ES-4/100 & ES-8/100

RS-232 Desktop Automation Controllers

Users Manual

First Edition

JLCooper Electronics

ES-4/100 and ES-8/100 RS-232 Automation Controllers
User's Manual, First Edition, Part Number 932496

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Welcome

Thank you for purchasing the ES-4/100 or ES-8/100. Continuing in the tradition of JLCooper's FaderMaster Professional, the ES-4/100 and ES-8/100 retain the feel and control of high quality; 100mm long throw faders and adds touch sensitive, motorized automation. The ES-4/100 and ES-8/100 deliver this in a compact, durable desktop package.

Like the FaderMaster Professional, JLCooper's design philosophy is to give you the feel and control over your art that technology has taken away. Modern hardware and software products are loaded with so many features, but simply lack the tactile user-interface to quickly and intuitively use these features.

The growing use of computer-based automation has necessitated the development of a professional mix interface. No longer will one-fader-at-a-time "mouse mixing" suffice in today's fast paced, high profile projects. The faders themselves must have the feel that the professional video editor or audio engineer demands.

All these qualities have been combined to put you back in control and give you new opportunities for creative freedom in the studio or on-stage.

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Introduction

The ES-4/100 and ES-8/100 are 4- and 8-channel automation controllers. They can control standalone RS-232 equipment or, computer-based applications such as audio editing, music production, video editing, animation and scientific visualization.

Features

- Controls music, audio, video and animation applications
- 4 or 8 100mm touch sensitive, motorized faders
- 8 virtual faders available via bank switching (ES-4/100)
- Select, Solo, Mute and Aux keys
- Implements all functions of JLCooper MCS-3000x
- Physically compatible with MCS3S and other MCS-Pro series products in the deep chassis
- Durable, compact all-metal construction
- Single captive cable minimizes footprint

Interface

The ES-4/100 and ES-8/100 RS-232 come with a standard RS-232 interface that connects to any device that has a RS-232 interface.

Controls

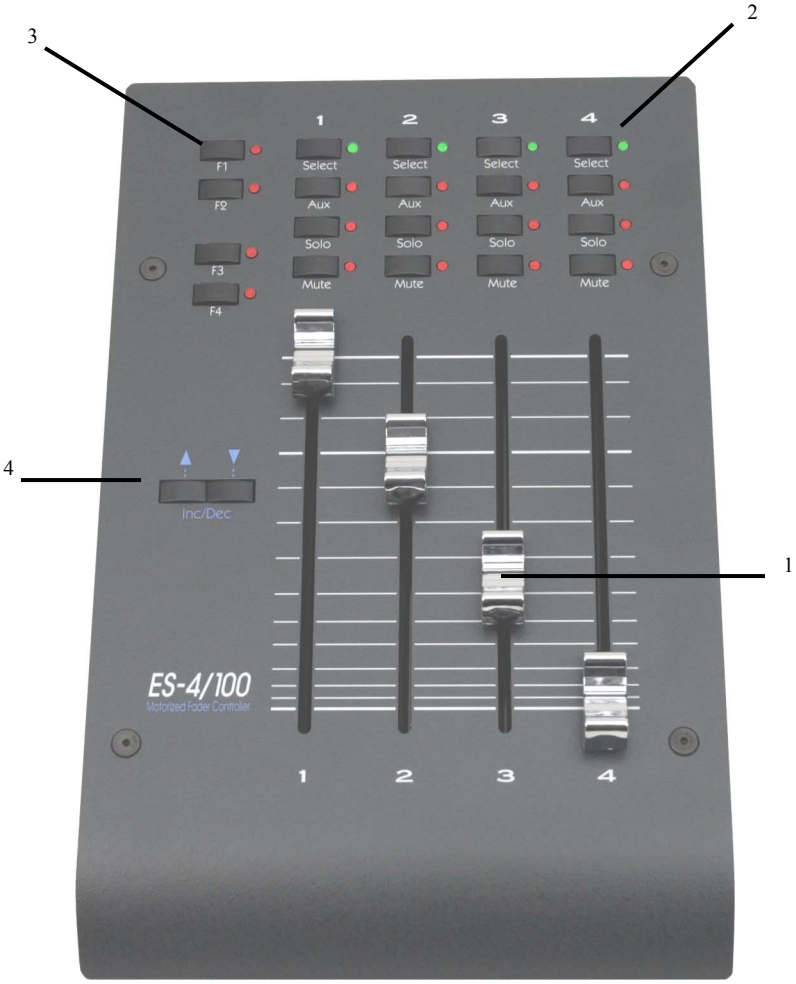

Figure 1 – Control Location

1. Faders

Prominently featured on the top panel of the unit are four or eight 100mm, touch sensitive, motorized faders. Because the faders are motorized, the faders can respond to updates from your system or software package.

