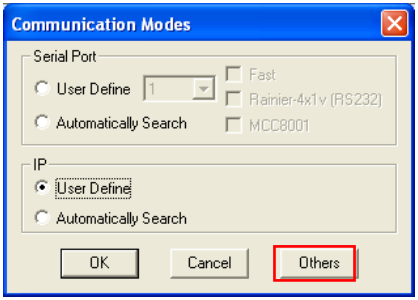
> **IMPORTANT:**
> - Disconnect all cascaded modules; connect only one module at a time.
> - The FPGA MB digital clock, FPGA MB analog clock, FPGA UB, and OSD firmware can be updated at the same time or individually.

DS80C400 (C2.1) Firmware

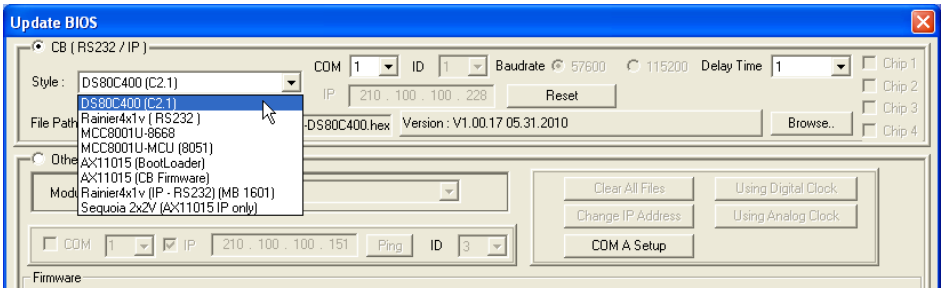
To update the DS80C400 (C2.1) firmware, perform the following steps:

1. Connect the power cable to the **100-250V AC** power jack on the rear panel of the MCC-8004 and the other end to an electrical outlet.
2. Use a serial (RS-232) cable and connect one end to the MCC-8004 rear panel's **RS-232** port and the other end to the computer's serial port.

3. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file. Click **Others** when the following screen appears.



4. When the following screen appears, click to select the radio button for **CB (RS232 / IP)** and on the **Style** drop-down menu, select **DS80C400 (C2.1)**.



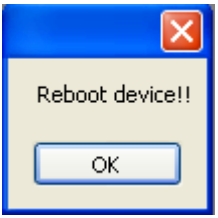
5. Select the COM port number you are using to connect the MCC-8004 to the computer from the **COM** drop-down menu.

6. Select the **Delay Time** (**1**, **5**, **10**, **15**, **20**, **25**, **30**, **35**, **40**) from the drop-down menu.

7. Click the **Browse** button to specify the location of the firmware file and select "mcc-8004a.hex" (for MCC-8004a) / "mcc-8004aa.hex" (for MCC-8004aA) / "mcc-8004d.hex" (for MCC-8004d) / "mcc-8004u.hex" (for MCC-8004Q / P / U).

8. Push the number **1** dip switch located on the MCC-8004 rear panel downward to the **ON** position.

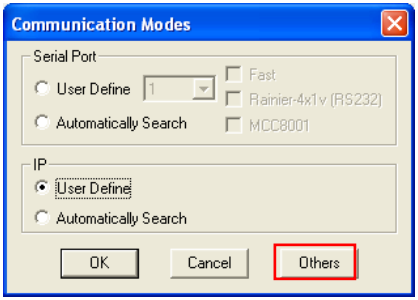
9. Click the **Update** button located on the lower left portion of the screen.
10. Push back the number **1** dip switch upward to the default position.
11. When the next screen appears; pull off the power cord from the power jack to shutdown the MCC-8004. Next, re-attach the power cord to restart the MCC-8004.



