

# Optical Switch Driving Circuit Board, Firmware, and GUI

(Protected by U.S. patent 6823102 and pending patents)

## Product Description

The SW-DR-2 evaluation kit is comprised of a main control board, a switch mounting daughter board, software, a power supply, and a computer interface cable. It is designed to drive and control Agiltron CrystaLatch™ (CL), LightBend™ (LB), MEMS, and Fiber-Fiber™ (FF) optical switches up to 15 activation points. The evaluation board integrates both USB and TTL interfaces, as well as an RS232 interface that require a jumper.

This board can control multiple switches simultaneously, designed to be flexible to meet customer application scenarios. Various switch configurations are realized via an application specific switch mounting daughter board, in which fibers are connected via splicing. A user-friendly GUI Windows™ program is included for switching testing.



## Specifications

Parameters	Min	Normal	Max	Unit	Notes
Control Channels	1		8		
Output Switching Voltage	4.75	5	5.25	V	Pulse width output, through J3
Switching Current			2.0	A	Total switching current, continuous
Output Pulse Width	0.1		3.0	ms	Pulse duration adjustable by firmware
Power Supply Voltage	11.7	12	12.3*	V	Input power supply through J2
Power Consumption (No Switching)			0.25	W	Hot pluggable. <1.5A inrush current
USB/RS232				V	Using J7 to select USB or RS232
TTL Interface	TTL Logic L<0.8V H>3.5V				through J4
Electrical Connector Type	Male AMP 103309-2 or equivalent				
Board Dimension	(L)100mm x (W)60mm x (H)15mm				

\*Over this value will damage the device

## Control Modes

### USB Control

This is a default setting for use with the supplied GUI Windows™-compatible software for programmable switching testing.

### RS232 Control

This function needs to jump the two pins of J7 to close position. The black jump is provided on the J7. This communication port has 9600; data bits: 8; parity: none; stop bits: 1; flow control: none;

### TTL Control

This function always works. Standard TTL logic level with TTL logic timing. A TTL emulator is available on the circuit board.

**Warning: Control Signal >5.5V Will Damage the Board**

**Warning:** This device must use the reference circuit to driver otherwise it is unstable.

## Features

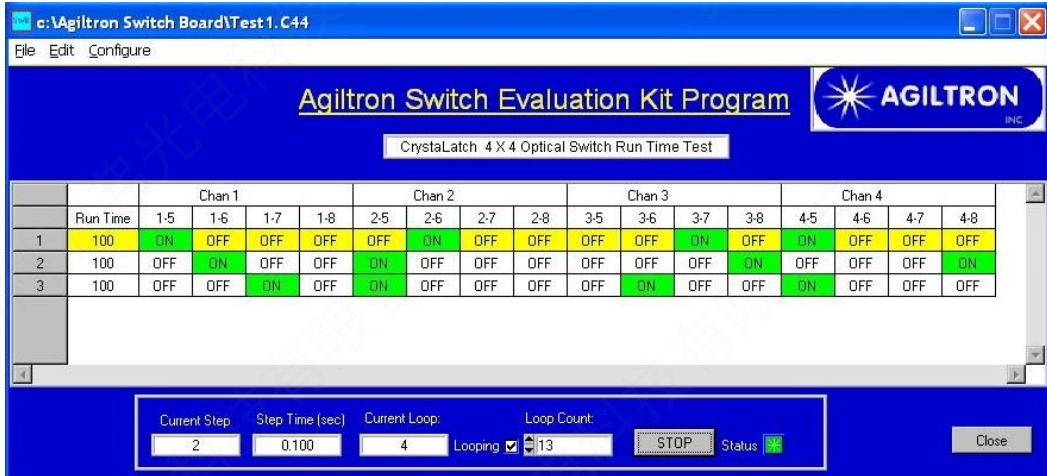
- USB, RS232, & TTL Interface
- Real time high speed
- Flexible ports configuration
- User-friendly GUI

## Applications & Compatibility

- NxM CrystaLatch™ Switches (N=1,2 M≤8; N=4, M=4)
- NxM LightBend™ Switches (N=1,2 M≤8; N=4, M=4)
- Multi-functional electronic control

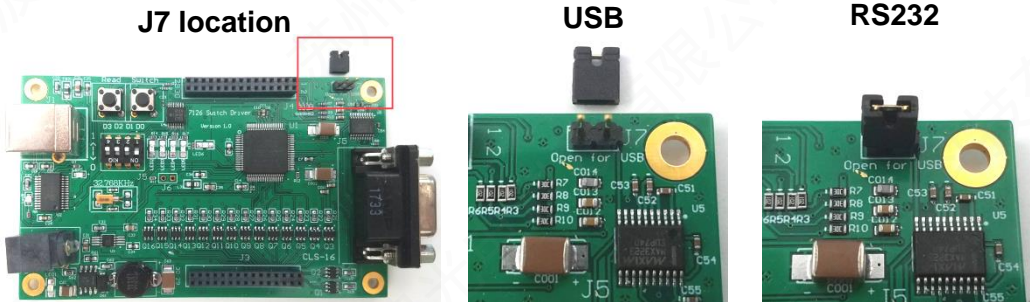
# Optical Switch Driving Circuit Board, Firmware, and GUI

