



ESP TRIGGER PROBE USER MANUAL



Ophir-Spiricon Inc.
60 West 1000 North
Logan, UT 84321

For Sales, Service or Technical Support
Phone (435) 753-3729
Fax (435) 753-5231
E-mail: sales@ophir-spiricon.com
E-mail: service@ophir-spiricon.com

© 2008 Ophir-Spiricon Inc. All Rights Reserved. Ophir-Spiricon Inc. reserves the right to make improvements in the product described in this User Guide at any time and without notice.

All rights to the product and any accompanying operator's manuals are reserved. While every precaution has been taken in the preparation of this product, the publisher and author assume no responsibility for errors, omissions, or any loss of data because of said errors or omissions

Table of Contents:

Introduction.....4
Description of Features.....5
 Optical Detector.....5
 SMA Input.....5
 Power Supply.....6
 LED.....6
 Switches.....7-9
 Fiber Optic Cable.....9
Technical Specification.....10

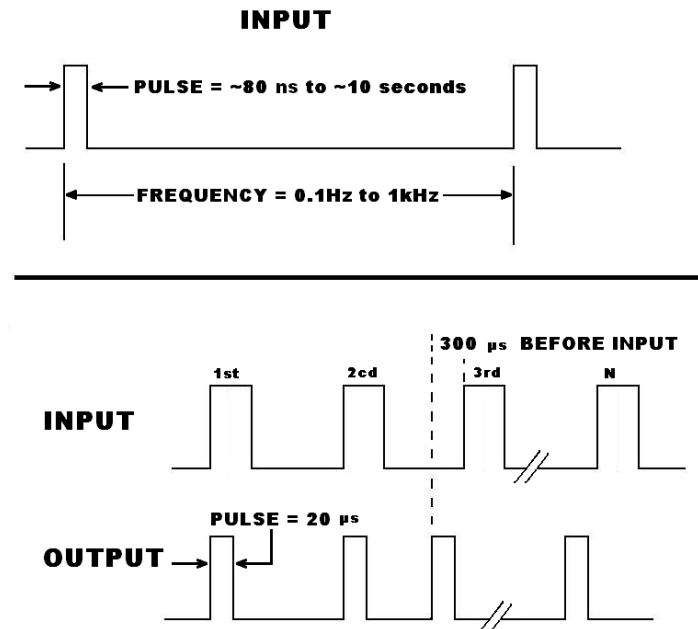
ESP TRIGGER PROBE



Introduction:

The Spiricon ESP Trigger Probe triggers a camera $300\ \mu\text{s}$ ($\pm 30\ \mu\text{s}$) before the laser fires. The probe analyzes the previous two pulses from the input flash (or input trigger) and predicts when the next pulse will occur. (Note: Subsequent pulses must not arrive more than $\pm 100\ \mu\text{s}$ in order to maintain a constantly reliable pre-trigger.) The probe should not be placed directly into the beam path; most lasers generate enough scattered light for the probe to detect a pulse.

Along with the inputs there are switches for various options. A fiber optic cable accessory is supplied, and a DC power supply if needed.



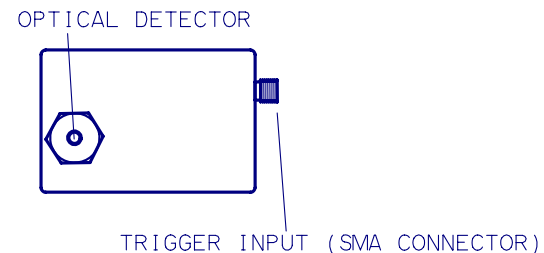
Description of Features:

Optical Detector:

The Optical Detector provides the primary receptor for receiving pulses. The detector operates best when directed toward the laser source, however placement directly within the beam path can damage the detector. Place the ESP at a convenient distance from the laser source, and then adjust its position until the probe registers every pulse.

