PULSESTAR
Connectivity Guide

1.0 Introduction

Raytec's PULSESTAR illuminators are all designed to be integrated with a camera, or an external trigger, which can be used to control the pulse functionality of the illuminator. The PULSESTAR range covers the following products;

- PULSESTAR PSTR Illuminators
- PULSESTAR VCT Illuminators
- PULSETSAR VTS Illuminators
- PULSESTAR VTR Illuminators

Each PULSESTAR product is based on the same controller platform, but each may have a different specification or methods of connecting to a camera/external trigger. This document is intended to guide users on the different set-up methods available with each product.

2.0 Connecting Trigger Signals

The lighting controllers used as part of Raytec's PULSESTAR illuminators have opto-isolated trigger input connectors. Generally, these are connected to trigger outputs from a camera.

2.1 Trigger voltage

The signal voltage required is as follows:

PRODUCT RANGE	SIGNAL FOR A LOGIC 1
PSTR	3V to 24V at 3mA
VTR	5V at 3mA to 24V at 22mA
VTS	5V at 3mA to 24v at 10mA
VCT	5V at 2mA to 24v at 12mA

Voltages less than 1V are a logic 0. Voltages between 1V and the minimum logic 1, are undefined; this could be seen by the controller as being logic 0, or logic 1.

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2.2 Trigger Input Falling Edge

By default, PULSESTAR illuminators are triggered from the rising edge (when the input goes from logic 0 to logic 1) but can be configured through the GUI to be trigger by a failing edge (when the input goes from logic 1 to logic 0).

In some cases (for example when a relay contact is opened), the falling edge can be quite slow which could create variation in the timing of the falling edge, as seen by the controller. A very slow falling edge can also cause extra triggers.

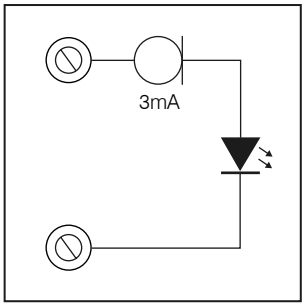
A slow falling edge can be caused by capacitance of cables. Systems which need precise timing of the falling edge might need a resistor (for example 4.7k) across the trigger input connector on the controller, to speed up the edge.

For this reason, it is generally better to trigger from the rising edge.

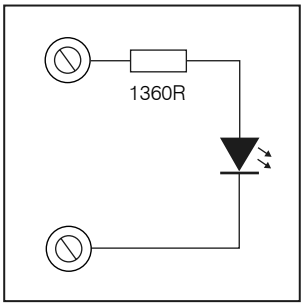
2.3 Triggering Multiple Channels

Some PULSESTAR products have multiple trigger inputs. For those which do, it is possible to connect a signal to multiple trigger inputs, but it is necessary to ensure that the signal can supply enough current.

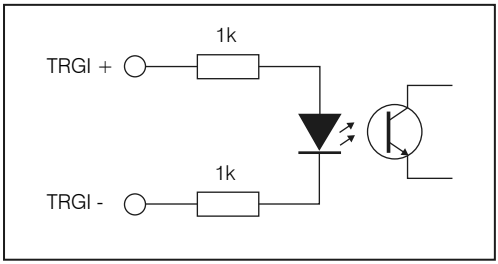
The trigger input circuit for **PSTR** products range is shown below:



The trigger input circuit for the **VTR** products is shown below:



The trigger input circuit for **VTS** & **VCT** products is shown below:

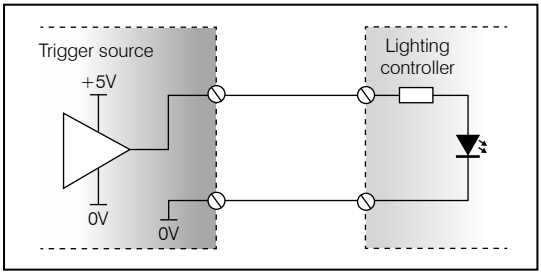


3.0 Connecting a TTL Signal

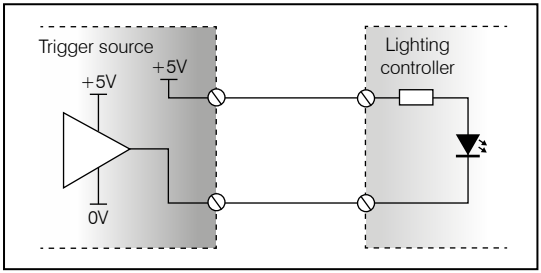
TTL signals can be connected directly to the trigger input.

(Note: Check the voltage of the TTL signal. Low voltage TTL only guarantees a 2.7V output signal, but in reality, this works with a 3V trigger input. 5V TTL outputs will work with all trigger inputs as long as they can deliver 3mA.)

It is possible to use a TTL signal as a positive going (current source) signal, as shown below:

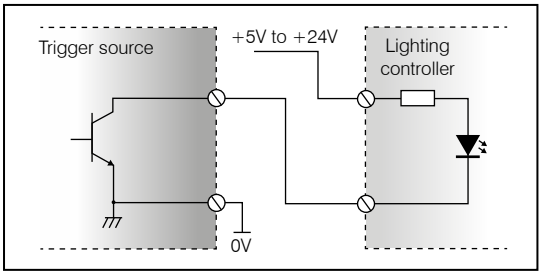


However, for some TTL outputs it might be better to use a negative going (current sink) signal, as shown below:



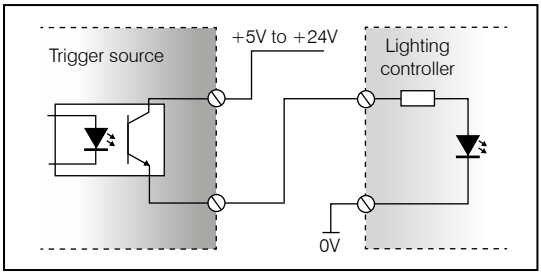
4.0 Connecting an Open Collector/Open Drain Signal

When connecting an open collector, or open drain, to a controller trigger input, use the following connections;



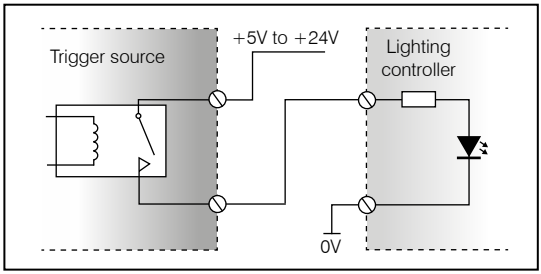
5.0 Connecting an Opto-Isolated Signal

When connecting an opto-isolated signal to a controller trigger input, use the following connections:



6.0 Connecting a Relay Contact Signal

When connecting relay contact to a controller trigger input, use the following connections:



7.0 Troubleshooting Trigger Signals

All PULSESTAR products with Ethernet communications have a way of monitoring the trigger input signals.

From the webpage on the PULSESTAR product it is possible to check the state of the trigger input. Webpages also give a count of how many trigger pulses have been received.

To check that a trigger input is working, put a constant trigger voltage on the trigger input and then check that web page shows the trigger input has a logic 1. If it doesn't, use a voltmeter to check that the correct voltage range is present and that it is connected the right way around.

Check camera is configured correctly.