Trigger IO

C-Cam Technologies

a division of

Vector International

1 Trigger IO connector
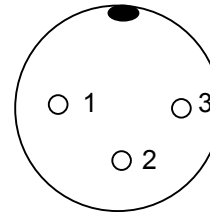

Camera with LS interface

Trigger IO connector

Trigger IO connector

Camera with USB interface

1.1 Pin Description

Pin	Description	Wire Color
1	Trigger input	White
2	GND	Brown
3	Trigger output	Black

Topview to interface

Cable connector : Binder 712 series female 3 pin.

1.2 Electrical Schematic

Camera housing

Isolated electronics

3P BINDER 712 PCB

680

ISO1

ISO2
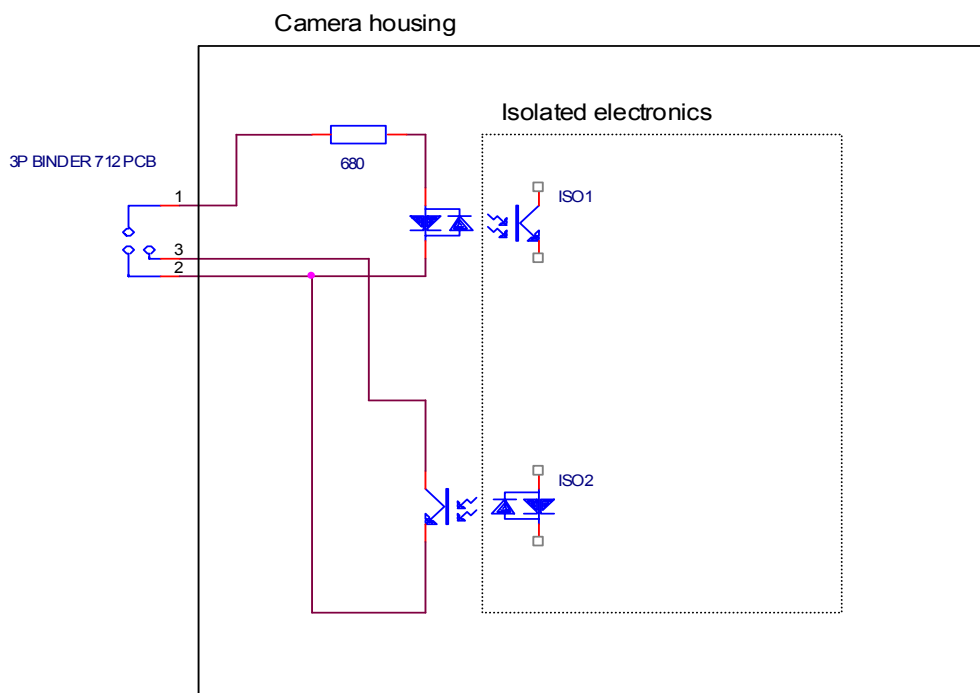
1.3 Recommended Operating Conditions

Characteristic	Min	Typ	Max	Unit
Supply voltage [1]	-	5	48	V
Diode current	-	16	20	mA
Collector current	-	1	10	mA

(1) The internal 680 ohm resistor is for a 5V supply, for higher supply voltages use an extra external resistor in series.

1.4 Timing characteristics

The trigger input has to be activated or deactivated for at least 10 micro seconds to let the photo detector respond properly.
The same goes for the trigger output, it has to be activated or deativated for at least 10 micro seconds to have a proper pulse at the output pin. (See software paragraph further on in this document)

2 Software

The references made to the functions in this document are all from the CCAPI.DLL library. Refer to the Programmers Reference Manual for more information on these functions.

2.1 Using the camera trigger input

The trigger input can be used to start a single frame capture or to start a continuous capture stream.
The way you use the trigger input can be defined by each of the `CC_Capture` calls (`CC_CaptureSingle`, `CC_CaptureContinuous`, …). You have to set the CC_TRIGGER_MODE parameter in the argument list of these functions according to the following table :

| CC_TRIGGER_MODE	Function
CC_NO_TRIGGER	The trigger input is disabled and the camera can only be started by a software command.
CC_CAMERA_TRIGGER_SINGLE	The camera will be armed with one of the `CC_Capture` functions. A single frame capture will be started upon an active trigger input. If the camera is used in continuous mode, one active trigger is needed for each frame.
CC_CAMERA_TRIGGER_CONTINUOUS	This setting can only be used with the `CC_CaptureContinuous` function. The camera will be armed with this function. A continuous stream capture will be started upon an active trigger input.

