

Dan Dugan Sound Design

Model K Control Surface

User Guide

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Important Safety Instructions and Warnings

The Model K's circuitry is made in the USA and meets applicable national safety standards.

Standards Compliance

The third-party power supply provided with this product has been certified to comply with UL.

Safety Instructions

1. Read these instructions.
 2. Keep these instructions.
 3. Heed all warnings.
 4. Follow all instructions.
 5. Do not use this apparatus near water.
 6. **WARNING!** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
 7. Clean only with dry cloth.
 8. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
 9. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
 10. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
 11. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
 12. Only use attachments/accessories specified by the manufacturer.
 13. Unplug this apparatus during lightning storms or when unused for long periods of time.
 14. **WARNING!** Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
 15. **WARNING!** To reduce the risk of electric shock, DO NOT REMOVE COVER. No user serviceable parts inside.
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Warranty Statement

Warranty: One year parts and labor

Dan Dugan Sound Design warrants that Model K hardware will be free from defects in components and workmanship for a period of 12 months from the date of invoice. During the warranty period, Dan Dugan Sound Design will cover the cost of all parts and labor to remedy the defect, or replace products which prove to be defective. Dan Dugan Sound Design is not obliged to honor this warranty if the hardware has failed to be maintained and operated as specified by Dan Dugan Sound Design, in the accompanying documentation, or other than in accordance with industry standards. Defects caused by unauthorized modifications, misuse, negligence, act of God or accident are not covered by this warranty. Software is provided as a convenience, but due to the wide variety of computer systems, cannot be guaranteed to work. This Limited Warranty is exclusive and no other warranty is expressed or implied. Dan Dugan Sound Design does not warrant that Dan Dugan Sound Design software, or any third-party software, is error free. Third party branded or manufactured goods are supplied by Dan Dugan Sound Design with care but without responsibility and subject only to third party suppliers' warranties. In all other respects Dan Dugan Sound Design is not liable for consequential damages.

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Chapter 1: Introduction

The Model K Control Surface provides a physical control surface for any number of Dugan automatic mixing controllers on a local area network. Multiple Model Ks can be used to instantly access more channels, or to let multiple operators run the system.

We recommend using the Dugan Control Panel software to set up a system, and the Model K to operate it. It is possible, however, to make most settings from the Model K if desired.



Figure 1-1 Model K top panel

The Model K controls Dugan devices via Ethernet. Figure 1-2 shows an example configuration with the Model K's audio and control paths. The built-in Ethernet switch in the Model E-2 (center, connected to computer) is the hub of the control system.

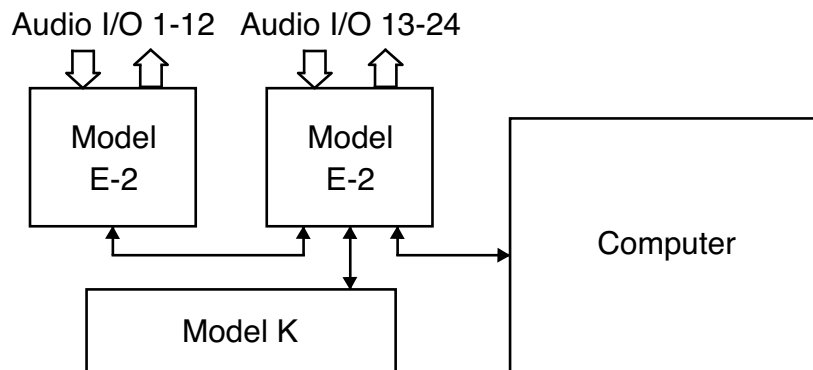


Figure 1-2 Example configuration showing audio and Ethernet control paths

Up to five control panels (surfaces and/or instances of Dugan Control Panel software) can be used simultaneously.

Chapter 2: Installation and Configuration

Installation

The Model K can be conveniently placed on a table top or rack mounted.

Best Position



Figure 2-1 Model K placed in front of console

Rack Mounting

We include a rack mounting adapter plate. For table-top use, you can remove the rack adapter plate.



Figure 2-2 Model K rack mounted

Power Supply

Units include a multi-voltage power supply. In an emergency, the Model K can accept power supplies in the range 12–24 VDC, minimum 1 A.

Hardware Connections

The Model K provides the following on the rear panel:

- Locking power input
- Power switch
- Ethernet switch with four external ports



Figure 2-3 Model K rear panel network and power connectors

Make the following hardware connections:

1. Attach the provided power cable to the locking power input connector.
2. Attach an Ethernet cable from any Model K Ethernet port to a Local Area Network that includes your Dugan automatic mixing controller(s).

Configuration

Establishing Network Connections

To establish network connections to your Model K, use the Dugan Utility in the same way as you did to connect your Dugan automatic mixing controller(s):

- If the network has a router, select **Use DHCP** and click **Send New Params to Unit**.
- If there is no router, deselect **Use DHCP**, edit the IP address field, then click **Send New Params to Unit**.

To set the Model K's IP address to the factory default:

- Press and hold down the left and right arrow buttons together.

Release the buttons when lights blink. The unit has been reset to factory defaults including the IP address: 192.168.1.xx, where xx is the last two digits of the unit's serial number. If the serial number ends with 00, 100 will be used.

To manually set the Model K's IP address on the Model K itself:

1. Press the **bright** knob multiple times until **IP Address** appears in the Master Display.
2. Press and hold down the **bright** knob until the IP address blinks.
3. When you release the **bright** knob, the first group of digits in the IP address will blink, indicating they can be edited.
4. Turn the knob to enter the desired number.
5. Press the **bright** knob again to edit the next group of digits.
6. Repeat until the IP address is what you want.
The display wraps around after reaching the last group.
7. Press and hold the **bright** knob to set the IP address.
The Model K reboots with the new IP address.

Pairing the Model K to Dugan Control Panel Software

Pairing establishes bidirectional control between the Model K and an instance of the Dugan Control Panel software. When paired, selecting a block in the Top Pane of the software selects the same block on the Model K, and vice versa.

To pair the Model K:

1. Launch the Dugan Control Panel software.
2. Click the **Model K** tab at the right side of the window.
If there is no **Model K** tab, you must update your Dugan Control Panel software (see the *Updates* chapter in your Dugan automatic mixing controller user guide).
3. To rename your Model K, double-click in the name field, type a new name, and press the **Return** key to set.
4. Select the checkbox next to the name of your Model K.
This control surface is now paired with this instance of the Dugan Control Panel software. Additional Model Ks can operate on the same network, and can be paired with instances of the Dugan Control Panel on other computers.
5. Click the **CLOSE** tab.

NOTE: Up to five control panels (surfaces and/or instances of Dugan Control Panel software) can be used simultaneously.

Chapter 3: Model K Operation

This chapter explains how to use the Model K with the Dugan Control Panel software and as a standalone device.

Dugan Control Panel Software

The Dugan software has both Java and iPad versions.

NOTE: *After setting up your Dugan automatic mixing controllers, both the Dugan Control Panel and Model K can be disconnected. All settings are retained by the Dugan units, which continue to function on their own.*

Dugan Control Panel software and the Model K Control Surface let you set additional controls not available on the front panels of some Dugan units:

- Channel **weight** control
- Channel **man** mode to bypass automixing with a soft switch
- Dugan Music System and Gain Limiting (in Dugan units with these features)
- Groups a, b, and c
- Preset function to recall favorite settings
- Override function to solo a mic
- Master mute function
- Input and output level meters
- Saving and recalling **Scenes** (in Dugan units with that feature)

The Dugan Control Panel software lets you manage these additional features not available from the Model K:

- Naming units and channels
- Naming **Scenes** (in Dugan units with that feature)
- Routing auxiliary outputs using a mix bus matrix (in Dugan units with that feature)

See the *Dugan Control Panel* chapter in your Dugan automatic mixing controller user guide to learn about its functions.

Channel Block Selection

The left and right arrow buttons (see figure below) select the previous or next block of eight channels in the system. This is just like clicking in the Top Pane of the Dugan Control Panel to select a block. For these actions to mirror each other, pair the Model K with that instance of the Dugan Control Panel (see *Pairing the Model K to Dugan Control Panel Software* on page 11).



Figure 3-1 Model K Control Surface showing arrow buttons

The name of the device you currently control appears in the Model K's Master Display above the right arrow button. When block selection takes you to a new device, its name appears. The channel names appear in the Model K's Channel Displays.

Channel Section

Each channel in the Channel Section includes three buttons, four LEDs, a display, and a knob. The display defaults to showing the channel name with a bar graph of the automix gain below it. Channel names can be edited in the Dugan Control Panel Software.

Channel Mode Buttons

These three buttons control the Dugan automixing mode for each channel.

- **man**: Manual (soft bypass)
- **auto**: Automatic mixing
- **mute**: Mute

In **auto** mode, the **auto** button lights with variable intensity to indicate the automix gain.

Channel Knob

The knob can be turned and pressed. Its illumination and color changes depending on its function, and the display shows the relevant information.




















To change settings:

1. Press the knob to cycle through the list of parameters shown in the table below. The parameters vary depending on the Dugan unit being controlled.
2. Turn the knob to set the displayed parameter.
Input and **Output Level** have no settings and appear as a bar graph.

Pressing the knob twice quickly returns to the default function. In the default function:

- The knob illumination works just like the channel Level LED. It lights green, orange, or white for signal in range, depending on the channel's speech or music mode, and red for overload.
- The display shows the channel name, group, and automix gain bargraph.
- Turning the knob adjusts the channel weight (Speech System) or threshold (Music System). The display changes to show the parameter value along with the automix gain bargraph.
- Press the knob repeatedly to step through the available functions, as shown in the table below.

Table 3-1 Knob Functions

Parameter	Function	Color
Level LED (default)	Speech Weight	
	NOM only Weight	
	Music Threshold	
Bypass	Disabled	
	Enabled	
Ch. Preset	manual	
	auto	
	mute	
Ch. Override	Disabled	
	Enabled	
Ch. Group	a	
	b	
	c	
Input Level	meter	
Output Level	meter	
Music	Disabled	
	Enabled	
NOM	Disabled	
	Enabled	

Bypass

When **bypass** is active, the signal passes through without automixing. That channel appears inactive, with all lights extinguished except the knob (yellow).

If you are using a Dugan unit with analog I/O, **bypass** mode physically connects the input to the output with a relay. Channels are automatically bypassed when the power is off. In **man** mode, the signal undergoes an A/D and D/A conversion, with the specified latency, but no automixing.

NOTE: *On Dugan controllers with analog I/O, if balanced and unbalanced circuits are connected together, the signal level may shift 6 dB when switching into **bypass** mode. In this case use **man** instead of **bypass**.*

Man and **bypass** modes are the same except for the transition. **Bypass** is instantaneous, which can cause an audible click, while **man** performs a quick fade without sonic artifacts.

To restore a channel to normal operation from **bypass**:

- Press any channel mode button.
The channel illumination turns on.

Preset

When a Dugan unit powers up, its channels default to their preset modes. Use the preset function to store your favorite channel mode settings, which may be restored by pressing the Master **pre** button.

There are two methods to set channel presets. The shortcut method executes the preset function when the **pre** button is first pressed so we do not recommend using this method during a show.

Shortcut to Use During Setup

1. In the Master section, press and hold the group's **pre** button.
2. For each channel you wish to set, press the **man**, **auto**, or **mute** button to select the state.

The LED next to the selected mode button lights.

While holding down the **pre** button, you may scroll to other blocks of channels.

3. Release the **pre** button.

Method to Use During Show

1. Press the channel knob repeatedly until **Ch. Preset** appears in its display.
2. Turn the knob until the desired mode (**man**, **auto**, **mute**) appears in its display.
An LED lights next to the button for that mode.
3. Press the knob twice quickly to return to the default display.

NOTE: See page 21 for instructions on how to use the preset function.

Override

To mute all mics except one for the host or chairperson, use the override function. However, any number of mics can be included in the **override** group. There are two methods to assign channels to an override group. The shortcut method executes the override function when the **over** button is first pressed so we do not recommend using this method during a show.

Shortcut to Use During Setup

1. In the Master section, press and hold the group's **over** button.
2. For each channel you wish to include in the override group, press the **man** button to toggle the state.
The LED next to **man** lights indicating that the channel is included.
While holding down the **over** button, you may scroll to other blocks of channels.
3. Release the **over** button.

Method to Use During Show

1. Press the channel's knob repeatedly until **Ch. Override** appears in the display.
2. Turn the knob until **Enabled** appears in the display.
The yellow LED next to **man** lights indicating that the channel is included.
3. Press the knob twice quickly to return to the default display.

NOTE: See page 21 for instructions on how to use the override function.

Group Assignment

Groups are separate automatic mixers. Every channel is in a group (a, b, c); group a is the default. Channels can be assigned to groups using the channel knob (described above), or the following shortcut method.

Shortcut

1. In the Master section, press and hold the group's knob.
All knobs light in the colors for their assigned groups.
2. For each channel you wish to include in this group, press the channel's knob.
While holding down the group's knob, you may scroll to other blocks of channels.
3. Release the group's knob.

Alternate Method

1. Press the channel knob until **Ch. Group** appears.
2. Turn the knob to set the channel's group.
3. Press the knob twice quickly to return to the default display.

Scene Section

The Scene Section lets you save and recall scenes. Scenes include all parameters in a Dugan unit except I/O, network settings, and the name of the unit. Scenes are saved in each Dugan unit.

When the **Global** checkbox is selected in the Scenes Panel in the Dugan Control Panel, that Scene is stored under the same name on all connected units; each unit stores its own settings. When a Scene is recalled on a given unit, any Scene name that matches in other units on the network is also recalled.

NOTE: *The Model K operates globally by default, so it stores and recalls Scenes for all connected units. See System Focus on page 23 to restrict operation to a selected unit.*

New Scene

To create a new Scene from the Model K:

- Press and hold the **bright** knob, then press the + button.

