

# ***MPX-6* Mixer/Multiplexer**

## **OPERATION GUIDE**

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This guide describes how to operate an *MPX-6* using control blocks. It is also possible to operate an *MPX-6* from a graphics plate. Please refer to the *Graphics Plate Operation Guide* for additional instructions.



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## 1 The MPX-6

The MPX-6 is a 6x2 mixer/multiplexer with six mic/line inputs, two main line-level outputs and two switchable bus outputs. Under computer control, it can switch the inputs on or off, control their levels, route them to two main and two bus outputs. Multiple MPX-6s can be connected together to create larger systems.

Because the MPX-6 is controlled by computer software, it can be located in out-of-the-way places. The computer software is designed for use by audio people—not computer hacks.



### 1.1 MPX-6 Features

#### Software controls:

The software features are controlled in the control block screen.

- Increase/decrease each input level in ½ dB steps over a 125 dB range.
- Independently switch each audio bus output on and off.
- Independently mute each input (mute = full attenuation).
- Turn any auxiliary device connected to the AUX port on or off.
- Force the DSPI (Data Signal Presence Indicator) to remain on. (A troubleshooting feature for Crown Bus loop communication.)

#### Hardware controls:

The hardware controls are located on the back panel of the unit.

- Individual three-position input level control for each input. The positions are for line, mic and phantom powered mic level signals.
- Individual preamp gain control for each input. (Can be used to equalize differing input levels.)

#### Protection features:

- Automatic microprocessor reset if noise spikes, power dropouts or other disturbances are encountered.
- DSPI (Data Signal Presence Indicator) provides swift isolation of wiring problems, improper addresses and disconnected or off-line components.
- NiCad battery and built-in charger maintain all settings. When fully charged, the unit can be disconnected from power for 60+ days.

**Digitally controlled analog circuitry:**

- ❑ Digital control also permits precise calibration. The gain settings of the *MPX-6* are accurate to  $\pm 1.0$  dB.

**Communication features:**

- ❑ The *MPX-6* can function as an IQ interface for one Crown Bus loop.

**1.2 About this Operation Guide...**

This *Operation Guide* describes how to use IQ software to control an *MPX-6* mixer/multiplexer. This *Operation Guide* does not discuss the hardware installation or hardware controls. Please refer to the *IQ Mixer/Multiplexer Hardware Installation Manual* for those details. Nor does this *Operation Guide* discuss the general features of the IQ software. Please refer to the *User's Manual* for your IQ software for that information.

Please also consult the *MPX-6 Application Notes* for additional detail on how to use an *MPX-6* in a variety of different applications.

## 2 Operation

The MPX-6 is controlled with the control block screen of the IQ software. To switch to the MPX-6 control block screen, press (F1) to access the Device menu then press (M). (↑) (↓) can also be used to select the MPX-6 control block screen from the Device menu followed by (Enter) to execute the selection. A mouse (☞) can also be used. An MPX-6 control block screen is shown below:

F1-Device F2-Display F5-Print			MPX						F9-FILE	F10-Control	
Multiplexer 001	Zone 1	On	DSPI	Input	1	2	3	4	5	6	All
Model	:MPX-6	Line	Aux	Ch 1	-5	-5	-5	-5	Off	Off	03
Location	:NORTH SHOW ROOM		Sel	Ch 2	-5	-5	-5	-5	Off	Off	03
Purpose	:DISTRIBUTION			Bus 1:	Off			Bus 2:	Off		
Multiplexer 002	Zone 1		DSPI	Input	1	2	3	4	5	6	All
Model	:MPX-6		Aux	Ch 1	-10	-10	Off	-10	-10	Off	03
Location	:EAST SHOW ROOM		Sel	Ch 2	-10	-10	Off	-10	-10	Off	03
Purpose	:DISTRIBUTION			Bus 1:	On			Bus 2:	On		
Multiplexer 003	Zone 1		DSPI	Input	1	2	3	4	5	6	All
Model	:MPX-6		Aux	Ch 1	0	0	0	0	0	0	03
Location	:SOUTH SHOW ROOM		Sel	Ch 2	0	0	0	0	0	0	03
Purpose	:DISTRIBUTION			Bus 1:	Off			Bus 2:	Off		
Multiplexer 004	Zone 1		DSPI	Input	1	2	3	4	5	6	All
Model	:MPX-6		Aux	Ch 1	Off	Off	Off	Off	Off	Off	03
Location	:WEST SHOW ROOM		Sel	Ch 2	Off	Off	Off	Off	Off	Off	03
Purpose	:DISTRIBUTION			Bus 1:	Off			Bus 2:	Off		

Offset = 1

SAMPLE2

Please refer to the IQ software *User's Manual* for general instruction on how to navigate around a control block screen and how to select and change a control.

A description of each control in an MPX-6 control block follows:

### Information Area:

Each control block contains an information area. When a roll call is run, a control block will be automatically created for all components. In it the roll call will enter the **IQ address** and **zone** number for each component. The IQ address and zone can also be manually entered or changed by selecting either number and entering a new one. The IQ address is limited to 1-250. The zone is limited to 1-8.

Under the IQ address and zone number is a line for the **Model**, **Location**, and **Purpose**. These lines are provided for you to enter information which will help you identify which MPX-6 is controlled by the control block and what its function is.

The phrase "On Line" will be displayed with green letters in the upper right corner of the information area of all MPX-6s which are found by the IQ software. This makes it easy to tell which control blocks are controlling active units and which are not.

### DSPI:

The DSPI or Data Signal Presence Indicator is an LED on the front panel of the unit which flashes whenever a data signal, addressed to it, is received. It can be forced to stay on as an aid to troubleshooting by turning the DSPI control on. If the DSPI is forced on by the IQ software and the indicator does not light on the unit, it signifies that there is a break in communication before it or the unit is defective.

**Tip:** Use the DSPI light to verify that all units in the system are responding to IQ commands. For example, turn all DSPI lights on before a show to verify that all equipment is operating properly.

**Tip:** When there are more than one *MPX-6* units in a system, use the DSPI light to quickly identify a particular one. For example, turn the DSPI light on to help a technician quickly locate a particular unit in a large equipment rack.

#### **Aux:**

The AUX port of the *MPX-6* is turned on and off with the Aux control. When turned on, the AUX port supplies +10 VDC across pins 3 (+) and 1 (gnd) of the 3-pin AUX connector located on the back panel of the unit. This can be used to signal non-IQ devices or it can be used to turn non-IQ components on and off (with the use of a solid state relay). For example, an auxiliary rack cooling system can be manually turned on with the Aux feature.

The AUX port also has the ability to sense the presence of an external signal. When a logic “high” is detected across pins 2 (+) and 1 (gnd) of the AUX connector, an **asterisk** will appear beside the Aux control to signal its presence. Normally, the AUX port is left to float. This means an asterisk may appear most of the time and can be disregarded. To use this function, the AUX port must be held “low” until a legitimate logic “high” is received.

#### **Sel:**

An *MPX-6* is selected with the Sel control. This feature is presently used by the Turbo version of the IQ-MSD software only. When switching to the graphics mode, a graphics display module will be automatically created and displayed for all selected units. The Display control of the Graphics control block must also be switched to the “Selected” position. The Sel control serves no purpose for other versions of the IQ-MSD software.

#### **Input:**

The gain of each input is controlled separately for each output channel. When a gain control is turned down as far as it will go (–100 dB) each input control will say “Off”. The range of the input level controls is +25 to –100 dB.

**Keyboard:** The Input gain can be incremented and decremented in ½ dB steps by pressing **[+]** **[-]**. A whole number can be entered directly by first selecting the desired Input gain control and then entering a level with the number keys. Do not use **[-]** to enter a negative number. Instead, use **[S]**. (“S” means “sign” to the IQ program.) For example, press **[S]** **[1]** **[0]** to enter a level of –10 dB. A level change is not sent to the *MPX-6* until either **[Enter]** is pressed or the cursor is moved to another control.

**Mouse:** Press and hold **[⇧ Shift]** and move the mouse (**[⏶]**) upward to increment and downward to decrement. Do not click or drag while moving the mouse.

The Input gain control has its own “emergency mute” feature. Pressing **[Spacebar]** when an Input gain control is selected immediately mutes the gain (sets it to –100 dB). This feature is a toggle. If the control is still selected, press the **[Spacebar]** again to toggle back to the previous setting. The previous level setting is lost if the cursor is moved to another control.

**All:**

The level of each output channel can be increased or decreased in 3 dB increments with the All controls. To do so, select one of the controls labelled "03" under the "All" heading and press  $\oplus$  or  $\ominus$  to increment or decrement it. The output level change will be reflected by an appropriate increase or decrease of each input gain setting.

