

## **Logitek Electronic Systems**

### *JetStream Plus Reference Manual*



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Logitek Electronic Systems, Inc.  
5622 Edgemoor Drive  
Houston, Texas 77081  
USA

**Tel** +1-713-664-4470

**Fax** +1-713-664-4479

**Email** [support@logitekaudio.com](mailto:support@logitekaudio.com)

**Web** [www.logitekaudio.com](http://www.logitekaudio.com)

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# Document Revisions

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August 2013	0.1	John Davis	First draft Jetstream Plus Reference Manual



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# 1 Introduction

## About this Manual

This manual describes the installation and operation of the **Logitek** JetStream PLUS.

### Intended Audience

This manual is aimed at Engineers and Technical Operators responsible for installing, configuring and supporting a **Logitek Networked Console System**.

In the context of a system installation, or to become familiar with the entire **Logitek Networked Console System**, the reader should also reference:

- Surface Reference Manual for each surface you are installing
- JetStream Server Reference Manual

It is assumed the person responsible for installing and configuring any PC application has a solid understanding of Microsoft Windows desktop operating systems, or has ready access to IT support.

### Manual Conventions

The following conventions are used in this manual:

---

*This text indicates a menu choice to be made, with an arrow separating a multi-level selection, eg Control Panel ➤ Users & Passwords. This can be a menu choice in a Logitek application, or within Windows.*



*Indicates a “see-also” section in this manual, or another Logitek manual.*



The exclamation symbol signifies an important note or critical information.

This text represents a command, script block example, instruction to be typed, or directory path.

 **TIP:** A useful tip from our knowledge base!

## About the JetStream PLUS

The heart of every **Logitek** digital console is the **JetStream** audio router. With 15 slots for microphone input cards, analog input cards, analog output cards, digital input cards, and digital output cards, one **JetStream Plus** easily handles all audio channels in a typical studio and is capable of mixing, routing, creating mix minuses, and all other functions of traditional consoles.

With the addition of **JetNet** audio networking, the **JetStream Plus** becomes an Audio over IP router, which allows for direct network transfer of audio to other **JetStream** devices, hard-disk playout systems, and other **Logitek JetNet** partners without using computer sound cards. Using standard IP protocols, **JetNet** is the simplest way to connect IP accessible devices to the audio network.

The **JetStream Plus** provides seamless integration of analog and digital sources or destinations. The **JetStream** can accept both digital and/or analog inputs and provide digital and/or analog outputs.

**Logitek** consoles retain the look and feel of traditional broadcast audio boards, adding input routing, multiple mix minus buses, dynamics, EQ controls, and more. Consoles supported by the **JetStream** as of this writing include the *Pilot*, *ROC*, and *Mosaic* surfaces. The **JetStream** can also drive multiple utility panels such as the *COM-12* intercom panel, *RTE-3* and *RTE-XY* rack-mount router control heads, *BTN-12* button panels, and *GST-20* and *GST-22* guest headphone amplifiers.

With the addition of the **JetNet** audio networking module, remote IP control of the **JetStream** is possible using the **Logitek vTools** software suite.

The following cards may be installed in a JetStream Plus's 15 I/O slots:

- JSP-MIC                      8 channel microphone pre-amp card with DB-25 connector
- JSP-AIN                      8 stereo/16 mono analog input card with DB-25 connector
- JSP-AOUT                    8 stereo/16 mono analog output card with DB-25 connector
- JSP-DIN                      8 AES/EBU or S/PDIF digital input card with DB-25 connector
- JSP-DOUT                    8 AES/EBU or S/PDIF digital output card with DB-25 connector
- JSP-SDI                      2 SDI-SD or SDI-HD input card with BNC connectors

## System Requirements

The JetStream Plus is designed to be installed in a standard 19" equipment rack. It is four rack-units high. The unit is cooled with a low speed fan therefore it is suitable for mounting inside a studio near operators and microphones. Forced air cooling allows the Plus to be mounted without blank Panels above or below. A built-in cable tray makes installation and maintenance possible from the front of the unit.

## System Architecture

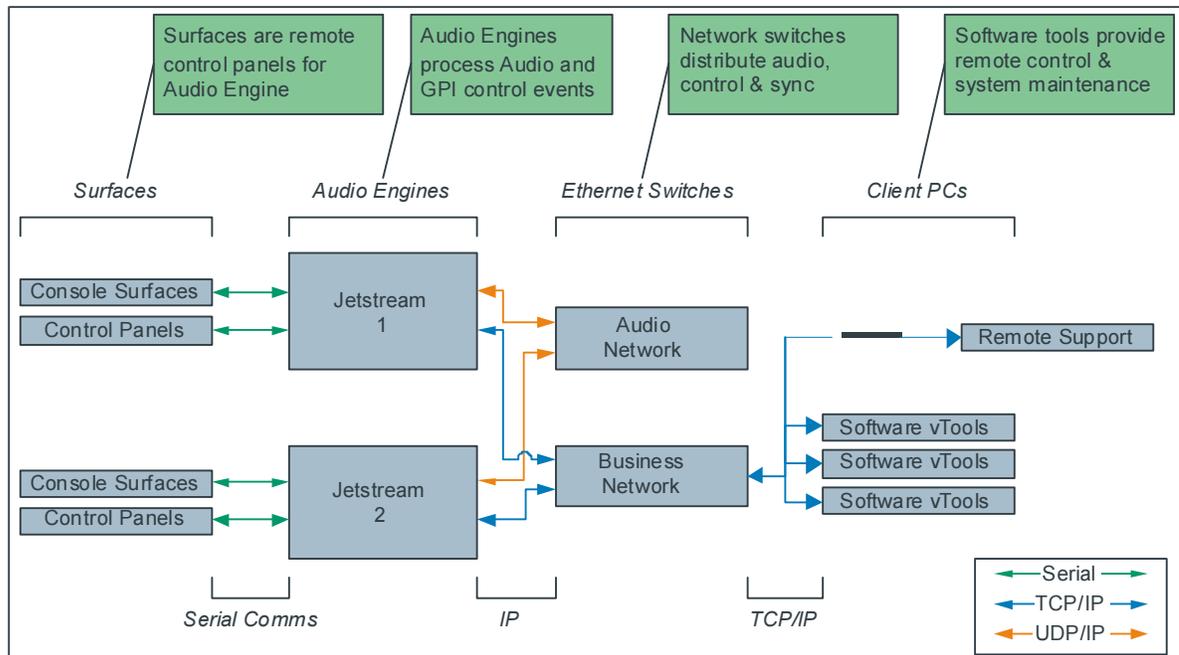


Figure 1 - Logitek System Architecture (v4.x)

Audio I/O cards plug into slots 2-16 on the JetStream. That audio is mixed on the JSP-DSP card (labeled "Surface") Consoles and utility panels connect directly to the JSP-DSP card via RS-485. All audio mixing, equalization, and dynamics processing is done on the DSP card. Local audio from the JetStream PLUS is ready within two seconds of power-up.

