Datasheet

UNIIQA+ CameraLink Color

CMOS Color Line scan Camera

Features

- CMOS bilinear Color Sensors:
  - 4096 pixels, 5x5µm
  - 2048 pixels, 10x10µm
  - 1024 pixels, 10x10µm
  - 512 pixels, 10x10µm
- Interface : CameraLink® (Base or dual Base)
- Line Rate :
  - Up to 40 kl/s for the “Essential” models
  - Up to 80 kl/s for the “High-Speed” models
- Data Rate :
  - 3 x 85 MHz for “Essential” models
  - Up to 2x 3x85MHz for the “High-Speed” models
- Bit Depth : RGB 3x8Bits
- Flat Field Correction
- White Balance
- Power Supply : 12 – 15V. Compliant PoCL
- Low Power Consumption : < 4W
- F-Mount, C-Mount and M42x1 mount available
- GenICam Compliant (xml file embedded)

Description

e2v’s UNiiQA+ line scan cameras family has been specifically designed to overcome the limitations of your current inspection system: improve your throughput, facilitate defect identification with colour images, make cost savings, inspect larger areas or identify smaller defects.
Two UNiiQA+ product ranges are offered in color:

- UNiiQA+ “Essential”: a unique low speed color cameras for cost effective equipments or with modest speed requirement
- UNiiQA+ “High-Speed”: high speed cameras to help improve the performance of your system

The UNiiQA+ family has also been designed to be highly modular to enable engineers to reuse the same camera in multiple equipments, simplify logistics and reduce development cycle time. All UNiiQA+ cameras feature e2v’s proprietary CMOS sensors : a single line of highly sensitive pixels of either 5µm or 10µm size.

Applications

- Sorting
  - Food sorting (Belt sorting, Lane sorting, Free fall sorting)
  - Parcel and postal sorting
  - Barcode reading

- On-line quality control
  - Raw material inspection (plastic film, glass, wood…)
  - Print and paper inspection

Contact us online at:
www.e2v.com/imaging

Standard Conformity

The UNIIQA+ cameras have been tested using the following equipment:

- A shielded power supply cable
- A Camera Link data transfer cable ref. 1MD26-3560-00C-500 (3M), 1SF26-L120-00C-500 (3M)
- A linear AC-DC power supply

e2v recommends using the same configuration to ensure the compliance with the following standards.

CE Conformity

The UNIIQA+ cameras comply with the requirements of the EMC (European) directive 89/336/CEE (EN 50081-2, EN 61000-6-2).

CE 0168

FCC Conformity

The UNIIQA+ cameras further comply with Part 15 of the FCC rules, which states that:

Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for Cl ass A digital device, pursuant to part 15 of the FC C rule s. These limits are designed to provide reasonable protection against harmful interference when the equipment is operate d in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and , if not installed and used in accordance with the instruction manual , ma y cause harmful interference to radio communications . Operation of this equipment in a residential area is likely to cause harmful interference

FCC ID : 2ADJ7EV71YC1XCLXXXX

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

RoHS / Chinese RoHS

RoHS per EU Directive 2011/65/EC and WEEE per EU Directive 2002/96/EC

China Electronic Industry Standard SJ/T11364-2006

GenICam

GenICam XML Description File, Superset of the GenICam™ Standard Features Naming Convention specification V1.5, Camera Link Serial Communication : GenICam™ Generic Control Protocol (Gen CP V1.0

