Logitek

# Logitek Electronic Systems

## *Utility Panel User's Manual*



*Revision 1.0*

*Sep 2005*

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All specifications are subject to change without notice.

# Document Revisions

| Date | Revision | Author | Notes |
|---|---|---|---|
| September 2005 | 1.0 | Paul Dengate | First release of Utility Panel manual |

# Contents

# 1 Introduction

## About this Manual

This manual describes the installation and operation of the **Logitek** utility panels, including *COM-12*, *BTN-12*, *RTE-3*, *RTE-XY* and Guest Headphone panels.

### Intended Audience

This manual is aimed at Engineers and Technical Operators responsible for installing, configuring and supporting a **Logitek Console Router System** that uses any of these utility panels.

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

- Audio Engine Installation & Operation Manual
- AEConfig User's Manual
- Supervisor User's Manual
- CommandBuilder User's Manual

### 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!

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# About Utility Panels

**Logitek** provides various control panels that connect to your **Audio Engines** and integrate into your system. These panels are fully configurable to suit the specific requirements of your facility.

The current range of **Utility Panels** includes:

### BTN-12

A 1 RU button panel with 12 buttons/lamps, plus 18 GPI inputs and outputs.

### COM-12

A 1 RU button panel with 12 buttons/lamps, plus integrated mic preamp and speaker amp for intercom purposes. Buttons can be programmed all as intercom stations, or for mixed functions.

### GST-20/22/23

An integrated monitoring selector, mic on/off/mute control and headphone amplifier, designed for use by studio guests.

The *GST-22* is a desk mounted headphone controller.
The *GST-20* is a 1RU rack mount version.
The *GST-23* is a remote 6 button panel for additional control applications.

### RTE-3

A 3 output router controller, designed for controlling record outputs and other destination feeds in a studio or equipment room.

### RTE-XY

An X-Y version of the *RTE-3*, which allows controlling multiple destinations on an Audio Engine.

# System Requirements

**Utility Panels** are designed to connect to a **Logitek Audio Engine** running any DSP version. Certain features may require a certain level of DSP or AE controller card firmware. Contact **Logitek Electronic Systems** or your reseller if you require confirmation.

## System Architecture

Put simply, a **Utility Panel** is just a remote control panel for the **Audio Engine**. Like **Logitek Console Surfaces**, these panels send and receive control commands to the **Audio Engine** using the **Logitek Command Protocol**, with all audio processing occurring inside the **Audio Engine**.

The router style panels are designed to control audio crosspoints on a particular **Audio Engine**. Button style panels are fully configurable to suit user requirements. As such the functionality of the **Utility Panels** is usually dependant upon the **Logitek** *Supervisor* PCs. This is different to **Console Surfaces**, which only require PCs to execute scripts and macros.

Whilst *Supervisor* is not a requirement to run a **Logitek Console Router System**, most systems are now sold with this PC suite, as it unlocks the true power of the **Logitek** system. Programmable button panels require scripting using *CommandBuilder*. The functionality for these buttons is then executed by *Supervisor*. If these buttons are performing on-air critical functions, such as delay control or studio switching, then running a *Dual Supervisor* configuration is highly recommended.

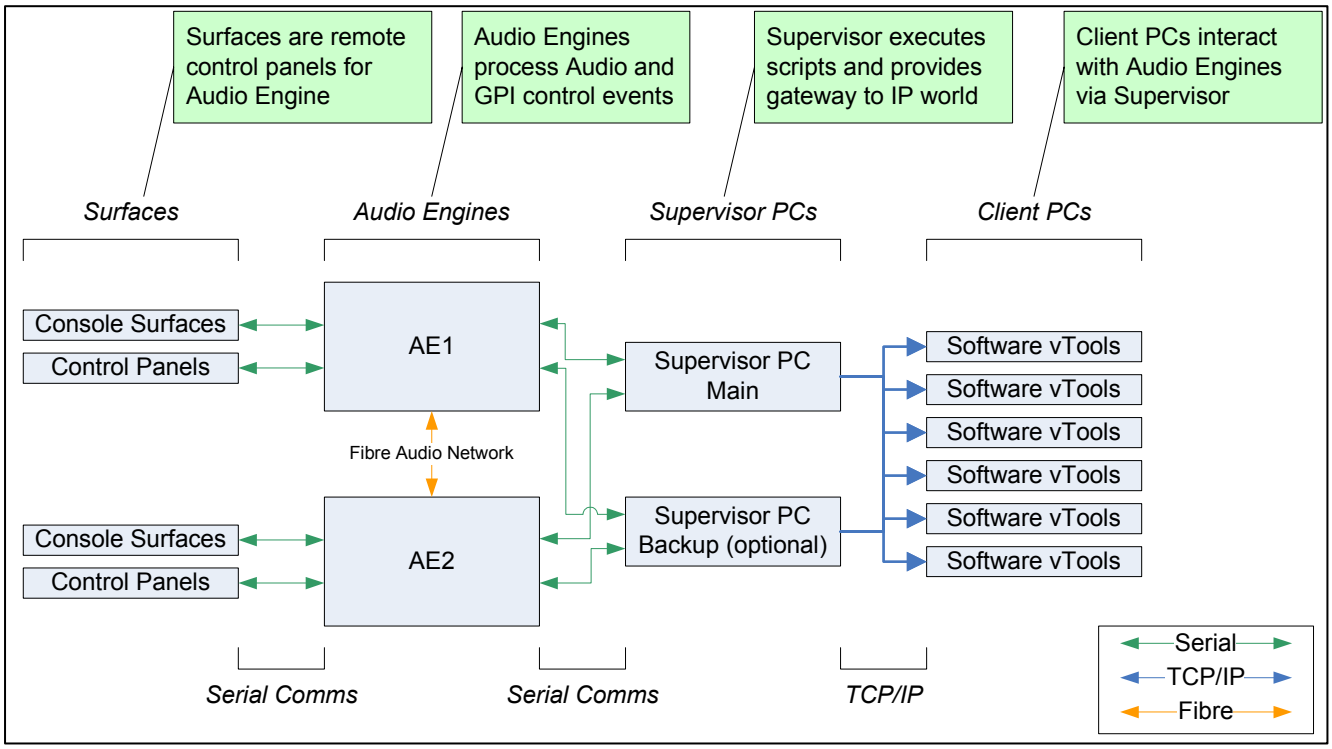


**Figure 1 - Logitek System Architecture**

# 2 Unpacking

This section details what you should do when unpacking your newly arrived *Utility Panel*.

## Parts List

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

### Rack Mount Panels

- Utility Panel in 19″ rack mount housing
- Integrated internal switch mode power supply
- Utility Panels User's Manual

### Guest Headphone Panels

- GST-20 (1RU) power supply and headphone panels as ordered
- GST-21 (wall mount) power supply(s) as ordered
- GST-22 headphone panels as ordered
- GST-23 remote button panels as ordered
- Utility Panels User's Manual

Cabling is not supplied, as this generally needs to be integrated into facility wiring.

## 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:

**U.S. Mail** Logitek Electronic Systems, Inc.
522 Edgemoor Drive
Houston, Texas 77081
**Telephone** 877-231-5870
713-664-4470 (outside U.S. and Canada)
**Fax** 713-664-4479
**Email** help@logitekaudio.com
**Website** www.logitekaudio.com

# 3 Common Information

The rest of this manual has one chapter for each **Utility Panel** that is available from **Logitek**.

Below is information that is relevant to all panels, and therefore is not duplicated in each chapter.

## About Device & Bus Addressing

Each device (such as a fader input or button panel) requires its own **Device Number**. Within that device, each button, lamp and feature has a **Bus Number**. Together, the **Device** and **Bus Numbers** allow the **Audio Engine** and **Surface** to communicate.

When configuring the programmable buttons in *CommandBuilder*, you will require the **Device Number** and **Bus Number** for each button or lamp. The information in each chapter will help you determine the addressing required for the particular panel.

Each **Utility Panel** includes device addressing wheels at the rear, which allow you to set the **Device Number**. In the case of panels that are associated with a particular output (or group of outputs), we recommend you use the **Device Number** of that output (this can be found in the *AEConfig* Output Page for the particular **Audio Engine**.)

If using an *AE-C6* **Audio Engine Controller Card**, ports 4-6 are recommended for the connection of **Utility Panels**. As the panels do not require allocation of DSP resources, ports 1-3 can be kept free for mixer surfaces. The *AE-C2* card only has 3 ports available.

The *Route-3* panel has two modes of addressing, which are both covered in the *Route-3* chapter.

## Daisy-chaining Panels

Most panels support the ability to daisy chain to other panels downstream. This reduces the amount of wiring and the amount of **Audio Engine** ports required when panels are located in proximity. This is particularly useful for the AE-C2 card, which only has three surface ports per **Audio Engine**.

However, as each panel is “active” in the circuit, a failure of an upstream panel will render all downstream panels inoperable. This should be considered in redundancy planning.

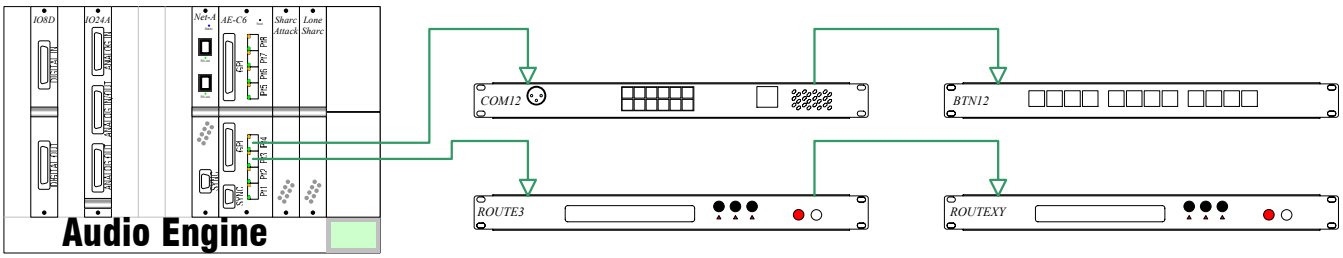


**Figure 2 - Example of daisy-chaining Utility Panels**

# Wiring

**Utility Panels** share a common connection and wiring scheme. Wiring from an **Audio Engine** to a panel will depend on the type of **Controller Card** in use. Both are shown below, as well as wiring between daisy-chained panels. The **Guest Headphone Panel** wiring is detailed in Chapter 7.

## Wiring

Twisted pair data cable should be used – CAT5 (or greater) is suitable. The RS485 +/- transmission lines should be on a pair together. If using shielded cable, Pin 5 on the DB9 should be connected to shield/drain. With unshielded cable, use one half of a pair. As the transmission is balanced, shielded cable is not necessary, unless in very high RF environments. TIA-568B wiring colors are shown.
Pair 1 Cue is not required for **Utility Panels**, but can be wired as per **Surface** cables for consistency.