Note that if the trigger input is hold on active, the camera will always trigger immediately upon a new capture start command.

2.2 Using the camera flash output

The trigger output is always enabled. You can set the trigger output pulse delay and width for use with an external flash light for example (See also trigger settings). At startup, these values are zero and no pulse will be generated.
You can change these values with the following parameters in the `CC_SetParameter` function :

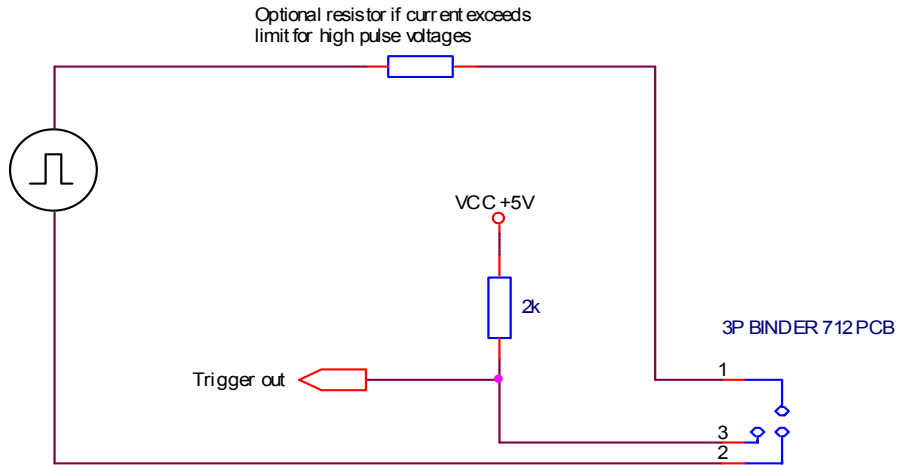| Parameter	Description
CC_PAR_CAMERA_FLASH_DELAY	Determines the pulse delay in micro seconds
CC_PAR_CAMERA_FLASH_WIDTH	Determines the pulse width in micro seconds
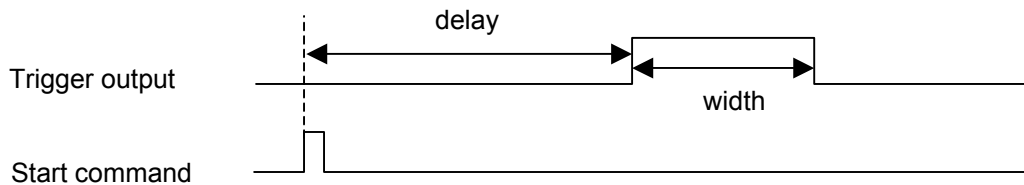
Note that the minimum pulse width should be > 10 micro seconds due to the switching characteristics of the optocoupler.

2.3 Trigger settings

The trigger input and output capabilities of the camera can be set using the `CC_PAR_CAMERA_TRIGGER_SETTINGS` parameter. Although `CC_CAMERA_TRIGGER_SETTINGS` is an enumeration, a combination of different settings may be OR'ed together. When this parameter is set, all previous settings to this parameter are lost.

CC_CAMERA_TRIGGER_SETTINGS	Function
CC_CAMERA_TRIGGER_INVERT_TRIGGER_IN	Makes the trigger input active high, the default is active low.
CC_CAMERA_TRIGGER_INVERT_TRIGGER_OUT	Makes the trigger output active high, the default is active low.
CC_CAMERA_TRIGGER_ARM	Use this setting if the camera should be armed without using one of the capture functions.
CC_CAMERA_TRIGGER_ARMED_OUTPUT	To use the trigger output signal as an arm ready signal. The default is that the trigger output is used as a flash output (see flash settings).

3 Typical trigger circuit

Optional resistor if current exceeds
limit for high pulse voltages

VCC +5V

2k

3P BINDER 712 PCB

Trigger out

1

3
2

Application: Laser Beam Profiler with 3D Visualization