The JetNet Audio Networking module is a dual Gigabit Ethernet card that provides up to 240 channels of streaming audio as well as partner discovery and channel guide functions. Networked audio is available within 30seconds of power-up.

The Plus also contains a PC running Windows 7 Embedded. The PC provides logging, configuration and control functions for the DSP and Networking cards as well as serving data to vMix+ remote GUI. Spare capacity on the PC can be used for VoIP codecs or audio playback applications.

## 2 Unpacking

This section details what you should do when unpacking your newly arrived JetStream PLUS.

### Parts List

The exact list of parts received will vary depending on your order, but should generally include:

- 1x fully assembled *JetStream PLUS* frame, containing cards and Power Supply/Supplies as ordered.

You will receive a parts list with the system that is specific to the JetStream and cards on your order.

### Unpacking

Carefully unpack the cartons whilst looking for any signs of shipping damage. You may wish to save the shipping cartons until the operation of the system is verified.

Report any damage to the shipping carrier immediately. Verify that the contents of each box match the packing list and report any discrepancies immediately to **Logitek** in writing.

### Contacting Logitek

In the event of a shipping problem, you can contact **Logitek Electronic Systems** in several ways:

<b>U.S. Mail</b>	Logitek Electronic Systems, Inc. 5622 Edgemoor Drive Houston, Texas 77081 USA
<b>Telephone</b>	877-231-5870 +1-713-664-4470 (outside U.S. and Canada)
<b>Fax</b>	+1-713-664-4479
<b>Email</b>	support@logitekaudio.com
<b>Website</b>	www.logitekaudio.com

## 3 Physical Installation

This chapter covers basic installation and cabling information, and details some cabling examples. As preferences and techniques for installation vary widely, this information should primarily be used as a starting point for planning your install.

### Installation

The JetStream PLUS is designed to be mounted in a standard 19" rack, and occupies four rack units.

Redundant power supplies are mounted internally. A separate IEC mains connector is provided on the rear panel for each supply

The *JetStream* should be mounted in a clean, dry and well-ventilated area. Because the unit is cooled by a fan, no empty space above or below the Plus is required.

### Cabling

All cables to the *JetStream* enter at the bottom rear of the cabinet and connect on the front of the unit.

#### Audio Cable

Be sure to use properly rated digital cable for digital audio connections such as cat-5 rated cable.

Cat-5 is also excellent for analog audio so using digital cable for all audio connections would be an acceptable and wise choice, negating the need to order separate types of cable.

For installations where an intense AM RF field is present, shielded CAT5 cable may also be used.

All audio connections use DB-25 connectors. The Jetstream Plus requires the use of 45 degree DB back shells. For convenience connector kits and prewired cables can be ordered from your Logitek reseller.

#### Data Cable

Recommended cable for the **Control Surface** data is CAT5 cable. The maximum length cable for **Control Surface** connections is 1000 feet (300 meters). Shielded cable can also be used if there is a risk of heavy interference to the signals, however this is normally not required.

Recommended cable for the **JetNet Audio Networking** module is CAT5e or CAT6 cable. The maximum length cable for network connections is 100 meters (roughly 328 feet). Shielded cable can be used if there is a risk of heavy interference to the signals, however this is normally not required.



*See Appendix 0 for pinouts of all cards.*

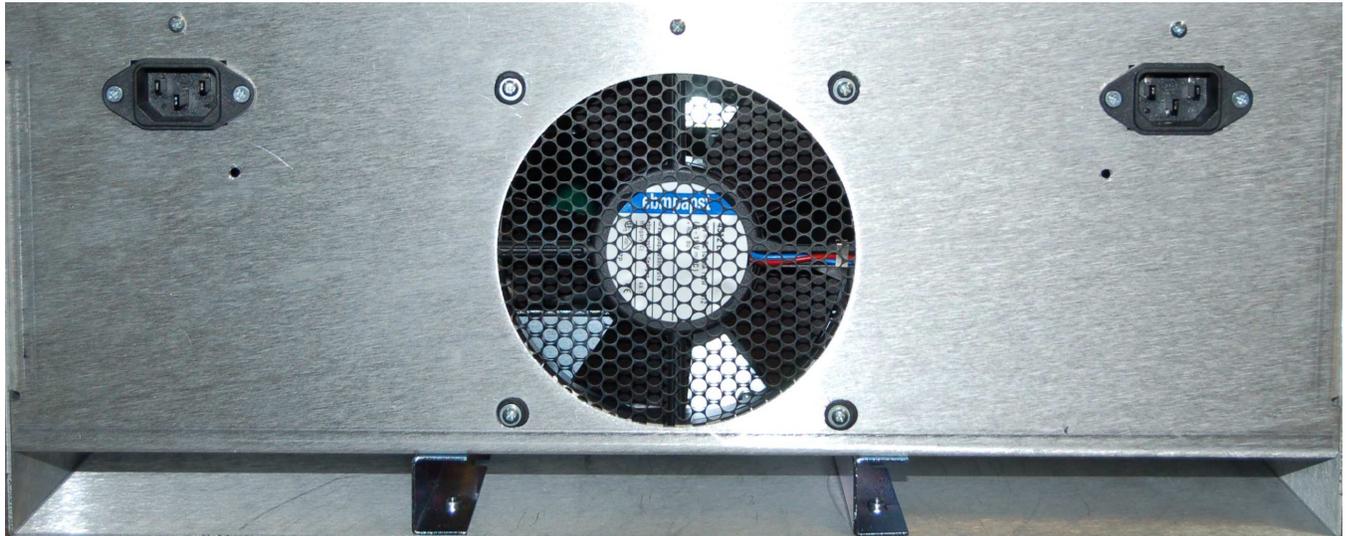
### **Pre Assembled Cables**

**Logitek** offers pre-made cable assemblies to M-66 block, Krone block, XLR connectors, BNC connectors, or bare ends.

## 4 System Components

### Power Supply Unit

Redundant 110/220 volt power supplies are mounted internally inside the **JetStream PLUS**. Connect the mains to the standard IEC power inlets on the rear of the unit.