## GUI Example (4x4)



## Changing from USB to RS232

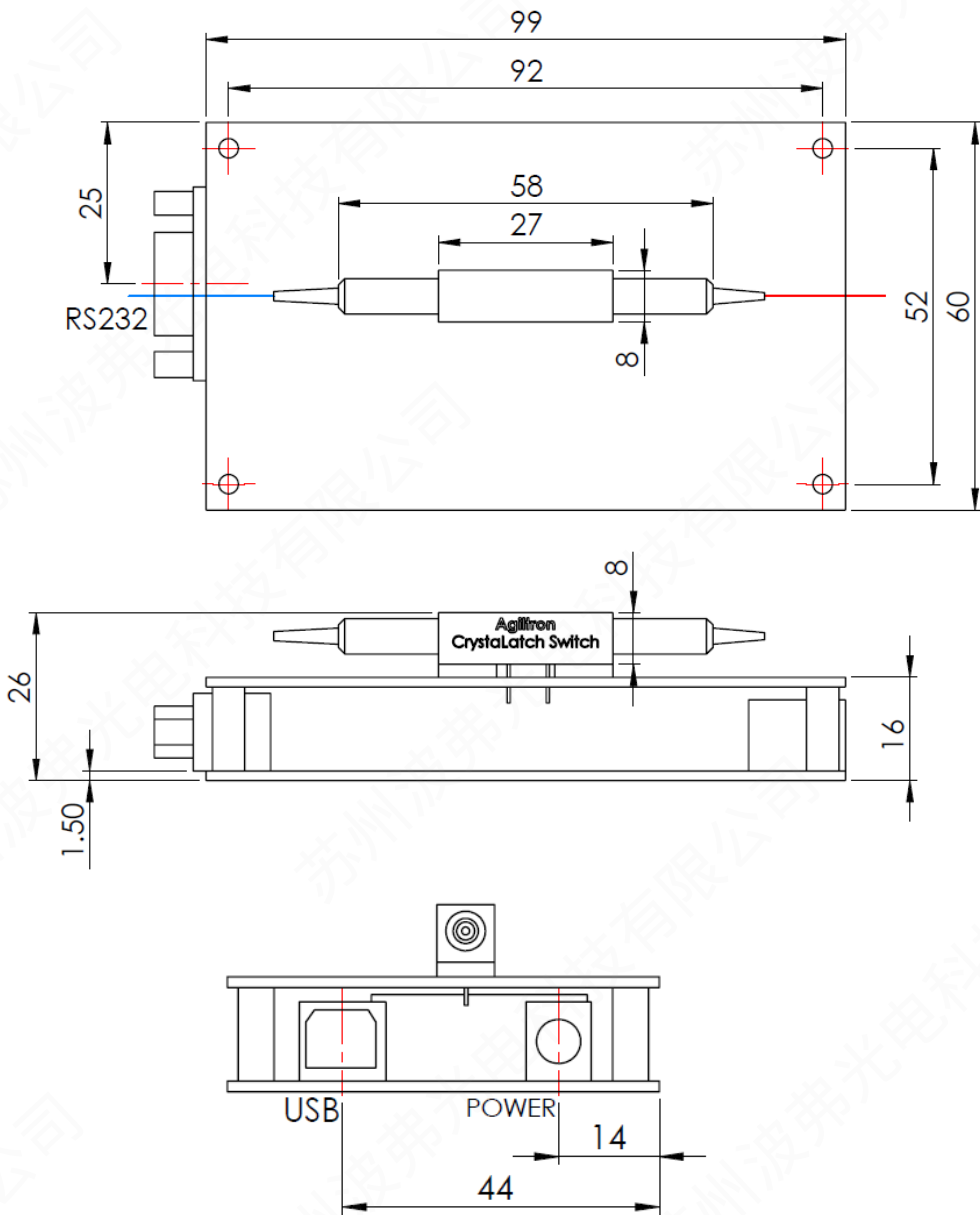
Use the J7 connector (provided with switch) to choose USB or RS232.



## Operation Instruction

1. Plug in the accompanied power supply.
2. Load the accompanied GUI into a computer
3. Connect the computer to the board using the accompanied cable
4. Run the software
5. Do not change any hardware setting that requires costly rest at the company

