

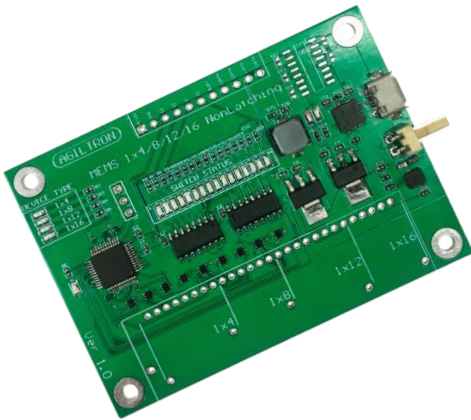
Fiber Optic MEMS-1xN Switch Evaluation Kit

Push Button/TTL/USB or RS232



DATASHEET

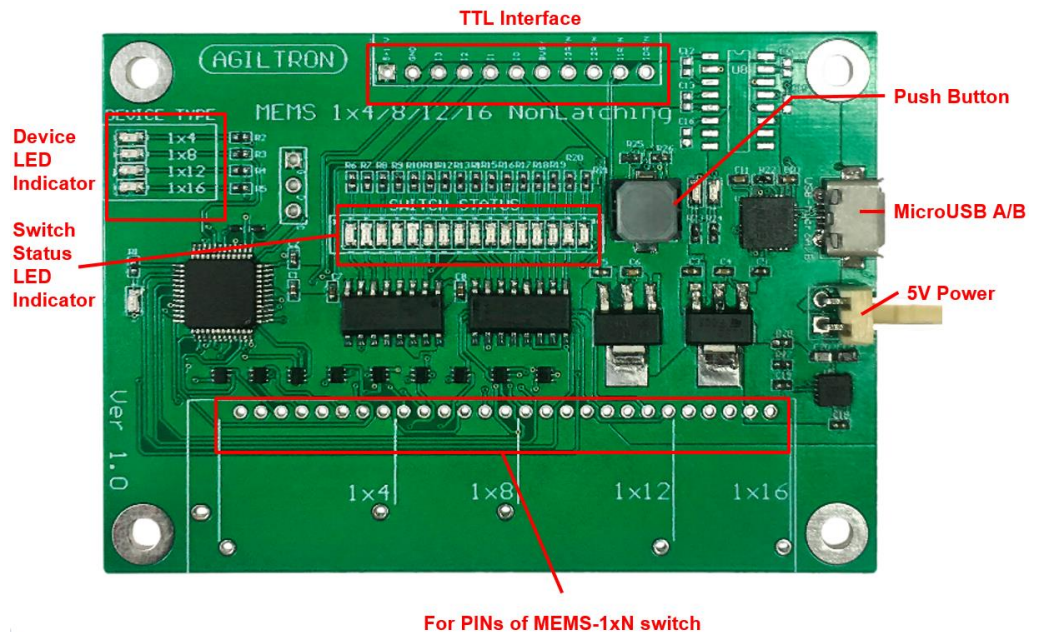
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The MS-DR-1 evaluation kit is compatible with MEMS 1x4/1x8/1x12/1x16 switches. It has three control modes: manual push button; TTL; USB or RS232 with a user-friendly GUI Windows™ program supporting UART commands. It is intended for convenient laboratory use or switch performance evaluation. The unit has a mini USB connector with a USB-to-MicroUSB cable or a special RS232-to-MicroUSB cable to support RS232 connection. It can be powered by 5V power supply. It is a cost-effective solution for ease of using our switches.

Features

- USB
- RS232
- Push Button
- TTL
- GUI



Compatibility

- MEMS-1x4, 1x8, 1x12 & 1x16

Electrical Specifications

Parameter	Min	Typical	Max	Unit
Operating Temperature	-10		70	°C
Storage Temperature	-40		85	°C
Power Voltage DC		5.0	5.5	V