Key Specifications

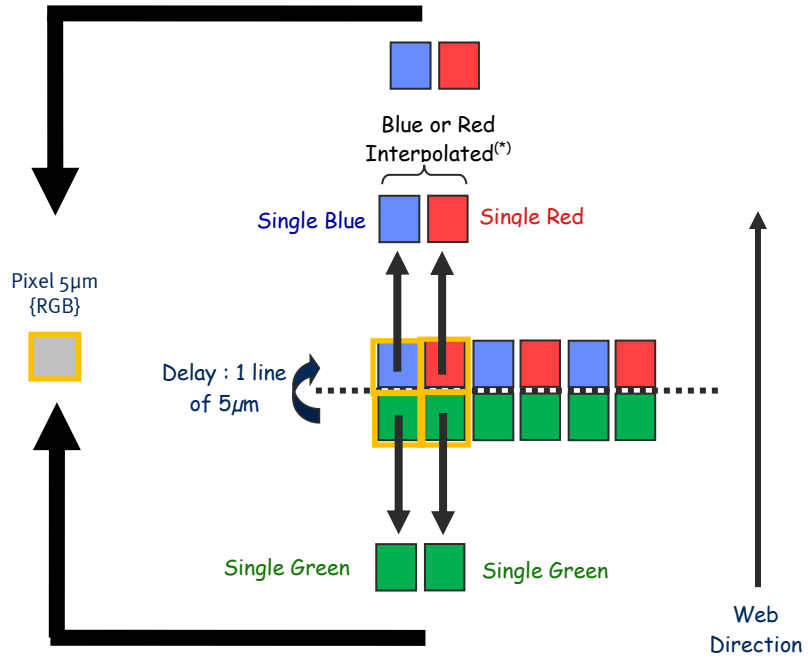
Characteristics	Value				Unit
Sensor Characteristics					
Resolution	4096	2048	1024	512	Pixels
Pixel Size (square)	5	10	10	10	µm
Base CameraLink (All models) *CameraLink® 3 x 85MHz (RGB 3x8bits)* Dual Base CameraLink ("High-Speed" models only) *CameraLink® Medium 2x 3x85MHz (RGB 3x8bits)*	20 40	40 80	40 80	40 80	kHz kHz
Radiometric Performances (at Maximum Pixel rate and Minimum Camera Gain)					
Bit Depth	8				Bits
Responsivity (peak response)	Red : 5.9	Green : 5.6	Blue : 4.2		LSB 8bits/(nJ/cm2)
Response non linearity (between 5 – 95% saturation)	0.3				%
Maximum PRNU	3				%
Dynamic Range	70dB				dB
Functionalities (Programmable via Control Interface)					
Gain (Analog : In the ADC converter)	Up to 12				dB
Offset	-4096 to +4096				LSB
Trigger Mode	Timed (Free run) and triggered (Ext Trig, Ext ITC) modes				
Mechanical and Electrical Interface					
Power Supply	10 to 15 PoCL Compliant				V_{DC}
Power Consumption	<4				W
Lens Mount	F, C, M42x1				-
Sensor Alignment	±100				µm
Sensor Flatness	50				µm
Size	60.0 x 60.0 x 33.65				mm
Weight	<150				g
General Features					
Operating Temperature	0 to 50 Front Face				°C
Storage Temperature	-40 to 70				°C
Regulatory	CE, FCC and RoHs and Chinese RoHs Compliant				-
Software / Firmware					
GenICam Support	Xml description file embedded in the camera				-

