



Setup Flashing with allPIXA evo / XLC4 / Corona II from 5 to 8 LED segments/ illumination

short instruction

CD40203

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Executive summary:

This document provides the essential steps for flashing with the allPIXA evo, XLC4 and Corona II.

Please also refer to the allPIXA evo manual.

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1 Warnings!

For complete safety instructions and danger descriptions see manual of Corona on our homepage: <https://chromasens.de/en> Support -> Download -> Corona

Corona II Manual – XLC4 Manual Chapter 3 -> Safety information

Important note: If you use the flash function (depending on your trigger setting) the illumination starts flashing directly with the command of grabbing (freerun mode) or directly with the start of your trigger signals (encoder, framestart, linestart trigger).

Therefore, always wear suitable eye protective equipment for the wavelength that is emitted by your illumination.

National and local standards, directives and regulations on health, safety and accident prevention must be followed.

2 Setup Overview

Necessary steps:

allPIXA evo camera -> enable LED flash mode in GCT2

The flash operation is controlled by the camera

- Wire a cable from the camera I/O X12 to XLC4 -> X6
- Set your flash pattern in GCT2
- Set the XLC4 controller to flash mode via XLC4 Commander Software

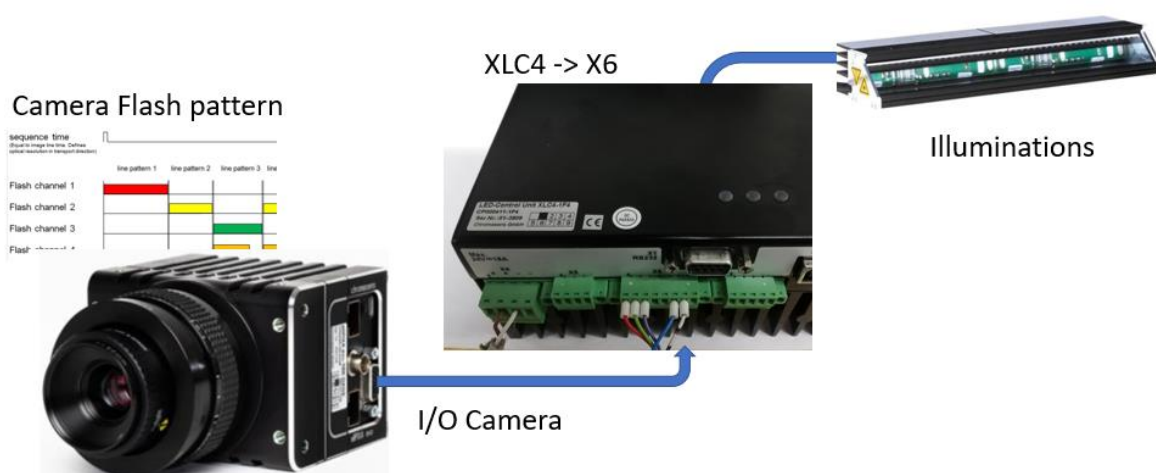


Figure 1: Overview Components allPIXA evo / XLC4 / Corona II

3 allPIXA Evo Camera I/O

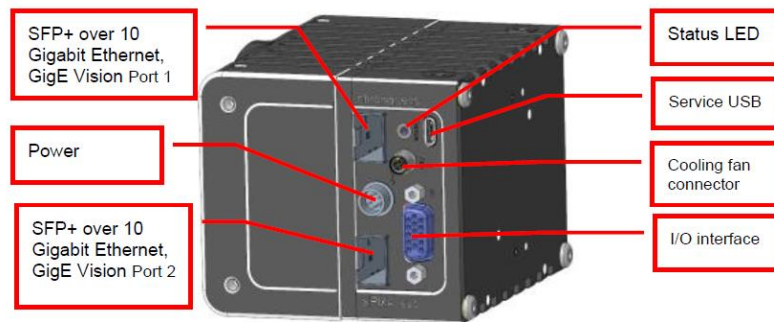


Figure 2: Camera connections I/O Interface X12

I/O Interface X12 allPIXA evo Camera

You need a 15-pin HD D-Sub (male) or one of our trigger cables (see homepage allPIXA evo accessories) to establish a connection to the *digital I/O interface (X12)*