Each supply has a blue LED that lights on the front and of the *JetStream* when it is operating.

- 🔊 **TIP:** The use of an uninterruptible power supply (UPS) to power the *JetStream* is highly recommended to preserve stable operation and to avoid audio interruptions. Power consumption of the *JetStream* is approximately 50 watts. Size the UPS according to the length of time needed to protect against outage.

## LED Display

The **JetStream PLUS** has an LED status display on the front of the unit.

**PSU 1** – Main power supply. This blue LED lights when the power supply is operating.

**PSU 2** – Redundant power supply. This blue LED lights when the power supply is operating.

**DSP** – This red LED will blink when the JetStream is in an idle state and waiting for a configuration file to be uploaded.

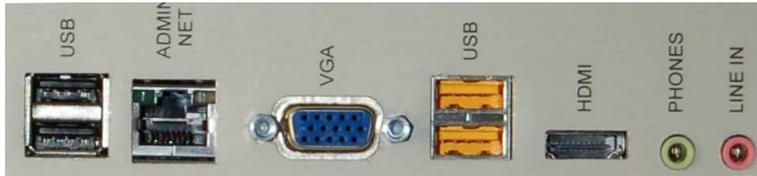
**PC** – This green LED is reserved for future use.

## LCD Screen (Optional)

An optional LCD screen on the front of the unit can provide status and metering. This LCD screen is touchscreen enabled for simple control functions.



## Embedded PC Connections



**VGA/HDMI** –Allows for connection of a computer monitor to the JetStream for configuration or for running Logitek vTools applications on the embedded PC.

**Admin Net** – 10/100/1000 Ethernet port for connection to the administrative LAN to allow remote configuration or control.

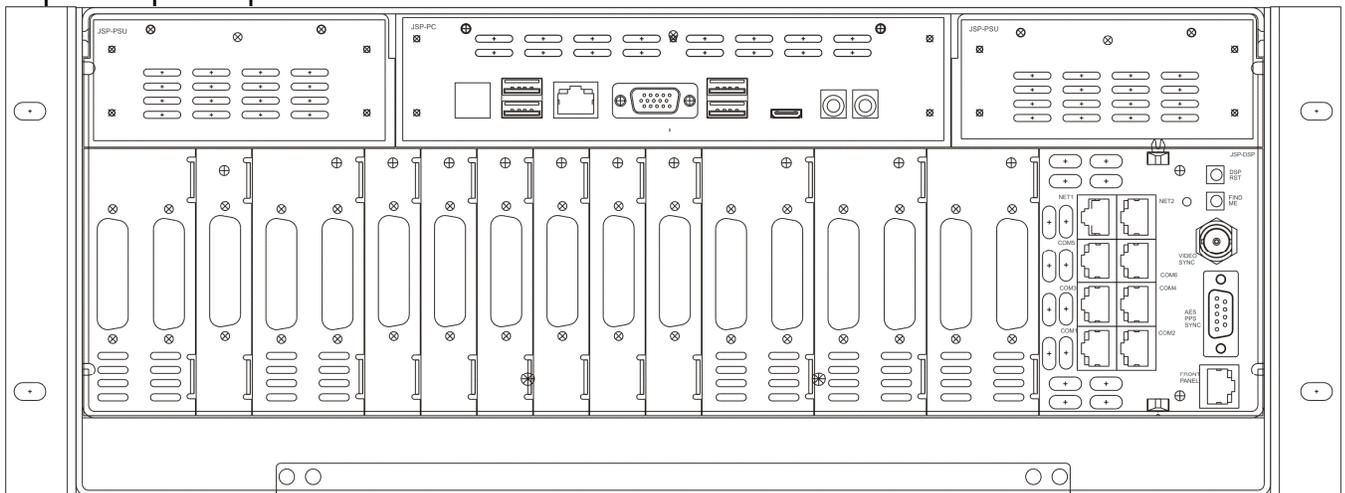
**USB** – 2 USB 2.0 ports for the embedded PC. Use for connecting a keyboard, mouse, or portable media.



If a KVM switch is connected to the JetStream instead of a separate keyboard, the computer may display an error message saying that the keyboard was not found after the BIOS POST message. After 5 seconds, the message will clear and the computer will continue to boot. The keyboard on your KVM switch will function normally despite the error message.

**Phones In/Line In** – Headphone and line input connectors for the soundcard built into the embedded PC. These connections are separate from the JetStream networking system. In most instances, they will be unused.

**RESET:** Used to perform a hardware reset of the embedded PC. The button is recessed; use a pen or pencil tip to depress.



