NOTE: This 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.

WARNING: Before attempting to control the Yokogawa with the SmartPanel the RS-232 baud rate setting *must* be set to *19200*. Failure to do this will make the projector unresponsive and will require **disconnecting projector power while on** to restore control. To set the baud rate, turn on the projector manually, and press the *Keystone* button. Once the keystone menu is displayed press the *Enter* key **5 times in a row**. This will put you in the *Service Menu 2*. Change the baud rate setting to *19200*. To exit the menu hit the *Menu* button.

I. Driver Features

1. Input Selection Mapping

Selection 1:	VIDEO
Selection 2:	S-VIDEO
Selection 3:	RGB1
Selection 4:	RGB2

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:	MUTE
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
Control Wiring:	RS-232 Only

II. Wiring Specifications

Although this driver does not use IR, SP Controls strongly recommends wiring for RS-232 and IR.

NOTE: For a wiring diagram, please see the SP Controls Application Note.

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

TX to	3
RX to	2
GND to	5

Connect this female DB9 to the projector port labeled *RS-232C.*

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 **IR window**.

This document describes the **SmartPanel** Projector Driver for the **Yokogawa D-3300X projector.** For more information on configuring and using the Panel see the *SmartPanel Configuration and Installation Guide.*

WARNING: Before attempting to control the Yokogawa with the SmartPanel the RS-232 baud rate setting *must* be set to *19200*. Failure to do this will make the projector unresponsive and will require **disconnecting projector power while on** to restore control. To set the baud rate, turn on the projector manually, and press the *Keystone* button. Once the keystone menu is displayed press the *Enter* key **5 times in a row**. This will put you in the *Service Menu 2*. Change the baud rate setting to *19200*. To exit the menu hit the *Menu* button.
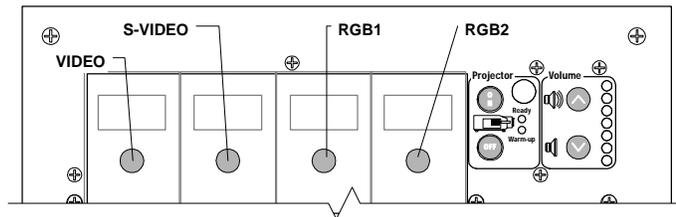
I. PROJECTOR CONTROL

A. Volume and Power Control

Volume control on the YOKOGAWA is **relative.**   Absolute volume control for the YOKOGAWA is also possible with use of SP Controls' optional **Audio Follow Video Pre-Amplifier**.

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.

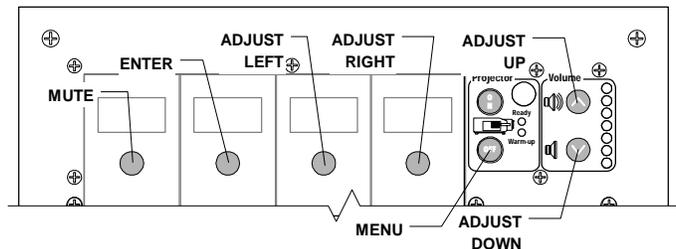|	
Selection 1:	VIDEO
Selection 2:	S-VIDEO
Selection 3:	RGB1
Selection 4:	RGB2

Input choices available for the YOKOGAWA with this Driver are: Video, S-Video, RGB1, RGB2 (this is a DVI input), and Component.

NOTE: This projector takes approximately 5 seconds to switch sources

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

Hidden functions are accessed by pressing the indicated key while the holding the **On** key down.

Hidden functions names are based on the YOKOGAWA remote and controls on top of the projector. *Adjust, and Enter* controls navigate through onscreen menus. Mute is a toggling Audio mute.
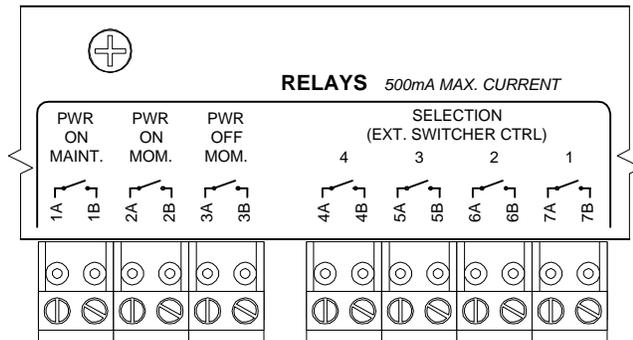
The hidden functions available for the YOKOGAWA with this Driver are as follows:

MENU	ENTER	AUD MUTE ON
ADJUST LEFT	MUTE	AUD MUTE OFF
ADJUST RIGHT	PinP	VID MUTE ON
ADJUST UP	PICTURE	VID MUTE OFF
ADJUST DOWN	WIDE	KEYSTONE
FREEZE	ZOOM+	ZOOM-
CANCEL		