Pin	Gen<I>Cam	Signal	Level	In/Out	Example / Remark
1	Line 1	Enc0_InP (+)	RS 422	Differential input	Encoder0 or LineTrigger
2	Line 2	Enc1_InP (+)	RS 422	Differential input	Encoder1 or Frametrigger
3	Line 3	IO_0P	LVC MOS	Input single-ended	Trigger or AutoSelectMaster
4	-	RT	RS 485		
5	Line 5	IO_2P	LVC MOS	Out	LED-Out1
6	Line 1	Enc0_InN (-)	RS 422	Differential input	Encoder0
7	Line 2	Enc1_InN (-)	RS 422	Differential input	Encoder1
8	Line 4	IO_1N	LVC MOS	Input single-ended	Trigger or Master-Slave Cascaded
9	-	RTN	RS 485	Out	To LightController XLC4
10	Line 6	IO_3	LVC MOS	Out	LED-Out2
11	-	GND	GND		
12	Line 7	IO_4_SDA	LVC MOS	Out	LED-Out3
13	-	GND	GND	-	
14	Line 9	Master/Slave	LVC MOS	Bi-directional	Master/Slave
15	Line 8	IO_5_SCL	LVC MOS	Out	LED-Out4

Table 1: I/O Camera connections X12

4 XLC4

The XLC4 controller can serve up to four channels or four separate Corona II modules with up to four channels in total. For illuminations with more channels additional XLC4 controller are needed.

See also Corona II Manual – XLC4 Manual Chapter 6.1 Possible setups

A connecting cable with terminal blocks is used for connecting the Corona II to the Chromasens XLC4 Controller.

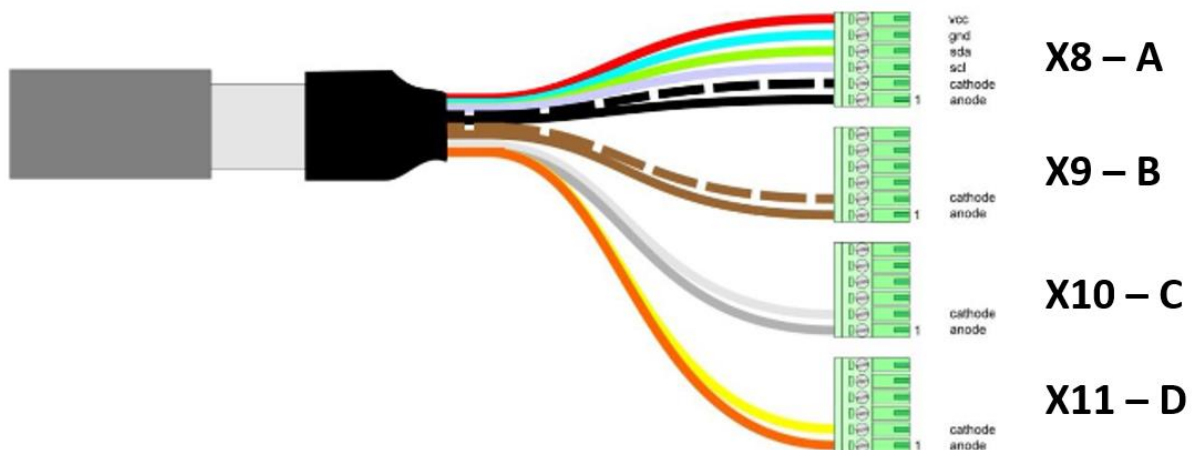


Figure 3: Cable with terminal blocks

NOTE: Check for Shielding and for sufficient supply current of the power supply-> **20 A**.