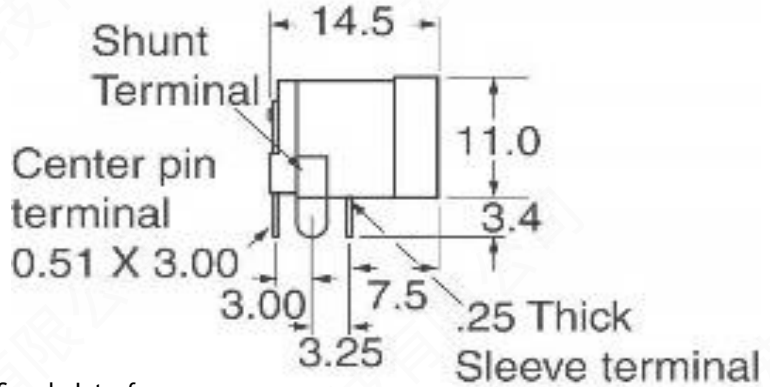
## Mechanical Dimension



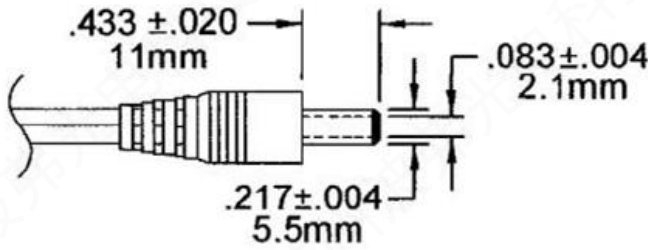
\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

## Power Connector

P/N: [SC1313-ND](#)  
 Power Barrel Connector Jack 2.00mm ID (0.079"),  
 5.50mm OD (0.217") Through Hole, Right Angle



12V Wall Plug DC Power Supply Interface



## Command List

**Table 1: RS232 Command/Response Format**

Command:	<Addr>	<Code>	<Dx>	<Dy>
Response:	<Addr>	<Code>	<Dx>	<Dy>

<Addr>	Module Address: 0 for all modules and 1-255 for specified module. Default:1
<Code>	Control Code: Refer to Command Code Table
<Dx>	One byte data, high byte
<Dy>	One byte data, low byte

**Table 2: RS232 Command Code Table**

Description		
Read Module Address	Address = <Dx> <Dy>	
Set Module Address	<Dx> <Dy> = 1 - 255	
Read Module Serial Number (Higher 2 Bytes)	S/N (Higher 2 Bytes) = <Dx> <Dy>	
Read Module Serial Number (Lower 2 Bytes)	S/N (Lower 2 Bytes) = <Dx> <Dy>	
Read Module Type	Type = <Dx> <Dy> (m ' n switch: n ¼ first two digits from left; m ¼ third and fourth digit from left)	
Read Module Version	Hardware Version = <Dx> / 10; Firmware Version = <Dy> / 10	
Read Switch Status	N = <Dx><Dy> (D <sub>4</sub> D <sub>3</sub> D <sub>2</sub> D <sub>1</sub> D <sub>0</sub> = N-1)	
Set Switch to Status N (N = D <sub>4</sub> D <sub>3</sub> D <sub>2</sub> D <sub>1</sub> D <sub>0</sub> +1, 1£N£32)	<Dx><Dy> = N	
Read Individual Switch Status	Status = <Dx><Dy>.	Bit-M: 0 ¼ Switch (M+1) L Position; 1 ¼ Switch (M+1) U Position;
Set Individual Switch Positions	<Dx><Dy>	Bit-M: 0 ¼ Switch (M+1) L Position; 1 ¼ Switch (M+1) U Position;
Read Module Alarm	Normal: <Dx> <Dy> = 0	Temperature Alarm: [Bit-0 of <Dx> <Dy>] = 1   Power Supply Alarm: [Bit-1 of <Dx> <Dy>] = 1
Read Module Temperature	T(°C) = <Dx> <Dy> / 10	
Read Power Supply Voltage	V(mV) = <Dx> <Dy>	
Read Low Temperature Alarm Threshold	T(°C) = <Dx> <Dy> / 10	
Set Low Temperature Alarm Threshold	<Dx> <Dy> = 10 ´ T(°C)	
Read High Temperature Alarm Threshold	T(°C) = <Dx> <Dy> / 10	
Set High Temperature Alarm Threshold	<Dx> <Dy> = 10 ´ T(°C)	

# Optical Switch Driving Circuit Board, Firmware, and GUI

## Ordering Information

Prefix	Switch Type	Function	Latching	Repeat rate <sup>[1]</sup>	Footprint	# of Switch	Control Mode	DC supply
SWDR-	FF Switch = 1 CL switch = 2 LB switch = 3 MEMS Switch = 4 FF Switch = 5 Delayline LB = 6 Delayline CL = 7 Delayline MEMS = 8	1x1 = 1a 1x2 = 2a 2x1 = 2b 2x2 = 2c 1x4 = 4a 4x1 = 4b ... 1x9 = 9a 9x1 = 9b 9x9 = 9c 1x10 = 10 ... 1x99 = 99 Special = 00	Latching = 1 Non-latching = 2	2Hz = 4 20Hz = 1 2kHz = 2 (CL) 20kHz = 3 (CL)	Standard = 1 Octo switch = 2 Special = 0	1 switch = 1 2 switches = 2 3 switches = 3 N switches = N Special = 0	TTL = 1 USB = 2 RS232 = 3 TTL & USB = 4 RS232 & USB = 5 Special = 0	12VDC = 1 Special = 0

[1]: LB, MEMS, FF all limited to 2Hz

**NOTE:**

- This driver is intended mounted with specific switches, tuned, and tested prior to shipping. It is not designed to be sold separately.

## Power Consumption

Static Condition - 12V/12mA