## AE-C2 to Panel

Wiring from an *AE-C2* card is the same as a mixer surface. The first pair (cue), is not required, but can still be wired. A Port 3 connection requires Pins 3 & 8 reversed at one end (see *AE-C2* wiring).

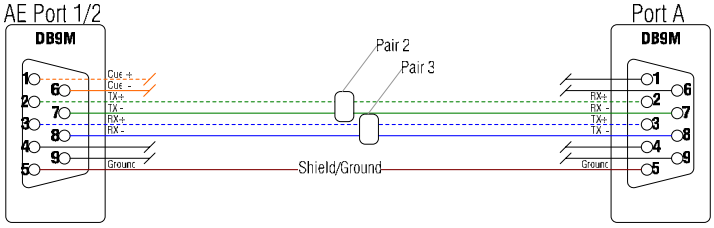


**Figure 3 - AE-C2 to Panel wiring**

## AE-C6 to Panel

For an *AE-C6*, we suggest using the TIA-568A/B color code at the RJ45, and wiring the DB9 to suit. The first pair (cue), is not required, but can still be wired (as per *AE-C6* to console wiring).

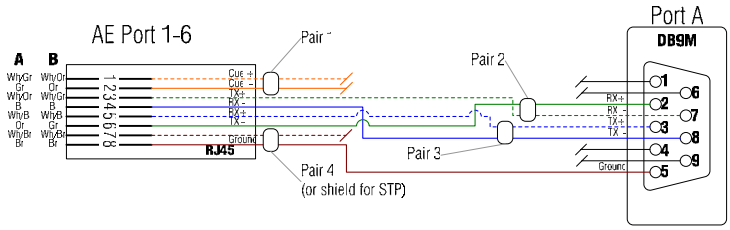


**Figure 4 - AE-C6 to Panel wiring**

## Panel to Panel

For daisy-chaining panels together, follow the same procedures as AE-C2 to Panel, listed above.

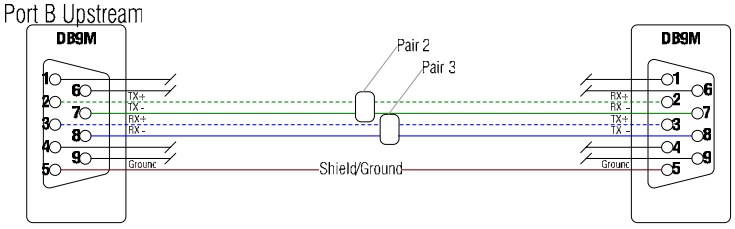


**Figure 5 - Panel to Panel wiring**

# 4 BTN-12 Panel

The *BTN-12* panel is a rack mount panel with 12 user-programmable buttons. It also features 18 GPI inputs and outputs to provide additional GPI interfacing where required.

The *BTN-12* is a basic control panel, and does not include any audio input or output. For an intercom panel, we recommend using the *COM-12* panel.

All buttons are fully programmable, and can be used for a combination of routing, intercom or other functions. The lamps in the button are a single color (red) LED, which supports solid illumination and a single flash speed.


**Figure 6 - BTN-12**

> This chapter applies to *BTN-12* models that have address wheels on the rear, and buttons in three groups of four, as shown above. For *BTN-12* units with all 12 buttons spaced equally, and no address wheels, please refer to the manual that shipped with the unit.

## Installation

The *BTN-12* is designed for mounting in a standard 19" rack, occupying 1 RU.

### Connections

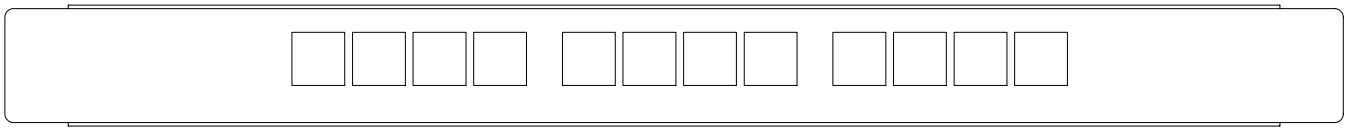

**Figure 7 - BTN-12 Front View**

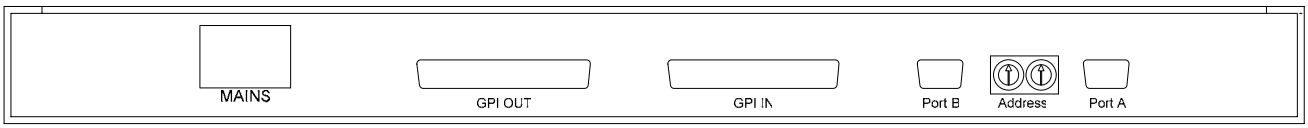


**Figure 8 - BTN-12 Rear View**

- The **MAINS** connector is an IEC style inlet connector.
- **Port A** is a DB9 female connector. This connects to the **Audio Engine**, or another upstream panel.
- **Port B** is a DB9 female connector. This connects to a downstream panel (optional).
- **GPI IN** is a DB37 female connector. This connects to the BTN-12 GPI inputs (optional).
- **GPI OUT** is a DB37 female connector. This connects to the BTN-12 GPI outputs (optional).

# Configuration

## Device Allocation

The two wheels on the back of the unit are used to set its **Device Number**. This sets the addressing between the **Utility Panel** and **Audio Engine**. The valid range is from 01 to FF, although not all addresses in this range are usable.

If the *BTN-12* will be used as a 12x1 router (or similar), we suggest that you connect it to the **Audio Engine** that is responsible for the audio the *BTN-12* is controlling, and use the **Device Number** of that **Audio Engine** Output.

As the *BTN-12* uses BUS 1-12 for its lamps, the **Device Number** allocated should not conflict with Fader or DSP Crosspoints, otherwise the BTN-12 and DSP functions will clash. Using the *BTN-12* with an output **Device Number** does not cause any conflict on a v3 **Audio Engine**.

## AEConfig

The *BTN-12* panel does not need to be shown on *AEConfig's* ***Hardware Page***, as this page is used to setup mixer surfaces that use DSP resources.

If you are using the *BTN-12* panel as an Intercom controller (with separate mic and speaker), we suggest you follow the *AEConfig* notes for the *COM-12* intercom unit. If you are using the *BTN-12* purely as a button/GPI control panel, with no associated audio, there is nothing to configure in *AEConfig*.

➥ *For more information on Engine I/O and routing, see the AEConfig User's Manual.*

## Route Mode

The *BTN-12* defaults to "GPI Mode", which sets it to send button presses and GPI closures to the Audio Engine. If **Triggers** are programmed against the relevant bus number, an event will occur. The *BTN-12* also supports "Route Mode", which turns the unit into a 12x1 Router. In this mode, each button sends the required Route command to the **Audio Engine**.

To configure for "Route Mode", you need to allocate an output in *AEConfig*, and assign up to 12 inputs ticks to that output. These will be uploaded to the *BTN-12* when it goes into **Route Mode**. The order of the inputs is alphabetical, based on the **Surface Label** assigned to the input in *AEConfig*. It is not possible to change the order of the inputs. If more flexible input assignment is required, we recommend using the 12x1 **Router Triggers** detailed in the *CommandBuilder* manual.

To use **Route Mode**, you will need to send a `BUS32 ON` command to the *BTN-12* in your **Trigger Table**. The **Init Trigger** is a good place to send that command.

## CommandBuilder Triggers

If using a *BTN-12* in Route Mode, no programming in *CommandBuilder* is necessary. If you wish to use a *BTN-12* to do anything else, you must define a set of **Triggers** in *CommandBuilder*.

Possible **Triggers** for a *BTN-12* include:

- Button (switch) **BUS ON**
- Button (switch) **BUS OFF**
- GPI Input **BUS ON**
- GPI Input **BUS OFF**

Possible Commands for a *BTN-12* include:

- Lamp **BUS ON**
- Lamp **BUS OFF**
- Lamp **FLASH**
- GPI Output **BUS ON**
- GPI Output **BUS OFF**
- GPI Output **PULSE**

The **Triggers** and **Commands** will require the following information:

1. **Audio Engine Number** (the AE the *BTN-12* is connected to).
2. **Device Number** (based on the Port and/or Address wheels on the back).
3. **Bus Number** (a list of *BTN-12* **Bus Numbers** follows in the Device & Addressing section).

Possible applications for a *BTN-12* include:

- 12x1 Route Switcher (or other combinations based on available buttons)
- Intercom / Talkback panel
- Remote start panel
- Monitoring switcher panel

➥ *For Trigger examples, refer to the CommandBuilder User's Manual Part C.*

# Operation

Operation of the *BTN-12* varies depending on its programming.

- The 12 push buttons can be used for push-to-talk, toggle or grouped push-once functions
- The *BTN-12* can also be programmed in **Route** mode, where it becomes a 12x1 router.
- The lamps in the buttons will light if programmed to do so. They can also be set to flash (single speed). In **Route** mode, a single lamp will indicate the currently routed source.

# Device & Bus Addressing

## Device Numbers

**Device** addressing is set by the number wheels on the back of the *BTN-12*. A single **Device Number** is used for both lamps and buttons, with the **Bus Number** distinguishing which is which.

## Bus Numbers

Bus numbering is fixed by the *BTN-12* firmware and is not configurable. The following **Bus Numbers** are used.

| Button/GPI | Lamp | Switch | GPI Out | GPI In |
|---|---|---|---|---|
| **1** | Bus 01 | Bus 17 | Bus 81 | Bus 49 |
| **2** | Bus 02 | Bus 18 | Bus 82 | Bus 50 |
| **3** | Bus 03 | Bus 19 | Bus 83 | Bus 51 |
| **4** | Bus 04 | Bus 20 | Bus 84 | Bus 52 |
| **5** | Bus 05 | Bus 21 | Bus 85 | Bus 53 |
| **6** | Bus 06 | Bus 22 | Bus 86 | Bus 54 |
| **7** | Bus 07 | Bus 23 | Bus 87 | Bus 55 |
| **8** | Bus 08 | Bus 24 | Bus 88 | Bus 56 |
| **9** | Bus 09 | Bus 25 | Bus 89 | Bus 57 |
| **10** | Bus 10 | Bus 26 | Bus 90 | Bus 58 |
| **11** | Bus 11 | Bus 27 | Bus 91 | Bus 59 |
| **12** | Bus 12 | Bus 28 | Bus 92 | Bus 60 |
| **13** | - | - | Bus 93 | Bus 61 |
| **14** | - | - | Bus 94 | Bus 62 |
| **15** | - | - | Bus 95 | Bus 63 |
| **16** | - | - | Bus 96 | Bus 64 |
| **17** | - | - | Bus 97 | Bus 65 |
| **18** | - | - | Bus 98 | Bus 66 |

## Commands Supported

The *BTN-12* supports the following **Logitek Protocol** commands.