See also Corona II Manual – XLC4 Manual

Chapter 6.3.10 Shielding

Chapter 6.4.2 Supply current

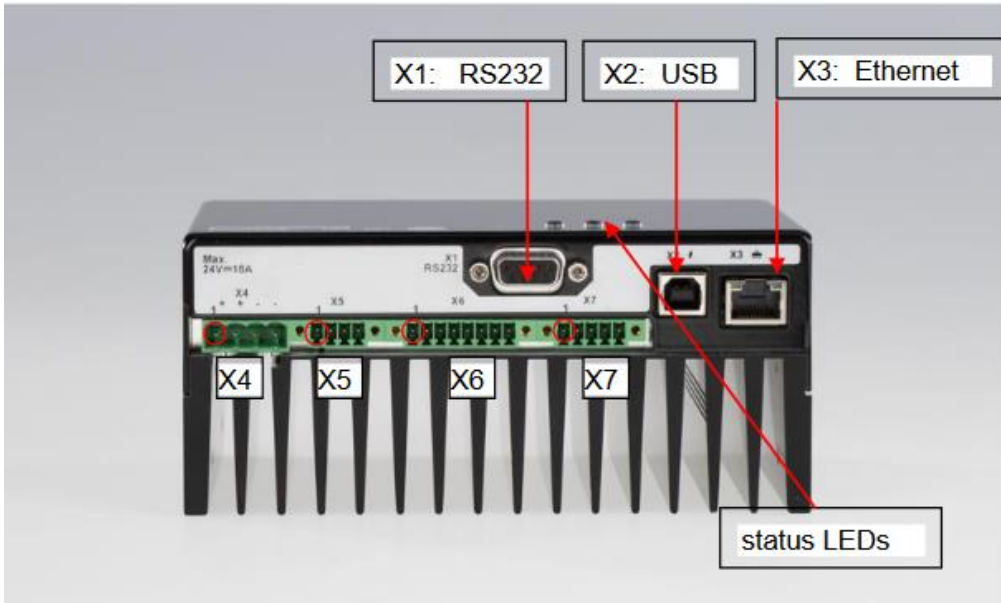


Figure 4: Ports of XLC4 controller – Front (Pin 1 is marked with ○)