## GPI Inputs & Outputs

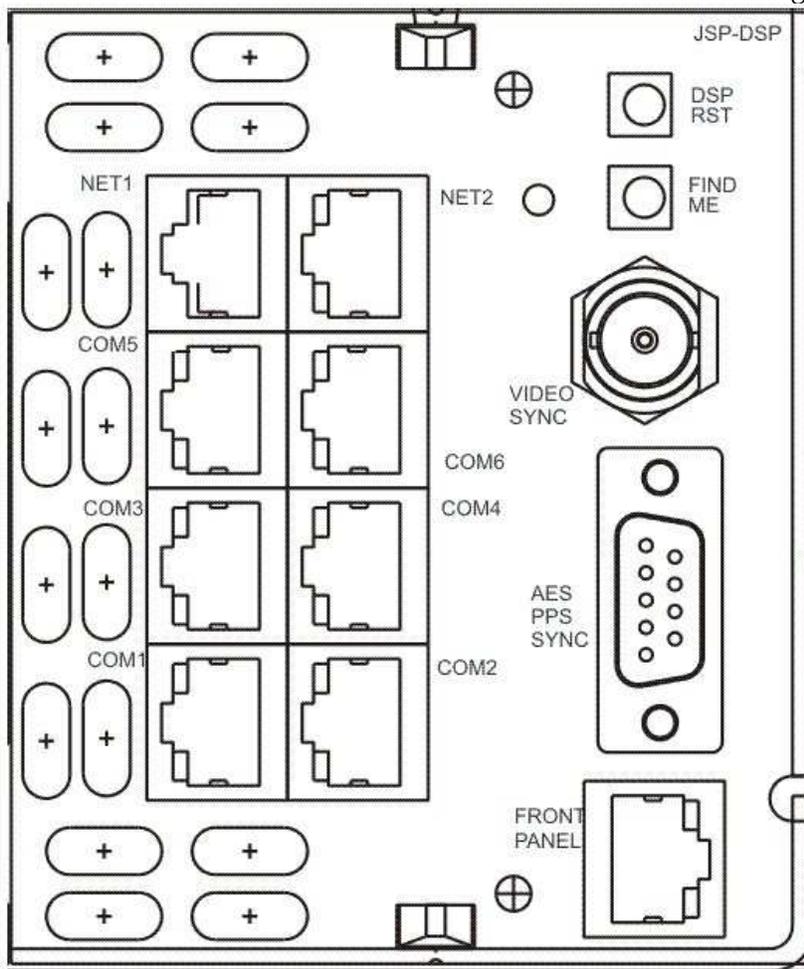
The **JetStream PLUS** provides 12 logic input connections along with 12 relay closures for external device control. These are connected on two DB-25 connectors (one for inputs and one for outputs). The GPI connections are the first two DB connectors on the left.



See Appendix 0 for connector pinouts.

## DSP Card Connections

The DSP connections are made on the module on the far right side of the frame.



## External Sync

The **JetStream PLUS** may be synchronized to an external sample clock, which is connected to the **Ext Sync** port. The external clock is an alternative to the internally set sample rate. For example, this would be used if all devices in a facility were to be tied to the same sample-rate and clock.

The **JetStream PLUS** will accept a variety of sync signals, including Word Clock, AES Silence, and GPS 1 second pulse.

The **JetStream PLUS** automatically matches any sample rate of digital inputs from approximately 25 KHz to over 50 KHz. The outputs can be set to sample rates of 32 KHz, 44.1 KHz, and 48 KHz or locked to an external clock source (at one of these frequencies).



*See Appendix 0 for connector pinouts.*

## DSP RST Button

The **DSP Reset** button, labeled DSP RST, is used to provide a hardware reset to the DSP card. This reset is usually only needed when the system is jammed.

## Find Me Button

The **Find Me** button is used to put the JetStream into Idle mode, where the JetStream stops processing audio and waits for a new configuration to be uploaded to the DSP card. In later software revisions, this button will be used to send a beacon via multicast to other units to tell them it is online and available as well as this JetStream's address.



*See Chapter 7 for further details on Resets*

## NET1/NET2 Connection

The primary and redundant audio network connections, using gigabit Ethernet.

**Control Surfaces** (Audio Consoles) and **Control Panels** (Guest Turrets and router control heads) connect via RS-485 to COM 1, COM 2, COM 3, COM 4, COM 5, and COM 6.



Although RJ-45 connectors are used for surface connections, these are NOT Ethernet connections. Use the CAT5 cable to connect the **JetStream PLUS** directly to the control surface or panel. Do NOT connect the CAT5 cable from a *Surface* port to an Ethernet Switch.



*See Appendix 0 for connector pinouts.*

## Communication verification

You can verify communications between the **JetStream Plus** and **Control Surface**, by watching the LED lamps on the Surface port. The top green LED is transmit and the bottom yellow LED is receive.

## Front Panel Connection

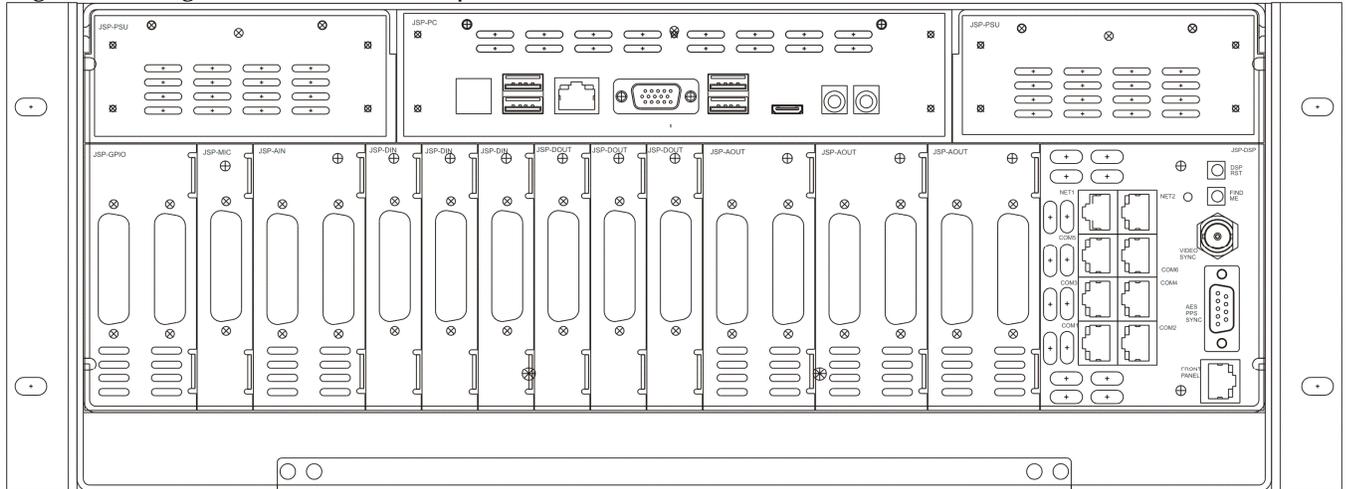
This RJ-11 connector supplies power and data to the LCD screen

### **“Open” Control Protocol**

The control protocol of the **JetStream PLUS** is “open”. If a user wishes to write software control or to interface other devices through software control, contact **Logitek Electronic Systems, Inc.** for a copy of the protocol.

