Installation and Operation Instructions
Model ES2 entry station

Overview

The ES2 is a stand-alone DMX snapshot recorder which can store two preset scenes or "looks". It can be used as a stand-alone main station or it can be configured as a remote station in conjunction with another ES2 configured as a main station. It can be used as a remote station with Doug Fleenor Design's Preset 10-A, Preset 10-A2, or Rerun stations.

In remote mode, the ES2 has two buttons which can be assigned to remotely trigger any of the presets/shows on a main station. There is also a recessed button which is used to record presets and to set fade times when the ES2 is configured as a main station.

Each button has an LED which illuminates while its associated preset/show is active. The third indicator is a bi-color LED. It is green when the active preset/show on a main station is other than the ones represented by the buttons on the ES2. It is red when DMX is coming in from a control console. It is yellow while any preset is fading. The bi-color LED turns off while one of the local presets is active and not fading.

Back box selection

Any standard single gang wall box with a depth of at least 1.5 inches can be used for the ES2. Raco models 590 and 660 are typical selections.

Wiring

The ES2 uses the same wiring conventions and methods as the Preset 10-A. A single 5 pin pluggable terminal block is used for all connections. Daisy-chain topology must be used for the DMX512 signal. Multiple "home runs" are not acceptable for DMX512 signals. The cabling used for the DMX512 signal must be suitable for high speed digital data. Examples include Belden 9729 and 9829.

Power to the station must be 9 - 15 volts either AC or DC. The ES2 current draw is 120mA. Cabling for the station power should be #16AWG. The low voltage power can be run in the same conduit with the DMX512 cable.

Wiring to the 5 position terminal block is as shown below:

Terminal Label	Function
C	DMX512 common (shield)
-	DMX512 data minus signal
+	DMX512 data plus signal
C	Power common (tied to DMX512 common)
V	Power positive voltage

Jumper settings
Prior to installation, the two jumpers on the rear of the ES2 should be set for the operation desired. The jumpers have the following functions:

	Main Station	Main Station with Recording Disabled	Remote Station (factory default)	Remote Station Button Mapping Mode
JP1	Installed	Removed	Installed	Removed
JP2	Removed	Removed	Installed	Installed

Installation
Prior to installing the ES2 into the back box, verify that all cabling is secure and that no wire or part of the station can short to the box. Secure the station to the wall box using the two #6 screws included with the ES2.

Remote station mode
Remote station mode operation (default configuration)
Pressing a preset button on the ES2 triggers one of the presets on the main station. The green LED next to the button will illuminate to indicate that the preset has been selected. The bi-color LED will turn yellow while the system is fading from the prior lighting preset to the newly selected preset. The bi-color LED will turn off when the fade to the new levels is complete.

If a preset is selected on the main station which cannot be triggered by the ES2, the bi-color LED will illuminate green. This shows that a preset is active, but it is not one which the ES2 can access.

If a DMX-based console is transmitting on the line, the bi-color LED will illuminate in red to show that the station is locked out. The lighting is exclusively controlled by the console.

Assigning presets/shows to the ES2 buttons (remote station mode)
The ES2 factory default configuration has the upper preset button (ON) assigned to preset/show 1 and the lower button (OFF) assigned to preset/show 10 (OFF). In order to re-assign the buttons to alternate main station presets/shows, the ES2 must not be mounted on the wall. This allows access to the programming jumper. The ES2 remote must also be connected to a main ES2, Preset 10, Preset 10-A2, or Rerun. Be sure to verify the jumper settings on the main station. It should be set up as a main for a multi-station installation. Perform the following steps to program the buttons:

1.   Verify that the remote ES2 is operating normally before re-programming.
2.   Remove jumper JP1 from the remote ES2 circuit board. All of the ES2 LEDs will begin to flash. If they do not, this is an indication that the main station is not set up correctly or there is a wiring problem.
3.   On the main station, select the preset/show which you wish to assign to an ES2 button.
4.   Back at the remote ES2, press the button to which you wish to assign the active

preset/show. The change is recorded into its memory. All LEDs will flash rapidly for one second to confirm that the new assignment has been recorded. The assignments are held in non-volatile memory so they are not lost if power is interrupted.

5.   Repeat steps 3 and 4 for the other ES2 button if desired.
6.   Replace jumper JP1.
7.   Verify proper operation and the new button assignments.
8.   Remove power, mount the station in its wall box, apply power, and once again verify proper operation.

Main station mode
The ES2 can act as a stand-alone wall station. Refer to the jumper table for configuration details. The ES2 has two recordable presets. Both contain all zero levels as shipped from the factory. A number of options can be selected and configured as well.

Main station mode operation
Simply press the ON or OFF preset buttons to select a preset. The green LED next to the selected preset will illuminate. The bi-color LED will light yellow while the ES2 is fading from one preset to the other.

If the fade needs to be sped up, push the selected preset button again while the fade is in progress. The fade time will be cut in half. Pressing the button again will further speed the fade.

If DMX from a control console is present, the green preset LEDs will be off and the bi-color LED will light in red. This indicates that the station is receiving DMX and the ES2 is locked out. No presets can be played back while DMX from a control console is present.