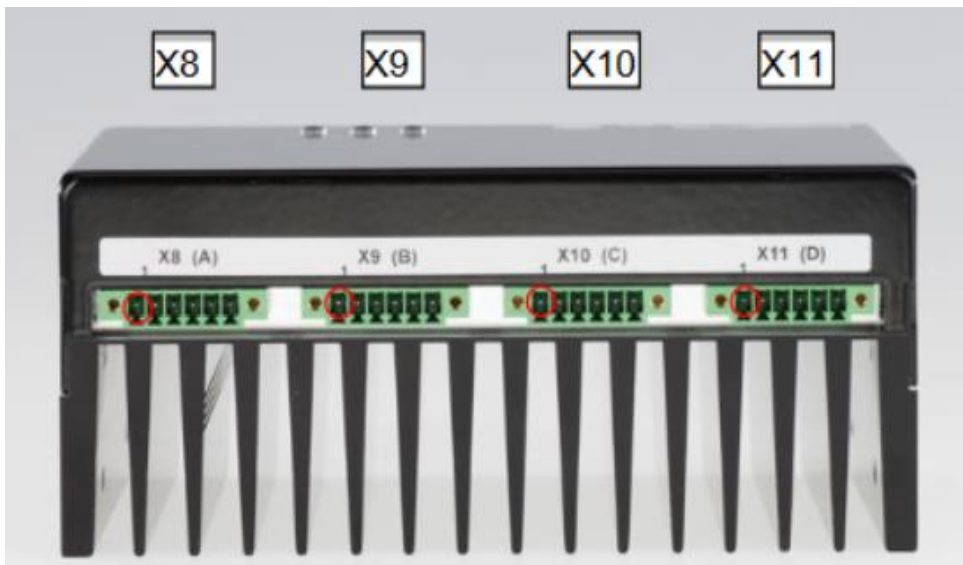
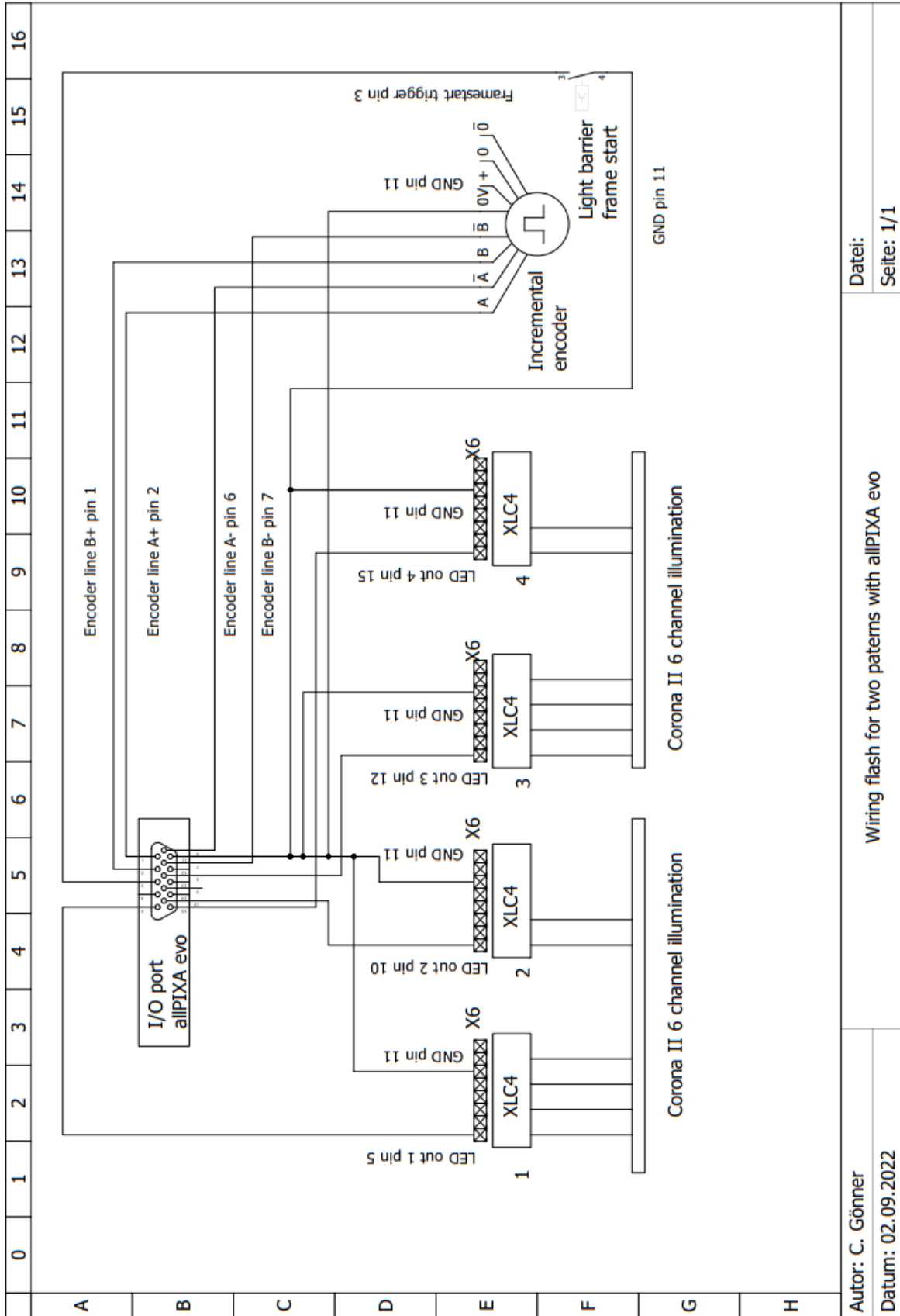


Figure 5: Ports of XLC4 controller – Back (Pin 1 is marked with ○)



Autor: C. Gönner	Datei:
Datum: 02.09.2022	Seite: 1/1
Wiring flash for two patterns with allPIXA evo	

Figure 6: Wiring I/O port of the camera and the XLC4 controllers for two flash patterns and more than four channels per illumination

5 How to setup a system for Flashing or multi-Flashing with XLC4

Flashing can be implemented with XLC4 controller Type:

- 1) XLC4-1 (CP000411) (only for all channels and reduced application in flash operation)
- 2) XLC4-1A (CP000411-1A) (Flash all channels with a single trigger on X6)(short reaction time)
- 3) XLC4-1F4 (CP000411-1F4) (Flash all channels independently)

For more information see Corona II - XLC4 Manual Chapter 6.5.3.5 Flash operating mode

<https://chromasens.de/en> Support -> Download -> Corona

To control the flashing via the X6 connector:

LED controller XLC4-1 and XLC4-1A

Pin	Name			Notes
1	ON		IN	switch signal for PWM mode operation
2	PWC		IN	control signal for PWM mode operation
3	ENC		IN	(don't use)
4	FAIL		OUT	failure signal
5	STAT		OUT	(don't use)
6	COMMON			common signals for pins 1-5
7	SW1			switch
8	SW2			switch