External Trigger Input:

This is a secondary trigger input in the event the Optical Detector cannot be used, and where an electrical Trigger Out is available from the laser source or other external laser trigger. The SMA Input can receive pulses ranging from 2 to 12 volts. Note: If used it may be wise to cover Optical input.



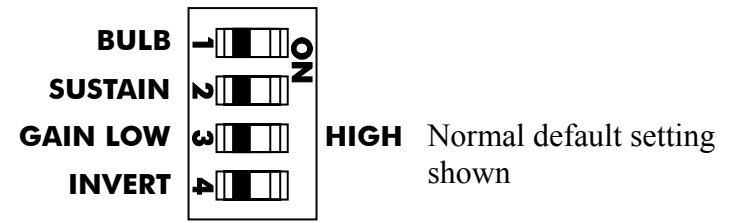
DC Power Supply:

Most cameras are capable of supplying power through the attached cable. If external power is required, connect a DC power source that provides from 5 to 12 volts with at least 40 mA. Mating plug is a CUI, PP3-002A: 5.5mm x 2.1mm x 9.5mm In-Line DC Power Plug.

LED Indicator:

The LED provides a green, red or amber indicator. When the unit is powered up, the red LED remains on until the first pulse is received. Once the probe begins to receive pulses, the green LED illuminates momentarily at each pulse. In Sustain Mode, and during a lapse in pulses the amber (or yellow) LED blinks at each output pulse.

The probe will reset itself if Sustain Mode is not on and it has not received a pulse after about 3 minutes. This will cause the red LED to come back on. However, when Sustain Mode is active, trigger output will continue until power is turned off or additional pulses are received.



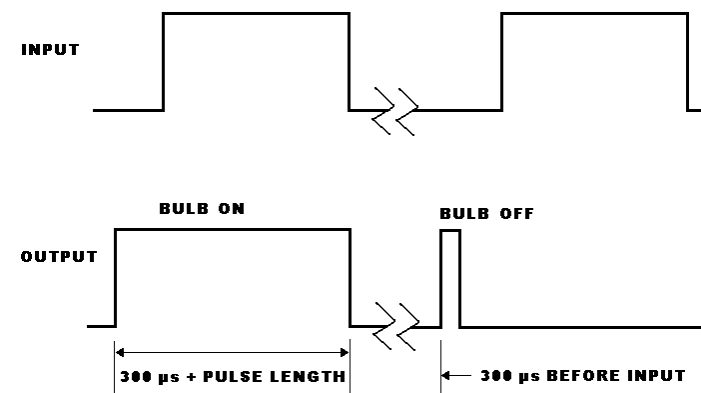
Switches:

Set switches and then power up the probe.

Four switches set various ESP Probe features:

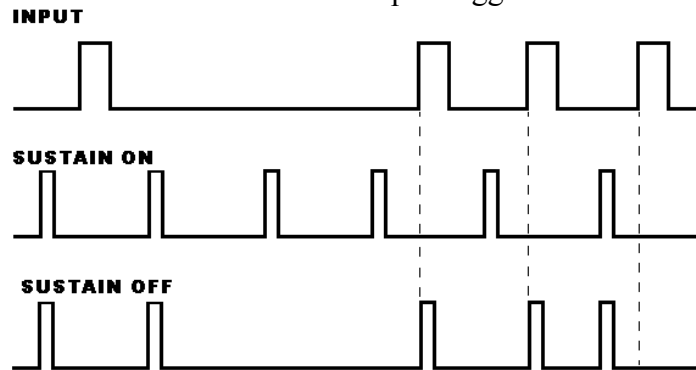
1. **BULB:** When Bulb Mode is on, the ESP pre-trigger output signal begins 300 μ s before the actual pulse and then remains on throughout the duration of the pulse. Pulses must meet a minimum duration of 125 μ s to operate correctly in Bulb Mode.

When Bulb Mode is off, the ESP trigger output signal begins 300 μ s before next pulse and is 20 μ s in duration.