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

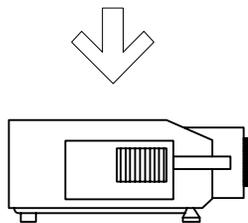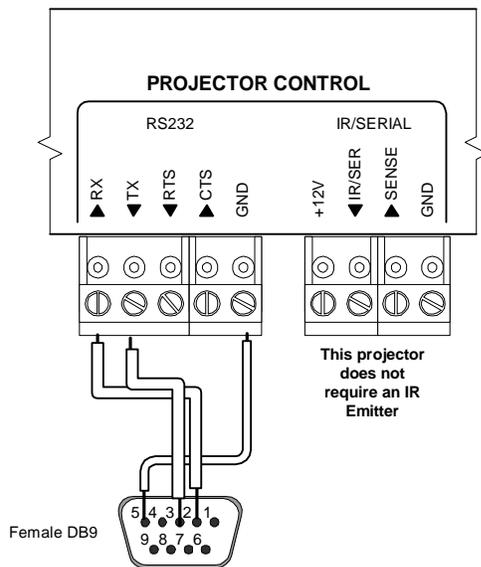The following table specifies other default factory settings for this Driver that affect is control of the Projector.

Power Status Feedback Method	RS-232 (see note 1)
Control Wiring Option	RS-232 Only (see note 2)

All control for the YOKOGAWA with this Driver is via RS-232. However, SP Controls **strongly recommends** wiring the IR 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 Manual.*

Lockout Timer	90 seconds (see note 3)
Inactivity Shutdown	Disabled

II. CONTROL WIRING

PROJECTOR CONTROL

RS232   IR/SERIAL

RX ▲ TX ▼ RTS ▼ CTS ▲ GND   +12V IR/SER ▼ SENSE ▲ GND

This projector does not require an IR Emitter

5 4 3 2 1
9 8 7 6

Female DB9

RS-232 to RS232C

This section specifies how RS-232 and the IR Emitter should be wired to the YOKOGAWA projector.

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

1. Wire the Panel to a female DB9 as follows:
   TX to 3
   RX to 2
   GND to 5

2. Connect this female DB9 to the projector port labeled *CONTROL (RS-232C)*.

Special Control Note:
The following settings must be set or the Yokogawa may become unresponsive and will require to be disconnected from power before being able to operate correctly.

1. Before attempting to control the Yokogawa with the SmartPanel the RS-232 baud rate setting *must* be set to *19200*. Failure to do this will make the projector unresponsive and will require **disconnecting projector power while on** to restore control. To set the baud rate, turn on the projector manually, and press the *Keystone* button. Once the keystone menu is displayed press the *Enter* key **5 times in a row**. This will put you in the *Service Menu 2*. Change the baud rate setting to *19200*. To exit the menu hit the *Menu* button.

2. In the *Installation Menu* turn **OFF** both **Auto Power Up** and **Auto Lamp Off**. This menu can be reached by hitting the *Menu* button and moving to the right most menu screen using the Adjust Right button.

III. TROUBLESHOOTING

Addition tips can be found in the *SmartPanel Configuration and Installation Manual.*

The Panel does not do anything 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 keeps turning itself off even though the projector is on.
   The Panel turns itself off when power polling indicates that the projector is off. Check to make sure the RS-232 connection is correctly wired (it is extremely unlikely other control would work, and power polling not).

When I try to turn the projector on, the warming indicator (red LED) blink.
   The projector is in the default configured *lockout state*, and the Panel is waiting for its internal lockout timer to expire. This feature protects the projector's bulb. Be sure to let your client know about this behavior.

When switching sources it takes a while for the image to display.
   This is a feature of the projector which the SmartPanel cannot control. The projector takes up to 5 seconds to determine how to display the signal, during this time the screen may be blue or black depending on the projector setup.

The projector turned on but is locked up.
   During testing SP Controls found that if the baud rate setting on the Yokogawa was not set to 19200 the projector may become inoperable. The Yokogawa responded to the Power On signal however it did not respond after that. During this time the Yokogawa did not respond to the remote control or the set top controls. SP Controls was forced to be disconnected the projector from power to reset the unit. *See Special Control Note in Section II.*

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 YOKOGAWA power off, the Panel will detect this and power off within twenty seconds. Should it power on, the Panel will detecting this and power on within thirty seconds.

2.   This YOKOGAWA is currently controlled via a combination of Infrared and RS-232 only. Wired Remote is not an option as the YOKOGAWA does not have a Wired Remote port.

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, *disabling the lockout delay will cause potentially confusing Panel behavior.*

V. REVISION HISTORY

1.   Revision A (May, 2004) *Initial release* – TK.