Comprehensive, Consolidated Control for Modular Products

The shift to digital infrastructures has brought with it increasingly complex signal-processing paths. The Newton modular control system gives you fast, multi-knob, Ethernet-based access to Grass Valley modular products in a processing channel.

Two abilities distinguish the Newton system from other approaches to modular control: the separation of system-level configuration tasks from operational ones, thus minimizing the potential for on-air mistakes; and the ability to group modular products—regardless of their physical locations—into a logical signal path (or channel) that you can easily access and manipulate.

Using the Newton system, you can instantly access the Grass Valley Gecko, GeckoFlex, and Kameleon modular products in a particular signal path—even if they’re in completely different racks or facilities. You can adjust module parameters from a rack-mounted Newton control panel or a software control panel running on a standard Windows PC. There’s even a button for locking out the control panel to prevent accidental changes.

The Newton system also includes the Grass Valley NetConfig software. Using it, you can assign IP addresses to Gecko, GeckoFlex, and Kameleon frames for easy network identification and set initial operational parameters. Additionally, the NetConfig application works with the Encore™ router control system and Grass Valley routers.

By separating configuration and operational tasks, the Newton system can simplify your workflows significantly. Instead of painstakingly attaching a serial cable to the back of every modular product you need to initialize, you can use NetConfig to set baseline functional operational parameters over a network. Operators can make adjustments to those parameters using Newton control panels, without having to wade through complex configuration menus.

The Newton system features two control panels: a rack-mounted version and a software-based version. You can have any combination of these panels on your network in any number. You configure these panels using a configuration plug-in application tool on the NetConfig application; you can also use this tool to restrict channel-path and device access on a panel-by-panel basis.

Key Features

- Ethernet-based control of Grass Valley Gecko, GeckoFlex, and Kameleon modular products
- Control panels:
  - Compact 1 RU rack mount panel
  - PC soft-panel application with same functionality
  - No limit to the number of panels on a network
  - Operation independent of configuration
- Includes NetConfig application and configuration plug-in tool for:
  - Network-wide device configuration
  - Control panel configuration
- Control panel functions:
  - Four user-configurable control knobs to update device parameters
  - Twelve soft keys for quick recall of user-configurable parameters
  - Simple up/down, left/right navigation
  - Each panel supports 128 channels with 12 setups each
  - Clearly visible status of controlled devices
  - Enable button locally disconnects knobs and buttons from devices
  - Identify button reveals identity of controlled devices
- Additional hardware panel features:
  - Easy-to-read green display w/adjustable intensity
  - Combination of soft buttons and dedicated function buttons with adjustable backlighting intensity
- Requires only two simple connections: RJ-45 Ethernet and IEC AC mains
- Optional Encore routing control system integration:
  - Source selection with automatic source delegation
  - Destination status monitoring

The Newton modular control system supports optional integration with the Grass Valley Encore router control system. It’s a great way to quickly switch sources and adjust signal parameters within configured processing channels.

You can also use the Newton system to monitor destinations on the routing system so that, when a source changes, the modules in the appropriate input signal-processing channel automatically appear on the Newton control panel.

To help maximize uptime, the Gecko, GeckoFlex, and Kameleon products support the Grass Valley NetCentral application for Simple Network Management Protocol (SNMP)-based monitoring.
Newton Modular Control System

Newton Control Panels

The ergonomic design of the Newton hardware control panel is emulated in a software version, shown here with optional router control.

Comprehensive Control Architecture

Grass Valley modular products have long had a variety of control and monitoring capabilities, from simple local card edge control to more complex local control with on-screen parameter displays—as well as network interface modules such as the 8900NET and 2000NET products whose built-in Web servers relay module-related information to a standard PC- or Macintosh-based Web browser. Certainly you could use these products to configure, access, and even adjust signal parameters. But more and more, the complexity of the signal-processing path—and the sheer number of devices in it—calls for easier access and real-time, comprehensive, on-air control.

The Newton control system lets you quickly access all of the Gecko, GeckoFlex, and Kameleon modules in a signal-processing path to make audio, video, and timing adjustments. You can make these adjustments from a rack-mounted control panel, a software control panel running on a standard PC, or a combination of both. There is no limit to the number of control panels you can have on the network.