Table 2: I/O X6 connector XLC4-1 and XLC4-1A

LED controller XLC4-1F4

Pin	Name			Notes
1	ON_1		IN	External LED control channel A
2	ON_2		IN	External LED control channel B
3	ON_3		IN	External LED control channel C
4	FAIL		OUT	failure signal
5	STAT		OUT	(don't use)
6	COMMON			common signals for pins 1-7
7	ON_4			External LED control channel D
8				

Table 3: I/O X6 connector XLC4-1F4

Also see Corona II - XLC4 Manual Chapter 6.3.6 PWM interface / external switch X6

<https://chromasens.de/en> Support -> Download -> Corona II

Note Timing and level of trigger signals on X6 as well as FA commands to activate the Flash mode see Corona II - XLC4 Manual -> Chapter Switching and flashing the Corona

With the FA commands the operation mode of the XLC4 controller can be changed/adjusted. This is necessary to switch the controller to operate according to the received signals on the X6 connector from the camera

Please check the model of your controller and use the commands below to activate the flash operating mode you want to use

FA 0x0020 for activating Flash for all channels (XLC4-1 and XLC4-1A)

FA 0x0220 for activating Flash for all channels independently (only XLC4-1F4)

Note: Sending these flag commands work only in command mode!

It does not work in bulb mode, PWM mode or in analog mode.

To get into command mode you have to send: "MO 1" # command mode

For more Information about Flag commands (FA)

see manual chapter 6.5.2.12 Command FA.

5.1 Configure Flash in GCT

The steps for setting the flash mode for the camera with GCT are shown below.

For further information see

<https://chromasens.de/en> Support -> Download -> allPIXA evo ->

allPIXA evo Manual -> Chapter 8.1 Configuring multi-channel flash control

Info: The GCT Software includes a widget which also allows to setup flash mode.

Configuring Led Flash

Flash control is configured with the features of the Led Flash Control group. In GCT the features are shown as follows

▼ Led Flash Control	
Led Flash Enable	<input type="checkbox"/> Off
Led Flash Number of Pattern	1
▼ Led Flash Pattern Selector	Led Flash Pattern 1
Out1 OnTime	0,000 us
Out2 OnTime	0,000 us
Out3 OnTime	0,000 us
Out4 OnTime	0,000 us
Pattern Off Delay	0,000 us
Pattern Duration	21,053 us
Led Flash Frame Control	Continuous
Led Flash Sequence Time	50,000 us

Figure 7: GCT GENICAM Tree

Which outputs are active and the exposure time of each flash output is defined by the features. **Led Flash Number of Pattern** and **Pattern Duration**. Up to four patterns can be specified which are executed one after the other.

To configure Led Flash:

1. At the Led Flash Control feature group, click Led Flash Enable and then select the check box.
2. Click Led Flash Number of Patterns and enter the desired number of patterns.
3. Click Led Flash Pattern Selector and click Led Flash Pattern 1 in the value list.
4. Click OutX On Time (X=1..4) and enter the time in microseconds for those channels that should be activated for the current pattern.
5. If all channels should be inactive at pattern end, specify a time in microseconds at Pattern Off Delay. In this case pattern duration is at least $\text{Max}(\text{OutX On Time}) + \text{Pattern Off Delay}$.
6. Repeat steps 3 to 5 the remaining patterns.

Note: CST Paramterer Led Flash Sequence Time :

Enlarge Led Flash Sequence Time before you start to insert values and to activate the number of paterns. Reason for this is that the sequence time controls your camera speed later, so if it is chosen too smal in the beginning, you're maybe not be able to insert your values. Later you have to adjust it again to fit your needed machine speed.

Two LED Output channels can be used for one illumination with two XLC4s. As shown in the wiring diagram drawing above and the example below

Note: Setup with more then four XLC4's

Controlling more than one XLC4 at one LED out, the output power may not be sufficient for more than one XLC. Here e.g. an additional amplifier box is needed. If your setup exceeds the number of four XLC4s for one camera, please contact the support@chromasens.de.

Example of using two LED Output channels for one illumination with two XLC4's.