Camera Description

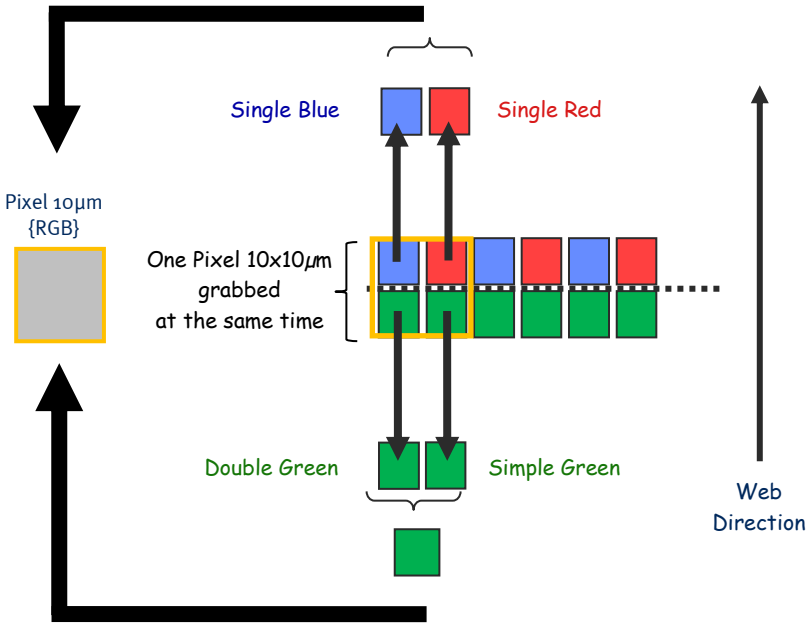
Image Sensor

Color image acquisition

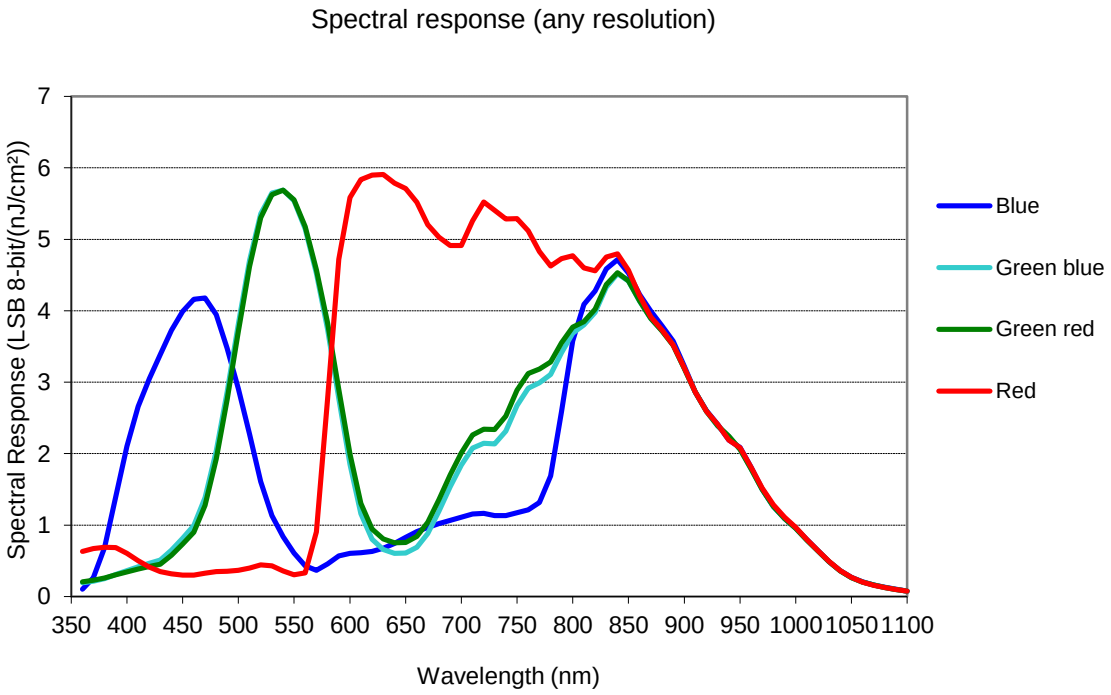
- In 4K resolution color imaging: Time-delayed integration + interpolation