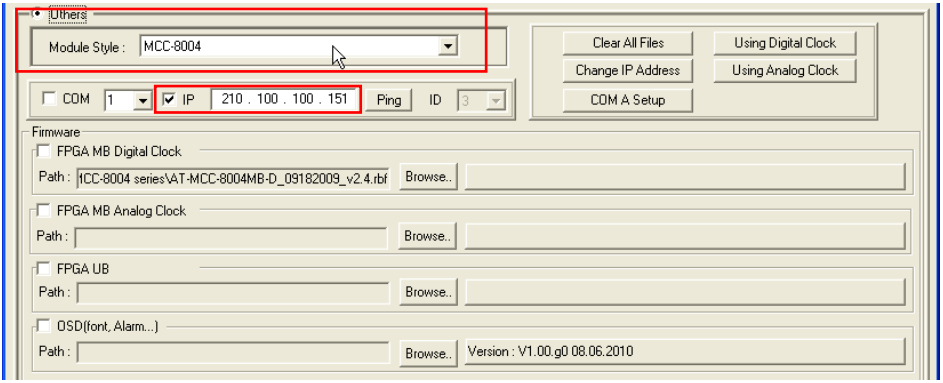
FPGA MB Digital Clock Firmware

To update the FPGA MB digital clock firmware, perform the following steps:

1. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file. Click **Others** when the following screen appears.



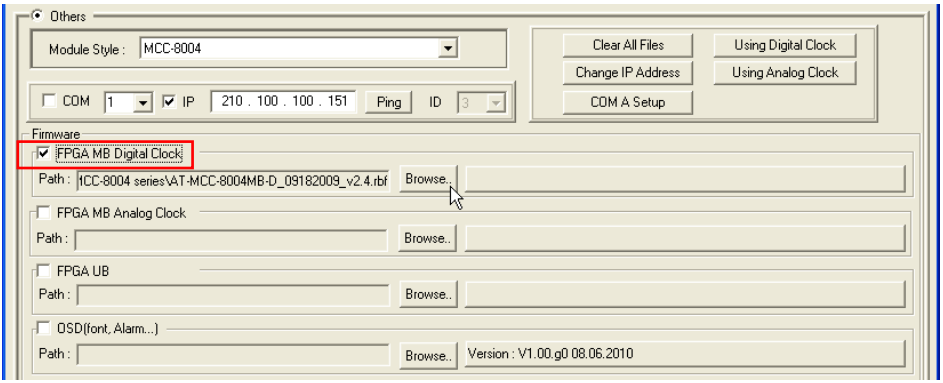
2. When the following screen appears, select **Others** and on the **Module Style** drop-down menu select **MCC-8004**.



3. Click to select the **IP** checkbox with the factory-default **210.100.100.151** value. In case you have changed the IP address of your MCC-8004, make sure to enter the correct IP address.

> **NOTE:** In case you are not sure of your module's IP address and want to find out, click **COM** and make sure that the COM port number is the same as the connected computer, then click the **Change IP Address** button to find out the IP address. Afterwards, click **Cancel** to exit.

4. Click to select the **FPGA MB Digital Clock** item, and then click the **Browse** button to specify the location of the firmware file and select "AT-MCC-8004MB-D_02022010_v2.4.rbf."



5. Click the **Update** button located on the lower left portion of the screen.

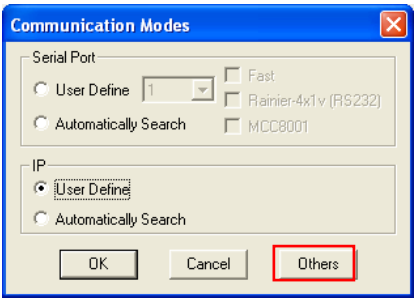
6. Reboot (unplug and re-plug the power cord) the MCC-8004 when FPGA MB Digital Clock firmware update is successful.

> **NOTE:** Shutdown and startup of MCC-8004 needs to be done to completely update the FPGA MB Digital Clock firmware.

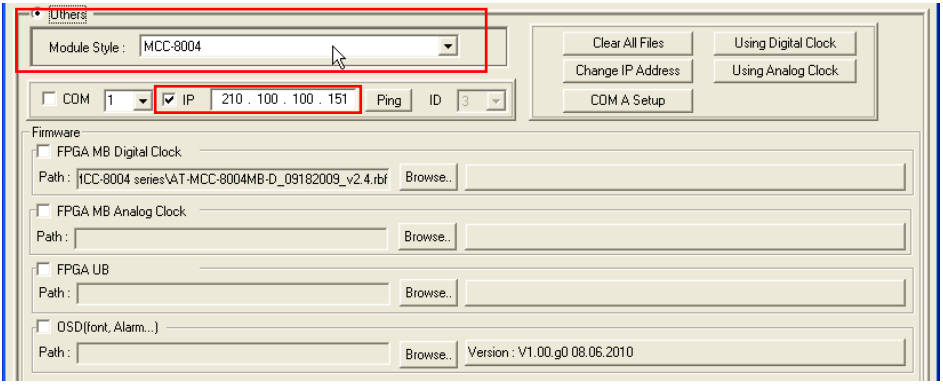
FPGA MB Analog Clock Firmware

To update the FPGA MB analog clock firmware, perform the following steps:

1. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file. Click **Others** when the following screen appears.