Set out 1 and 2 to “80 μ s” in Patern 1 to flash both XLC4s synchronously with the first illumination and out 3 and 4 to “60 μ s” to flash the other two XLC4s with the other illumination synchronously.

5.1.1 Example Flash pattern timing

With the patterns of the diagram shown in section **Fehler! Verweisquelle konnte nicht gefunden werden.**, the features must be set as follows for free-running mode:

Trigger Selector = FrameStart,
Trigger Mode = Off,

Trigger Selector = FrameActive,
Trigger Mode = Off,

Trigger Selector = LineStart,
Led Flash Number of Pattern = 2,

Led Flash Sequence Time = xxx, (calculated from pattern duration)

Led Flash Frame Control = Continuous,

Led Flash Enable = On.

	Pattern1	Pattern2
Out1 On Time (μs)	80	0
Out2 On Time (μs)	80	0
Out3 On Time (μs)	0	60
Out4 On Time (μs)	0	60
Pattern Off Delay (μs)	10	10
Pattern Duration (μs)	170	130

Table 4: ON/OFF Flash pattern timing

For Line Trigger mode:

Trigger Selector = LineStart,
Trigger Mode = On,
Trigger Source = Line4,
Ext. Line Time = 300.

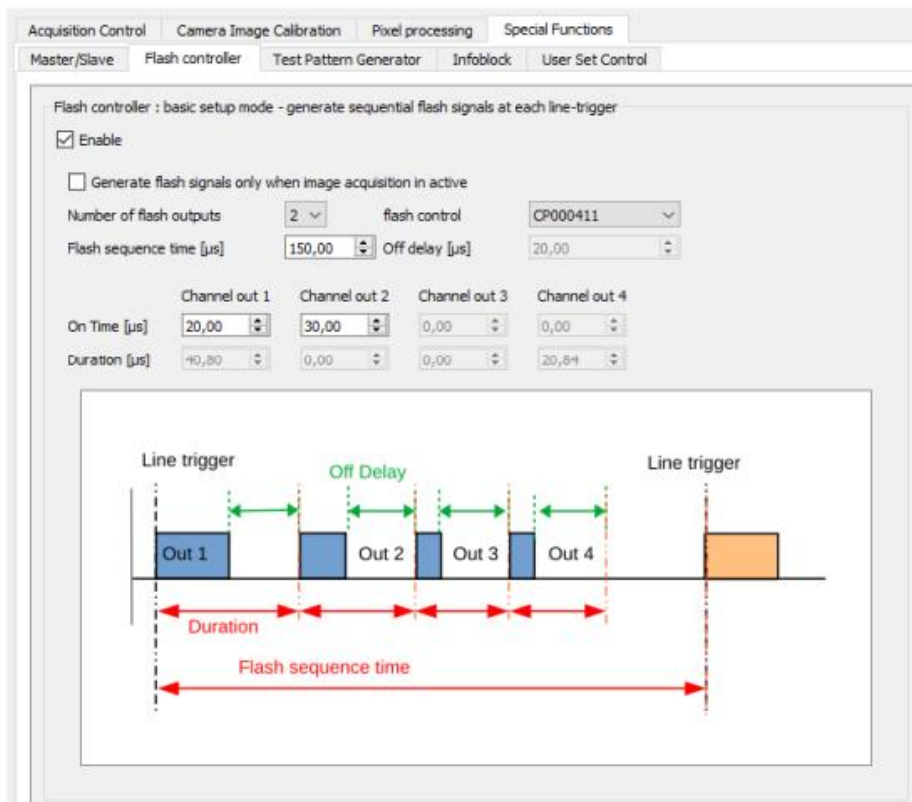
With these settings, each sequence consists of three patterns. The image consists of groups of three lines. The three lines correspond to the three specified patterns.

6 Synchronization

For more information regarding synchronization, interlaced image please refer to the white paper on our website. <https://chromasens.de/en> -> Knowledge Base -> White papers

Synchronizing modes of allPIXA classic, pro and wave -> Chapter 5

Below: widget for GCT2 and allPIXA evo



Note: Needed firmware version XXX and needed GCT2 version XXX

For more information see the manual for your type of camera.

Note:

If you use flashing you'll receive an interlaced image.

You also have to take care about the line shift R to G to B see allPIXA evo camera | Manual Chapter "How to deinterlace the images".