Warning: Control Signal >5.5V Will Damage the Board

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

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Rev 11/12/23

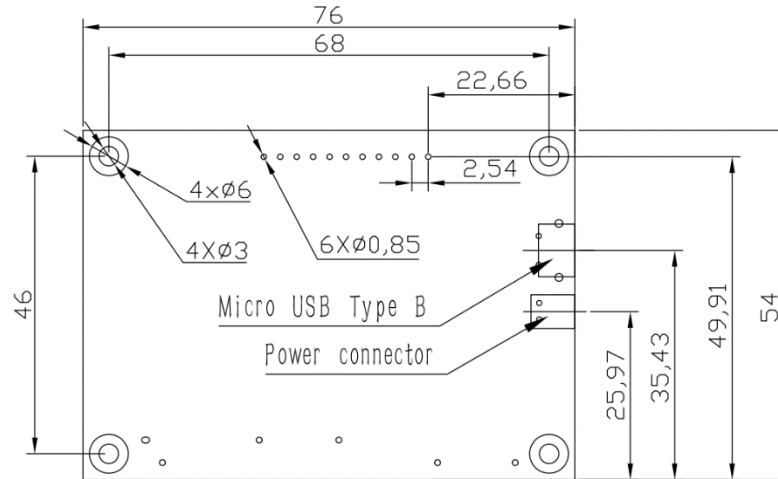
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Mechanical Footprint Dimensions (Unit: mm)



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

Manual Operation Instruction

• Power the Board

The unit can be powered up via the USB cable to a computer or a wall plug or a 5V power supply.

• Manual Push Button Control

When the Push Button is pressed shortly (less than 4s), the status of switch would roll among all its available status. For example, when the switch is at status 1 (Input 1 -> Output 2) and the Push Button is pressed, the switch would change to status 2.

When the Push Button is long pressed (more than 4s), the device type would change. The device type would be saved and only need to be changed once.

TTL Operation Instruction L<0.8V H>3.5V

• TTL Interface Definition

Definition of TTL holes from left to right:

Name	Direction	Description
5V	Power	The driver board can also be powered up via these two holes.
GND	Ground	
I3	Input	I0-I3 denotes the input status of switch. Up to 16 different statuses are available for this driver board. I3 is the highest bit of input status, while I0 is the lowest one. For example, I3 -> 0, I2 -> 0, I1 -> 0, I0 -> 1, change to status 2. I3 -> 1, I2 -> 1, I1 -> 1, I0 -> 1, change to status 16.
I2	Input	
I1	Input	
I0	Input	
BUSY	Output	When the driver is taking action, BUSY would be set to 1, while 0 when idle.
I3RTN	Output	I0RTN-I3RTN can be used to read current switch status. I3RTN is the highest bit, while I0RTN is the lowest one.
I2RTN	Output	
I1RTN	Output	
I0RTN	Output	

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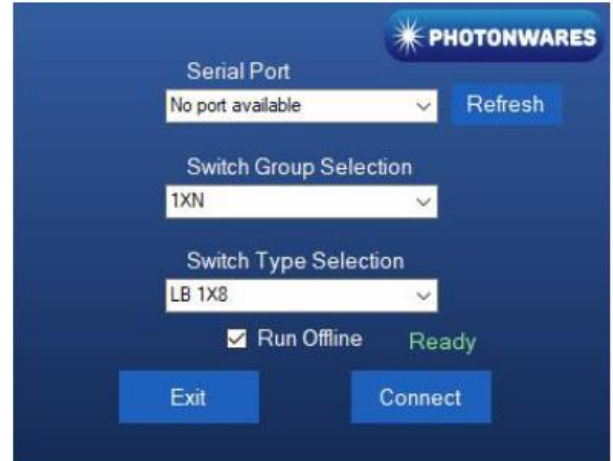
Computer Graphic Software User Guide

- **Install the Program**

Click on **setup.exe** for the automatic installation, which should be provided with the product.

- **Run the Program**

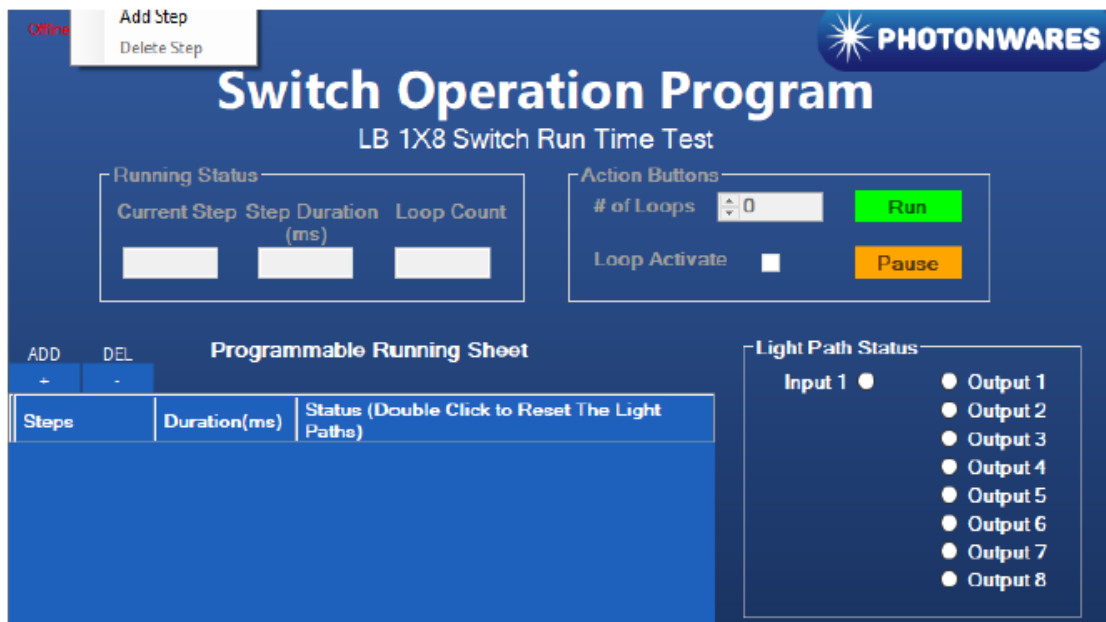
Run the "**Switch Operation Program.exe**" and the program will open the configuration window. Select the correct Switch Group and select the specific Switch Type. Then click the "Connect" button and the program will establish the connection between PC and board.



