grass valley

Apex™

Digital Audio Router

Release Notes

FIRMWARE VERSION 2

071 8426 00
June 30, 2005

the most watched worldwide

A THOMSON BRAND

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Grass Valley Web Site

The www.thomsongrassvalley.com web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

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Version 2

June 30, 2005

ECO 763L

Apex Release Notes

Applicability

This release applies only to Standard Apex routers. It does *not* apply to Apex Plus systems. (Apex Plus frames can be identified by having either input connections only or output connections only.)

Purpose

The primary purpose of this firmware (gateware) release is to provide

- Output monitoring,
- Redundant MX-34000 Matrix board operation, and
- Expansion up to 1024 x 1024.

For a detailed list of problems fixed and known limitations see *Apex Release Notes Addendum, Release* 2, part no. 071 8427 00.

Output Monitoring

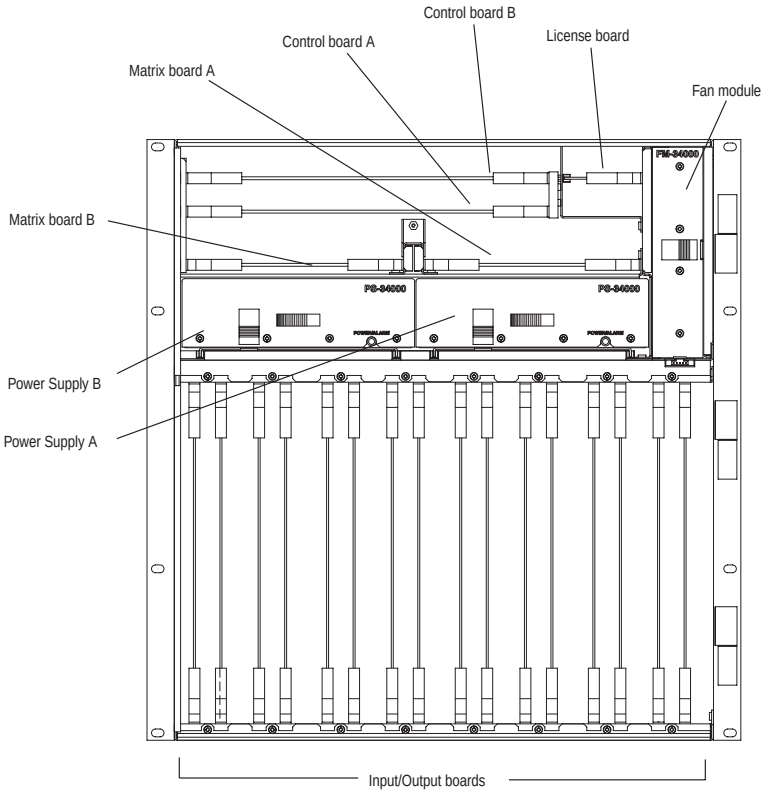
For a description of this feature, see page 9.

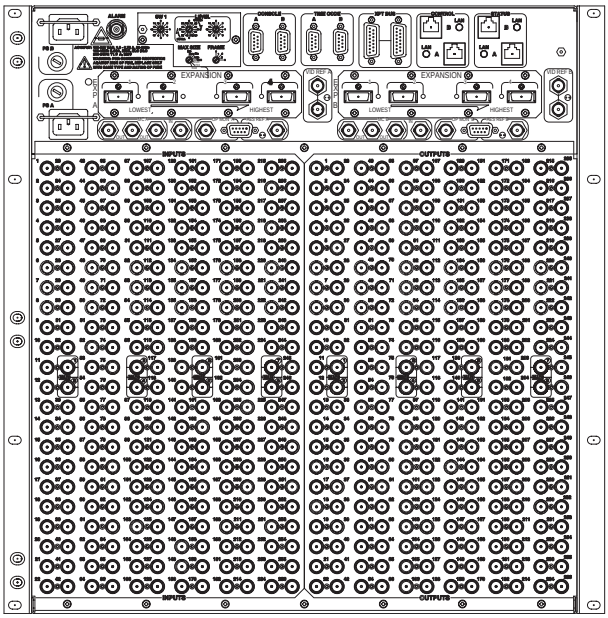
Redundant Matrix Boards

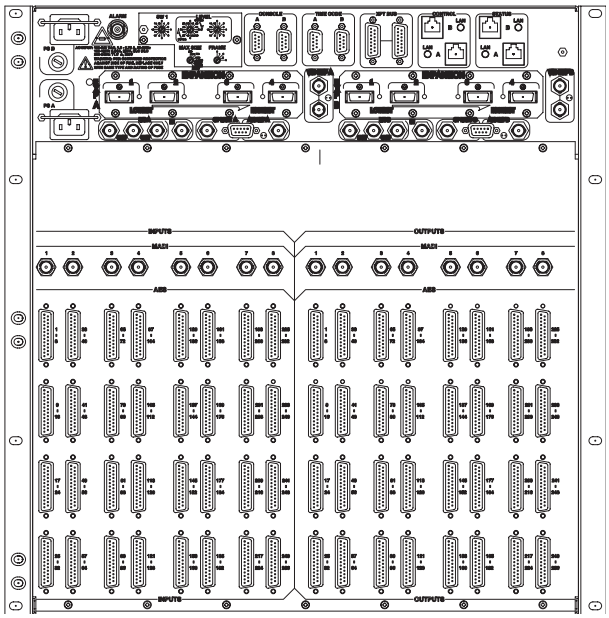
Should the primary Matrix board fail, the secondary board will take over immediately.

The system also employs redundant TDM (Time Domain Multiplexing) expansion links between chassis—and connects those links in a fully connected star topology. This ensures that every chassis is speaking to every other chassis, eliminating the weak-link pitfalls of serial or daisy-chain topologies.

Figure 1. Apex Digital Audio Router, showing Standard-type 75- and 110-ohm rear panels.







System Requirements

Master Clock and InfiniBand® cables

Expanded Standard Apex routers that are in the field may or may not have RG-59 coax Master Clock cables installed. If not, the cables must be installed for this upgrade as described below.

If the system will include redundant Matrix boards, a redundant set of Master Clock and InfiniBand cables should be installed as well (see below).

Materials Supplied

Table 1. Material supplicd with this release.

Qty	Description	Part number
1 per frame	License (Configuration) Board	Various*
1	Release Notes	071 8426 00
1	Release Notes Addendum	071 8427 00

*License Boards vary according to the router type (expanded / non-expanded) and rear panel (75 or 110 ohm). SeeTable 2.

Table 2. Standard Apex License Boards

Nomenclature	Description	U2 firmware part no.
APX-CL-34075	Standard Apex, 75 ohm, License board	080 8352 02
APX-CL-34110	Standard Apex, 110 ohm, License board	080 8353 02
APX-CL-34075-EX	Standard Apex, 75 ohm, Expansion License board	080 8354 02
APX-CL-34110-EX	Standard Apex, 110 ohm, Expansion License board	080 8355 02

These items are obtained through Technical Support. For contact information, see page 2.

Upgrade Procedure

Note The steps listed under A and B below will not affect on-air operation of systems with v1.x software.

A. For expanded (multi-frame) systems

1. Install Master Clock cable(s).

   In addition to the InfiniBand cables, expanded Apex systems with version 2 software require RG-59 coax Master Clock connections. The three Master Clock "Out" connectors are functionally identical, i.e., they can be connected to any chassis. See Figure 3 on page 7. As shown on page 8, each group of four Master Clock BNC connectors correspond to a Matrix board.

B. For systems upgrading to redundant Matrix boards

1. Install redundant Master Clock cable(s).
2. Install redundant InfiniBand cable(s).
3. Do not install redundant Matrix boards at this time.
4. Proceed to *C. For all systems receiving v2 upgrade*.

C. For all systems receiving v2 upgrade

CAUTION The next step will **interrupt signals passing through the router**.

Note Customers using this equipment in a continuous 24/7 environment should consult Technical Support concerning alternate procedures. Possibilities may include patching around the router during the upgrade.

1. Power down all frames by disconnecting the rear power cords.
2. Remove the installed License board(s) and replace it with the one(s) provided.
3. Install redundant Matrix boards (if they are part of the upgrade).
4. Power up the system in frame-number order: frame 0, then frame 1, then frame 2, etc.

   The new firmware will be downloaded automatically from the new license board to the other boards; the router will then be refreshed by the control system (i.e., crosspoints will be returned to their state prior to power off). This process will take from 2 to 30 seconds.

5. This completes the upgrade.

Figure 2. Standard Apex expansion InfiniBand cabling (optional redundant cables not shown).

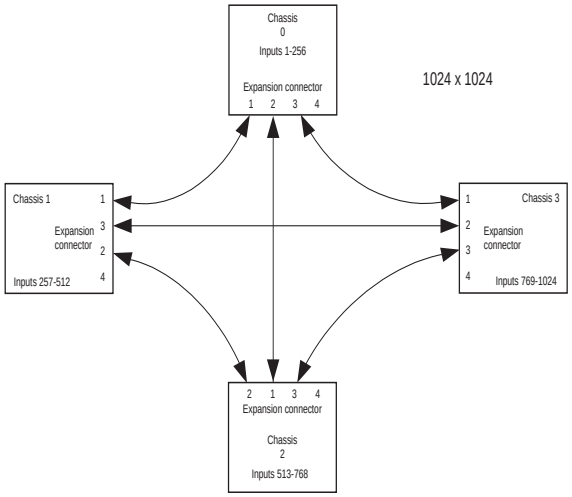


Figure 3. Standard Apex expansion Master Clock cabling (optional redundant cables not shown).

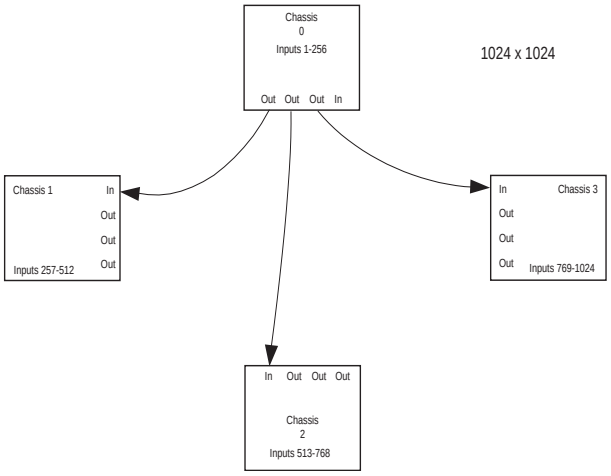
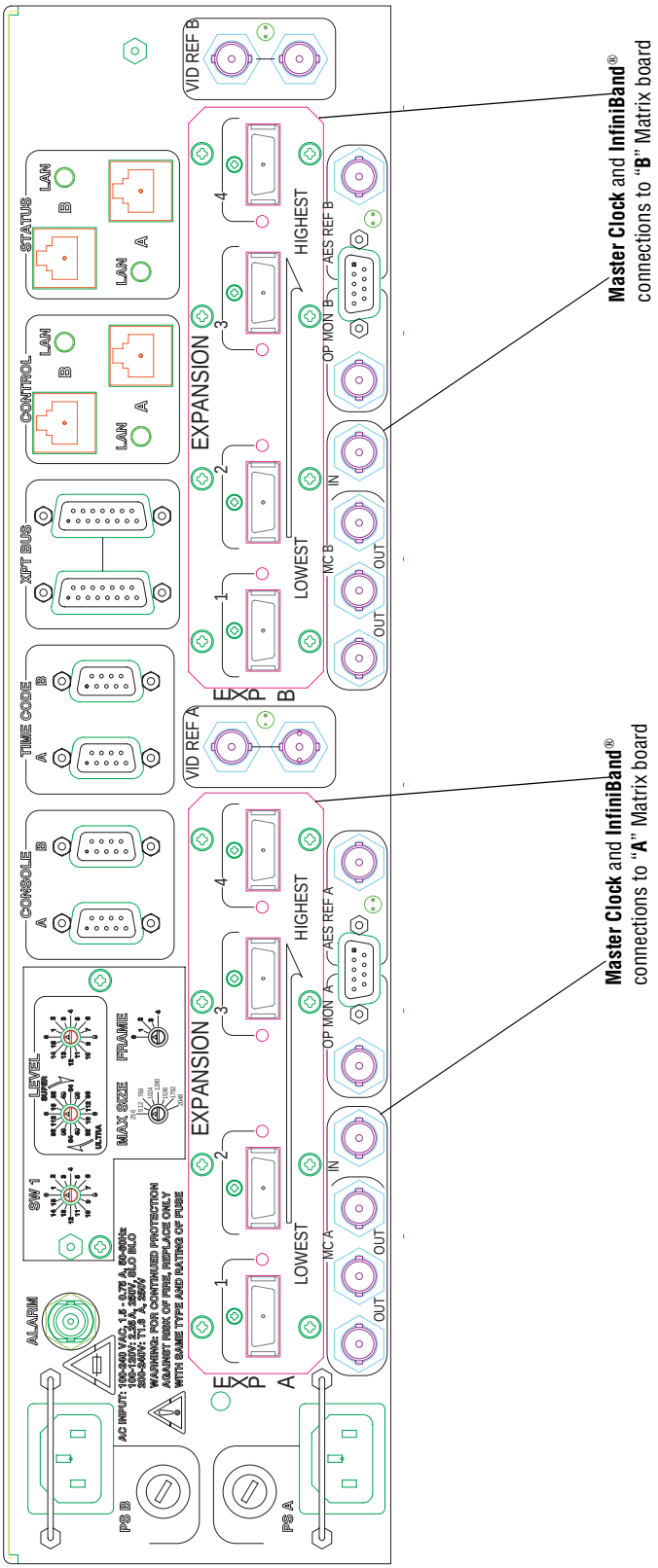