A Scene number is assigned and appears in the display. The Scene can be renamed in the Dugan Control Panel software.

Recall Scene

To recall a saved Scene:

1. Press the + or - buttons to scroll through the available Scenes, which are displayed in the window above.
2. Press **enter** to recall the currently displayed Scene.

If you make changes to parameters in this Scene, its name appears with a “*” appended.

Save Scene

To update a saved Scene:

1. Check that the name of the Scene you would like to update is displayed.
2. Make any desired changes to the settings.
3. Press and hold the **bright** knob, then press the **enter** button.
The Scene memory is updated.

Delete Scene

To delete a Scene:

1. Press the + or - buttons to scroll to the Scene you would like to delete.
2. Press and hold the **bright** knob, press the - button twice.
The Scene is deleted.

Master Section

The Master Section contains a knob and three buttons for each group (a, b, c).

Group Master Buttons

Override

Pressing the Master **over** button puts the group into override mode and has the following effect on individual channels:

- Channel override LED active: puts the channel in **man** mode with full gain (no automixing);
- OR -
- Channel override LED inactive: mutes the channel.

The **over** button winks while override mode is active. Press it again to deactivate override mode.

NOTE: To assign channels to the override group, see *Override* on page 18.

Preset

Clicking the Master **pre** button sets the channel modes (**man**, **auto**, **mute**) to those shown on each channel's **preset** LEDs.

The preset indicators should mirror your normal working combination of input modes. The normal condition can then be restored by pressing the Master **pre** button. On power-up, channels are set to the preset condition.

NOTE: To set the channel preset modes, see *Preset* on page 17.

Mute






Press the **mute** button to toggle the muting of a group. The **mute** button winks when the group is muted.

Group Master Knobs

These knobs illuminate to show that there are inputs assigned to the group. If all inputs in a group are assigned to the Speech System, the knob lights green. If any input in a group has NOM on or is assigned to the Music System, the knob lights white.

When the knob is lit white, the Music System parameters for that group can be set as follows:








1. Turn the knob to set the Music System Threshold Input gain.
The display above the right arrow button shows the current gain setting and a meter of the audio level.
2. Press the knob repeatedly to select other parameters.
The parameter name and value displays.
3. Turn the knob to set the parameter's value.
4. Press the knob twice quickly to return to the default function.

Parameter	Value	Color
Default		
Speech		
Music Turn to set Music System Threshold Input gain		
NOM Gain Limit & Meter	1-10	
Music System Threshold Ch.	chan #	
Automix Depth	-60 to 0 dB	

Brightness Knob and Master Display

The Master display is located above the right arrow. By default it shows the name and model of the selected Dugan controller.

- Turn the **bright** knob to set the overall brightness.
- Press the **bright** knob repeatedly to access the parameters in the table below.
- From any parameter, press the **bright** knob twice quickly to return to the default display.

Parameter	Value	Color
Brightness (default)	5–100%	
Selected Dugan Unit Information	Turn the knob to display: Dugan Model Serial Number MAC Address Firmware Version Additional items (depends on model)	
Factory Reset	Press the right arrow button to reset the currently displayed Dugan unit.	
Online Units	Turn the knob to display the names of the currently connected Dugan units. The second line of the display shows whether each unit is reachable or not. If a unit is not reachable, use the Dugan Utility to set a compatible IP Address.	
IP Address of this Model K	Hold down the knob to edit the IP Address. See <i>Establishing Network Connections</i> on page 10.	
Netmask of this Model K	Hold down the knob to edit the Netmask. See <i>Establishing Network Connections</i> on page 10.	
System Focus	Press and hold the knob until the parameter value blinks. Turn the knob to select System All or System 1-16 . Press and hold the knob until the Model K reboots.	

Chapter 4: Model K Specifications

Connectors	
Power	Coaxial with locking collar, 5.5 mm o.d., 2 mm i.d.
Network	4 x RJ-45: Four-port internal switch for network
Power	
Electrical	Nominal 12 VDC, 1 A maximum; accepts 12–24 VDC; center pin positive
External Supply	Input: 100–240 VAC, 50–60 Hz, 0.7 A Output: 18 VDC, 1.33 A Approved UL, GS, CE, FCC, CCC, LPS
Physical	
Dimensions	H = 4.2 in (106 mm) D = 3.2 in (81 mm) W = 17.1 in (435 mm) rack mounted (3RU): H = 5.2 in (133 mm) D = 3.2 in (81 mm) W = 19 in (483 mm)
Weight	4.3 lb (1.97 kg) including rack mounting adapter 7.0 lb (3.18 kg) in shipping box with power supply

