



***Digital Video I/O Card
Installation Guide
(IEEE-1394)***



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Patents. Various technology in the GlobeCaster System is patented in the United States, including without limitation patent numbers 5,941,997, 5,978,876, 5,872,565. Other patents, in the United States and other countries, are pending.

Acknowledgments. The Software is based in part on the work of the Independent JPEG Group. Artbeats Software, Inc. provided visual imagery for the Fire, Arc, Bloom, Cityscape, Waterfall, Smoke, Tvwater, and FireStage effects.

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How to Install Your New IEEE-1394 (DV) I/O Card Within GlobeCaster

Please read this before you start!

It is important to make a point about electrostatic discharge, or ESD. Even if you are an experienced technician, you should be aware of the danger of ESD.

Almost everyone is aware of static electricity and its effect when you rub your feet on the carpet and zap someone on the earlobe. But did you know how damaging static electricity can be to computer components?

For a human being to feel a static shock, the voltage must be around 1,500 volts. Really nasty shocks can be over 30,000 volts! Electronic components can be damaged by much lower voltages, about 20-30 volts. Therefore the static electricity your body accumulates is enough to damage circuit boards by merely touching them.

Sometimes ESD damage is not readily apparent, and can cause a board to fail months after it was improperly handled. To avoid this type of failure, please take the following steps when working inside your GlobeCaster:

- Remove any articles of clothing that gather static electricity. Wool sweaters are especially prone to this.
- Work on the GlobeCaster in a reasonably ESD-free area. Don't work on the unit if it's sitting on a shag carpet.
- When working on the GlobeCaster, keep it turned off and unplugged.
- Before touching any boards inside GlobeCaster, touch the edges of the chassis lightly to discharge any static buildup you may have.
- Handle only the boards you need to handle. Don't go poking around in the unit without a reason.

An ESD wrist strap costs \$5 - \$20 at any electronic supply house, and ensures that your body does not have any static charge. Having an ESD wrist strap is recommended, but not required. Attach the alligator clip of the wrist strap cord to the Trinity chassis or another common ground point.

34-229 IEEE-1394 (DV) Input/Output Module

The DV I/O module features a single 4-pin DV connector and a composite Monitor loop-thru output. This card is designed to receive or transmit signals corresponding to the IEEE-1394 standard DV specification (DV-25). Whether the card is functioning as an input or an output is controlled by the **Advanced Input Settings** panel found in **Switcher** or **Editor**.

The input module can be installed in external slots 1-7 in a typical GlobeCaster configuration. To use the card as an 8th input, the card may be placed in one of the available slots labeled 10-12. Only one input card can be placed in slots 10-12; the first input card that GlobeCaster sees in one of these slots will show up as Input 8 on the Switcher panel and in the other applications. The card may function as an output when in any of these slots.

This card also has a TDM audio cable connector meant to be used to connect to the 34-367 TDM Audio Router module. This connection is necessary for digital audio I/O on the IEEE-1394 connection. Two audio cable sockets (**H2** and **H3** ~ see figure 1.1) are provided so multiple modules may be chained together rather than each one connecting individually to the Audio Router. If multiple modules are chained, unplug the jumper labelled **JP1** near the lower audio cable socket for

each module that has both cables connected (leaving it on for the last one in the chain). Up to four modules may be used on a chain.