Table 3. Standard Apex InfiniBand and Master Clock cable requirements.

		InfiniBand cables needed		**Master Clock cables needed**	
Switcher size	# of Chassis	Non-redundant (1 Matrix board per chassis)	Redundant (2 Matrix boards per chassis)	Non-redundant (1 Matrix board per chassis)	Redundant (2 Matrix boards per chassis)
256 x 256	1	0	0	0	0
512 x 512	2	1	2	1	2
768 x 768	3	3	6	2	4
1024 x 1024	4	6	12	3	6

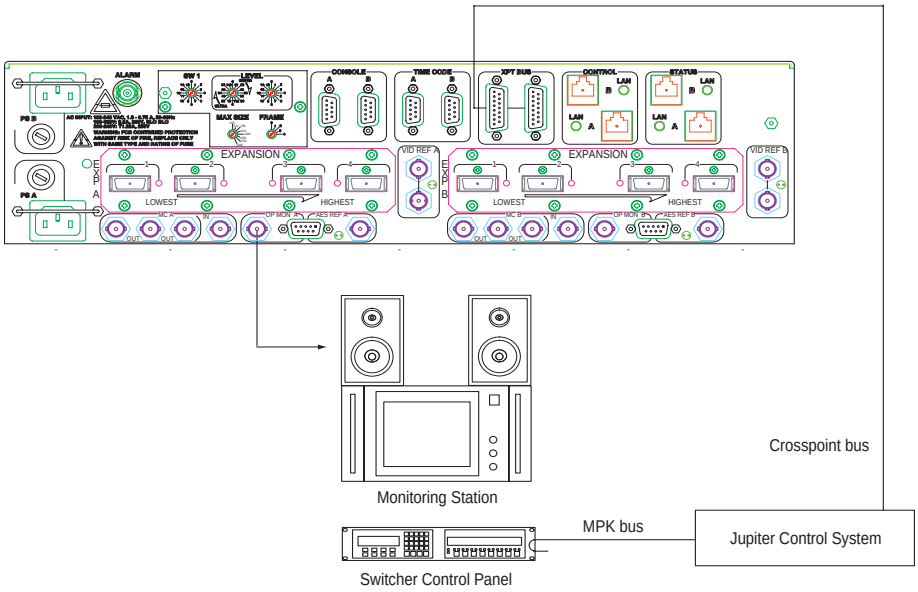
Figure 4. Auxiliary panel.



Output Monitoring

Output monitoring allows verification of switcher performance without interrupting normal operations. A separate internal switching system is used to switch the selected output signal to the Output Monitor connector. See Figure 5.

Figure 5. Example of output monitor connection.



Using a standard system control panel, the operator picks an output as usual—in this case, the Output Monitor. (The physical number of the Output Monitor connector is determined by the Max Size switch setting plus 1) The operator then selects an *input*, but this input is actually one of the switcher *outputs*.