## Audio Cards

The JetStream PLUS will accept from one to fifteen audio cards, which can be either analog or digital. Analog connections take up two slots.



### JSP-AIN Analog Input Card

The JSP-AIN Analog Input Card provides 8 stereo or 16 mono inputs to the system. Due to the connector density, this card requires two slots.



*See Appendix 0 for connector pinouts.*

### JSP-AOUT-DB Analog Output Card

The JSP-AOUT Analog Output card provides 8 stereo or 16 mono outputs to the system. Due to the connector density, this card requires two slots.



*See Appendix 0 for connector pinouts.*

### JSP-MIC Analog Input Card

The JSP-MIC card provides 8 microphone pre-amplified inputs.



*See Appendix 0 for connector pinouts.*

### JSP-DIN Digital Input Card

The JSP-DIN card provides 8 AES/EBU inputs to the system. S/PDIF inputs may be connected, although a cable run of less than 6 feet and jumpering negative to ground is suggested.



*See Appendix 0 for connector pinouts.*

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### JSP-DOUT Digital Output Card

The JSP-DOUT card provides 8 AES/EBU outputs to the system. As with the DIN card, S/PDIF outputs may be connected with a suggested cable run of less than 6 feet and jumpering negative to ground.



*See Appendix 0 for connector pinouts.*

### JSP-SDI Embedded Video Card

The JSP-SDI card provides 2 SDI-SD or 2 SDI-HD embedded video connections via BNC connectors.



*See Appendix 0 for connector pinouts.*

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## 5 Configuration

### Using JetSet

JetSet is a web-based system that lets you configure a JetStream using any popular web browser (Internet Explorer, Firefox, Chrome, Safari) either on the JetStream itself or on any laptop, computer, or tablet connected to the ADMIN network connection.

Point the web browser to the IP address of the ADMIN network connection. You will be prompted for a username and password. The default is user with no password. This may be changed on the User Setup tab in JetStream Server's Administration page. After logging in, you will be presented with a web page that will enable you to configure the inputs, outputs, and control surface.

If you are using the web browser on the embedded PC, it's easiest to use the loopback address of 127.0.0.1 to get to JetSet.

### JetStream Server

JetStream Server is an application running on the embedded PC that is a gateway from all Logitek software to the JetStream. This program should always be running and automatically launches at startup.

Besides controlling access from other applications and passing data to them, JetStream Server also contains a JetStream State page that enables administrators to control the routing and other functions directly from the program.

## 6 Embedded PC Administration

### About the Embedded PC

Your JetStream Plus has a Mini-ITX PC built into the chassis running Windows Embedded 7. This operating system is very similar to Windows 7.

### Default User Account

The default username is JetStream with a password of logitek. The unit is configured to log itself in automatically. Use this combination to unlock the console should you find it locked.

### Windows Updates

The JetStream ships with automatic updates turned off. If you would like to change this, see the Windows Update section in the Windows Control Panel. Logitek recommends that you follow good security practices and apply patches on a regular basis as you do with the rest of the important computers in your facility.

### Anti-Virus Software

The JetStream ships with no anti-virus software installed. Logitek recommends that you follow good security practices and install the same anti-virus software you use in the rest of your facility. The embedded computer is small and has a limited amount of RAM, therefore we recommend using as lightweight of security software as possible. While we do not recommend one brand over another, we use Webroot SecureAnywhere in the factory on our development machines at the time of this manual's writing.

### Remote Access

Logitek installs LogMeIn for remote access to assist with support. If remote access is not allowed in your facility, you may either choose to not connect the admin network to the internet or you may choose to disable LogMeIn. You can also install software such as Dameware, Team Viewer, or VNC for your own use or use Windows Remote Desktop within your own facility. As always, follow good security practices and limit access accordingly.

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## 7 Operation

This chapter covers the basic operation of the **JetStream Plus**.

### Initial Power-Up

Depending on your distance from **Logitek Electronic Systems'** factory, your **JetStream** may have had a long journey to get to you. It's always a good idea to re-seat all I/O cards prior to powering on your unit.

### Power Loss at Audio Engine

In the event of loss of power at the **JetStream**, upon the resumption of power, it will return to the same state it was in prior to the power failure.

Audio from local sources will begin to play within 3 seconds of power up. It can take up to twenty seconds for networked **JetStreams** to find each other and begin streaming after a power failure. Networked sources will remain silent until they automatically restore the connection.

### Recovering From a Bad Upload

If the configuration stored on the **JetStream** is corrupted for any reason, the DSP will refuse to start. When this occurs, all LED lamps on all I/O cards and on the DSP (Surface) card will light simultaneously and no audio will be present. After a few seconds, the DSP will restart; the lamps will shut off and turn back on again, and the process will repeat every few seconds. You may hear a popping noise in your monitor speakers as the unit resets.

Recover from this condition with an idle reset.

#### Idle Reset

Press and hold the **Find Me** button on the back of the **JetStream** while you press and release the DSP RST button. Release the **Find Me** button when you see the DSP lamp begin to blink. You may now upload a good configuration to the **JetStream** to resume operation.

- 🔊 **TIP:** If the **JetStream** is constantly rebooting, you can often force an Idle Reset by pressing and holding **Find Me** while it reboots.

## Resets from JetStream Server

The following resets are performed from the JetStream Server and AEConfig PC applications:

### Soft Reset

A **Soft Reset** is executed by clicking *Soft Reset* from the *JetStream Log* page in *JetStream Server*. This reset will tell JetStream to read its current routing table and perform every route again. This reset will also ask JetNet to refresh its list of network routes.



