



NOTE: This one-page document is intended **only as a quick reference for installation** – please read the SP Controls Application Note for a complete description of this projector driver prior to installation.

I. Driver Features

1. Input Selection Mapping

Selection 1:	IR VIDEO
Selection 2:	IR S-VIDEO
Selection 3:	IR RGB 1
Selection 4:	IR RGB 2

2. Hidden Function Mapping (Default Configuration)

Using the ON button as a shift key, press the following buttons to access the specified projector features.

Selection 1:	AV MUTE TOGGLE
Selection 2:	ENTER
Selection 3:	ADJUST LEFT
Selection 4:	ADJUST RIGHT
Off:	MENU
Volume Up:	ADJUST UP
Volume Down:	ADJUST DOWN

3. Other Driver Features

Power Status Feedback Method	RS-232 Power Polling
Control Wiring:	RS-232 and IR-Emitter required

II. Wiring Specifications

1. RS-232:

Wire the Panel RS-232 port to a female DB9 as follows:

TX to	2
RX to	3
GND to	5

Connect this female DB9 to the included Sharp intermediate cable (labeled RS-232C) and connect the mini-DIN end of the adapter to the projector port labeled *RS-232C IOIOI*.

2. Infrared Emitter:

Wire the Panel IR/Serial port to a female 1/8" Mini as follows:

IR/SER to	tip
GND to	ring

Connect to the included IR Emitter and attach the emitter bud to any projector IR window.

III. Additional Projector Information

Note: SP Controls strongly recommends using IR to control projector input selection. See the Application Note below for more information.

Note: The following projector menu settings must be correctly set:

ECONOMY MODE must be set to OFF in the projector menu *OPTIONS 1*. *RS232C* must be set to 9600 (default) in the projector menu *OPTIONS 2*. *LAN/RS232C* must be set to *ENABLE* (default) in the projector menu *OPTIONS 2*.

See the *Special Control Note* in *Section II. Control Wiring* below for more information.



Projector Driver Application Note

Sharp XG-MB70X

Revision A

This document describes the **SmartPanel** Projector Driver for the **Sharp XG-MB70X** projector. For information on configuring and using the Panel see the *SmartPanel Configuration and Installation Guide*.

Note: This driver can control input selection on the Sharp XG-MB70X with either IR or RS-232. SP Controls strongly recommends using IR input control. Input switching by RS-232 takes 8-10 seconds. This is due to the Sharp projector design and is not subject to SmartPanel control. Switching inputs through IR is nearly instantaneous.

To use IR to control projector input selection, configure the SmartPanel with input selection commands preceded with an *IR*. For example, select *IR VIDEO* instead of *VIDEO*, et cetera. Contact SP Controls Technical Support for more information.

Please read the **SPECIAL CONTROL NOTE** in the *Control Wiring* section of this document before attempting control of the projector. This note describes how the Sharp's *Economy Mode* impacts the projector's behavior.

I. PROJECTOR CONTROL

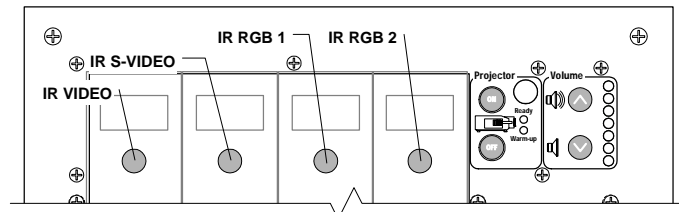
A. Volume and Power Control

Volume control on the Sharp is **absolute**. Absolute volume control is also possible with SP Controls' option **Audio Follow Video Preamplifier** (SP3-AFVP+).

B. Input Selection Mapping

The following table specifies the factory-preset input mapping for this Driver. The **Configuration Utility** can be used to customize these settings your installation.

Selection 1:	IR VIDEO
Selection 2:	IR S-VIDEO
Selection 3:	IR RGB 1
Selection 4:	IR RGB 2



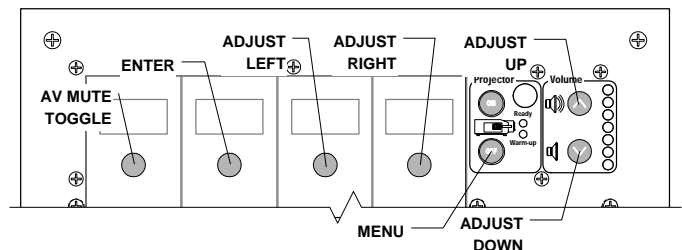
Input choices available for the Sharp with this Driver are IR VIDEO, IR S-VIDEO, IR RGB 1, IR RGB 2, VIDEO, S-VIDEO, RGB 1, and RGB 2.

SP Controls strongly recommends use of the IR inputs. See NOTE at the top of this page for more information.

C. Hidden Function Mapping

The following table specifies the factory preset hidden function mapping for this Driver. The **Configuration Utility** can be used to customize these settings your installation.