- **Create and edit testing time sequence**

Add step: Click the "Add Step" button in the menu strip or click the "+(ADD)" button would both add a step to the Programmable Running Sheet.

Delete step: Click the "Delete Step" button in the menu strip or click the "-(DEL)" button would both delete a step in the Programmable Running Sheet.



Fiber Optic MEMS-1xN Switch Evaluation Kit

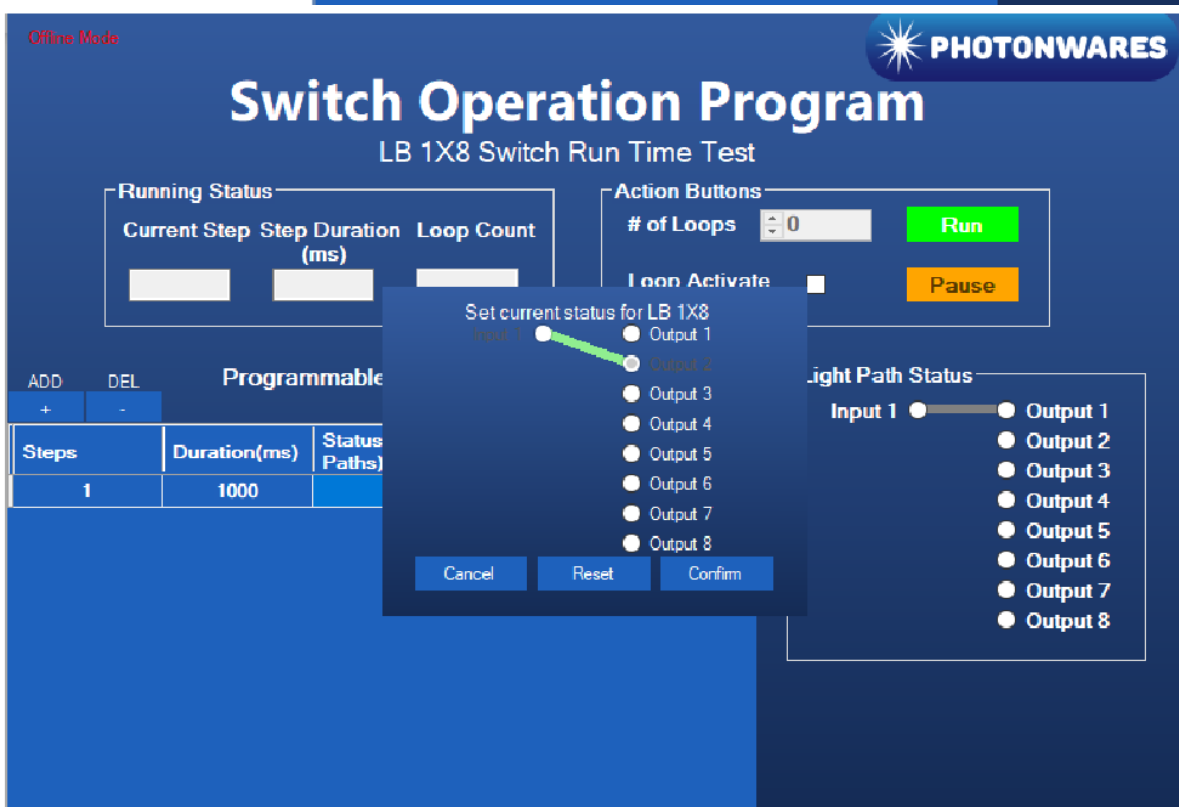
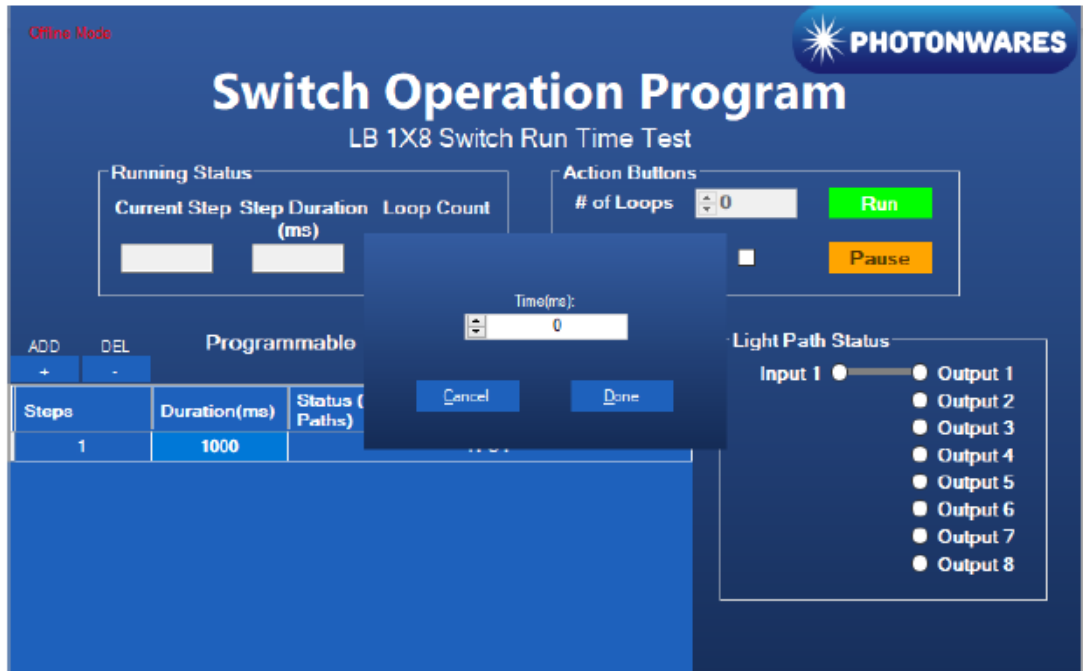
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Computer Graphic Software User Guide (continue)