A **Soft Reset** will NOT read the default route table. Therefore, if you are changing a default route, it will not take effect until a full reset is performed. Also, any changes made to the Mix Minus grid on the *System Page* will not take effect until a Full Reset.

🔊 **TIP:** A **Soft Reset** does not interrupt audio. Therefore, if you need to change default routes but do not wish to interrupt programming, do a Soft Reset, then force the routing change manually using the *JetStream State* page in *JetStream Server*.

### Full Reset

A **Full Reset** is executed by clicking **Full Reset** from the *JetStream Log* page in *JetStream Server* or during the upload process in *AEConfig*.

A **Full Reset** copies the default startup state of the last configuration saved, erasing any routing, level or on/off information currently held in memory. This function is required to activate the routing portion of a new configuration file or to clear the current state memory if it becomes corrupted.



A **Full Reset** will tell *JetNet* to remove all of its network routes, unplug the USB connection to the DSP card, and then restore all of its network routes. It can take up to 30 seconds for this process to take place before network routes are restored.

🔊 **TIP:** As a **Full Reset** will reset to default routes and turn off all faders, audio interruption will likely result.

## 8 Maintenance

The **Audio Engine** uses multi-layer boards with surface mount technology. As such, the majority of the engine and its cards are not user-serviceable. However, there are some basic tasks that can be performed by suitably qualified technical personnel.

### Warranty

**Logitek Electronic Systems, Inc.** will honor the warranty of the system when conducting field maintenance, provided:

- Repairs or updates only relate to recommended and documented procedures
- Care is taken and procedures are followed
- Repairs are conducted by suitably trained or experienced service personnel

If you do not feel comfortable performing maintenance or repairs, please do not proceed. If you would like advice prior to attempting a repair, please contact **Logitek Electronic Systems** or your reseller.

### Firmware Updates

Each card has a firmware chip that is field upgradeable. **Logitek Electronic Systems, Inc.** or your value-added reseller may from time-to-time supply firmware updates to add new features or fix bugs.

Firmware is uploaded via the embedded JetStream PC. **Logitek Support** will contact you if your system's cards need an update.

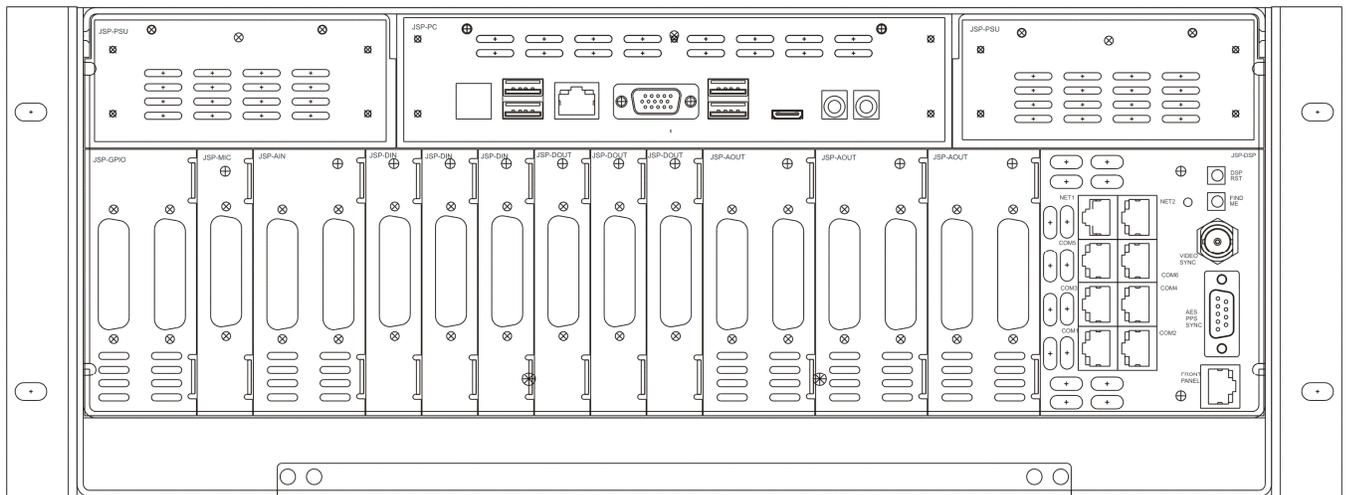
### LogMeIn Access

Logitek installs the LogMeIn utility to the JetNet embedded PC prior to shipping in order to provide remote support. Please contact **Logitek Support** if you would like to be granted remote access to your machines.

## Component Replacement

### Card swap-out

If you need to swap a card with an on-site spare, you can simply unscrew the thumb-screw that secures the card and remove it. Replace the card and tighten the thumb screw. The system will automatically start the new card.



Cards are fully hot-swappable.



As the Engine config is stored within the JSP-DSP card, when swapping a JSP-DSP, the config will need to be reloaded before normal operation can be resumed.

## **Contacting Support**

### **North America**

Contact the factory directly via phone: (877) 231-5870 Toll Free or +1-713-664-4470 or email [support@logitekaudio.com](mailto:support@logitekaudio.com)

### **Outside of North America**

Contact your local Logitek dealer for factory-trained assistance.

## Defining Non-Logitek Network Sources

A small text file is kept in D:\Logitek named JSM\_Net\_Def.txt. Multicast information about AoIP sources from non-Logitek JetNet partners is placed in this file in order for JetStream Server to know it is available on the network.

Either spaces or tabs may be used as delimiters in the file. Text following two forward slashes // will be treated as a comment and ignored.

The following information is kept in the file:

**Stream Name:** Two sets of 8 character fields. This is the 16 character surface label that will be sent to the console. Text should be enclosed in quotes. If a blank field is desired, put a space between quote marks.

**Destination IP:** Enter the multicast address of the stream coming from the Non-Logitek device.

**Host Name:** One 14 character field. Computer Name used in some IGMP implementations. The host need not be specified; if you do not want to list the host you must enter a space between quotation marks.