Selection 1:	AV MUTE TOGGLE
Selection 2:	ENTER
Selection 3:	ADJUST LEFT
Selection 4:	ADJUST RIGHT
Off:	MENU
Volume Up:	ADJUST UP
Volume Down:	ADJUST DOWN



Hidden functions names are based on the Sharp remote and controls on top of the projector. Hidden functions are accessed by pressing the indicated key while the holding the **On** key down.

ADJUST controls, *ENTER* and *UNDO* navigate through onscreen menus. *UNDO* is a “return to previous menu” or “back” command. *MENU* can also be used as *UNDO*. The area zoomed with the *ENLARGE* function can be moved using the *ADJUST* keys.

BLACK SCREEN, *AV MUTE TOGGLE*, and *FREEZE* are toggling commands.

AUTO SYNC only works when an RGB input is selected.

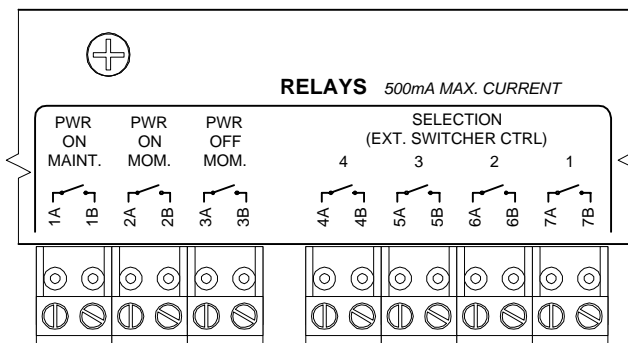
The hidden functions available for the Sharp with this Driver are as follows:

- | | | |
|----------------|-------------|--------------|
| MENU | AV MUTE ON | ENLARGE UP |
| ADJUST LEFT | AV MUTE OFF | ENLARGE DOWN |
| ADJUST RIGHT | MUTE ON | PIC MODE |
| ADJUST UP | MUTE OFF | IRIS |
| ADJUST DOWN | ZOOM UP | KEYSTONE |
| ENTER | ZOOM DOWN | FREEZE |
| UNDO | FOCUS UP | RESIZE |
| AV MUTE TOGGLE | FOCUS DOWN | BLACK SCREEN |
| AUTO SYNC | | |
| AUTO FOCUS | | |

D. Relays

The following table specifies the factory preset settings for the low-current relays found on the rear of the **SmartPanel**. The **Configuration Utility** can be used to customize these settings your installation.

Relay 1	ON Maintained
Relay 2	ON Momentary
Relay 3	OFF Momentary
Selection	Momentary; not Binary



E. Other Presets

The following table specifies other default factory settings for this Driver that affect is control of the Projector.

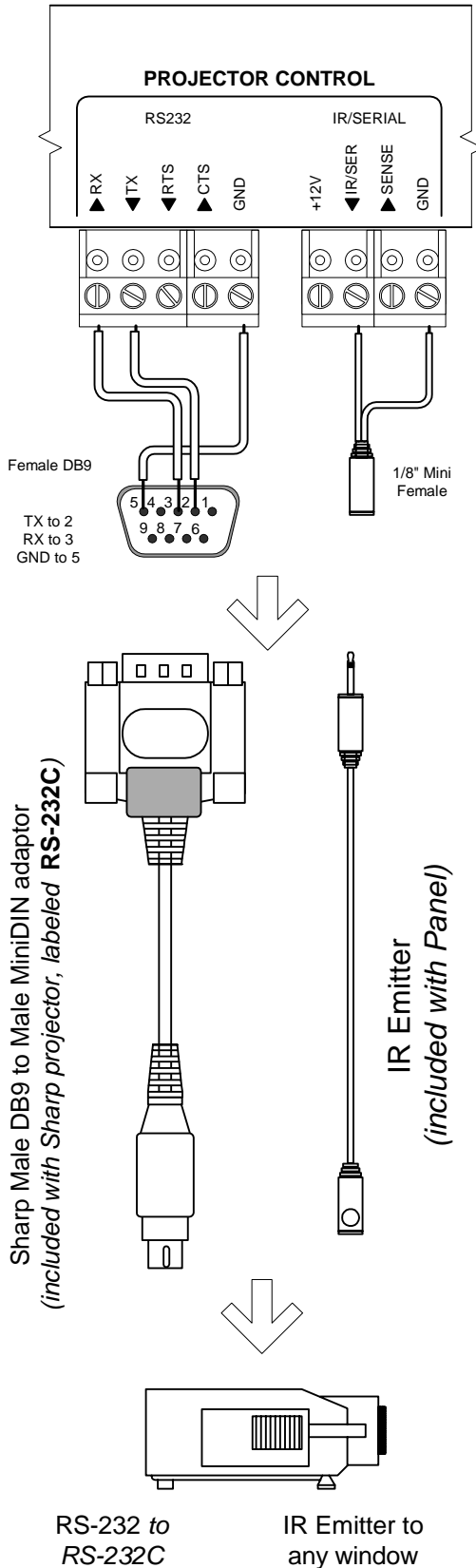
<i>Power Status Feedback Method</i>	Power Polling (see note 1)
<i>Control Wiring</i>	RS-232 and Infrared Emitter required (see note 2)

Control for the Sharp with this Driver is via RS-232 and Infrared Emitter

The following table specifies settings for the Panel’s configurable timers. For more information on the inactivity shutdown feature and the lockout timer see the *SmartPanel Configuration and Installation Guide*.