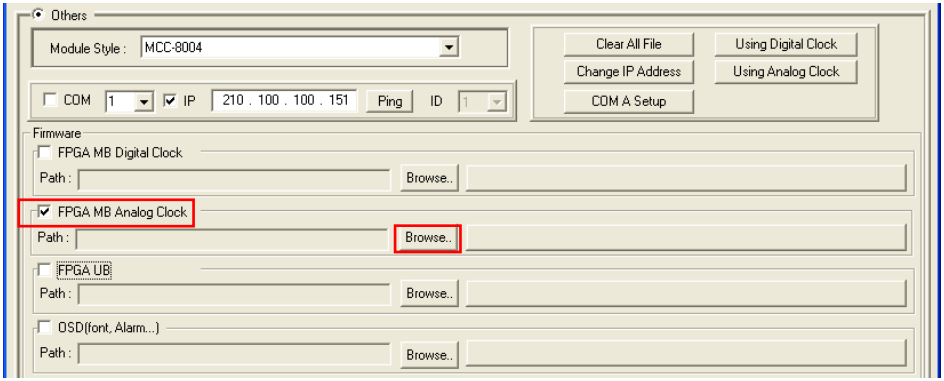
2. When the following screen appears, select **Others** and on the **Module Style** drop-down menu select **MCC-8004**.



3. Click to select the **IP** checkbox with the factory-default **210.100.100.151** value. In case you have changed the IP address of your MCC-8004, make sure to enter the correct IP address.

> **NOTE:** In case you are not sure of your module's IP address and want to find out, click **COM** and make sure that the COM port number is the same as the connected computer, then click the **Change IP Address** button to find out the IP address. Afterwards, click **Cancel** to exit.

4. Click to select the **FPGA MB Analog Clock** item, then click the **Browse** button to specify the location of the firmware file and select "AT-MCC-8004MB-A 080121.rbf" (for MCC-8004d / Q) "AT-MCC-8004MB-A0121-08.rbf" (for MCC-8004a / aA / P / U).



5. Click the **Update** button located on the lower left portion of the screen.

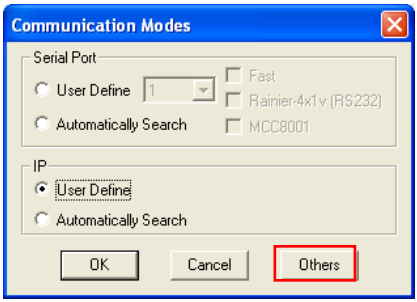
6. Reboot (unplug and re-plug the power cord) the MCC-8004 when FPGA MB Analog Clock firmware update is successful.

> **NOTE:** Shutdown and startup of MCC-8004 needs to be done to completely update the FPGA MB Analog Clock firmware.

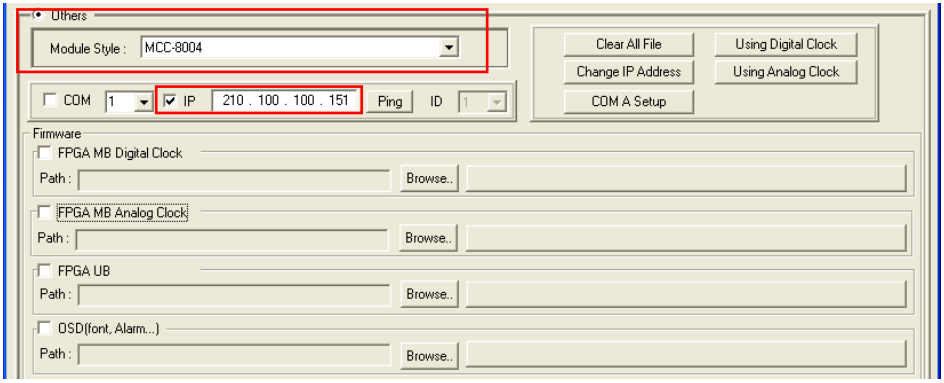
FPGA UB Firmware

To update the FPGA UB firmware, perform the following steps:

1. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file. Click **Others** when the following screen appears.



