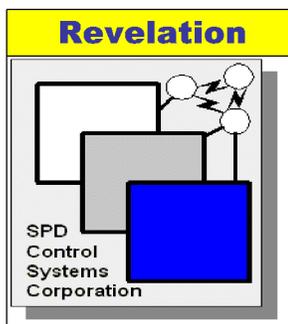


# REVELATION

SPD Smart Glass Demonstration Unit

## User's Guide



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Version 4.3b  
August 8, 2007

# Revelation SPD Smart Glass Demonstration Unit Users Guide

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# Revelation SPD Smart Glass Demonstration Unit Users Guide

## 1. Introduction

The major features of the Revelation SPD SmartGlass™ Demonstration Controller are:

- Exercises the full range of variable transparency of SPD SmartGlass™ film
- Small, self-contained, portable, battery operated (4 AA's) controller
- Supports one or two pieces of film (2 recommended for demo mode)
- Adjusts to different manufacturers film types

*Please read this entire User's Guide AND the Errata section at the end of the Guide before using the demo unit.*

## 2. Description

You can control the SPD film samples either from the included remote control device or using the front panel on the unit. The front panel of the unit has soft membrane-type buttons. The buttons on the front panel (See Figure 1) are as follows:

### 2.1 Front Panel Controls

<b>ON/OFF</b>	Demo Unit <i>Power</i> On/Off
<b>Clear</b>	Press to make film sample <i>clearer/less tint</i>
<b>Dark</b>	Press to make film sample <i>darker/more tint.</i>
<b>SELECT</b>	Press to switch between <i>operating modes</i>

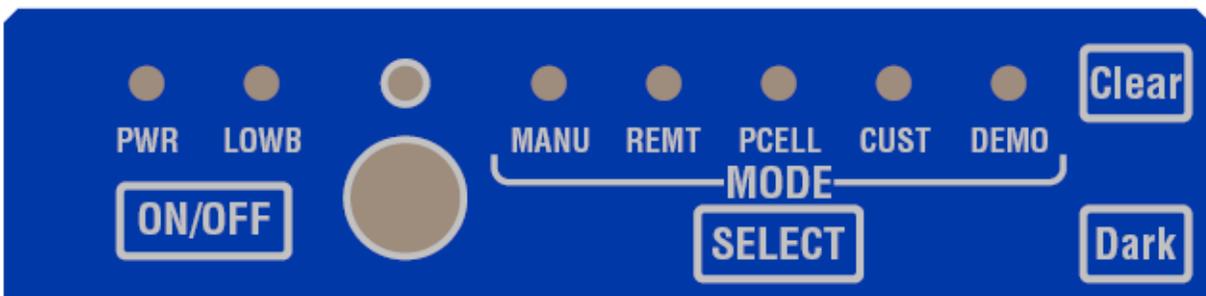


Figure 1 - Demo Unit Front Panel

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## 2.2 Front Panel Indicators

<b>PWR</b>	<i>Power</i> circuits to drive film are active.
<b>LOWB</b>	<i>Insufficient power</i> remains in the batteries to operate a quality demonstration.
<b>MANU</b>	<i>Manual Mode</i> - Indicates that Manual Mode is active.
<b>REMT</b>	<i>Remote Control Activity</i> - flashes when signals are received from the remote control.
<b>PCELL -</b>	<i>Photocell Mode</i> - Indicates that Photocell Mode is active.
<b>CUST</b>	<i>Custom Mode</i> - Client specific custom programmed features are active.
<b>DEMO</b>	<i>Demo Mode</i> - Indicates that Demo mode is active.

## 2.3 Back Panel Layout

The following picture shows the layout of the back panel of the demo unit.