**Dn** Device Number
**Bn** Bus Number
**Sc** Source Device (01xx)

| Command | Trigger Command | Example | Notes |
|---|---|---|---|
| B1 (flash) | FLASH | <02><04><B1><Dn><Bn><03> | Fully supported |
| B2 (bus on) | BUS ON | <02><03><B2><Dn><Bn> | Fully supported |
| B3 (bus off) | BUS OFF | <02><03><B3><Dn><Bn> | Fully supported |
| B4 (route) | ROUTE | <02><04><B4><Dn><01><Sc> | Must be in Route Mode |

The *BTN-12* also supports the following utility commands for setting the panel's mode, and performing other functions.

| Command | Trigger Command | Example | Notes |
|---|---|---|---|
| Clear All | BUS 33 ON | <02><03><B2><Dn><21> | Clear all LED's in the current mode, where Dn is the device number. |
| Set GPI Mode | BUS 32 OFF | <02><03><B3><Dn><20> | Select GPI mode, where Dn is the device number of the unit. |
| Set Route Mode | BUS 32 ON | <02><03><B2><Dn><20> | Select Route mode, where Dn is the device number of the unit.. |

The *BTN-12* does not support variable brightness illumination in its lamps. These will be ignored.

# Pinouts

## Port A (rear panel) – DB9F

| Pin | Connection |
|---|---|
| **1** | No connect |
| **2** | RS485 RX+ (Pair 2) |
| **3** | RS485 TX+ (Pair 3) |
| **4** | No connect |
| **5** | Ground |
| **6** | No connect |
| **7** | RS485 RX- (Pair 2) |
| **8** | RS485 TX- (Pair 3) |
| **9** | No connect |

Port A connects to AE or upstream panel

## Port B (rear panel) – DB9F

| Pin | Connection |
|---|---|
| **1** | No connect |
| **2** | RS485 TX+ (Pair 2) |
| **3** | RS485 RX+ (Pair 3) |
| **4** | No connect |
| **5** | Ground |
| **6** | No connect |
| **7** | RS485 TX- (Pair 2) |
| **8** | RS485 RX- (Pair 3) |
| **9** | No connect |

Port B connects to downstream panels

## GPI In (rear panel) – DB37F

| Pin | Connection | Pin | Connection |
|---|---|---|---|
| **1** | Input 1 | **20** | Ground |
| **2** | Input 2 | **21** | Ground |
| **3** | Input 3 | **22** | Ground |
| **4** | Input 4 | **23** | Ground |
| **5** | Input 5 | **24** | Ground |
| **6** | Input 6 | **25** | Ground |
| **7** | Input 7 | **26** | Ground |
| **8** | Input 8 | **27** | Ground |
| **9** | Input 9 | **28** | Ground |
| **10** | Input 10 | **29** | Ground |
| **11** | Input 11 | **30** | Ground |
| **12** | Input 12 | **31** | Ground |
| **13** | Input 13 | **32** | Ground |
| **14** | Input 14 | **33** | Ground |
| **15** | Input 15 | **34** | Ground |
| **16** | Input 16 | **35** | Ground |
| **17** | Input 17 | **36** | Ground |
| **18** | Input 18 | **37** | Ground |
| **19** | No Connect | | |

## GPI Out (rear panel) – DB37F

| Pin | Connection | Pin | Connection |
|---|---|---|---|
| **1** | Relay 1 | **20** | Relay 1 |
| **2** | Relay 2 | **21** | Relay 2 |
| **3** | Relay 3 | **22** | Relay 3 |
| **4** | Relay 4 | **23** | Relay 4 |
| **5** | Relay 5 | **24** | Relay 5 |
| **6** | Relay 6 | **25** | Relay 6 |
| **7** | Relay 7 | **26** | Relay 7 |
| **8** | Relay 8 | **27** | Relay 8 |
| **9** | Relay 9 | **28** | Relay 9 |
| **10** | Relay 10 | **29** | Relay 10 |
| **11** | Relay 11 | **30** | Relay 11 |
| **12** | Relay 12 | **31** | Relay 12 |
| **13** | Relay 13 | **32** | Relay 13 |
| **14** | Relay 14 | **33** | Relay 14 |
| **15** | Relay 15 | **34** | Relay 15 |
| **16** | Relay 16 | **35** | Relay 16 |
| **17** | Relay 17 | **36** | Relay 17 |
| **18** | Relay 18 | **37** | Relay 18 |
| **19** | No Connect | | |

# Specifications

## General

**Dimensions** 19″ W x 1.75″ H x 7.5″ D (482.6 mm x 44.5 mm x 190.5 mm)
Occupies 1 RU rack space
**Power Supply** 110 - 230 VAC, 50/60 Hz, 15 W. Input voltage is switch selectable inside unit.

## GPI Inputs

Number 18
Interface Rear panel DB37 Female
**Type** Input+ pins are driven to 5 VDC through a 10K ohm resistor. Pull to ground to activate.

## GPI Outputs

Number 18
Interface Rear panel DB37 Female
**Type** Relays have a single pole, single throw contact rated at a maximum of 50VDC @ 500 mA

## Control

**Buttons** 12 lighted buttons with legend holding caps
**Lamps** Integrated into button, supports solid illumination and one flash speed
**Comms** 2 COM ports, RS485
Multiple units can be daisy chained together

# 5 COM-12 Panel

The *COM-12* panel is a rack mount intercom unit. It features an internal mic pre-amp and speaker, with a front-mounted XLR for connection of your choice of intercom mic. The *COM-12* front panel buttons are arranged in two rows of 6.

All buttons are fully programmable, and can be used for a combination of intercom, routing, or other functions. The lamps in the button are a single color (red) LED, which supports solid illumination and three flash speeds.

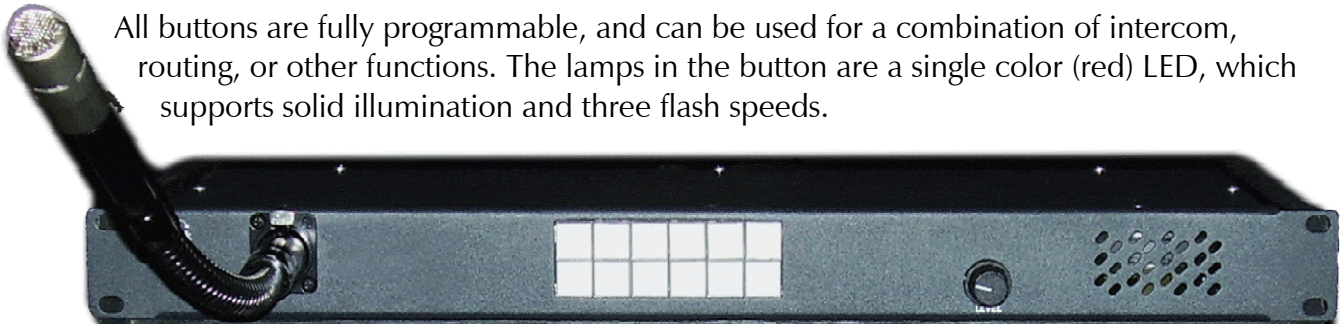

**Figure 9 - COM-12 with optional AKG D58E and Boom Arm**

## Installation

The *COM-12* is designed for mounting in a standard 19″ rack, occupying 1 RU.

### Connections

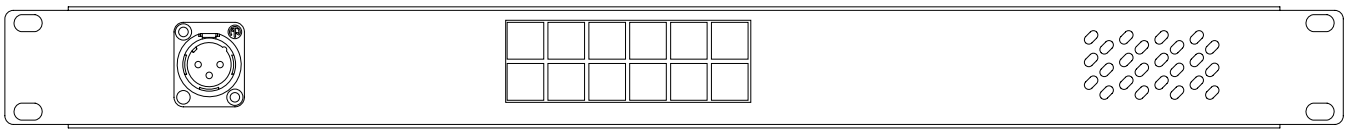

**Figure 10 - COM-12 Front View**

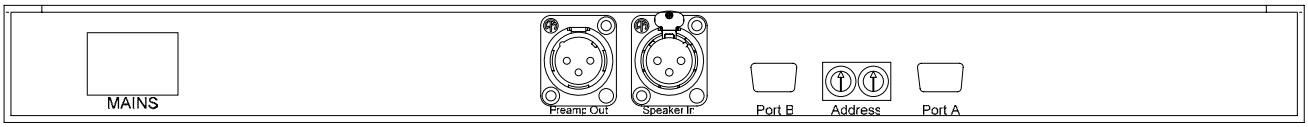


**Figure 11 - COM-12 Rear View**

- The **MAINS** connector is an IEC style inlet connector.
- **Port A** is a DB9 female connector. This connects to the **Audio Engine**, or an upstream panel.
- **Port B** is a DB9 female connector. This connects to a downstream panel (optional).
- **Preamp Out** is a male XLR connector. This is a line level output of the internal mic preamp.
- **Speaker In** is a female XLR connector. This is a line level input to the speaker amp.
- The front panel has a female XLR connector for attaching a microphone. As the type of microphone depends on user preference, this is not included. The *COM-12* accepts a dynamic microphone, with an adjustable gain control.

### Microphone

A dynamic microphone is required for the front panel. Any dynamic intercom type of microphone should provide acceptable results. The *COM-12* has been tested with an AKG D58E microphone.

# Configuration

## Device Allocation

The two wheels on the back of the unit are used to set its **Device Number**. This sets the addressing between the **Utility Panel** and the **Audio Engine**. The valid range is from 01 to FF, although not all addresses in this range are usable. For a *COM-12*, we suggest that you connect it to the **Audio Engine** that is responsible for the audio to/from the *COM-12*, and use the **Device Number** of the **Audio Engine** Output that feeds the *COM-12's* intercom input.

## Gain Control

The gain pot on the rear of the panel is used to set the mic pre-amp gain. A small screwdriver can be used to make adjustments. For consistency between multiple COM-12 panels, you may wish to inject tone at a mic level that reflects the sensitivity of the mic in use, and adjust to suit.

Gain can also be adjusted at the **Audio Engine** inputs and outputs, however it is always better to ensure the *COM-12* is within acceptable range first. The front panel of the *COM-12* has a speaker volume allowing the user to adjust the incoming level.

## AEConfig

The *COM-12* panel does not need to be shown on *AEConfig's* ***Hardware Page***, as this page is used to setup mixer surfaces that use DSP resources. The *COM-12* uses output routes and not DSP mixing.

The *COM-12* will require a mono **Input** and **Output** on an Analog IO card. For example, if the *COM-12* is used in a Master Control Room, the following naming could be used:

| Label | Unique Name |
|---|---|
| MCR Mic | MCR Talkback Mic |
| MCR T/B | MCR Talkback Output |

In a multi-engine system, the Intercom Mic input should be allocated to the **Fibre Network** so that intercom audio can be routed to any **Audio Engine**.