**Host IP:** Used in some IGMP implementations. If not needed, enter 0.0.0.0.

**Net 1:** Y or N. For most JetNet installations, this will be Y, as audio is transmitted on this LAN.

**Net 2:** Y or N. For most JetNet installations, this will be N, as we will not transmit audio on this LAN.

A sample JSM\_Net\_Def.txt follows:

```
// JetStream Manual Channel Guide File
//
//   Stream Name           Destination IP       Host Name   Host IP       Net 1       Net 2
//   16-char 2x8           0.0.0.0           14-char    0.0.0.0       Y / N       Y / N
//-----
//  "12345678""12345678" 239.193.1.1  "12345689901234" 0.0.0.0     Y           N
//
//  "Phone""1"           239.192.0.1       " "         0.0.0.0       Y           N
//  "SS-32""A"           239.192.0.2       "LiveIO"    0.0.0.0       Y           N
//  "A-Serv 1""Out 1"    239.192.8.32     "RCS1"      0.0.0.0       Y           N
//  "A-Serv 1""Out 2"    239.192.8.33     " "         0.0.0.0       Y           N
```

# Appendix A Specifications

## General

Card slots: 1 Audio & Network processor, 1 GPIO, 15 Audio I/O, 1 PC, 2 PSU  
Local audio I/O: 240 channels max (mono) on 15 I/O cards  
Power: 95 - 120 volt or 220-240 volt, 47-63 Hz single phase (50 watts maximum)  
Backup power: 2 internal PSU with individual mains connections  
Start up time: 3 sec to local audio, 30 sec to networked audio  
Cooling: Low noise, low vibration fan  
Environmental: 10°C – 38°C, 10 – 90% RH (non-condensing)  
Dimensions Actual - 19" w x 15.5" d x 7.0" h (4RU) (48.2 cm w x 39.4 cm d x 17.8 cm h)  
Weight fully loaded - 25 lbs.

## Audio Processor / AoIP Interface Card

DSP: 32 bit floating point processing  
Mixing: 36 channels (stereo) shared between 1 to 4 consoles  
EQ & Dynamics: 24 channels allocated to either inputs or outputs  
Profanity delay: 2x delays, 12 sec stereo each  
Mix-Minus outputs: 24 channels mono, may be combined for stereo  
0 VU Reference Level: -20 or -18 dBFs  
Factory default reference: 0VU = +4 dBu = -20 dBFs (+20 VU = +24 dBu = 0 dBFs)  
Internal sampling rate: User selectable 44.1K, or 48K (Sample/Sec)  
External sync input: AES3, pulse-per-sec, analog video  
Surface and Utility connections: 7 serial ports with activity indicators

Ethernet: 2 wired Gigabit ports  
Simultaneous audio streams: 240  
System size: 2000 streams total  
Network delay: 2.8 mSec max  
Fault tolerance: dual redundant networks when using two network switches  
Snake Mode: up to 3 JetStream units can be directly connected without a switch  
Streaming protocols: RTP, multicast and unicast  
Network sync: PTPv2 (ieee1588)  
Network can be locked to house sync input via a single JetStream  
Automatic system master selection, automatic failover

## GPIO Card

Inputs: 12 channels  
Input level: +3.3 volts, ground to activate, reverse voltage and over voltage protected  
Outputs: 12 channels  
Outputs format: optical isolated relay, non-polarized (50 volt, 500 milliamp max load)  
Functionality: assigned in setup program

## Microphone Input Cards

Number of Channels: 8 microphones  
Connectors: 1 DB-25

Phantom power: +48 volts switched via software  
Normal input level: -65 to -30 dBu, rear panel trim-pot adjustable  
First Stage Gain control: via software or control surface  
Input impedance: 4k ohms balanced  
Common mode rejection ratio: -90 dB (1 kHz)  
THD+N: .01% (-35 dBu input, +4 dBu output, 20 Hz to 20 kHz)  
Frequency response: +/- .2 dB (20 Hz to 20 kHz)  
Equivalent input Noise: < -124 dB (-60 dBu input, +4 dBu output, 20 Hz to 20 kHz)  
Conversion resolution: 24 bits

## Analog Input Card

Number of Channels: 16 mono inputs, may be combined for stereo  
Connectors: 2 DB-25 (consumes two slots in card cage)  
Signal format: Balanced or unbalanced  
Maximum input level: +24 dBu  
Normal input level: +4 dBu, +20 dB headroom  
Input impedance: 50k ohms balanced or 25k ohms unbalanced  
Common mode rejection ratio: -90 dB @ 1 kHz  
THD+N: < .008% (+4 dBu input, -20 dBFs output, 20 Hz to 20 kHz)  
Frequency response: +/- .2 dB (20 Hz to 20 kHz)  
Signal to Noise Ratio: > 80 dB (+4 dBu input, +4 dBu output, 20 Hz to 20 kHz)  
Conversion resolution: 24 bits

## Analog Output Card

Number of Channels: 16 mono outputs, may be combined for stereo  
Connector: 2 DB-25 (consumes two slots in card cage)  
Signal format: Balanced or unbalanced  
Maximum output level: +24 dBu into 600 Ohms  
Normal output level: +4 dBu, +20 dB headroom  
Output impedance: 60 Ohms  
THD+N: < .008% (-20 dBFs input, +4 dBu output, 20 Hz to 20 kHz)  
Frequency response: +/- .2 dB (20 Hz to 20 kHz)  
Signal to Noise Ratio: > 80 dB (+4 dBu input, +4 dBu output, 20 Hz to 20 kHz)  
Conversion resolution: 24 bits  
Stereo Separation: > 80 dB (+23 dBu input, +23 dBu output, 20 Hz to 20 kHz)  
Inter-Channel Crosstalk: > 90 dB (+23 dBu input, +23 dBu output, 20 Hz to 20 kHz)

## Digital Input Card

Number of channels: 8 inputs, stereo input may be split into 2 mono  
Connector: 1 DB-25  
Digital format: AES3-1992 or S/PDIF  
Rate conversion: All inputs, 24 bit resolution, 24kHz to 96kHz, switchable in or out  
Input sample rate: same as audio processor card when rate conversion turned off  
Precision: up to 24 bits  
Input impedance: 110 ohms, transformer balanced and isolated  
THD+N: < .004% (-20 dBFs input, -20 dBFs output, 20 Hz to 20 kHz)  
Frequency response: +/- .1 dB (20 Hz to 20 kHz)  
Dynamic range: 140 dB  
Subcode detection: validity bit, audio/no audio bit