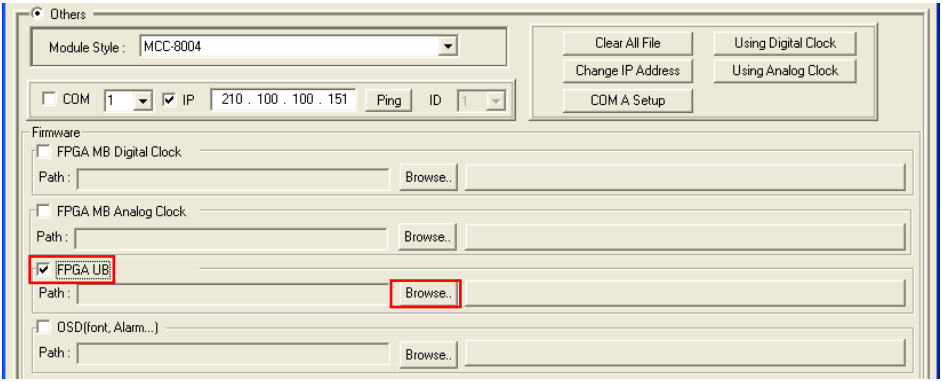
2. When the following screen appears, select **Others** and on the **Module Style** drop-down menu select **MCC-8004**.



3. Click to select the **IP** checkbox with the factory-default **210.100.100.151** value. In case you have changed the IP address of your MCC-8004, make sure to enter the correct IP address.

> **NOTE:** In case you are not sure of your module's IP address and want to find out, click **COM** and make sure that the COM port number is the same as the connected computer, then click the **Change IP Address** button to find out the IP address. Afterwards, click **Cancel** to exit.

4. Click to select the **FPGA UB** checkbox, then click the **Browse** button to specify the location of the firmware file and select
   "AT-MCC-8004UB-AA0126.rbf" (for MCC-8004a / aA)
   "AT-MCC-8004UB-DAll 080123.rbf" (for MCC-8004d)
   "AT-MCC-8004UB-UALL 080213.rbf" (for MCC-8004Q)
   "AT-MCC-8004UB-UALL0213-08.rbf" (for MCC-8004U).



5. Click the **Update** button located on the lower left portion of the screen.

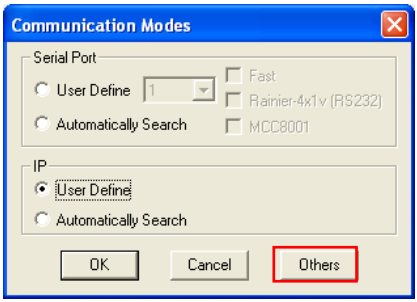
6. Reboot (unplug and re-plug the power cord) the MCC-8004 when FPGA UB firmware update is successful.

> **NOTE:** Shutdown and startup of MCC-8004 needs to be done to completely update the FPGA UB firmware.

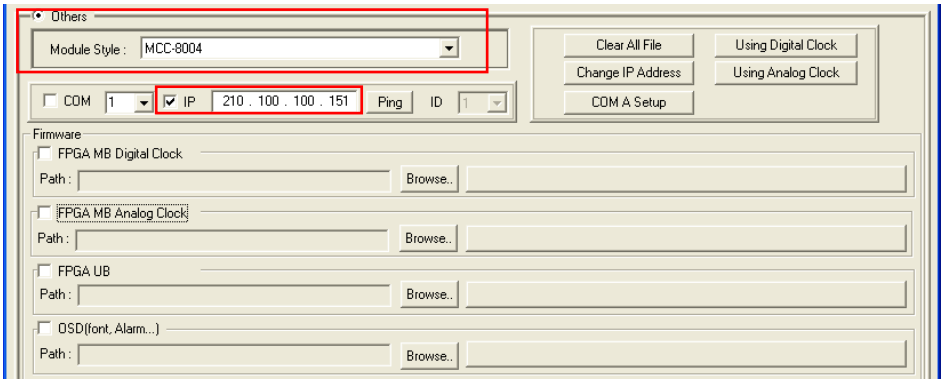
OSD Firmware

To update the OSD firmware, perform the following steps:

1. Run the Phoenix-G software by double-clicking the "Phoenix-G-V31x.exe" file. Click **Others** when the following screen appears.