The output can be allocated no source on the ***Surface Settings*** page, or a default "silence" source if one is used. On a version 3.x and above **Audio Engine**, intercom audio to the *COM-12* can be routed directly to the **Output** that feeds it, or a DSP Crosspoint can be used. The latter provides for gain control, and audio processing if DSP crosspoints on a *SharcAttack* DSP card are available. In common practice, routing directly to the **Output** is usually sufficient, and the most simple option.

➥ *For more information on Engine I/O and routing, see the AEConfig User's Manual.*

## CommandBuilder Triggers

A *COM-12* requires **Triggers** to perform the desired functions. These are scripted in *CommandBuilder* then uploaded and executed by *Supervisor*.

The exact **Triggers** written for a *COM-12* depend on required functionality. As the *COM-12* is primarily designed as an Intercom panel, we suggest you review the Intercom examples in the *CommandBuilder* manual.

Possible **Triggers** for a *COM-12* include:

- Button (switch) **BUS ON**
- Button (switch) **BUS OFF**

Possible **Commands** for a *COM-12* include:

- Lamp **BUS ON**
- Lamp **BUS OFF**
- Lamp **FLASH**

The **Triggers** and **Commands** will require the following information:

1. **Audio Engine Number** (the AE the *COM-12* is connected to).
2. **Device Number** (based on the **Port** and/or **Address** wheels on the back).
3. **Bus Number** (a list of *COM-12* **Bus Numbers** follows in the Device & Addressing section).

Whilst the *COM-12* is designed to be an Intercom/Talkback panel, available buttons can still be programmed to perform other tasks, such as:

- Route switching
- Remote starts
- Monitoring switching
- Delay control

➥ ***For detailed Trigger examples, refer to the CommandBuilder User's Manual Part C.***

# Operation

Operation of the *COM-12* varies depending on its programming:

- The 12 push buttons can be used for push-to-talk, toggle or grouped push-once functions
- Lamps will light if programmed to do so. They can also flash in three different speeds.
- The front-panel volume control can be used to adjust the incoming audio level.

# Device & Bus Addressing

## Device Numbers

**Device** addressing is set by the number wheels on the back of the *COM-12*. A single **Device Number** is used for both lamps and buttons, with the **Bus Number** distinguishing which is which.

## Bus Numbers

Bus numbering is fixed by the *COM-12* firmware and is not configurable. The following **Bus Numbers** are used. Buttons are left to right, 1-6 on the top row, and 7-12 on the bottom row.

| Button | Switch | Lamp |
|---|---|---|
| **1** | Bus 51 | Bus 31 |
| **2** | Bus 52 | Bus 32 |
| **3** | Bus 53 | Bus 33 |
| **4** | Bus 54 | Bus 34 |
| **5** | Bus 55 | Bus 35 |
| **6** | Bus 56 | Bus 36 |
| **7** | Bus 57 | Bus 37 |
| **8** | Bus 58 | Bus 38 |
| **9** | Bus 59 | Bus 39 |
| **10** | Bus 60 | Bus 40 |
| **11** | Bus 61 | Bus 41 |
| **12** | Bus 62 | Bus 42 |

## Commands Supported

The *COM-12* supports the following **Logitek Protocol** commands.

**Dn** Device Number
**Bn** Bus Number
**Fr** Flash Rate (02= slow, 03 = medium, 05 = fast)
**Fn** Flash Number (01-255, 00 = continuous).

| Command | Trigger Command | Example | Notes |
|---|---|---|---|
| B1 (flash) | FLASH | <02><04><B1><Dn><Bn><Fr><br><02><05><B1><Dn><Bn><Fr><Fn> | Supported in v1.3<br>Not supported as yet * |
| B2 (bus on) | BUS ON | <02><03><B2><Dn><Bn> | Fully supported |
| B3 (bus off) | BUS OFF | <02><03><B3><Dn><Bn> | Fully supported |

* Where a 5-byte B1 is sent, the COM-12 v1.3 will use the flash rate but ignore flash number.

The *COM-12* does not support variable brightness illumination in its lamps. These will be ignored.

# Pinouts

## Port A (rear panel) – DB9F

| Pin | Connection |
|---|---|
| 1 | No connect |
| 2 | RS485 RX+ (Pair 2) |
| 3 | RS485 TX+ (Pair 3) |
| 4 | No connect |
| 5 | Ground |
| 6 | No connect |
| 7 | RS485 RX- (Pair 2) |
| 8 | RS485 TX- (Pair 3) |
| 9 | No connect |

Port A connects to AE or upstream panel

## Port B (rear panel) – DB9F

| Pin | Connection |
|---|---|
| 1 | No connect |
| 2 | RS485 TX+ (Pair 2) |
| 3 | RS485 RX+ (Pair 3) |
| 4 | No connect |
| 5 | Ground |
| 6 | No connect |
| 7 | RS485 TX- (Pair 2) |
| 8 | RS485 RX- (Pair 3) |
| 9 | No connect |

Port B connects to downstream panels

## Preamp Out (rear panel) – XLR M

| Pin | Connection |
|---|---|
| 1 | Ground |
| 2 | Hot |
| 3 | Cold |

Line Level

## Speaker In (rear panel) – XLR F

| Pin | Connection |
|---|---|
| 1 | Ground |
| 2 | Hot |
| 3 | Cold |

Line Level

## Mic In (front panel) – XLR F

| Pin | Connection |
|---|---|
| 1 | Ground |
| 2 | Hot |
| 3 | Cold |

Mic Level

# Specifications

## General

**Dimensions** 19″ W x 1.75″ H x 7.5″ D (482.6 mm x 44.5 mm x 190.5 mm)
Occupies 1 RU rack space
**Power Supply** 110 - 230 VAC, 50/60 Hz, 15 W

## Audio Input for Speaker

**Connector** Female XLR
**Configuration** Active Balanced
**Level** 0 dBu normal, +24 dBu max
**Impedance** 25 K Ohms

## Audio Output from Microphone

**Connector** Male XLR
**Configuration** Active Balanced
**Level** 0 dBu normal, +24 dBu max
**Impedance** 10 Ohms

## Control

**Buttons** 12 lighted buttons with legend holding caps
**Lamps** Integrated into button, supports solid illumination and three flash speeds
**Comms** 2 COM ports, RS485
Multiple units can be daisy chained together

# 6 RTE-3 & RTE-XY

The *RTE-3* and *RTE-XY* panels provide routing control for an **Audio Engine**. These are commonly implemented as studio record source selectors, or MCR utility routers.

The *RTE-3* allows access to 3 output selections, while the *RTE-XY* can control all outputs on a single **Audio Engine**. Both are configurable in *AEConfig* to only allow certain sources or destinations.

A backlit LCD screen shows the user the current routes, with user-configurable labels. Both models share the same physical hardware, although firmware and front panel printing distinguish their operation.


**Figure 12 - RTE-3**


**Figure 13 - RTE-XY**

## Installation

The *RTE-3* and *RTE-XY* are designed for mounting in a standard 19″ rack, occupying 1 RU.

### Connections

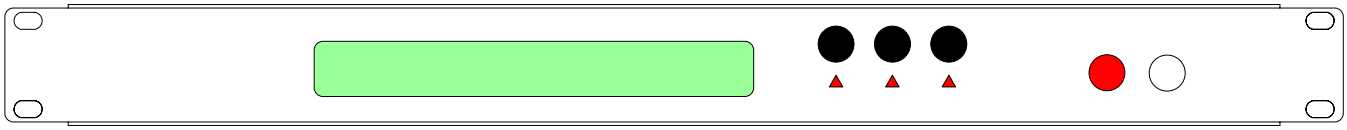

**Figure 14 - RTE-3 & RTE-XY Front View**


**Figure 15 - RTE-3 & RTE-XY Rear View**

- The **MAINS** connector is an IEC style inlet connector.
- **Port A** is a DB9 female connector. This connects to the **Audio Engine**, or another upstream panel.
- **Port B** is a DB9 female connector. This connects to a downstream panel (optional).

# Configuration

## Device Allocation

The two wheels on the back of the unit are used to set its **Device Number**. This sets the addressing between the **Utility Panel** and **Audio Engine**. The valid range is from 01 to FF.

### RTE-3 Device Allocation

The *RTE-3* supports two methods of device allocation:

- Using DSP Crosspoints on Audio Engine Port 1, 2 or 3
- Using output routes on any Audio Engine Port (older units may require firmware update)

| Feature | Crosspoint mode | Output mode |
|---|---|---|
| Allowed Ports | 1, 2 or 3 (AE-C2 & AE-C6) | 1-3 (AE-C2) / 1-6 (AE-C6) |
| Source allocation list | Set in AEConfig Surface Settings for Port 1, 2 or 3. Must be setup in Hardware Page. | Set in AEConfig Surface Settings ➢ Output Selections. Don't show on Hardware Page. |
| Address settings | Set Device Number to match Crosspoints on Surface Settings Tab (eg 01 for first panel, 04 for second panel, etc). | Set Device Number to match first output in AEConfig. Three outputs must have sequential Device Numbers in AEConfig output page. |
| Number of Panels per port | Limited by available Crosspoints | Limited by available outputs |
| DSP Options | Can set Crosspoint gain & mode in Supervisor or Triggers | No DSP – only output routing |
| Feed Crosspoint to multiple outputs | Yes – DSP Crosspoint can be assigned to multiple I/O card outputs | No |
| Feed Crosspoint to fiber network | Yes – allocate DSP Crosspoint to NetA output | No |

Output routing provides a simple way to configure the Route 3. In this mode, any port may be used (provided no surface is shown in *AEConfig* for this port), and any number of panels may be daisy chained. If you are unsure, this is the recommended configuration.

DSP Crosspoints provide some additional features, such as the ability to use audio processing on a Crosspoint, allocate a Crosspoint to multiple outputs, or switch an output to the fiber-network *NetA* card.

### RTE-XY Device Allocation

The *RTE-XY* provides access to any number of destinations on a particular **Audio Engine**. It can be allocated any **Device Number** that corresponds to an output route in *AEConfig*. As *AEConfig* can be used to set the allowed destinations for a *RTE-XY* panel, we suggest allocating an output **Device Number** that relates to the *RTE-XY* (eg a Monitoring output).

🎧 TIP: The ability to allow only specified destinations on a *RTE-XY* requires a version of *AEConfig* dated May 2005 or later, and v3.3 or later of the *RTE-XY*. In prior versions or either *AEConfig* or *RTE-XY* software, the panel has access to all destinations.

## AEConfig Configuration

To setup a *RTE-3* using **DSP Crosspoints**:

1. On the *AEConfig* ***Hardware Config*** page, allocate a "Router" to Port 1, 2 or 3.
2. Go to the *AEConfig* ***Surface Settings*** page and select the port you allocated in Step 1.
3. You will now see a series of available **DSP Crosspoints**, labeled "CP1 St" and so on.
4. The *RTE-3* **Device Number** should be allocated to available **DSP Crosspoints** on this port. For example, setting the wheels to "01" will tell the *RTE-3* to use **Crosspoints** 1-3. Please note, some higher numbered **Crosspoints** are mono only.
5. Additional panels can be allocated **Device Numbers** and **Crosspoints** as per step 4.
6. You can now allocate the allowed **Source** ticks to each of the **Crosspoints** as required.
7. Go to the *AEConfig* ***Surface Settings*** page and select the page for the port you are using.
8. The **DSP Crosspoints** used above can now be allocated to the desired audio outputs. It is possible to allocate these to *NetA* channels if required. This assumes you have already added the required outputs to your config. See the screenshot below for tick mark examples.
9. Once your settings have been made, your new config can be uploaded to the **Audio Engine**.