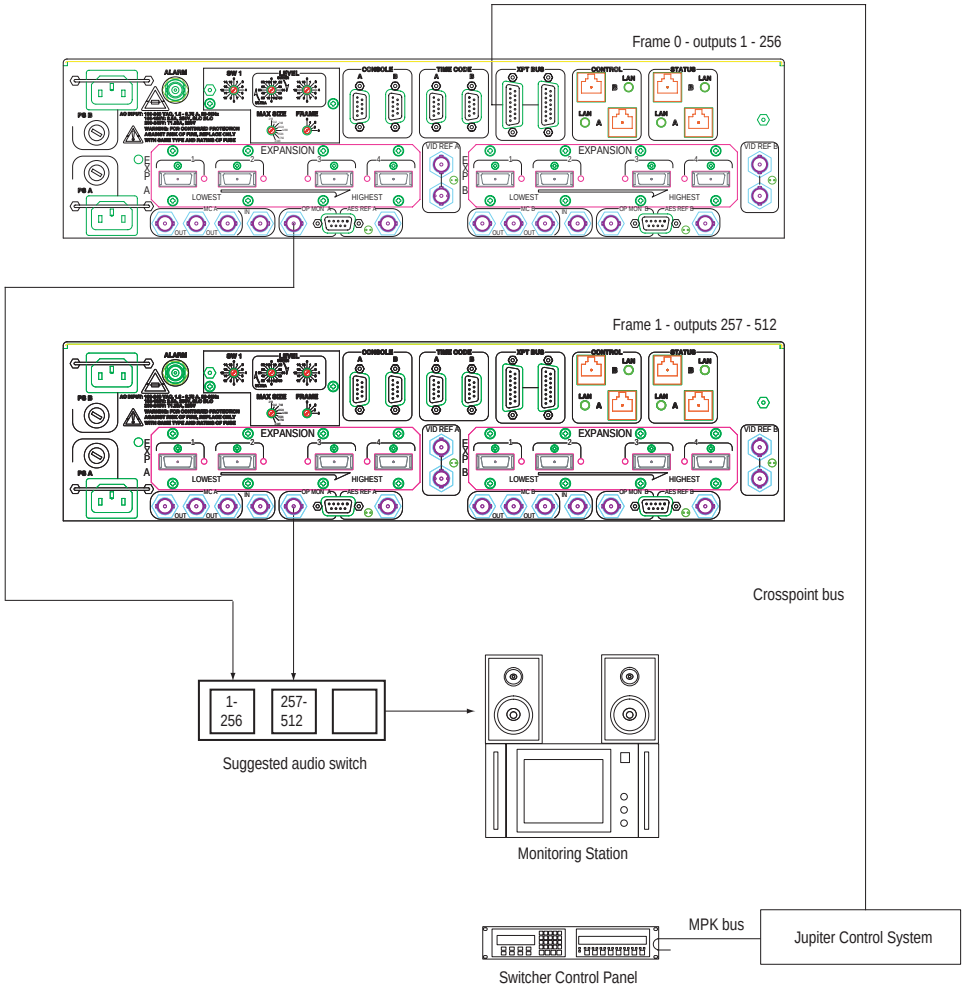
Two connector sets are provided on each chassis: “OP MON A,” which corresponds to the “A” Matrix board; and “OP MON B,” which corresponds to the optional “B” (secondary) Matrix board. Within each set are two connectors: a BNC type for 75 ohm cabling, and a 9-pin D female type for 110 ohm cabling. Pinouts for the D connector are shown in the *Planning and Installation Manual*. Note that some pins on this connector are used for 110 ohm AES Reference cabling.

The signal selected by the control system for monitoring is always present on both the BNC and the D connectors.

Multi-frame Systems

On multi-frame systems, each frame is monitored separately. For example, in a 512 x 512 (2-frame) system, outputs 1-256 are monitored using the OP MON connector(s) on Frame 0; outputs 257-512 are monitored using the OP MON connector(s) on Frame 1. See Figure 6.

Figure 6. Multi-frame output monitor connections.



For redundant Matrix board systems, note that the same signal will be present on the “A” and “B” connector sets.