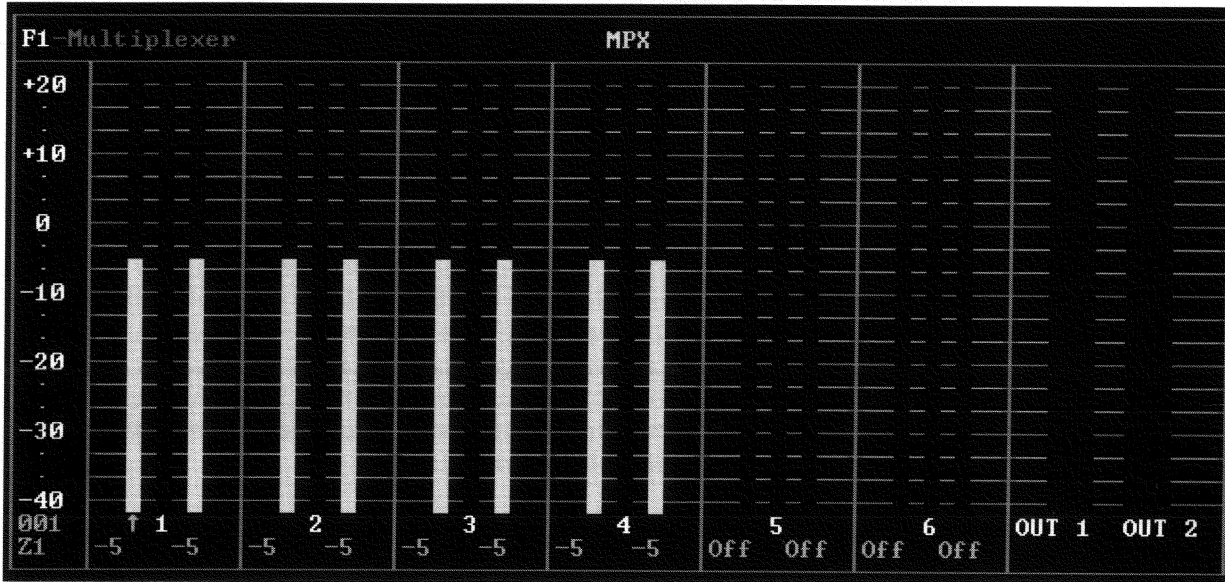
**Bus:**

The *MPX-6* has two switchable "bus" outputs (one for each output channel). They receive the exact same post-fader audio signal which the main outputs receive. They are each turned on and off with the Bus controls.

The purpose for the audio bus outputs is twofold: First, to provide a switchable output for each channel; Second, to make it possible to connect many mixer/multiplexers together to the same audio bus without loading down the outputs of each one. The first capability is very handy for small installations which want an on/off output for recording. The latter capability enables large number of mixer/multiplexers to be connected, for example, to an airport paging bus. The bus outputs would be off until an airport terminal gate needs to make an announcement. When this happens, the appropriate bus output of only the affected mixer/multiplexer is turned on, allowing the announcement to be sent to the paging bus.

### 3 Display Screen

Pressing **[F2]** from the MPX-6 control block screen switches to the Display screen of the selected MPX-6. Only one unit can be shown in the Display screen at a time.



The Display screen provides a visual representation of the gain settings of each input and output channel.

When you are ready to leave the Display screen, press **[Esc]**, **[F1]** or **[Right Mouse Button]** to return to the control block screen.

**Gain:**

The gain of each input is shown by the **blue bar graphs** which flank either side of an input column. The input columns are numbered 1-6 from left to right. There two gain bar graphs for each input because the net gain for each channel is controlled separately.

The input gain can be controlled from the Display screen with the keyboard or a mouse as described below:

*Keyboard:* Use **[Left Arrow]** **[Right Arrow]** to select the input gain you want to change. The selected input gain will have a small up arrow displayed below its bar. Use **[Up Arrow]** **[Down Arrow]** to increment or decrement the input level in 1/2 dB steps.

*Mouse:* Move the mouse **[Right Mouse Button]** sideways to select the input gain you want to change. Move the mouse **[Left Mouse Button]** upward to increment and downward to decrement. Do not click or drag while moving the mouse.



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