Lockout Timer	95 seconds (see note 3)
Inactivity Shutdown	Disabled

II. CONTROL WIRING



This section describes how RS-232 and the Infrared Emitter must be wired to the Sharp projector.

A. RS-232 should be connected to the Sharp control port labeled **RS-232C**. Connection should be as follows:

1. Wire the Panel to a female DB9 as follows:
TX to 2
RX to 3
GND to 5
2. Connect this female DB9 to the Sharp's custom DB9 to mini-DIN adapter cable. This cable is included with the Sharp and is labeled **RS-232C**.
3. Connect the Sharp custom cable to the projector port labeled **RS-232C IO/IOI**.

B. Infrared should be wired to any Sharp infrared port. Connection should be as follows:

1. Wire the Panel to a female 1/8" Mini as shown; wire **IR/SER** to *tip* and **GND** to *ring*. Direct wiring to the IR Emitter is not recommended as it makes removal of the Panel for service more difficult.
2. Attach to any projector IR port using the Panel's IR Emitter (included with the Panel).

Note that the emitter glows red when IR is emitted so wiring can be verified.

SPECIAL CONTROL NOTE

The following projector menu settings must be correctly set to control the Sharp XG-MB70X with the SmartPanel:

- In the projector menu **OPTIONS1** the **ECONOMY MODE** must be set to **OFF**. Be sure the arrow is pointing to the **RIGHT**.
- In the projector menu **OPTIONS 2** the setting **RS232C** must be set to **9600** (default).
- In the projector menu **OPTIONS 2** the setting **LAN/RS232C** must be set to **ENABLE** (default).
- Questions should be directed to SP Controls technical support at help@spcontrols.com.

III. TROUBLESHOOTING

Additional tips can be found in the *SmartPanel Configuration and Installation Guide*.

The Panel does not power on at all.

When power is applied to the Panel it should run through a brief power on self-test, during which all of the Panel lights will turn on and off in sequence. If you do not see this self test, make sure power is connected correctly and that polarity is correct.

The Panel does not control the projector at all.

The most frequent cause of control failure is incorrect wiring. Verify that RS-232 and IR are both correctly wired. Try swapping RX and TX on the captive screw connectors.

If wiring is correct, verify that the projector settings are set correctly as described in the *Special Control Note* in *Section II. Control Wiring*.

The projector is extremely slow to switch inputs.

The XG-MB70X takes 8-10 seconds to switch inputs by RS-232. This is due to the projector design and is not subject to control. SP Controls recommends using the much faster IR to control the projector inputs by selecting the IR input commands during configuration (*IR VIDEO* instead of *VIDEO*, et cetera).

The Panel keeps turning itself off even though the projector is on.

The Panel turns itself off when power status feedback indicates that the projector is off. If a third party power current sensor is being used, check to make sure that it is correctly wired, and that it is correctly calibrated according to the manufacturer's instructions. If not, make sure that the Panel is configured with *None* or *Power Polling* under power status feedback in the Configuration Utility's *Wiring Options* tab.

The Projector keeps turning itself off!

Verify that the MB70X's *Economy Mode* is set to *OFF* as explained in the *Special Note* in the *Control Wiring* section of this document

IV. TECHNICAL NOTES

1. By default, projector power is verified by polling every few seconds via the RS-232 port. Power polling can be suspended by depressing and holding the **On** key; polling will be restored when the key is released. Should the Sharp power off, the Panel will usually detect this condition and power off within twenty seconds. Should the Sharp power on, the Panel will usually detecting this condition and power on within ten seconds.
2. The Sharp is controlled via RS-232 and Infrared/Wired Remote with this Driver. A discussion of the advantages of Wired Remote versus IR can be found in the *SmartPanel Configuration and Installation Guide*.
3. The lockout timer specifies the amount of time allowed between sending *POWER OFF* and *POWER ON* to the projector (the delay allows the projector bulb to cool before re-powering). This delay can be configured using the **Configuration Utility**; however, adjusting the lockout timer delay is **strongly discouraged** as rapid re-powering causes undue wear on the projector's bulb. Also, the Sharp will **not** allow power to be restored before a minimum delay has expired. Therefore, **disabling the lockout delay will cause potentially confusing Panel behavior**.

V. REVISION HISTORY

1. Revision A (October, 2004) *Original release.* BT