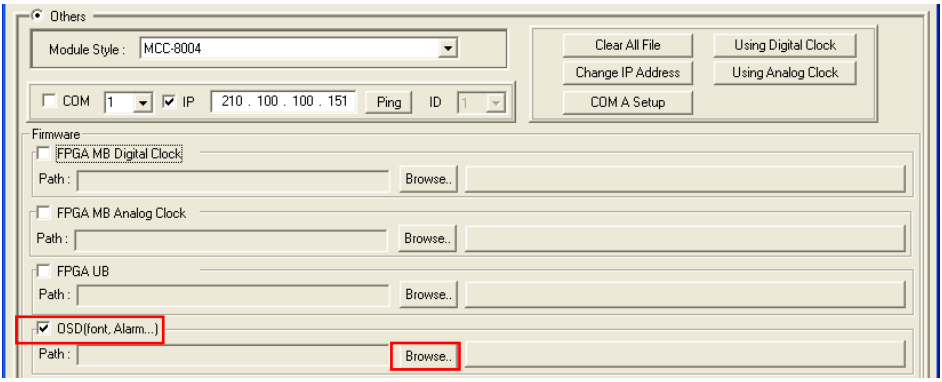
2. Select **Others** and on the **Module Style** drop-down menu select **MCC-8004**.



3. Click to select the **IP** checkbox with the factory-default **210.100.100.151** value. In case you have changed the IP address of your MCC-8004, make sure to enter the correct IP address.

> **NOTE:** In case you are not sure of your module's IP address and want to find out, click **COM** and make sure that the COM port number is the same as the connected computer, then click the **Change IP Address** button to find out the IP address. Afterwards, click **Cancel** to exit.

4. Click to select the **OSD** checkbox, and then click the **Browse** button to specify the location of the firmware file, then select "AT-MCC8000-DATA-V104.OSD" (for MCC-8004d / Q / a / aA / P / U).



5. Click the **Update** button located on the lower left portion of the screen.
6. Reboot (unplug and re-plug the power cord) the MCC-8004 when OSD firmware update is successful.

> **NOTE:** Shutdown and startup of MCC-8004 needs to be done to completely update the OSD firmware.

4.2 Resetting to the Factory-Default State

To reset your MCC-8004 to the factory-default state, perform the following steps:

1. Power-off the MCC-8004 by unplugging the power cord.
2. Push the number **2** dip switch located on the MCC-8004 rear panel downward to the **ON** position.

3. Power-on the MCC-8004 by plugging in the power cord (make sure that power is available).
4. Push back the number **2** dip switch upward to the default position.

A Glossary

DDC (Display Data Channel) VESA standard for communication between a monitor display and a video adapter. Using DDC, a monitor display can inform a computer's video card about its properties, such as maximum resolution and color depth, to ensure that the user is presented with valid options for configuring the display.

Group (screen) A collective number of video or image windows showing on a monitor display. Basically, the Group defined here is the display device that is connected to the last module's **DVI-I Out** port.

Latest File Contains the layout that gets loaded each time the module is powered on.

Master Module Connects to the computer via RS-232 cable or IP, to function as the controlling module when cascading more than one module.

Module File The module **`*.sys`** file contains the module ID / model name / IP address / tally configuration data.

Preset File The preset **`*.gpx`** file contains the layout / label / border configuration data.

Rotary ID Selector Switch

A circular dip switch used to set a unique ID to each MCC-8004 module. The rotary ID selector switch's range spans from **0** – **9** and then from **A** – **F**. For the Phoenix-G software to recognize specific modules in a group, each module in a group setting must have a unique ID number. When ran, the program will detect a module's specific ID and add unity to it. Therefore, if a module has an ID of **1**, the program will detect it as **ID2** while an ID of **2** will be detected as **ID3**, and so forth.

Slave Module Module that is cascaded with / and controlled by the master module.

System File The system **`*.agi`** file contains the group number and group cascading module's configuration data.