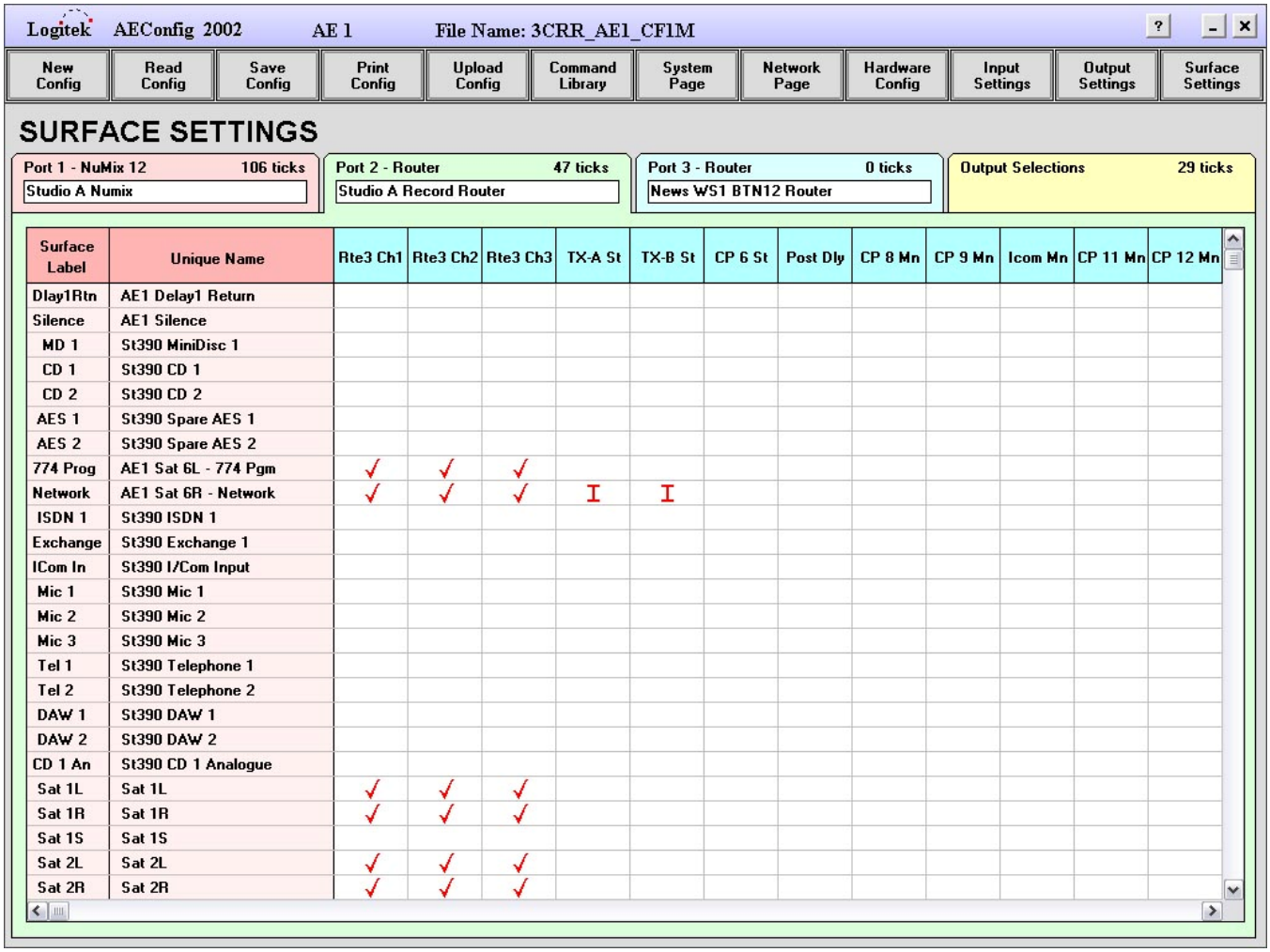


**Figure 16 - AEConfig showing Output Selections for Router Surface**

To setup a *RTE-3* using **Output Routes**:

1. On the *AEConfig* ***Hardware Config*** page, ensure no surface is allocated to the port you will be using for the *RTE-3*.
2. Go to the *AEConfig* ***Outputs*** page. The outputs for each *RTE-3* should be added in order, so that they receive sequential **Device Numbers**.
3. The *RTE-3* **Device Number** should be set to the **Device Number** of the first output of the group. For example, setting the wheels to "6E" will tell the *RTE-3* to control outputs 6E, 6F and 70. The **Device Number** can be viewed by editing the ***Output*** line.
4. Go to the *AEConfig* ***Surface Settings*** page and select the ***Output Selections*** page.
5. You can now allocate the allowed **Source** ticks to each of the ***Outputs*** as required. The **Audio Engine** only supports routing to I/O card outputs – you cannot route to *NetA* channels using this method. See the screenshot below for tick mark examples.
6. Additional panels can be added by repeating Steps 1-5.
7. Once your settings have been made, your new config can be uploaded to the **Audio Engine**.

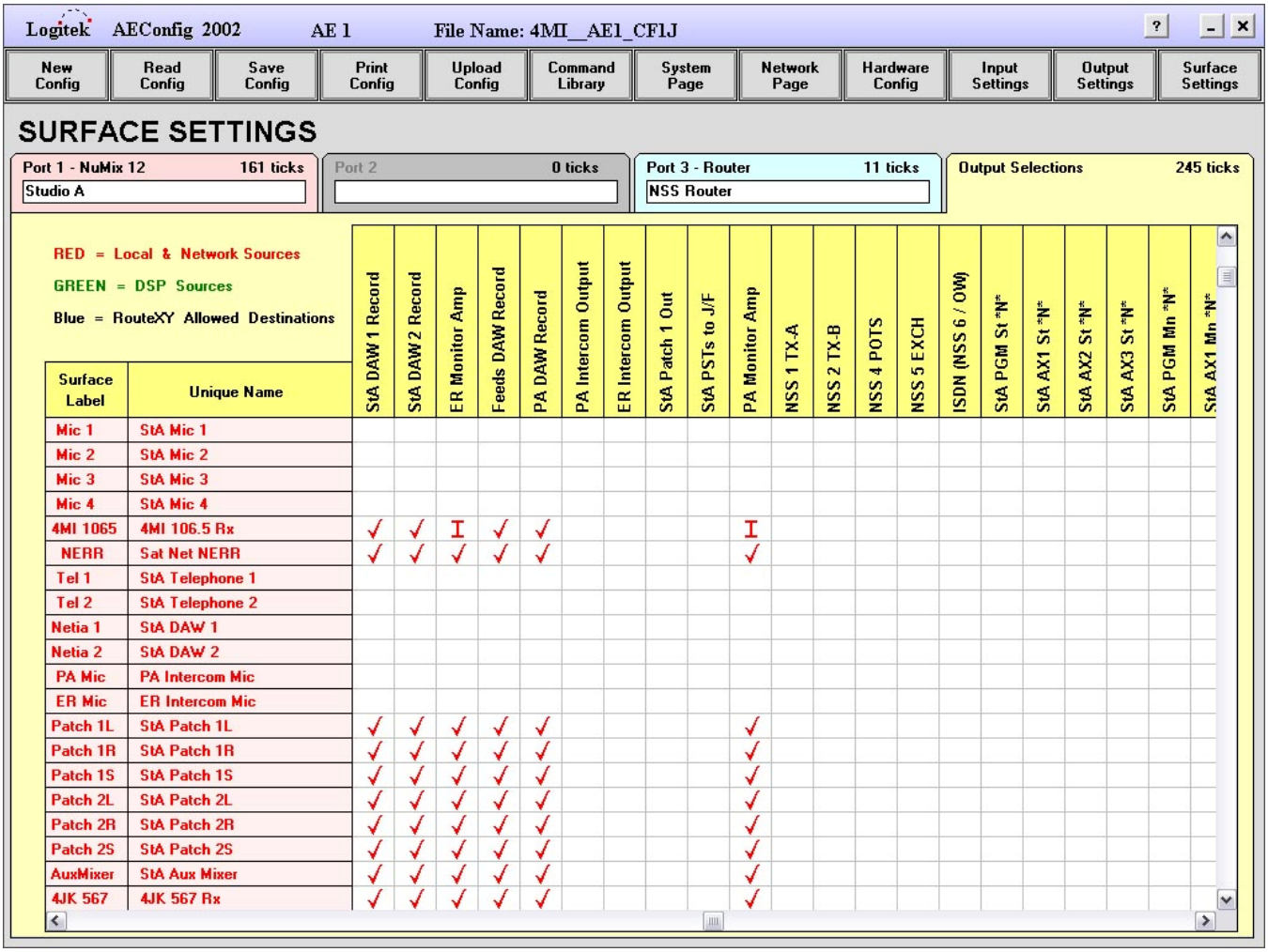


**Figure 17 - AEConfig Output Selections for output destination.**

To setup a *RTE-XY*:

1. On the *AEConfig* ***Hardware Config*** page, ensure no surface is allocated on the port you will be using for the *RTE-XY*. On an *AE-C6* card you can use Ports 4, 5, or 6 if desired.
2. The *RTE-XY* **Device Number** should be set to the **Device Number** of a relevant/related **Output** (eg a nearby monitoring point). This **Output's** column is used to set the allowed **Destinations** for that *RTE-XY* panel.
3. Set the *RTE-XY* wheels to match the output's **Device Number** (see ***Output Settings*** page).
4. Go to *AEConfig* ***Surface Settings*** and select the ***Output Selections*** page.
5. At the bottom of the grid you will see a blue section listing all **Destination** rows. Find the relevant *RTE-XY* **Output** column, then place tick marks for each allowed **Destination**. An allowed **Destination** is indicated by a tick surrounded by the letters "X" and "Y".
6. The allowed **Sources** for each **Destination** are set by the red/green ticks in the top section. **Sources** should be allowed by placing a tick in the column for each required **Destination**.
7. Additional panels can be added by repeating Steps 1-4. Each *RTE-XY* panel requires its own output **Device Number**, so its allowed **Destinations** can be independently set in *AEConfig*.
8. Once your settings have been made, your new config can be uploaded to the **Audio Engine**.