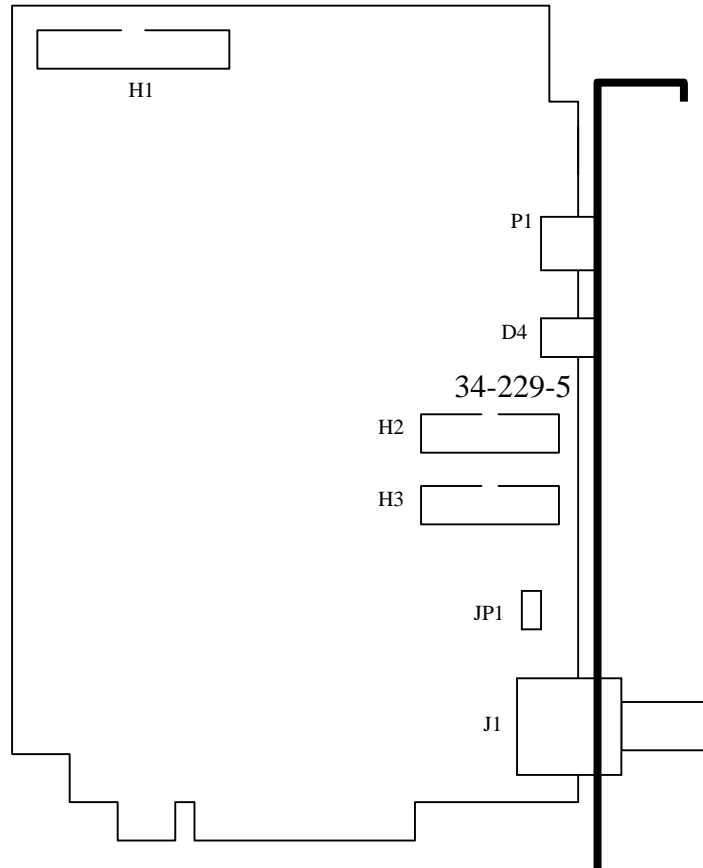


Figure 1.1: DV I/O Module

H1

27MHz YcbCr video to Time Machine; 12 x 2 keyed shrouded header.

H2	Audio port #1; 7 x 2 keyed shrouded header; input or daisy-chaining output of H3.
H3	Audio port #2; 7 x 2 keyed shrouded header; input or daisy-chaining output of H2.
P1	4-pin IEEE1394 input/output jack for DV stream.
D4	Link active LED indicator.
JP1	2 x 1 header; audio clock termination applied when shorting block present. Apply termination only when not daisy-chaining the audio connection to another I/O module.
J1	Composite video monitor output to or from DV codec.

Card Installation

1. Unscrew the three thumbscrews along the edge of the top cover.
2. Slide the top cover toward the back of the GlobeCaster about halfway, and lift off.
3. Locate the lockdown panel that holds the backs of the cards in place. It is on the inside of the back of the unit. It is hinged in place, and held down with three thumbscrews, (see figure 1.2).

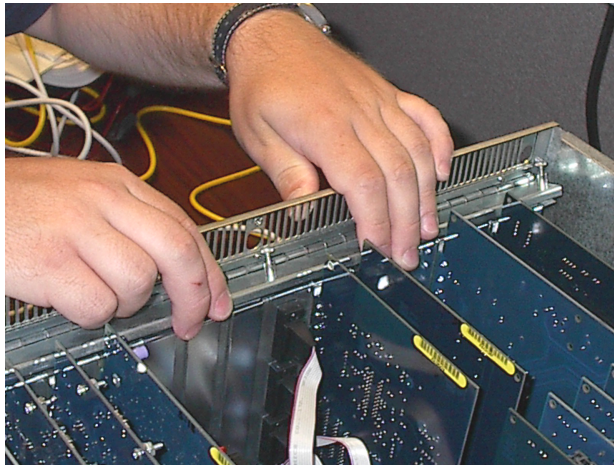


Figure 1.2: Rear Lockdown Panel

4. Unscrew the three thumbscrews on the rear lockdown panel.
5. Lift and rotate the lockdown panel out of the way.
6. Remove the backplate from the hole in the back of the slot.
7. Line up the new card in the socket.
8. Push lightly down on the card, **BUT DO NOT PUSH THE CARD IN YET!** Double-check a second time to make sure that the card is properly aligned and not binding within the socket. **PLEASE NOTE: THESE HIGH SPEED SOCKETS ARE MUCH MORE FRAGILE THAN STANDARD PC SOCKETS AND EXTREME CARE MUST BE TAKEN TO MAKE SURE THAT THE MOTHERBOARD IS NOT DAMAGED DURING INSTALLATION.**

9. Using equal pressure, push the card into the socket. Make sure the card is in the socket evenly.
10. Connect a TDM Router cable from H2 or H3 to the Audio Router Card.
11. Rotate the rear lockdown panel back into place, and tighten up the thumbscrews.
12. Replace the top cover. Make sure the bottom edges of the top cover fit into the slots on the bottom cover.
13. Tighten the three thumbscrews on the top cover.
14. Hook the Videonet cables back up to the GlobeCaster. Remember to hook RX to TX and TX to RX.
15. Now that the card(s) have been installed, we'll fire up the GlobeCaster and test the configuration of the cards.
16. Turn on the GlobeCaster and the PC.

Software Changes

After installing the card, you'll notice some subtle changes in the software. This section will illustrate the changes you'll come across.