2. Fader Buttons and LEDs

Above the each fader is a button with a corresponding LED. These buttons and LEDs provide for control various functions such as SELECT, SOLO, MUTE and AUXiliary. These buttons are momentary acting. Your system or computer software controls the LEDs.

3. Function Select Buttons

To the left side are four buttons, which select the functionality of the buttons above the faders.

4. Inc / Dec Buttons

Changes the fader bank. The ES-4/100 and ES-8/100 internally keeps track of 8 fader channels. However, since the ES-4/100 only has 4 physical faders, the INC/DEC buttons allow the user to select the four channels that the unit controls at any given time. DEC selects channels 1,2,3 & 4, which is the default after power is applied, while INC selects channels 5, 6, 7 & 8. These buttons in the ES-8/100 send Bank Up and Band Down commands

System Requirements

Any computer with a RS-232 interface.

Installation

Unpacking

When unpacking the unit please keep the original packaging in the event the unit needs to be shipped.

The unit is packed with the following items:

ES-4/100 or ES-8/100
Universal Power Supply and Power Cord
This Users Manual

Physical Setup

Mount the unit on a solid surface away from dust or moisture.
Connect the provided power supply to the unit.
Connect the power supply to a proper power outlet.
Connect the ES-4/100 and ES-8/100 to your system as outlined below.

Hookup

The ES-4/100 and ES-8/100 RS-232 connects to a RS-232 port in your system.

Consult your system documentation for more information on setting up and configuring your RS-232 port.

Operation

Faders

Since there are only 4 physical faders, only 4 faders can be manipulated and shown at any time. The use of all 8 faders is accomplished through "bank switching". The faders are arranged in two groups of 4 faders. The Inc/Dec button selects the bank to make active. When the unit is first powered on, Bank 1 (faders 1-4) is active. When the INC button is pressed, Bank 2 (faders 5-8) is active. Bank 1 can be selected by pressing the DEC button.

The ES-4/100 and ES-8/100 internally keeps track of all 8 faders. For example, if the INC button is pressed, the ES-4/100 and ES-8/100 will remember the settings of Faders 1-4. Pressing the DEC button will restore the faders to their original positions.

Additionally, if the computer made updates to the fader position, those positions would be remember even if they were part of a bank that was not currently selected.

This also holds true for the LEDs above the faders. The ES-4/100 and ES-8/100 will remember the settings of the LEDs when the banks are changed.

Function Select

The Fader buttons can produce various actions in your application. Typically, the Fader buttons can be set to perform a SELECT, SOLO, MUTE or any other command that your software package might use.

Please consult your documentation.

Technical Information

Electrical Interface

The ES-4/100 and ES-8/100 uses the EIA RS-232A protocol over a 9 pin D-Sub connector. The pinout is listed in the table below:

1	DCD*
2	Data to computer
3	Data from computer
4	DTR**
5	Ground
6	DSR*
7	RTS**
8	CTS*
9	Not used

** Pins 1, 6 and 8 are connected together to provide hardware handshaking for the computer. The unit does not use these signals.*

*** Pins 4 and 7 are not used by the unit.*

The ES-4/100 and ES-8/100 sends data at 38.4 kbits/sec. The data format is 1 start bit, 8 data bits, 1 stop bit and 1 parity bit. The parity is odd. That is, the sum of the data bits and the parity bit is an odd number.

```
D7 + D6 + D5 + D4 + D3 + D2 + D1 + D0 + P = odd number
```

Touch

When a fader knob is touched or released, the ES-4/100 and ES-8/100 sends the following message:

```
Bnh 4Ah 0xxxxxxxx
```

n	0 to 7, corresponding to faders 1 thru 8
xxxxxxx	7Fh when the fader is touched and 00h when the fader is released

Faders

When a fader is moved, the ES-4/100 and ES-8/100 sends the following message:

```
Bnh 07h 0xxxxxxxx 27h 0y000000
```

n	0 to 7, corresponding to faders 1 thru 8
xxxxxxx	Most significant 7 bits of fader position
y	Least significant bit of fader position.

For example, Fader #2 moved to full scale (FFh), would yield:

```
B1h 07h 7Fh 27h 40h
```

Conversely, to command a fader to move to a specified position, the same message format is used.

Sending the least significant bit is optional. For example, the command s:

```
B3h 07h 39h
```

and

```
B3h 07h 39h 27h 00h
```

are interpreted identically.