Yet your Gecko, GeckoFlex, and Kameleon modules do not need to be located in the same frame for the Newton system to control them—or even the same facility. Because the system runs on standard TCP/IP networks, an Ethernet connection across a LAN or WAN gives you complete signal-processing control.

Powerful Control Panel Provides Fast, Easy Adjustments

The hardware version of the Newton modular control panel was designed with operator ergonomics in mind. It features four, simultaneously active, user-configurable knobs that update modular product parameters in real time. Each has a tri-color LED that indicates the health of a connection, providing immediate feedback of module or signal condition.

The Newton system also features 12 configurable buttons. You can configure them to do everything from recall a signal-processing path setup to perform a source take or recall a router destination.

When you press one of these 12 buttons, the Newton system automatically displays the current settings above four knobs. You can then use these knobs to adjust specific signal parameters. Using the intuitive interface, you can also scroll through additional setups and signal processing channels.

NetConfig Tools

With a comprehensive set of powerful tools, hardware and software control panel functionality can be precisely defined. Additional tools for IP configuration and software updates makes NetConfig a valuable engineering package.
The Newton control panel also features a local enable/disable button that you can engage to prevent inadvertent changes, should someone accidentally brush against a knob.

The software control panel of the Newton system offers the same, powerful features as the hardware version.

The Newton system includes a configuration tool that is a plug-in to the NetConfig application. Not only does this tool provide fast, network-based control-panel configuration, it offers an additional degree of security, as control access to your signal-channel paths on a panel-by-panel basis.

The Newton control panels support up to 128 configured channels each with up to 12 setups—a setup is a subset of a channel that contains knob assignments—within each configured channel. There is no limit, however, to the number of control hardware or software panels that can reside on a Newton system-controlled network.

**Easy Setup, Customization**

The Newton control system includes the NetConfig application for configuring a module’s system and operational parameters. You can also use it to download software updates into the modules.

Because the NetConfig application runs over your network, it centralizes and accelerates your configuration tasks. You do not need to physically visit every device in your racks, plug in a serial cable, and load its parameters. You can do everything you need to do from your desktop.

More important, separating the configuration tasks you perform using the NetConfig application from the everyday operational tasks you perform with the Newton control panels simplifies your workflow and minimizes potential on-air mistakes.

The NetConfig application simplifies Ethernet-based network configuration and maintenance by providing a simple method to set IP addresses over the network—eliminating the need for separate serial connections to each frame during the system commissioning.

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**Complete Control of Modules**

The Newton control panel provides immediate access to four control parameters at once. Using the left and right arrow keys, you can quickly step through additional adjustment parameters.
Instant Control of Multiple Modules

The Newton control panel provides simultaneous access and control to any combination of modules in a signal-processing path. Additional processing paths can be selected using the up and down arrow keys or by selecting a user-configured soft key.

In addition to Gecko, GeckoFlex, and Kameleon products, the NetConfig software can identify and configure routing control systems anywhere on the Ethernet LAN or WAN to set IP address, subnet mask, and gateway network configuration—all through an intuitive interface.

With your devices configured, you can use the NetConfig application to view them all by IP address or configured device name. Additionally, it can also generate a facility view with hyperlinks from a user-supplied diagram or picture. This range of viewing options makes it easy to locate devices on the network, update software as necessary, and pull up the Web pages generated by Gecko and Kameleon modules to adjust individual module parameters.

While control of individual module parameters is available within the NetConfig application, the signal-processing complexities of most facilities is such that you should consider using the NetConfig software to set up basic parameters of the individual modules and then configure Newton modular control panels for day-to-day operational requirements.

Using the plug-in configuration tool for the NetConfig system, you can configure the Newton system’s control panels. Doing so is a straightforward process of naming a new signal-processing path—a channel—that includes an individual module or a string of modules. Next, you define the adjustable parameters or setups for each channel; setups could include such things as audio modes, video processing, or timing. Each setup contains the assignment for each of the four control knobs.