Serial Devices Panel (Editor and Switcher)

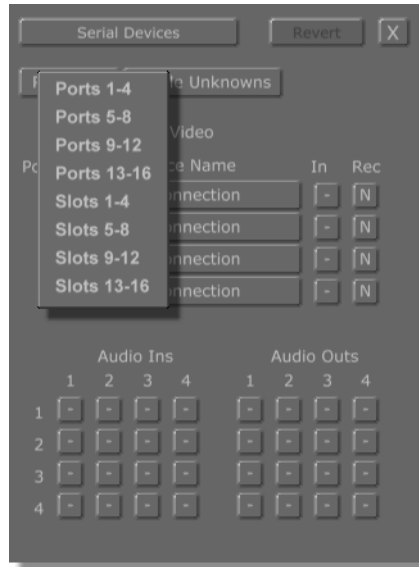


Figure 1.3: Serial Devices Panel

The **Serial Devices Panel**, which is accessed by clicking on **Configure** in **Editor** or **Switcher**, has some new features. When clicking on the **Ports 1-4** button, new entries are available. You'll notice that in addition to the ports being available, you can now choose slots. Select the slot that corresponds to your card. This will allow you to control your deck through FireWire. To allow the audio to be handled by FireWire, leave your **Audio Ins** unassigned.

You'll also notice that in the **Device Name** section, **Unknown** will be listed. To assign properties to that deck, click on **Unknown** and select **Properties**. The **Deck Properties** panel is displayed.

Figure 1.4: Deck Properties Panel

Fill out the **Deck Properties** panel as you normally would. You'll notice a new field called **Frame Tolerance**. The **Frame Tolerance** field allows you specify how many frames to start recording prior to what the timecode says. This is used to overcome the inaccuracies of DV decks.

For more information on the **Deck Properties** panel, please see **Profiling Decks** in the **Installation and Troubleshooting Guide**.

VTR Transport Panel (Switcher)

The **VTR Transport Panel** has some changes much like the **Serial Devices Panel**.

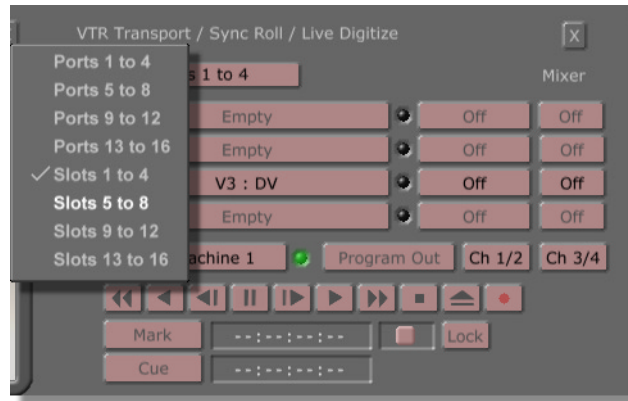


Figure 1.5: VTR Transport Panel

You'll notice that in addition to the ports being available, you can now choose slots. Select the slot that corresponds to your card. This will allow you to control your deck through FireWire.

Advanced Input Settings Panel (Editor)

The DV card is associated with the **Advanced Input Settings Panel** found in **Editor** or **Switcher**. To display this panel, select **Configure** then **Advanced Input Settings**. The following panel is displayed:

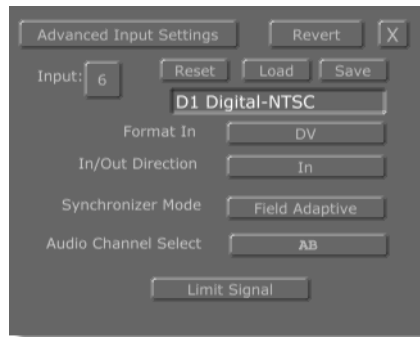


Figure 1.6: Advanced Input Settings Panel

Revert	Reverts values to previously saved settings.
Input	Selects the input source to be modified. The number corresponds to the number of the slot on the back of the GlobeCaster to which the device is connected.
Reset	Resets values to default settings.
Load	Brings up the list of input profiles.
Save	Adds a new input profile.
Name	Identifies the input profile. Be sure to type in a new name here when creating a new profile, or your profile won't be saved.
Format In	Selects which input format is active, in this case there is only one choice: DV .

In/Out Direction	Selects your DV card to either send digital video Out or receive digital video In .
Synchronizer Mode	<p>Contains three settings: Bypass, Field Adaptive, and Frame Sync.</p> <p>Bypass: Turns off the synchronizer function to eliminate any extra delays if the input source is already timed properly. We recommend you use this mode whenever the video source is already genlocked or timed. We also highly recommend you use this mode when digitizing tapes to Time Machine for non-linear editing, as it eliminates the possibility of jumps in motion, and keeps the audio perfectly synced to the picture (the Time Machine locks to the source when digitizing, even if it is not timed).</p> <p>Field Adaptive: Compensates for the stuttering that can occasionally be seen with all frame syncs and external TBCs. This mode provides much-improved results over traditional broadcast equipment. This mode has a maximum delay of 1/60th of a second, and drops or repeats only single fields when necessary. It has reverse field interpolation, so it never stutters on motion. Depending on how far your input video source drifts, it may occasionally exhibit a small vertical shift, but you'll probably never be able to see it.</p> <p>Frame Sync: This is the traditional full-frame TBC function with the standard delay of up to 1/30th of a second. It is only available in NTSC. Like all broadcast frame syncs and external TBCs, if the input video source continues to drift far enough, the synchronizer must eventually compensate and bring the source back into alignment by dropping or repeating a frame. This can cause occasional subtle jumps or stutters in motion that may be noticeable, depending on the source content.</p>

Audio Channel Select

Allows you to select the incoming audio from either channel **AB** or **CD**. This is only used if the source audio format is four-channel 32KHz, 12-bit compressed.