Edit step: There are two things that you can modify for one step. One is the light path, and the other is the duration for each step. Double click the cell that you want to modify, and the program will allow you to modify the setting.



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Computer Interface Options

This driver is intended as an open source version for customer to write their own control software. The USB interface working as a Virtual COM port which is compatible with LabView, Matlab. We provide **LabView** and **Matlab** interface software at extra cost.

A Windows GUI and UART command list will be provided for test and software development.

Command List

Command in Serial

The serial communication should be set in **9600 baud rate, none parity, 8 data bits, 1 stop bits.**

Command in HEX:

```
0x01 0x12 0x00 0x01 ---- Switch to status 1
0x01 0x12 0x00 0x02 ---- Switch to status 2
0x01 0x12 0x00 0x03 ---- Switch to status 3
0x01 0x12 0x00 0x04 ---- Switch to status 4
```

In Matlab,

Example code as below:

```
s=serialport("COM1", 9600, "Timeout", 5);
Write(s, [1, 18, 0, 1], "uint8");           for status 1
Write(s, [1, 18, 0, 2], "uint8");           for status 2
```

Ordering Information

Prefix	Switch	Function	Pluggable Pins	Power	Switch Type	Control Mode
<input type="checkbox"/>	<input type="checkbox"/>	1 1	<input type="checkbox"/>	1	1	<input type="checkbox"/>
MSDR-	1x2 = A2 1x4 = A4 1x5 = A5 1x10 = 10 1x12 = 12 1x16 = 16		No (solder) = 1 Yes = 2	5V = 1	MEMS = 1	USB + TTL + Push-Button = 1 RS232 + TTL + Push-Button = 2

NOTE:

- This driver is intended mounted with specific switches, tuned, and tested prior to shipping. It is not designed to be sold separately.
- Pluggable Pins are for temporary making contacts between the PCB and the optical switches. This function adds \$120