## Digital Output Card

Number of channels: 8 outputs, 2 mono may be combined into 1 output

Connector: 1 DB-25

Digital format: AES3-1992 or S/PDIF, user switchable

Sample rate: same as audio processor card

AES output compliance: 24 bits

Output impedance: 110 ohms, transformer balanced and isolated

THD+N: < .004% (-20 dBFs input, -20 dBFs output, 20 Hz to 20 kHz)

Frequency response +/- .1 dB (20 Hz to 20 kHz)

Dynamic range 140 dB

Subcode generation: copyright not asserted when in SPDIF mode

## Embedded PC

Embedded processor: Intel Atom, 1.6 GHz, 1Meg DDR3

Bulk Memory: SSD

OS: Windows 7 embedded standard

Video: 1 VGA, 1280 x 1024 resolution, 1 HDMI

Video application: vMix+ user configurable meter bridge replacement GUI

USB: 4 ports for pointing devices or memory sticks

Ethernet: 1 wired Gigabit port for connection to business network

**\*\* Specifications are subject to change \*\***

# Appendix A Pinout Data

## Audio I/O with DB Connectors

DB25M right angle plugs are required.

### Audio Inputs/Outputs

Pin	Connection	Pin	Connection
1	I/O 1 +	14	I/O 2 +
2	I/O 1 -	15	I/O 2 -
3	Ground	16	Ground
4	I/O 3 +	17	I/O 4 +
5	I/O 3 -	18	I/O 4 -
6	Ground	19	Ground
7	I/O 5 +	20	I/O 6 +
8	I/O 5 -	21	I/O 6 -
9	Ground	22	Ground
10	I/O 7 +	23	I/O 8 +
11	I/O 7 -	24	I/O 8 -
12	Ground	25	Ground
13	No connect		

**TIP:** If using unbalanced input connections, jumper the negative pins to ground. For unbalanced output connections, leave the negative pins unconnected.

## GPIO

There are 2 DB-25 connectors, one with 12 GPI inputs and one with 12 GPI outputs. The contacts of the internal electronic relays are rated at 50 volts DC maximum and 500 milliamps maximum. Higher voltages should be connected to larger external relays.

### GPI Inputs

Pin	Connection	Pin	Connection
<b>1</b>	GPI In 1	<b>14</b>	Ground
<b>2</b>	GPI In 2	<b>15</b>	Ground
<b>3</b>	GPI In 3	<b>16</b>	Ground
<b>4</b>	GPI In 4	<b>17</b>	Ground
<b>5</b>	GPI In 5	<b>18</b>	Ground
<b>6</b>	GPI In 6	<b>19</b>	Ground
<b>7</b>	GPI In 7	<b>20</b>	Ground
<b>8</b>	GPI In 8	<b>21</b>	Ground
<b>9</b>	GPI In 9	<b>22</b>	Ground
<b>10</b>	GPI In 10	<b>23</b>	Ground
<b>11</b>	GPI In 11	<b>24</b>	Ground
<b>12</b>	GPI In 12	<b>25</b>	Ground
<b>13</b>	No Connect		

### GPI Outputs

Pin	Connection	Pin	Connection
<b>1</b>	Out 1A	<b>14</b>	Out 1B
<b>2</b>	Out 2A	<b>15</b>	Out 2B
<b>3</b>	Out 3A	<b>16</b>	Out 3B
<b>4</b>	Out 4A	<b>17</b>	Out 4B
<b>5</b>	Out 5A	<b>18</b>	Out 5B
<b>6</b>	Out 6A	<b>19</b>	Out 6B
<b>7</b>	Out 7A	<b>20</b>	Out 7B
<b>8</b>	Out 8A	<b>21</b>	Out 8B
<b>9</b>	Out 9A	<b>22</b>	Out 9B
<b>10</b>	Out 10A	<b>23</b>	Out 10B
<b>11</b>	Out 11A	<b>24</b>	Out 11B
<b>12</b>	Out 12A	<b>25</b>	Out 12B
<b>13</b>			

## JSP-DSP (Surface)

### Port 1 to 6 – RJ45

Pin	Cable Color	Connection
1	White/Orange	Cue -
2	Orange	Cue +
3	White/Green	RS-485 Tx -
4	Blue	RS-485 Rx -
5	White/Blue	RS-485 Rx +
6	Green	RS-485 Tx +
7	White/Brown	No connect
8	Brown	Ground

 **TIP:** Pre-wired CAT-5 cables may swap the orange and green pairs.

## JSP-DSP (Ext Sync)

### DB-9

Pin	Connection	Pin	Connection
1	RS-232 Rx (GPS)	6	AES +
2	RS-232 Tx (GPS)	7	AES -
3	GND	8	GND
4	+5 VDC	9	Pwr GND
5	Pulse per Sec		

## Control Surfaces & Utility Panels

Pinouts for **Logitek Control Surfaces** are also included below. For further information see the relevant manual for the **Surface** you are connecting.

### Artisan/Mosaic Surface RS-485 – RJ45

Pin	Connection
1	Cue -
2	Cue +
3	RS-485 Rx -
4	RS-485 Tx -
5	RS-485 Tx +
6	RS-485 Rx +
7	No connect
8	Ground

 **TIP:** Pre-wired CAT-5 cables will match the JetStream pin for pin.

### Remora Surface/BTN-12/RTE-3/RTE-XY/GST-20 Panel RS-485 – DB9

Pin	Connection
1	Cue +
2	RS-485 Tx +
3	RS-485 Rx +
4	No connect
5	Ground
6	Cue -
7	RS-485 Tx -
8	RS-485 Rx -
9	No connect

 **TIP:** There is no cue audio available on a RTE-3, RTE-XY, or GST-20, so pins 1 and 6 may be omitted on those panels.

 **TIP:** Using a pre-wired CAT-5 cable and a RJ-45 to DB 9 adapter is a fast way to wire these surfaces and panels.

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