- In 2K/1K/0.5K resolution: single shot color imaging

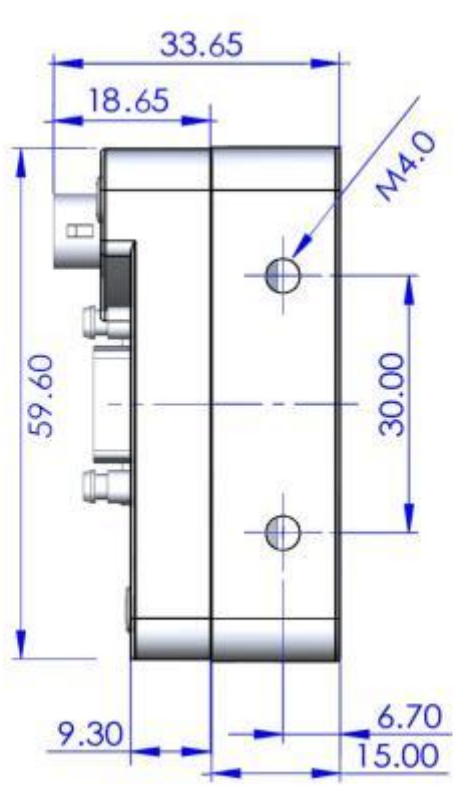


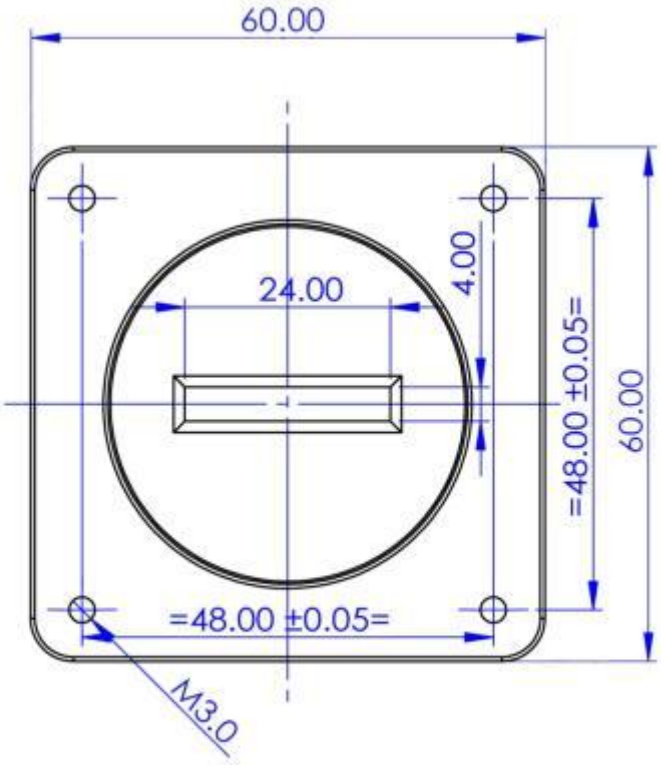
Camera Response



Camera Interface