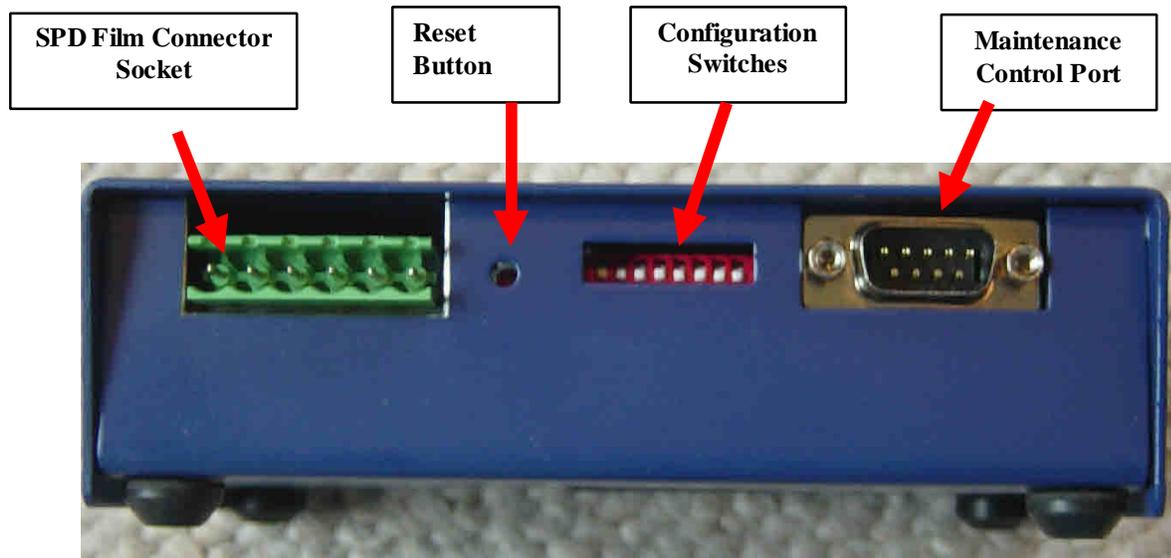


Figure 2 - Demo Unit Back Panel

## 3. Demo Unit Setup and Configuration

### 3.1 Battery Installation

Remove the battery cover on the bottom of the demo unit by removing the two screws that hold the cover in place. See Figure 3. Insert **4 AA batteries** and replace the cover securing with the two screws. It is recommended to use **Lithium batteries** (e.g. Energizer Lithium 2020 or equivalent) for long life and best performance.



**Figure 3 - Bottom of Demo Unit, Battery Compartment**

The remote unit also requires 2 AA batteries.

### 3.2 Configuration Switches

The configuration switches allow selection of the type of SPD film connected to the demo unit. The switches are located on the back panel of the unit. See Figure 2. ***Please note if there are two film samples connected to the demo unit they must both be of the same type and manufacturer in order for the unit to work properly.***

***After changing the switch configuration you must press the reset button on the back panel before powering on the unit. This is done most easily with a small pointed object such as the end of a paper clip.***

The first six switches in the group select the type of film. The other two switches are used in custom programming and to override the built in shut down of the unit if no buttons are pressed in 10 minutes.

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When a switch is **DOWN** it is in the **ON** position.

When a switch is **UP** it is in the **OFF** position.

The following table indicates the settings required for each film type.

**Table 1 - Film Type Switch Settings**

S W1	S W2	S W3	S W4	S W5	S W6	SP D	Fil m	Sa m #	Sa m le	Sa m le	Sa m le
							ID	#	Siz (in che s)		
O	N	O	N	O	N	O	DI	FM501063	C	07G	10"
								#1			
O	F	O	N	O	N	O	DI	KFM51110-8	C	x15	"
								#2			
O	N	O	F	O	N	O	DI	SFM50214-1	C	#3	x17"
								#3			
O	F	O	F	O	N	O	DI	KFM51109-10	C	5"x	15"
								#4			
O	N	O	F	O	N	O	Hit	05200.21 LCF	ach	5"x	8.5"
								#1			
O	F	O	F	O	N	O	Hit	TB	ach	D	D
								#2			

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ON OF OF ON ON ON Hit TB TB  
 F F                   ach D D  
                           i  
                           #3

OF OF OF ON ON ON Hit TB TB  
 F F F                   ach D D  
                           i  
                           #4

ON ON ON OF ON ON Iso TB TB  
           F               cli D D  
                           ma  
                           #1

OF ON ON OF ON ON Iso TB TB  
 F            F           cli D D  
                           ma  
                           #2

ON OF ON OF ON ON Iso TB TB  
   F        F           cli D D  
                           ma  
                           #3

OF OF ON OF ON ON Iso TB TB  
 F F        F           cli D D  
                           ma  
                           #4

**NOTE: For switch positions DOWN = ON, UP = OFF**

Table 2 shows how to configure the unit for custom operation. Note that switch 7 must be **ON** for normal operation.