> *Note: Since there are only four physical faders, reception of a fader position command for a fader not selected on the current bank will be stored internally until the operator has made a bank change.*

Buttons/LEDs

The function select buttons determine the behavior of the buttons above the faders. In the ES-4/100 and ES-8/100, there are 4 buttons that allow the user to directly select the function for the buttons above the faders. An LED indicates the function selected for the buttons above the faders.

When a button above the fader is touched or released, the ES-4/100 and ES-8/100 sends the following message:

```
Bnh 0xxxxxxx 0yyyyyyy
```

n	0 to 7, corresponding to faders 1 thru 8
xxxxxxx	button function (see table on next page)
yyyyyyy	7Fh when the button is pressed and 00h when the button is released

Mute	46h
Solo	47h
Aux	48h
Select	49h

As with the faders, the same message format is used illuminate the LEDs above the faders.

> *Note: Since there are only four physical faders, reception of a LED illuminate command for a fader not selected on the current bank will be stored internally until the operator has made a bank change.*

Care and Service

While the ES-4/100 and ES-8/100 was designed to deliver years of trouble free use, there are some things to keep in mind while using this product:

- Use only the provided power supply and grounded power cord
- Plug the power supply into a grounded power outlet
- Do not use unit if power cord is frayed or damaged
- Use the unit indoors
- Do not use the unit if it is wet or in a damp environment
- Do not use if a foreign object or liquid has fallen into the unit.
- Do not use if the unit has been damaged
- Do not clean or lubricate the faders
- Use only a damp cloth to clean the unit
- Unplug the unit when not in use
- Do not use the unit during an electrical storm

Troubleshooting

The ES-4/100 and ES-8/100 is a rather straightforward device that does not require any programming to setup. The unit works right out of the box. Try these steps before calling a Customer Service Rep.

None of the Function Select LED illuminate.	Check power supply
Faders stick all the way up or down.	Discontinue use immediately and contact service center.
Computer does not recognize unit.	Verify that the RS-232 port drivers are installed. Verify that unit is plugged into correct RS-232 port
Application does not respond to faders.	Verify that the computer shows that the ES-4/100 and ES-8/100 device is installed. Verify that fader automation is set to WRITE.
Faders do not respond to application.	Verify that application supports external faders. Verify that application is configured to send fader messages. Verify that fader automation is set to READ.
Application does not respond to buttons.	Verify that driver and MCS-Editor is installed. Verify that MCS-Editor keyset is configured for application. Verify that buttons map to functions in application.

JLCooper Electronics Limited Factory Warranty

JLCooper Electronics ("JLCooper") warrants this product to be free of defects in materials or workmanship for a period of 12 months from the date of purchase. This warranty is non-transferable and the benefits apply to the original owner. Proof of purchase in the form of an itemized sales receipt is required for warranty coverage. To receive service under this warranty, customers in the United States should contact the JLCooper factory at +1 310 322 9990 and speak with a service technician. If necessary, a Return Authorization number may be issued. For our customers outside the United States, it is recommended that you first contact your Dealer or Distributor, since they may offer their own service or support policy. If local support is not obtainable, please send a FAX to JLCooper's Service Department at +1 310 335 0110 with a detailed description of the service required. Upon issuance of return authorization, the product should be properly packed and shipped to: Service Department, JLCooper Electronics, 142 Arena Street, El Segundo, CA 90245. Please include the following: copy of the sales receipt, your name and address (no P.O. Boxes, please), a brief description of the problem, and any other related items discussed with the service department and considered necessary to evaluate the product or effect a repair. The return authorization number must be clearly written on the outside of the package. JLCooper will at its option, without charge for parts or labor, either repair or replace the defective part(s). Shipping costs are not covered by this warranty. JLCooper's normal repair turn around time at the factory is approximately 15 business days from receipt of product to shipping. Your actual turn around time will include return shipping. Actual turn around time will vary depending upon many factors including the repeatability of the customer's reported complaint, the availability of parts required for repair, the availability of related products needed to evaluate the product if necessary. Priority services are available at additional cost. These should be discussed with the service technician at the time the return authorization is issued.This warranty provides only the benefits specified and does not cover defects or repairs needed as result of acts beyond the control of JLCooper including but not limited to: abuse, damage by accident/negligence, modification, alteration, improper use, unauthorized servicing, tampering, or failure to operate in accordance with the procedures outlined in the owner's manual; nor for natural or man-made events such as, but not limited to flooding, lightning, tornadoes, earthquake, fire, civil unrest, war, etc.

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