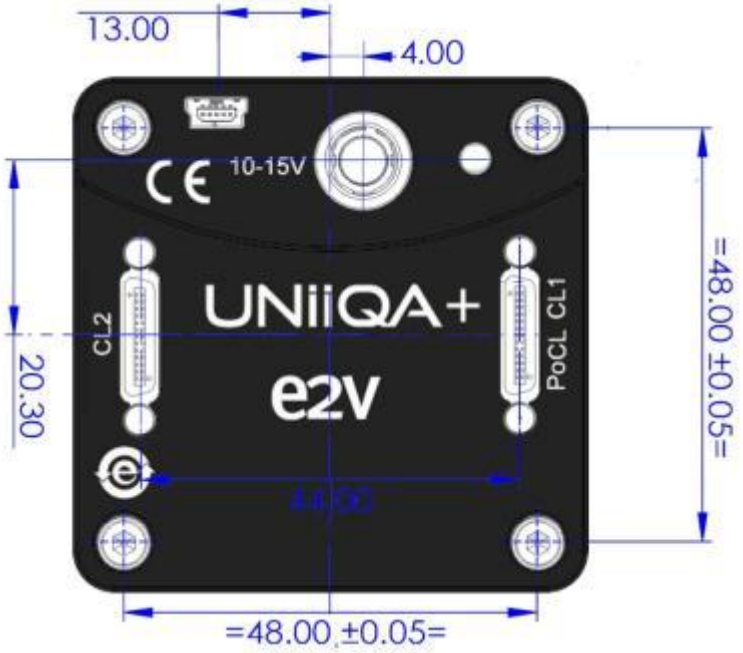
Mechanical Drawings





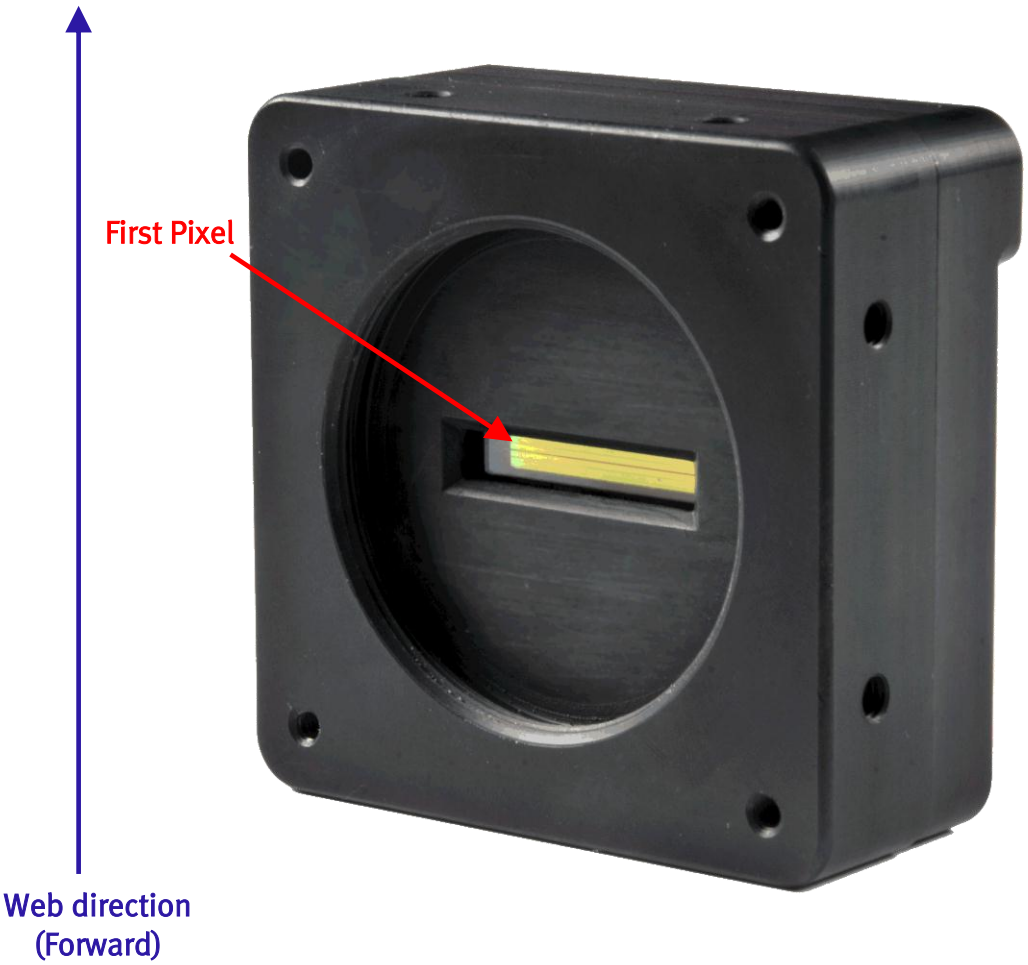
Rear Face CL "Essential" Model

Rear Face "High-Speed" Model

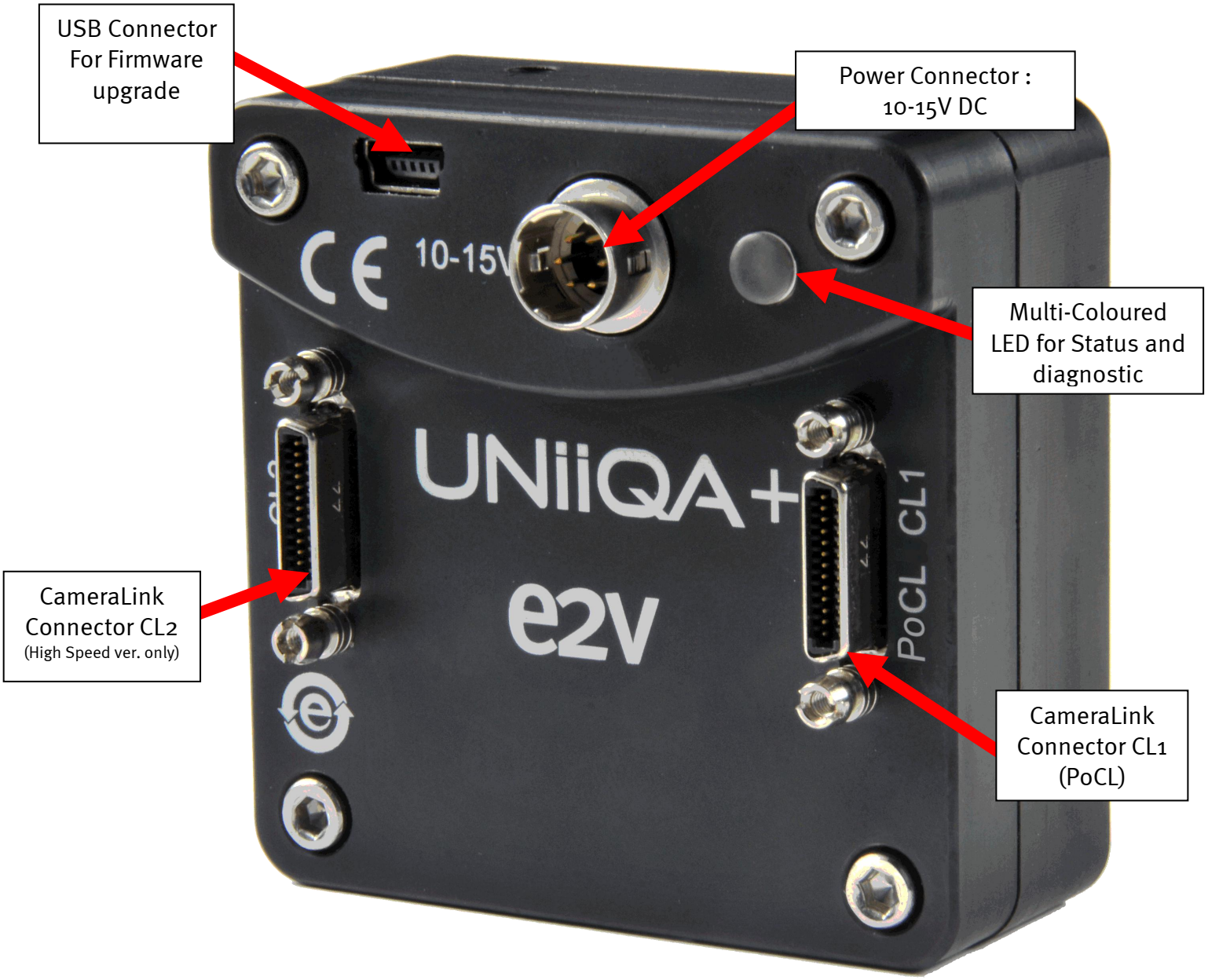


Sensor Positioning

Sensor alignment		
X	19.8 ±0,1	mm
Y	30 ±0,1	mm
Z	-10.2 ±0,1	mm
Planarity	50	µm
Rotation (X,Y plan)	±0,15	°
Tilt (versus lens mounting plane)	50	µm