**Table 2 - Custom Mode Switch Settings**

SW7	Feature
ON	<i>Custom Mode Disabled</i>
OFF	Custom Mode Enabled

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The Demo Unit is programmed to shutdown automatically if there is no activity from the remote or front panel for 30 minutes. This is intended to save battery life. Table 3 shows how to disable the built-in timeout feature.

**Table 3 - Timeout Feature Setting**

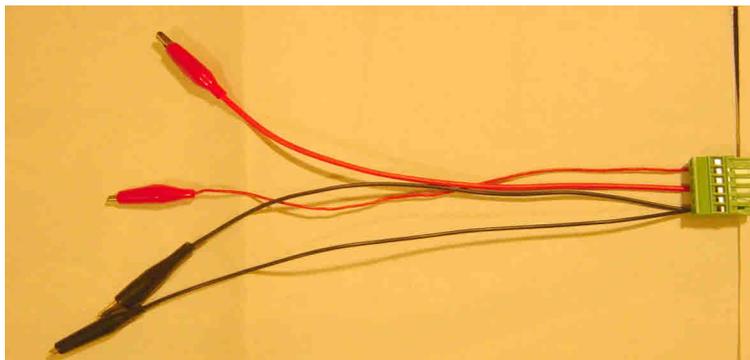
SW8	Feature
ON	<i>Demo Unit Timeout Enabled</i>
OFF	Demo Unit Timeout Disabled

### 3.3 Connection of SPD Film Samples

The Revelation demo unit comes with a wiring harness (See Figure 4) for the connection of the unit to the SPD film samples. The wiring harness consists of two pair of wires with alligator clips that terminate in a connector block that plugs into the back of the demo unit. The red wires are for connection to the first SPD film that is considered to be on Channel One of the demo unit. The black wires are for connection to the second piece of SPD film on Channel Two, if there is one.

#### NOTE

**PLEASE BE AWARE THERE IS A SIGNIFICANT ELECTRICAL CURRENT PRESENT AT THESE CONNECTIONS WHEN THE DEMO UNIT IS OPERATING. A SIGNIFICANT SHOCK CAN RESULT FROM CONTACT WITH BARE WIRES OR CONNECTORS. PLEASE BE SURE THAT THE POWER TO THE UNIT IS OFF WHEN CONNECTING OR DISCONNECTING THE UNIT TO FILM SAMPLES.**



**Figure 4 - Demo Unit Wiring Harness**

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Use the alligator clips to attach the demo unit to wires or connection points to the bus bars for each of the film samples. Plug the connector block on the wiring harness into SPD Film connector socket on the back panel of the demo unit. See Figure 2 – Revelation Back Panel,.

### 4. Operating Modes

The controller operates in one of 5 modes. The LEDs on the front panel indicate which mode is currently active.

The Modes can be selected from the front panel (See Figure 1) and the remote control unit (Figure 5).

**The remote control is Infrared based. The remote must be pointed at the front panel of the Revelation unit for proper operation.**



**Figure 5 - Infrared Remote Control**

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## 4.1 Manual Mode

This mode allows you control the level of transparency in two pieces of SPD film. Using the **Clear/Dark** control on the front panel you can vary the tint of the film sample on channel 1 also referred to as Film 1. Using the remote control unit you can vary the tint of the samples on both channel 1 and channel 2 by pressing the appropriate button.

## 4.2 Demo Mode

### Refer to the Demo Mode Timing Diagram (Figure 6)

In this mode the two pieces of film transition from dark to clear on different cycles. Film One will start a cycle of changing from dark to clear and back again. Film Two will start a similar cycle but approximately 15 seconds further along in the cycle than Film One and will operate 25% percent slower than Film One. The objective of the demo is to show the full capabilities of the film samples: the response time and the range of tint from dark to clear. It is also intended to show the ability of the controller to manage multiple SPD samples simultaneously.