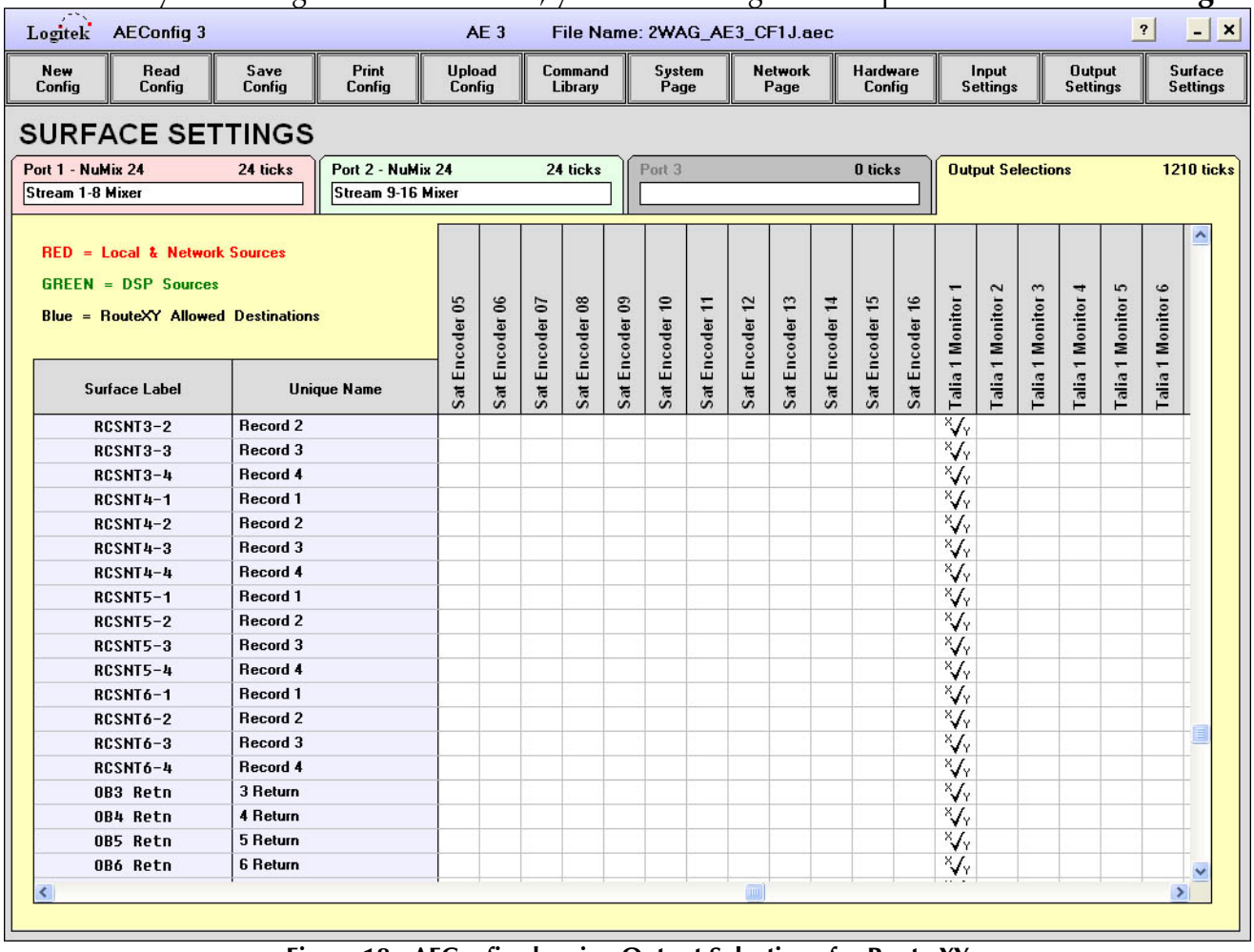


**Figure 18 - AEConfig showing Output Selections for Route XY**

➥ *For more information on Engine I/O and routing, see the AEConfig User's Manual.*

### CommandBuilder Triggers

The *RTE-3* and *RTE-XY* do not require **Triggers** to be programmed. In addition to audio routing, the *RTE-3* can be used to present question screens to the user.

➥ *See the CommandBuilder User's Manual for information on question screens.*

# Operation

### Route 3 (RTE-3)

- Press the CH1, CH2, or CH3 button to edit the required destination.
- Use the ***SELECT*** wheel to choose the desired input.
- Press the ***TAKE*** button to confirm and perform the route.

### Route XY (RTE-XY)

The Route XY has three modes of operation:

1. ***Locked*** – all front panel control is disabled (except for unlock function).
2. ***View*** – allows the route selections to be viewed but not changed.
3. ***Change*** – full view and change permissions.

To change the Route XY mode:

- Press the ***MODE*** button
- Use the ***SELECT*** wheel to choose the desired mode
- Press ***CONFIRM*** to accept the new mode

The view a route:

- Select ***VIEW*** or ***CHANGE*** mode (as above)
- Press the ***DEST*** button
- Use the ***SELECT*** wheel to cycle through the allowed destinations
- The source will be displayed on screen as you move through the list

The change a route:

- Select ***CHANGE*** mode (as above)
- Press the ***DEST*** button
- Use the ***SELECT*** wheel to cycle through to the desired destination
- Press the ***SOURCE*** button
- Use the ***SELECT*** wheel to cycle through to the desired source
- Press the ***CONFIRM*** button to perform the route

# Device & Bus Addressing

## Device Numbers

**Device** addressing is set by the number wheels on the back of the *RTE-3* or *RTE-XY*.

For a *RTE-3*, the **Device Number** on the wheels sets the CH1 router. CH2 and CH3 use the next consecutive **Device Numbers**. When using output routing in *AEConfig*, you must setup the 3 outputs to be used on the *RTE-3* in order, so that *AEConfig* allocates consecutive Device Numbers.

## Bus Numbers

The *RTE-3* and *RTE-XY* do not utilize bus numbers for route control.

## Commands Supported

The *RTE-3* and *RTE-XY* support the following **Logitek Protocol** commands.

**Dn** Device Number
**Bs** Bus Number
**Sd** Source Device (01xx)

| Command | Trigger Command | Example | Notes |
|---|---|---|---|
| B4 (route) | ROUTE | <03><B4><Dn><01><Sd> | Device Number determined by which channel is being routed. |

# Pinouts

## Port A (rear panel) – DB9F

| Pin | Connection |
|---|---|
| **1** | No connect |
| **2** | RS485 RX+ (Pair 2) |
| **3** | RS485 TX+ (Pair 3) |
| **4** | No connect |
| **5** | Ground |
| **6** | No connect |
| **7** | RS485 RX- (Pair 2) |
| **8** | RS485 TX- (Pair 3) |
| **9** | No connect |

Port A connects to AE or upstream panel

## Port B (rear panel) – DB9F

| Pin | Connection |
|---|---|
| **1** | No connect |
| **2** | RS485 TX+ (Pair 2) |
| **3** | RS485 RX+ (Pair 3) |
| **4** | No connect |
| **5** | Ground |
| **6** | No connect |
| **7** | RS485 TX- (Pair 2) |
| **8** | RS485 RX- (Pair 3) |
| **9** | No connect |

Port B connects to downstream panels

# Specifications

## General

**Dimensions** 19″ W x 1.75″ H x 7.5″ D (482.6 mm x 44.5 mm x 190.5 mm)
Occupies 1 RU rack space

**Power Supply** 110 - 230 VAC, 50/60 Hz, 15 W

## Control

**Selection** 3 destination/mode buttons, selection wheel, take button

**Display** Backlit LCD display, showing route selections and user information

**Comms** 2 COM ports, RS485
Multiple units can be daisy chained together

# 7 Guest Headphone Panels

**Guest Headphone Panels** enable guests and on-air talent to have their own control over headphone routing and their microphone. In addition, optional button panels can be used to allow talent access to producer/remote talkback and other functions.

The *GST-22* panel provides a backlit LCD panel which displays headphone routing, volume, and a talk timer. The *GST-22* also includes an internal headphone amplifier and volume control, plus on, off and mute controls for the guest's microphone. The headphone amplifier output is available on a standard front panel socket, and via the rear panel connector. A GPI output is also included on the rear panel, to drive an external mic-on indicator.

The *GST-20* is a 1RU rack mount self-powered version of the *GST-22*.

### Guest Headphone Panel Options

- *GST-20* 1RU rack mount guest panel, with internal power supply
- *GST-21* Power Supply (wall mount) for up to 6 x *GST-22*
- *GST-22* Desk Mount Headphone Panels
- *GST-23* Remote Desktop Button Panels for *GST-22* or *GST-20*

## Installation

### GST-20

The *GST-20* is designed for mounting in a 19" rack, occupying 1RU. It has its own internal power supply. The *GST-20* is an alternative to the *GST-22* for stations with little desktop space, but available table-top rack space.

### GST-21/22

The *GST-22* panel is designed for mounting in the studio furniture, where the guests will be able to easily access it. We recommend you do not make furniture cutouts until you have had a chance to examine the size and desired panel location. As the unit will protrude below the desktop, care in placement is required to avoid the panel encroaching into guest legroom and furniture joinery.

The *GST-22* panels requires power from the *GST-21* (wall mount) power supply. Up to 6 panels can be powered per power supply, so one per studio is recommended.

### GST-23

The *GST-23* remote button panel connects to a *GST-20* or *GST-22*. This remote panel provides user-programmable functions, such as remote machine control, or talkback. This is a table-top panel that can be moved around to suit. The *GST-23* has six illuminated push buttons.

## Cutout

The *GST-22* is designed for mounting in the studio furniture. The required cutout is 2.5in (63.5mm) x 7.40in (188mm) as shown below. The total depth of the *GST-22* is 3.0in (76.2mm).