Input/Output Connectors and LED (CameraLink)



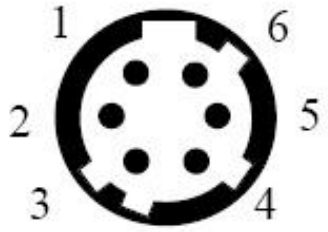
Status LED Behaviour

After less than 1 seconds of power establishment, the LED first lights up in ORANGE. Then after a Maximum of 4 seconds, the LED must turn in a following color:

Color and state	Meaning
Green and continuous	OK
Green and blinking slowly	Waiting for Ext Trig (Trig1 and/or Trig2)
Red and continuous	Camera out of order : Internal firmware error

Power Connector (CameraLink)

Camera connector type: Hirose HR10A-7R-6PB (male)
Cable connector type: Hirose HR10A-7P-6S (female)



Camera side description

Signal	Pin	Signal	Pin
PWR	1	GND	4
PWR	2	GND	5
PWR	3	GND	6

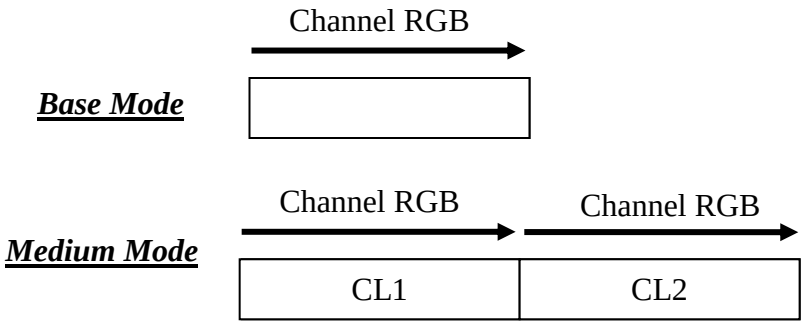
Power supply from 10 to 15v
Power 4W max

Power up Time : Around 4s

Typical values (stabilized Current)	Current consumption	
	10V	15V
High Speed Ver.	0,30A	0,20A
Standby Mode	0,22A	0,15A

OutputConfiguration (CameraLink)

Essential model	**Base CameraLink Mode**	**Connector CL1**
	3 Channels 8 bits (RGB)	3 x 85MHz
High-Speed model	**Dual Base CameraLink Mode**	**Connector CL1 + CL2**
	2x 3 Channels 8bits (2x RGB)	2 x 3 x 85MHz



Optical Interfaces

M42x1 Mount :
Integrated to the Front Face

C Mount :
EV50-MOUNT-C

F Mount :
EV50-MOUNT-F

Camera Models

	Camera Part Number	Description	Details
UNIIQA+ Essential Color	**EV71YC1CCL4005-BA2**	Versatile **Base** CameraLink	4k pixels 5x5µm color up to **20kHz** 2k pixels 10x10µm True color up to **40kHz**
	EV71YC1CCL4005-BA0	4k Pixels **Base** CameraLink	4k pixels 5x5µm color up to **20kHz**
	EV71YC1CCL2010-BA0	2k pixels **Base** CameraLink	2k pixels 10x10µm True Color up to **40kHz**
UNIIQA+ High-Speed Color	**EV71YC1CCL4005-BA3**	Versatile **Dual Base** CameraLink	4k pixels 5x5µm color up to **40kHz** 2k pixels 10x10µm True color up to **80kHz**
	EV71YC1CCL4005-BA1	4k Pixels **Dual Base** CameraLink	4k pixels 5x5µm color up to **40kHz**
	EV71YC1CCL2010-BA1	2k pixels **Dual Base** CameraLink	2k pixels 10x10µm True Color up to **80kHz**