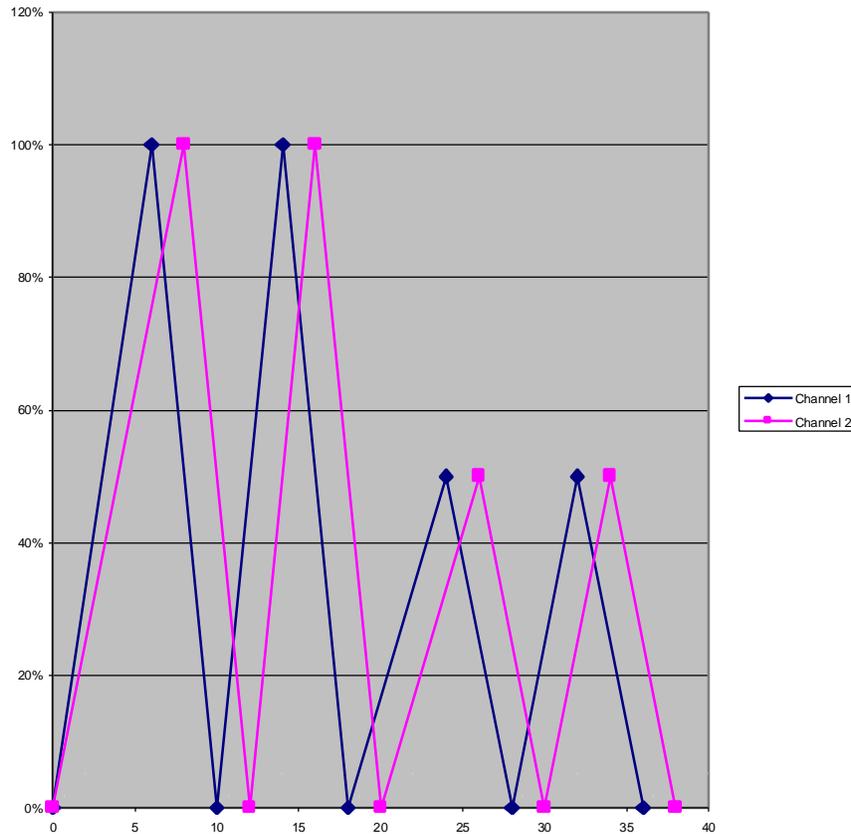


Figure 6 - Demo Mode Timing Diagram

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## 4.3 Photocell Mode

In this mode the film sample on channel 1 varies its transparency based on the level of light received by the photocell located on the front panel of the Revelation unit. The full range of the film sample will be shown based on photocell input. The film is darkest in direct sunlight and clearest in a dark room.

## 4.5 Custom Mode

This mode is reserved for custom features that can be programmed into the controller at a client's request.

## 5. Troubleshooting

**Table 4 - Troubleshooting Guide**

<b>Problem</b>	<b>Solution</b>
No power to the unit, LEDs do not light	Check batteries. Insure that batteries are correctly inserted into the battery holder.  The unit powers down off after 10 minutes. Restart the unit.
Film does not change tint	Check connections to film.  Check that wiring harness is completely plugged into the socket on back panel.  Press Reset Button.
Remote control does not change tint of film	Check batteries in remote control.
Remote does not change modes	Be sure to point the remote directly at the demo unit. Check batteries in the remote.

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## Customer Support

**Email** - [support@spdControlSystems.com](mailto:support@spdControlSystems.com)

**Web** - [www.spdControlSystems.com/support-DemoController.htm](http://www.spdControlSystems.com/support-DemoController.htm)

## 6. Specifications

### Demo Unit Controller

#### Electrical

- Voltage - 6 VDC  
- 4 AA batteries (Energizer No. 2020 Lithium Recommended)
- RS-232C Interface for Program and Film Profile Table updates
- Connection Harness: Plug and two pair of 20 gauge wires for connection to film

#### Physical Dimensions

- 5.375" L x 4" W x 1.5" H

### Demo Unit Remote Controller

Infrared Remote Control with Power, Mode, and rocker switches for Clear/Dark control of Channel 1 and Channel 2.

#### Electrical

- Voltage 3 VDC – 2 AA Batteries

#### Physical Dimensions

- 7.25" L x 1.75" W x 0.75" H

**Errata (July 20<sup>th</sup>, 2006, SCSC)**

1. The unit must be turned on using the switch on the unit. The remote control can be used for all the other functions and to turn it off.