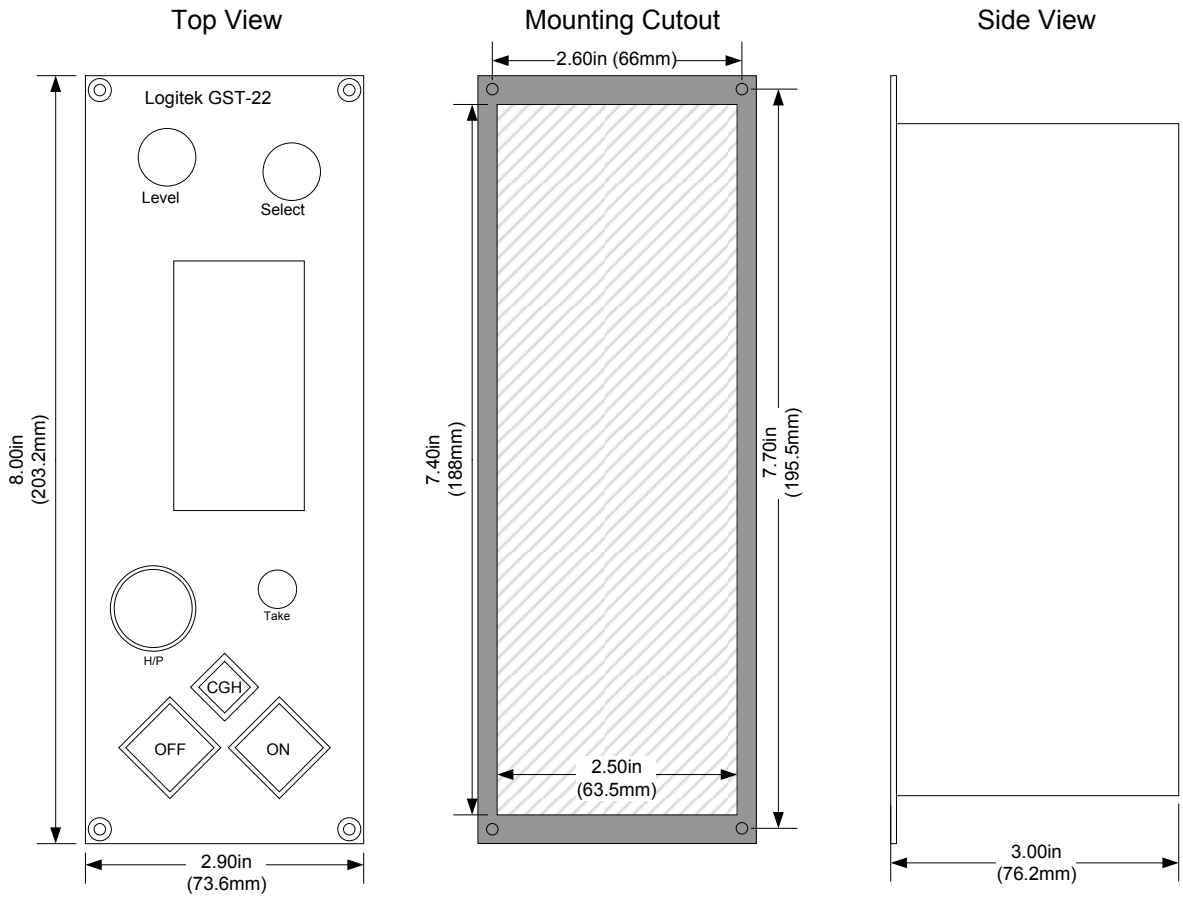


**Figure 19 - GST-22 Mounting Cutout**

## Connections

Following is an example of **Guest Panel** wiring. Note that the *GST-20* has its own internal PSU, and the *GST-22* panels require an upstream *GST-21* power supply. The GST-23 remote button panel is optional. Audio cabling is not shown (see pinouts later in this chapter).
One *GST-21* power supply per studio is recommended.

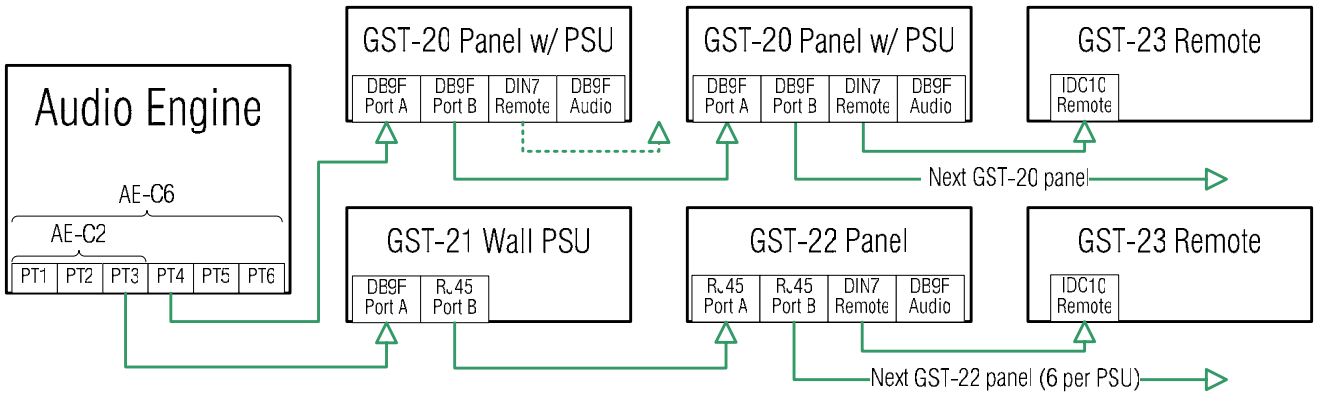


**Figure 20 - Guest Panel Wiring example**

- The **Audio Engine** connects to a *GST-21* Port A, or the first *GST-20*. Any available port on the **Audio Engine's** *AE-C2* or *AE-C6* card can be used. The port should be on the same **Audio Engine** as the audio outputs.
- Port B of a *GST-20* connects to Port A of the next *GST-20* panel.
- Port B of the *GST-21* connects to Port A of the first *GST-22* panel.
- Port B of the *GST-22* panel connects to Port A of the next *GST-22*, for a total of 6 per PSU.
- The DIN7 remote on a *GST-20* PSU or *GST-22* panel is connected to a *GST-23* remote.
- The DB9F audio connection on the *GST-20* and *GST-22* panels should be connected to an analog audio output from the **Audio Engine**. One stereo analog output is required per *GST-20* or *GST-22* panel.
- The DB9F audio connection also contains an output tally, which can be used to drive an external mic on indicator.
- The **MAINS** connector (not shown) on the *GST-20* and *GST-21* is an IEC style inlet.
- The **H/P** connector (not shown) contains the amplifier output. This is also available on the DB9F audio connection (for using own connectors).
- It is possible to use a mixture of *GST-20* and *GST-22* panels. The *GST-20* should be first in the chain, followed by *GST-21* PSU and *GST-22* panels.

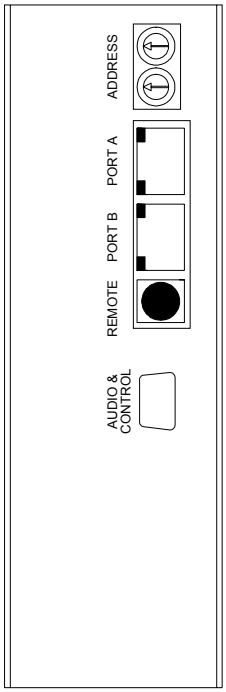


**Figure 21 - GST-22 Rear View**

# Configuration

## Device Allocation

The two wheels on the back of the *GST-20* & *GST-22* unit are used to set its **Device Number**. This sets the addressing between the **Utility Panel** and **Audio Engine**. The valid range is from 01 to FF, although not all addresses in this range are usable. For guest panels, we suggest you connect them to the **Audio Engine** that is responsible for the audio to the guest positions in that studio. The **Device Number** for each should match the **Audio Engine** Output that feeds the panel audio input.

## AEConfig

The guest panels do not need to be shown on *AEConfig's* ***Hardware Page***, as this page is used to setup mixer surfaces that use DSP resources. Guest panels use output routes and not DSP mixing.

Each *GST-20/22* on and **Audio Engine** will require a stereo **Output** on an Analog IO card. As each panel has the ability to control the audio output routed to it, one **Output** per panel is recommended. If guest-controlled routing is not required, you can feed all the panels in a studio off a single output that is selected to the "Studio Out" in pre-fader mode. Then the main studio console has sole control of the audio to all guest panels.

The *GST-20* & *GST-22* will display the **Surface Label** of the **Output** that is assigned its **Device Number**. For this reason, the **Output** must be named with the panel display in mind, and the **Device Number** of the panel should match the **Output Device Number** it receives.

For maximum usability, we suggest setting the **Output's Surface Label** to the name of the relevant microphone, as in the following example. Customize the label to suit your mic naming conventions:

| Label | Unique Name |
|---|---|
| Gst Mic2 | StA Guest 1 H/P |
| Gst Mic3 | StA Guest 2 H/P |

In a 16-character Engine, you can display a label with 2 lines of 8 characters.

In *AEConfig*, the **Output** should be allocated the allowed sources on the ***Surface Settings*** page.

If you do not want the guest to have control over the audio source, simply allocate the required single source using the *AEConfig* "I" beam tick. In this situation, you would usually use the relevant "Studio Out" for that studio's **Audio Engine** port, and set the **Studio Out** to pre-fader. This allows the studio console to control the source, and toggle the insertion of **Talkback Return**.

➥ ***For more information on Engine I/O and routing, see the AEConfig User's Manual.***

## CommandBuilder Triggers

The audio and routing functions of the guest panel are established in *AEConfig*. However, the buttons and lamps must be programmed to your requirements using *CommandBuilder*.

The exact **Triggers** written for a guest panel depend on required functionality. The *CommandBuilder* manual includes an entire chapter of useful examples for the *GST-20/22*.

Possible **Triggers** for a *GST-20, GST-22* & *GST-23* include:

- Button (switch) **BUS ON**
- Button (switch) **BUS OFF**

Possible **Commands** for a *GST-20 & GST-22* include:

- Lamp **BUS ON**
- Lamp **BUS OFF**
- Output Tally **BUS ON**
- Timer on/run/reset **BUS ON**
- Timer off/stop **BUS OFF**

Possible **Commands** for a *GST-23* include:

- Lamp **BUS ON**
- Lamp **BUS OFF**

The **Triggers** and **Commands** will require the following information:

1. **Audio Engine Number** (the AE the guest panel is connected to).
2. **Device Number** (based on the **Address** wheels on the back) –this can be specified using the **Device Name** of the **Output**, and *CommandBuilder* will look it up in the config file.
3. **Bus Number** (a list of **Bus Numbers** follows in the Device & Addressing section).

Functionality of the *GST-23* button panel is determined by user requirements. A common use is intercom/talkback for on-air talent. If using a *GST-23* in this fashion we suggest you review the Intercom examples in the *CommandBuilder* manual, and apply the same intercom functionality and operation as the rest of your facility.

➥ *For detailed Trigger examples, refer to the CommandBuilder User's Manual Part C.*

🎧TIP: The *GST-20* and *GST-22* have an Output Tally (solid state relay to ground and +12 VDC 100 mA) available for controlling an external "mic on" lamp or other device. To use this tally, your Triggers must turn on BUS20 of the *GST-20/22* when desired, eg in the Trigger that lights the ON lamp.

# Operation

Operation of the *GST-22* is generally as follows:
(some functionality depends on **Trigger** programming)

- H/P LEVEL controls internal amplifier gain to the headphones.
- The SELECT WHEEL is used to scroll through the available inputs, depending on what has been allowed in AEConfig.
- The white button functions as either TAKE or SWAP. The display above the button shows the current function. TAKE is used to accept a selected input. SWAP is used to toggle between the current and last used input.
- The current input is displayed closest to the SWAP button, with the last used input above it. An optional timer display will show how long the mic has been turned on. The H/P level and guest/mic position label are displayed at the top of the screen.
- The H/P socket takes a standard ¼" (6.35mm) jack. The socket is recessed and protected by a plastic guard.
- The MUTE, ON and OFF buttons and their respective lamps may or may not function, depending on your Triggers. Usually, these are programmed to control the microphone at that guest position.