Upon loss of DMX from a control console, the ES2 will begin transmitting with the last levels received from the console. It will immediately begin fading from those levels to the levels in the preset which was active prior to the console being connected.

If power is lost, all presets and settings are held in non-volatile memory. When power is restored, the ES2 will send DMX with all levels at zero and it will then fade to the last active preset in its assigned fade time.

Recording a preset
To record levels into the ES2's presets, perform the following steps:
1.   Connect a DMX512 control console.
2.   Verify that the bi-color LED is red. This indicates that the ES2 is receiving a signal.
3.   Set the lighting levels as desired on the control console.
4.   Using a small object such as a paper clip, press and release the recessed record switch. The hole to access the switch is between the upper mounting hole and the ON preset button. The bi-color LED will blink red.
5.   Press and release the preset button to be recorded. The bi-color LED will turn solid red to indicate that the levels have been recorded.
6.   Repeat steps 3 through 5 for each preset to be recorded or re-recorded.

Note: Presets can not be recorded if the record lockout jumper is removed.

Setting a fade time
Fade times are defaulted to two seconds. Each preset can have its own fade time. To set a preset's fade time, perform the following steps:
1.   Remove any control console and select the preset to have its fade time altered.
2.   After the fade to the desired preset is complete, press and release the recessed record switch. The hole to access the switch is between the upper mounting hole and the ON preset button. The bi-color LED will illuminate yellow for about two seconds. It will then begin blinking. Press the preset button when the number of blinks equals the number of seconds you wish the fade time to be set to. If a zero fade time is desired, press the preset button while the bi-color LED is on during the first two seconds upon entering the time setting mode. A maximum fade time of 30 seconds can be set.

Note: The fade times can not be altered if the record lockout jumper is removed.

OFF preset special feature
The OFF preset has a special feature which will allow the ES2 to stop transmitting DMX. If the OFF preset is selected and all levels in the preset are at 0, the ES2 will stop transmitting DMX about two seconds after all of the levels have reached 0. This feature allows other equipment to power down. Examples include dimmer rack cooling systems and moving light lamps.

If your system requires that DMX be present at all times, simply record the OFF preset with any channel at any level above zero. If any channel (even an unused one) is non-zero, the ES2 will continue to transmit DMX.

Special functions
The ES2 has a number of advanced features which can be selected during power-up of the station. To alter each feature, apply power to the station while holding the desired button. In addition, the ES2 will display its configuration briefly during power-up.

Factory default reset
If the record button is held during power-up, the ES2 is set to its factory default configuration. All preset levels are set to zero. All fade times are set to two seconds. Remote station buttons are mapped to presets 1 and 10. The last active preset is set to 1. The DMX output speed is set to normal. Remote station support is enabled.

All LEDs will light to indicate that the ES2 has been factory defaulted. Upon releasing the record button, the ES2 will perform its normal power-up cycle.

Adjusting the DMX output speed
If the ON preset button is held during power-up, the ES2 will toggle the status of the DMX output speed. The bi-color LED will be green if the output speed is being set to normal. It will be red if the output speed is being set to relaxed timing (slow output). Upon releasing the button, the ES2 will perform its normal power-up cycle.

The status of the output speed is held in non-volatile memory so this setting only needs

to be set once. The default is normal speed output.

Changing the remote station support mode
If the OFF preset button is held during power-up, the ES2 will toggle the remote station support capability. The bi-color LED will be green if remote station support is being set to enabled. It will be red if remote station support is being set to disabled. Upon releasing the button, the ES2 will perform its normal power-up cycle.

The status of remote station support is held in non-volatile memory so this setting only needs to be set once. The default is remote stationsupport enabled.

Remote station support allows an ES2 main station to communicate with other ES2 stations configured as remote stations. This communication takes place between standard DMX data packets using "alternate start code" packets of information. Some non-compliant receiving devices can malfunction when these special packets are present. By disabling remote station support, the ES2 will only send traditional "null start code" data packets. However, remote stations cannot operate if remote station support is disabled. If your system requires the use of remote stations and non-compliant receivers, use Doug Fleenor Design model DMX DECELERATORII between the last remote station and the first non-compliant receiving device to shield the devices from the "alternate start code" packets. Please contact Doug Fleenor Design for more details.

Power-up sequence
When power is applied to the ES2, the LEDs on the front panel will light to show the current configuration. The sequence takes place in about two seconds before normal station operation begins.

	Bi-color LED color	Meaning
ON LED lit	Green	DMX speed = normal
ON LED lit	Red	DMX speed = slow
OFF LED lit	Green	Remote support enabled
OFF LED lit	Red	Remote support disabled

Limited Manufacturer's Warranty

Products manufactured by Doug Fleenor Design (DFD) carry a five-year parts and labor warranty against manufacturing defects. It is the customer's responsibility to return the product to DFD at the customer's expense. If covered under warranty, DFD will repair the unit and pay for return ground shipping. If a trip is necessary to the customer's site to solve a problem, the expenses of the trip must be paid by the customer.

This warranty covers manufacturing defects. It does not cover damage due to abuse, misuse, negligence, accident, alteration, or repair by other than by Doug Fleenor Design.

Most non-warranty repairs are made for a fixed $50.00 fee, plus shipping.