Limit Signal

Limits digital video to digital range of 16-235. When off, allows superblack or over range signals to be passed.

Technical Information

Here are the features and the specifications for the IEEE-1394 Digital Video I/O Card.

Features

- IEEE-1394 Standard DV video I/O (Firewire) 4:1:1 or 4:2:0 (DV25)
- Embedded audio I/O as well as video I/O for GlobeCaster
- Vertical Synchronizer allows totally asynchronous sources without glitches or tearing
- Can operated with fixed (short) delay for frame accurate batch digitizing or switching synchronous sources
- Adaptive Field-Sync mode for minimum latency and best motion performance
- Tape transport control for many popular camcorders
- Stereo digital audio I/O to/from internal TDM audio router module (required)
- Encodes 48 KHz 16 bit
- Decodes 48, 44.1, or 32 KHz (16 or 12 bit); synchronous or asynchronous
- Composite Monitor signal output (NTSC or PAL)
- True color corrector in addition to H, S, B, C controls allowing:
 - Independent White and Black balance
 - Nonlinear hue and saturation curves
 - Complex Chroma Luma modifications and effects
 - Out of range signals passed or blocked (superblack, etc.)

Technical Specifications

Re-Encoded Monitor Out: Output level	+/- 10% (Absolute error)
Saturation Control Range	0-200% (0.4% steps)
Hue Control Range	+/- 45 deg. (0.1 deg. steps)
Black Level Control Range	+/- 100% (0.4% steps)
Luma Control (contrast) range	0-200% (0.4% steps)

Troubleshooting

One quick note to remember while troubleshooting: If for any reason you need to remove or reseal a card, **ALWAYS** turn off the power to your GlobeCaster before removing or reseating any card. Failure to do so will damage your GlobeCaster system and void the warranty.

I get an error stating "I couldn't find attached GlobeCaster system."

First, check the Videonet cables between the PC and the GlobeCaster. The cables run from the TX connector on the PC to the RX connector on the GlobeCaster. The RX connector on the PC runs to the TX connector on the GlobeCaster. If the coordinator card in the GlobeCaster was removed for any reason, it might not be properly seated in the sockets. Pull the card and reseal it.

I get an error saying "Failure during creation of VEMain Bus..."

The card may not be seated properly in the slot. Pull the card and reseal it, making sure that the card is fully inserted in the slot.

Check to make sure that no other cards have been popped loose from their sockets.

Make sure you have one master encoder card. More than one master encoder card will generate conflicting timing signals, confusing your GlobeCaster.

When I turn on the power for my GlobeCaster, it doesn't do anything. The fans don't start and the light doesn't even turn on.

A card may be improperly seated in the sockets on the motherboard. Immediately turn the power off and re-seat the card. Make sure that the card is inserted into all appropriate sockets and is pushed down evenly in the unit.

If the unit still won't start, pull the installed card and inspect the sockets on the motherboard for damage. There is a slim possibility that the motherboard sockets have been damaged. Look for any pins in the socket that look bent or out of shape. If so, contact tech support immediately.

The installed card is not listed in the Installed Cards configure panel.

The card was not recognized by GlobeCaster when the system powered up. It may not be plugged in properly. Please turn everything off, open the unit and reseat the card. If this doesn't work, try a different input module slot. It could be the slot is bad. Also, verify that you have a version of the software that supports this module. The first version to support it is release 2.85. If this problem still persists, please contact technical support or your dealer.

The Program video screen is showing Pink or Green when I select the DV module.

Verify that the video signal is a DV video signal, and that the connector is securely hooked to the connector of the DV module. A pink or green or scrambled screen means the signal is not a cohesive DV video signal. There is a green LED on the back panel that will light if the module detects that an IEEE-1394 device is connected. Note that this does not necessarily mean that the external device is actually outputting DV video! If possible, verify the signal by connecting to another known good DV device (try hooking to another camcorder, for example).

Also, check the cable. A scrambled image can be caused by a bad connector on the cable.

FCC Notice

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.

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