Operation of the *GST-20* (not shown) is similar.
Operation of the *GST-23* (not shown) depends on user configuration.

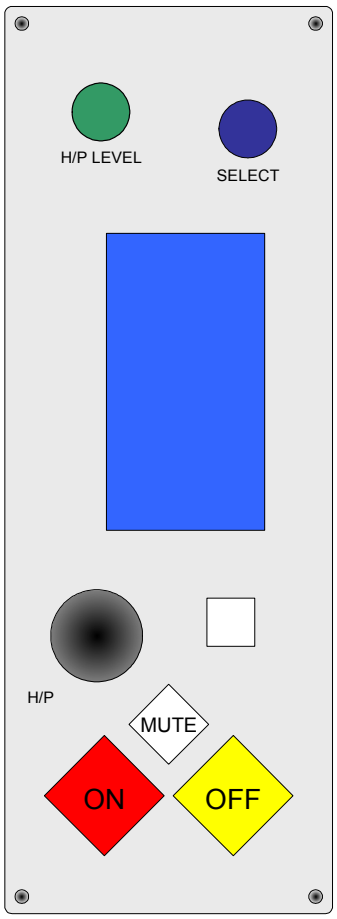


**Figure 22 - GST-22 Front View**

# Device & Bus Addressing

## Device Numbers

**Device** addressing is set by the number wheels on the back of the *GST-20/22*. A single **Device Number** is used for both lamps and buttons, with the **Bus Number** distinguishing which is which.

## Bus Numbers

Bus numbering is fixed by the *GST-20/22* firmware and is not configurable. The following **Bus Numbers** are used.

| Button | Switch | Lamp |
|---|---|---|
| **ON** | Bus 31 | Bus 11 |
| **OFF** | Bus 32 | Bus 12 |
| **MUTE** | Bus 33 | Bus 13 |
| **TALLY** | | Bus 20 |

| Function | Bus |
|---|---|
| **Timer Display** | Bus 21 |
| **Timer Run** | Bus 22 |
| **Timer Reset** | Bus 23 |

The following Bus Numbers are used for the *GST-23* Button Panel:

| Button | Switch | Lamp |
|---|---|---|
| **1** | Bus 34 | Bus 14 |
| **2** | Bus 35 | Bus 15 |
| **3** | Bus 36 | Bus 16 |

| Button | Switch | Lamp |
|---|---|---|
| **4** | Bus 37 | Bus 17 |
| **5** | Bus 38 | Bus 18 |
| **6** | Bus 39 | Bus 19 |

## Commands Supported

The *GST-20* & *GST-22* supports the following **Logitek Protocol** commands.
Note the *GST-23* is simply a remote panel which does not communicate using the **Logitek Protocol**.

**Dn** Device Number
**Bn** Bus Number
**Fr** Flash Rate (02= slow, 03 = medium, 05 = fast)
**Fn** Flash Number (01-255, 00 = continuous).

| Command | Trigger Command | Example | Notes |
|---|---|---|---|
| B2 (bus on) | BUS ON | <02><03><B2><Dn><Bn> | Fully supported |
| B3 (bus off) | BUS OFF | <02><03><B3><Dn><Bn> | Fully supported |

# Pinouts

## GST-20 (1RU w/ Power Supply)

Following are the pinouts for the *GST-20* which is a 1RU rack mounted panel with power supply.

### Port A (rear panel) – DB9F

| Pin | Connection |
|---|---|
| 1 | No connect |
| 2 | RS485 RX+ (Pair 2) |
| 3 | RS485 TX+ (Pair 3) |
| 4 | No connect |
| 5 | Ground |
| 6 | No connect |
| 7 | RS485 RX- (Pair 2) |
| 8 | RS485 TX- (Pair 3) |
| 9 | No connect |

Port A connects to Audio Engine

### Port B (rear panel) – DB9F

| Pin | Connection |
|---|---|
| 1 | No connect |
| 2 | RS485 TX+ (Pair 2) |
| 3 | RS485 RX+ (Pair 3) |
| 4 | No connect |
| 5 | Ground |
| 6 | No connect |
| 7 | RS485 TX- (Pair 2) |
| 8 | RS485 RX- (Pair 3) |
| 9 | No connect |

Port B connects to downstream panels

### Remote (rear panel) – DIN-7

| Pin | Connection |
|---|---|
| 1 | LedData |
| 2 | LedLoad |
| 3 | SwitchData |
| 4 | SwitchLoad |
| 5 | SerialClock |
| 6 | +5 Volts DC |
| 7 | Ground |

Remote connects to a *GST-23* Button Panel

### Audio (rear panel) – DB9F

| Pin | Connection |
|---|---|
| 1 | Left In + |
| 2 | Right In + |
| 3 | Left Out |
| 4 | Out Common |
| 5 | Tally, active=0 VDC |
| 6 | Left In - |
| 7 | Right In - |
| 8 | Right Out |
| 9 | +12 VDC 100 mA |

Audio connects to an AE Analog Output

## GST-21 (Wall Mount Power Supply)

Following are the pinouts for the *GST-21* which is a wall mounted power supply.

### Port A (rear panel) – DB9F

| Pin | Connection |
|---|---|
| 1 | No connect |
| 2 | RS485 RX+ (Pair 3) |
| 3 | RS485 TX+ (Pair 2) |
| 4 | No connect |
| 5 | Ground |
| 6 | No connect |
| 7 | RS485 RX- (Pair 3) |
| 8 | RS485 TX- (Pair 2) |
| 9 | No connect |

Port A connects to Audio Engine

### Port B (rear panel) – RJ45

| Pin | Connection |
|---|---|
| 1 | +15 Volts |
| 2 | -15 Volts |
| 3 | Rx - |
| 4 | Tx + |
| 5 | Tx - |
| 6 | Rx+ |
| 7 | +5 Volts |
| 8 | Ground |

Port B connects to *GST-22* panels

## GST-22 (Table Mount Panel)

Following are the pinouts for the *GST-22* which is a desk mounted guest panel.

### Port A (rear panel) – RJ45

| Pin | Connection |
|---|---|
| **1** | +15 Volts |
| **2** | -15 Volts |
| **3** | Tx - |
| **4** | Rx + |
| **5** | Rx - |
| **6** | Tx + |
| **7** | +5 Volts |
| **8** | Ground |

Port A connects to PSU or upstream panels

### Port B (rear panel) – RJ45

| Pin | Connection |
|---|---|
| **1** | +15 Volts |
| **2** | -15 Volts |
| **3** | Rx - |
| **4** | Tx + |
| **5** | Tx - |
| **6** | Rx + |
| **7** | +5 Volts |
| **8** | Ground |

Port B connects to downstream panels

### Remote (rear panel) – DIN-7

| Pin | Connection |
|---|---|
| **1** | LedData |
| **2** | LedLoad |
| **3** | SwitchData |
| **4** | SwitchLoad |
| **5** | SerialClock |
| **6** | +5 Volts DC |
| **7** | Ground |

Remote connects to a *GST-23* Button Panel

### Audio (rear panel) – DB9F

| Pin | Connection |
|---|---|
| **1** | Left In + |
| **2** | Right In + |
| **3** | Left Out |
| **4** | Out Common |
| **5** | Tally, active=0 VDC |
| **6** | Left In - |
| **7** | Right In - |
| **8** | Right Out |
| **9** | +12 VDC 100 mA |

Audio connects to an AE Analog Output

## GST-23 (Remote Button Panel)

Following are the pinouts for the *GST-23* which is a table top button panel.

### Remote – IDC-10

| Pin | Connection |
|---|---|
| **1** | LedData |
| **2** | LedLoad |
| **3** | SwitchData |
| **4** | SwitchLoad |
| **5** | SerialClock |
| **6** | No connect |
| **7** | +5 Volts DC |
| **8** | Ground |
| **9** | No connect |
| **10** | No connect |

# Specifications

## General – GST-20

**Dimensions** 19″ W x 1.75″ H x 7.5″ D (482.6 mm x 44.5 mm x 190.5 mm)
Occupies 1RU rack space
**Power Supply** 110 - 230 VAC, 50/60 Hz, 15 W

## General – GST-21

**Dimensions** 10″ W x 1.7″ H x 6″ D (254 mm x 43.2 mm x 152.4 mm)
**Power Supply** 110 - 230 VAC, 50/60 Hz, 25 W

## General – GST-22

**Dimensions** 2.9″ W x 8″ H x 3.5″ D (73.6 mm x 203.2 mm x 88.9 mm)
**Cutout** 2.5″ W x 7.4″ D (63.5 mm x 188 mm)

## General – GST-23

**Dimensions** 2.5″ W x 1.0″ H x 4.5″ D (63.5 mm x 25.4 mm x 114.3 mm)

## Audio Input for Headphone Amp – GST20 & GST-22

**Connector** DB-9 female
**Configuration** Active Balanced stereo
**Level** 0 dBu normal, +24 dBu max
**Impedance** 25 K Ohms

## Audio Output for Headphones – GST-20 & GST-22

**Connector** 1/4″ phone jack recessed into front panel & available on rear panel DB-9 female
**Configuration** Unbalanced stereo
**Level** +20 dBu, 30 mA max
**Impedance** 9 Ohms

## Control – GST-20 & GST-22

**Controls** Mic on, Mic off, Cough Mute, Take, Input select, Headphone Volume
**GPI** One solid state relay to ground, +12 VDC 100 mA
**Comms** GST22 only: 2 com ports (RJ45) with power, 1 GST-23 control (DIN7)
GST20 only: 2 com ports (DB9 Female), 1 GST-23 control (DIN7)
6 GST-22 units can be daisy chained from one power supply

## Control – GST-23

**Controls** Six lighted programmable pushbuttons
**Comms** 1 CAT-5 cable, 20 feet max

# Appendix A Release Notes

## Release Notes & Versions

### BTN-12

**Version** v2.0
**Released** 23-Sep-03
**Notes** Supports Device Addressing wheels and GPIs

### RTE-3

**Version** v3.0
**Released** 28-Apr-03
**Notes** Supports v3.0 Audio Engines with Output Routing

**Version** v3.3
**Released** 26-Jun-05
**Notes** Supports 16 character Device Names

### RTE-XY

**Version** v3.3
**Released** 09-May-05
**Notes** Supports 16 character Device Names; Route-XY Destination ticks from AEConfig

### COM-12

**Version** v1.2
**Released** 20-Feb-05
**Notes** Initial release (only supports medium speed flash B1 command)

**Version** v1.3
**Released** 21-Feb-05
**Notes** Added support for tri-speed flash B1 command (slow, medium, fast)

### GST-20

**Version** v1.4
**Released** 28-Apr-05
**Notes** Supports 16 character Device Names (previous versions do not).

### GST-22

**Version** v1.4
**Released** 28-Apr-05
**Notes** Supports 16 character Device Names (previous versions do not).