Consider the situation of a television station whose incoming satellite feed requires video analog-to-digital conversion with processing and timing adjustment, along with multichannel audio processing and delay. Using the NetConfig application and configuration tool, you create an easy-to-remember name for the processing channel which includes all the modules in the path, such as SAT_5. Now, you only need to drag and drop the selected modules into the configuration tool and select the parameters you want an operator to be able to adjust.

In fact, the SAT_5 channel may have a number of adjustment parameters that need to be controlled, such as video gain, black level, hue, horizontal and vertical timing adjustments, audio levels, and audio processing functions such as sum, swap, and phase invert. You can store these parameters as nested setups then navigate through them using the Newton system’s control panel. As you do, the Newton system recalls the current module parameters and presents them in the display over each of the four control knobs. Each knob takes on the functionality required for the parameter recalled, be it continuously variable control (such as gain) or enumerated steps (such as black clip on/off).

Once you complete the setup of your control panel, you can copy it to an offline storage system, edit it if need be, and load the resulting file to any other control panel on the network. For example, a studio can easily define, store, and reload the appropriate control panel configuration settings for a weekly game show production. Similarly, a mobile production unit can load standard configuration files to switch from outdoor baseball to indoor basketball.

For increased security, the configuration plug-in tool within the NetConfig application lets you specify the control available to each panel on your network. You can permit or deny access to any frame, module, or adjustment parameter.
Optional Router Control

The Newton modular control system is designed to integrate with the Grass Valley Encore routing control system. With this optional router control interface, you can use the Newton system to make an all-level source take and automatically connect to the modules in the signal-processing channel.

While this approach is no substitute for the power of a dedicated router control panel, it is an excellent way to quickly switch sources and adjust signal parameters within configured input channels.

Using the optional router control interface, you can also monitor destinations on a routing system so that when a source changes, the modules in the input signal-processing channel for the selected source are automatically activated on the Newton system’s control panel.

Proactive Monitoring of Modular Products

To help maximize uptime, the Newton modular products control system supports the Grass Valley NetCentral software for Simple Network Management Protocol (SNMP)-based remote monitoring.

The NetCentral application offers continuous monitoring and user-programmable alerts in the event of equipment problems or device status changes. More important, this highly configurable application lets you link any electronic document—from engineering drawings and floor plans to rack elevations and workflow diagrams—with device alerts, so you can check the state of your facility at a glance and instantly assess the impact of any system status changes.

Specifications

<table>
<thead>
<tr>
<th>Newton Software Control Panel</th>
<th>Newton Hardware Control Panel</th>
<th>Ordering Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requires PC with Windows XP, 2000, or NT 4.0 and Internet Explorer v.5.5 or greater</td>
<td>Power</td>
<td>Newt-PC includes: NetConfig application, Newton control panel configuration plug-in application for the NetConfig application, Newton Control Panel application, and system documentation in PDF format. Hard copy documentation is also supplied</td>
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<td></td>
<td>90 to 265 VAC, 47 Hz to 63 Hz, 15W max.</td>
<td>Newt-RM-RTX includes the Newt-RM option with the Newt-Route option already enabled</td>
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<tr>
<td></td>
<td>Connectors</td>
<td>NetConfig includes: CD-ROM with standalone NetConfig application, and documentation in PDF format. No hard copy documentation is supplied</td>
</tr>
<tr>
<td></td>
<td>RJ-45 10/100Base-T Ethernet connector</td>
<td>NetCentral includes: CD-ROM with standalone copy of NetCentral Manager. Hard copy documentation is provided</td>
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**Dimensions**

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<tr>
<th>Dimensions</th>
<th>cm</th>
<th>in.</th>
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<tr>
<td>Height (1 RU)</td>
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<td>Width</td>
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<td>19.0</td>
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<tr>
<td>Depth</td>
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<td>Weight</td>
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<td>3.0 lbs.</td>
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Interface Protocols

The Newton control system uses a standard Ethernet TCP/IP communications interface and a standard XML data format. An open published protocol specification is available upon request for third-party automation system developers.

Typical Applications

Quality analysis and control of satellite and microwave incoming feeds are an ideal application for these real-time control panels.

8900NET (Net Card)

Network Interface card for Gecko and GeckoFlex frames

For detailed specifications, installation, and setup instructions see: www.grassvalley.com/docs/modular