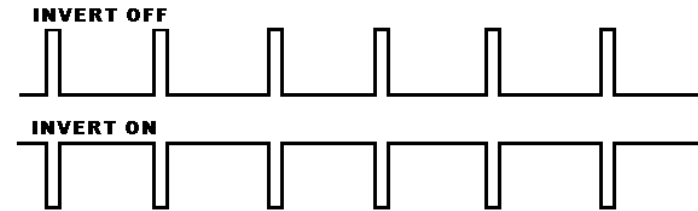
2. **SUSTAIN:** When Sustain Mode is on, the ESP maintains the most recently calculated pre-trigger output rate even if the laser source is turned off or the pulse rate is reduced. However once subsequent pulses are received by the sensor, the pre-trigger interval is recalculated and adjusted.

When Sustain Mode is turned off, the pre-trigger output ends after the first undetected pulse. Upon detecting subsequent pulses, the ESP will once again calculate the pulse rate based on the first two pulses received and re-establish the pre-trigger rate.



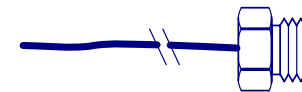
3. **GAIN:** Set the Gain switch to high (on) if light from the laser source is weak. Set it to low (off) if light from ambient sources interferes with the unit's operation.

4. **INVERT:** Set this switch to on, to invert the output signal. Some cameras require a falling edge to trigger properly, rather than a rising edge.



Fiber Optic Cable:

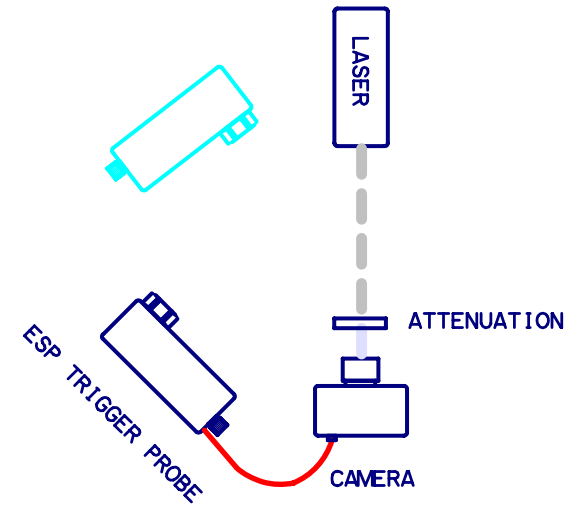
Use this cable to channel a laser pulse directly to the detector. Note: Attenuation precautions need to be used (high powered laser can damage fiber cable and / or detector.) To use, unscrew bezel and screw fiber into probe. Other end can be placed anywhere that the pulses can be picked up.



Technical Specification:

Frequency	10 seconds – 1 kHz
LASER Stability	$\pm 100 \mu\text{s}$ between pulses
Pre-trigger Output	$300 \mu\text{s} \pm 30 \mu\text{s}$
Pulse duration	$\sim 80 \text{ ns @ } 1064 \text{ nm}$
Fiber Optic Cable POF	400 nm – 1064 nm
SMA Trigger Input	2 – 12 volts
Output Trigger	3.3 volts @ 10mA
Post Threads	$\frac{1}{4}$ -20
Power Plug	CUI, PP3-002A

Optional placement of ESP Trigger Probe



Silicon 190 – 1064 nm		
CAMERA	MODEL	PART NO.
SCOR 20/03	ESP-SCOR	SP90032
L070	ESP-LUM	SP90033
L130	ESP-LUM	SP90033
L230	ESP-LUM	SP90033
STC-700	ESP-STC	SP90034

Germanium 950 - 1650 nm		
CAMERA	MODEL	PART NO.
STC-700-1550	ESP-STC1550	CALL
SU-320MS	ESP-SUMS	CALL

Pyrodetector special order		
CAMERA	MODEL	PART NO.
PY-III	ESP-PYIII	CALL

NOTES: