

EventCam

Application and Tricks

SICK
Sensor Intelligence.



1 Introduction

In this document we will elaborate on the applications of the EventCam as well as giving a step by step configuration for these applications. Keep in mind that this is not an instruction manual on how to do an initial setup of the device. This information is available in the Device operating instructions. This document is application based setup, optimization and trouble shooting. As products become more versatile, they also become more complex.

This document aids in bridging this gap. Information not in this document is available on the SICK Internal Intranet and includes EventCam product training, application and setup videos, troubleshooting guide and firmware information.

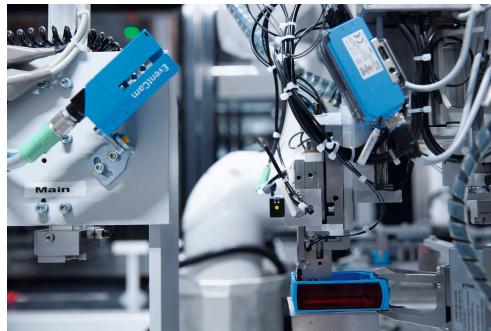
Contents

1	Introduction.....	2
2	Applications.....	4
3	Getting started and configuration.....	5
4	Connecting the Eventcam.....	6
5	Resolution and field of view.....	7
6	Trigger timing.....	9
7	Processing time.....	10
8	Picture quality.....	11
9	Rolling Shutter.....	12
10	Troubleshooting.....	13

2 Applications

Typical applications for the EventCam are:

1. Failure analysis in processes, e. g. gripping, gluing, screwing, etc.
→ For process optimization and higher machine uptime
→ For faster and easier machine set-up by better alignment of sensors or machine components



2. Diagnosis of laser scanner trips, e. g. in Automotive Industry and AGV/AGC applications



3. Quality documentation in logistic processes or food industry



3 Getting started and configuration

Please watch our video tutorials.

- Getting started :
https://www.youtube.com/watch?v=jy_JLBVDhWw
- Configuration
<https://www.youtube.com/watch?v=q-2WoseAa08>

4 Connecting the Eventcam

Connection diagram without connection module:

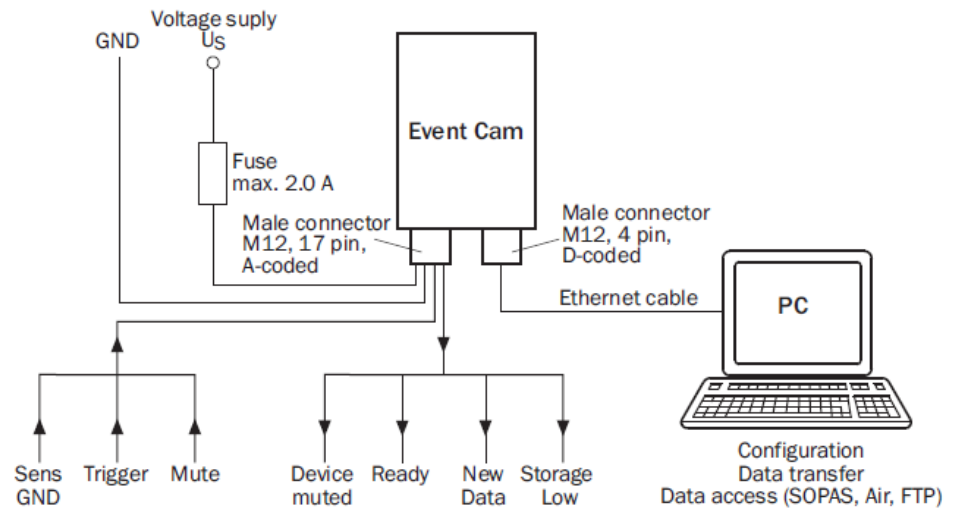


Figure 2: Connection diagram without connection module

Figure 1: Connection diagram without connection module

Connection diagram with connection module CDB620:

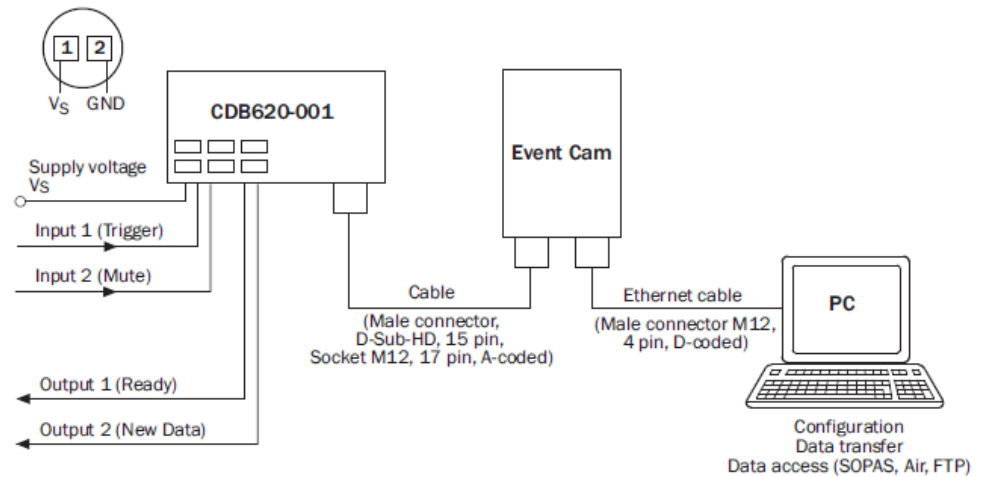


Figure 3: Connection diagram with connection module CDB620-001

Figure 2: Connection diagram with connection module

5 Resolution and field of view

Different resolutions can be selected which lead to different fields of view:

Far range variant:

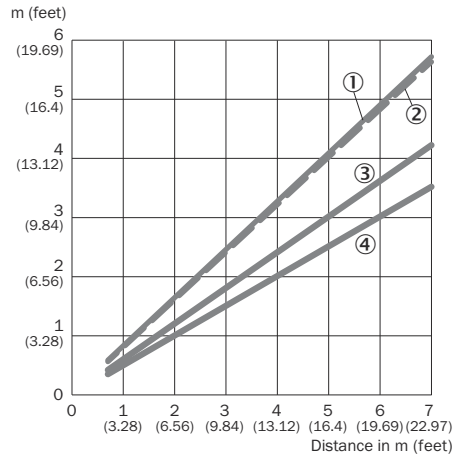


Figure 3: Characteristic curve horizontal field of view

- ① QSXGA
- ② 720p
- ③ 1080p
- ④ SVGA

Far range variant:

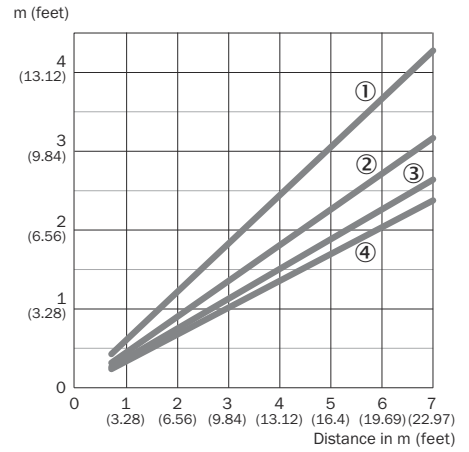


Figure 4: Characteristic curve vertical field of view

- ① QSXGA
- ② 720p
- ③ SVGA
- ④ 1080P

Close range variant:

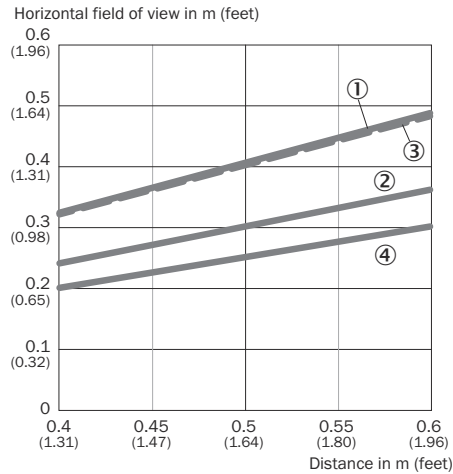


Figure 5: Characteristic curve horizontal field of view

- ① QSXGA
- ② 1080p
- ③ 720p
- ④ SVGA

Close range variant:

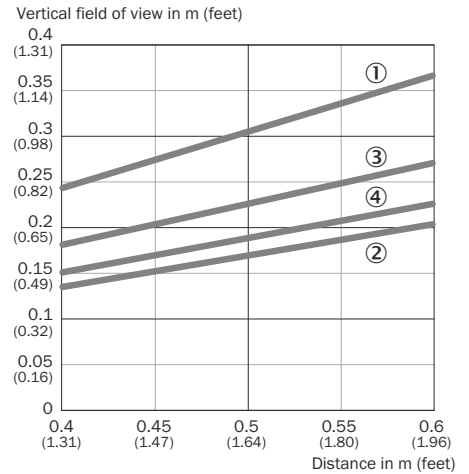


Figure 6: Characteristic curve vertical field of view

- ① QSXGA
- ② 1080p
- ③ 720p
- ④ SVGA

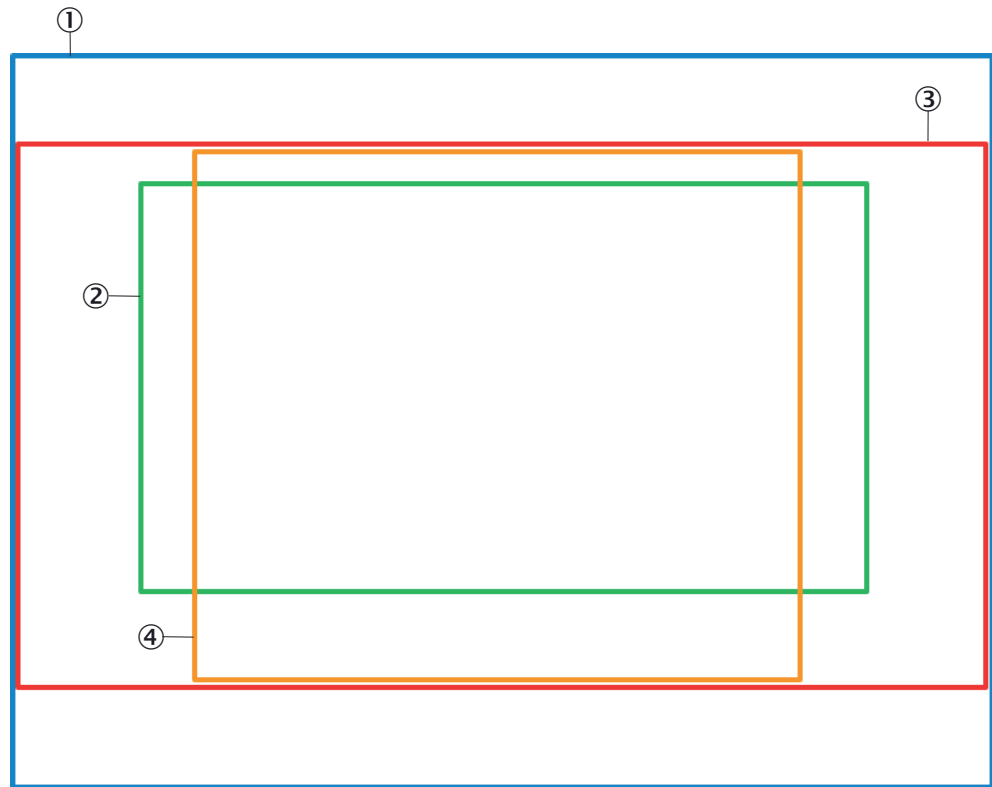


Figure 7: Different fields of view

- ① QSVGA
- ② 1080p, Full-HD
- ③ 720p
- ④ SVGA (4:3)

6 Trigger timing

Example configuration:

Picture mode, spatial resolution 2592x1944, max. temporal resolution 15 fps.



Figure 8: Picture mode

Mode

Regular temporal grid: Every picture, max. temporal resolution 15 fps

Regular temporal grid: Every 3rd picture, selected temporal resolution 5 fps of max. 15 fps

Next available picture: Every 3rd picture, selected temporal resolution 5 fps of max. 15 fps

7 Processing time

Calculation of total event processing time:

- Time for image processing
- + image or video compression
- + zip container
- + writing on SD card or FTP transmission
- = Total event processing time



NOTE

Thumb rule:

2 * event time = total event processing time

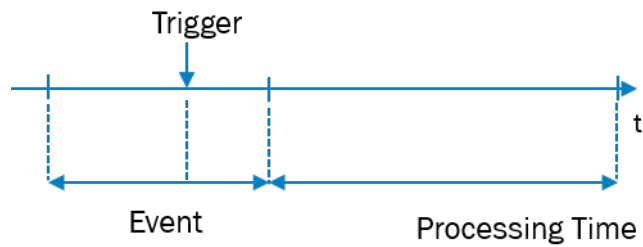


Figure 9: Processing time

Which time can I expect for event processing after the event?

Table 1: Event processing time

In picture mode

Resolution	Time per picture in the event
QSXVGA	0.5 s
1080p	0.25 s
720p	0.1 s
SVGA	0.05 s

In video mode

Resolution	Time per second of the event
1080p @ 30 fps	2.2 s
1080p @ 15 fps	1.1 s
720p @ 45 fps	1.7 s
720p @ 15 fps	0.6 s
SVGA @ 65 fps	1.3 s
SVGA @ 13 fps	0.3 s

Example: Video with 1080p @ 15 fps, 10 s before trigger and 5 s after trigger signal:

Processing time = 1.1 x (10 s+5 s) = 16.5 s

Additionally, 1s per 15 MB event data has to be added for zip container compression.

8 Picture quality

Illumination

The camera does not have an internal illumination and is designed for applications with approx. 1 klux ambient light.

Additional illumination may be needed to improve picture quality, if ambient light is not sufficient.

Example:

1 klux = cloudy day

or

1 klux = 2 white 10 W LEDs at 1 m distance

The exposure time depends on ambient light. Long exposure times are needed for dark environments. Short exposure times can be selected for high object speed.

See configuration menu:



Motion Blur

- Insufficient ambient light
- Working distance
- Static resolution

can have an impact on motion blur.

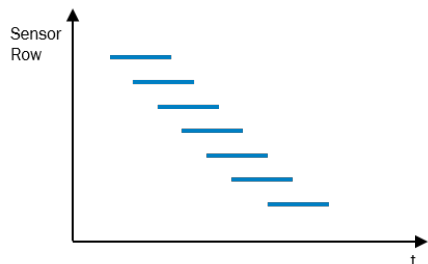
High object speed can lead to shutter artifacts.

9 Rolling Shutter

The EventCam has a Rolling Shutter.

The pictures show the difference between rolling and global shutter.

Rolling Shutter



Global Shutter



As described on the previous page, motion blur and shutter artifacts can occur depending on the application.

10 Troubleshooting

Table 2: Troubleshooting

No.	Fail behavior	Cause	Action
1	No access to EventCam	Forgot password or IP address of the EventCam	Push the Reset button for 10 s. This will reset to factory settings. And you can enter with standard IP address 192.168.0.30 and enter 'Maintenance' level in SOPASair with the password 'maintenance'
2	Device not ready	No voltage supply	Check voltage supply
3	Device not ready - (Ready LED blue, Recording LED green)	Configuration Wizard not finished correctly or missing initial configuration	Open Configuration Wizard in the browser and finish it by pressing the button Finish
4	New Data and Event LEDs are lighting up blue	Device is overheating	Provide a cooler environment and/or better heat dissipation
5	Memory full. Ready LED is lighting up blue	Internal device memory is full	Download data and delete them from device
6	Event not recorded	Trigger configuration (low/high) incorrect; trigger duration too short; device still processing previous event; memory full and/or FTP transmission error; device muted	Change trigger configuration (min. trigger duration 15 ms); shorten event duration; verify if memory is full; unmute device
7	FTP data transmission not working	Cause noted in log file	Read cause of error in log file; log file can be downloaded in SOPASair
8a	Device cannot be muted by pressing button	Mute button deactivated	Button can be activated via SOPASair
8b	Device cannot be muted by pressing button	Muting via pin is switched on, which is preventing muting via button	Deactivate muting via pin in SOPASair
9	Image too bright/dark	Incorrect exposure setting	Switch on Automatic Exposure Control if it is switched off or change manual exposure time. If Automatic Exposure Control is switched on, increase/ reduce brightness.
10	Image is blurry	Object is moving too fast	Check exposure settings
11	Live view and other functionalities cannot be displayed in SOPAS Air	Internet Explorer not supported	Use Microsoft Edge 40, Google Chrome 63 or Firefox 61 browser

Australia

Phone +61 (3) 9457 0600
1800 33 48 02 – tollfree
E-Mail sales@sick.com.au

Austria

Phone +43 (0) 2236 62288-0
E-Mail office@sick.at

Belgium/Luxembourg

Phone +32 (0) 2 466 55 66
E-Mail info@sick.be

Brazil

Phone +55 11 3215-4900
E-Mail comercial@sick.com.br

Canada

Phone +1 905.771.1444
E-Mail cs.canada@sick.com

Czech Republic

Phone +420 234 719 500
E-Mail sick@sick.cz

Chile

Phone +56 (2) 2274 7430
E-Mail chile@sick.com

China

Phone +86 20 2882 3600
E-Mail info.china@sick.net.cn

Denmark

Phone +45 45 82 64 00
E-Mail sick@sick.dk

Finland

Phone +358-9-25 15 800
E-Mail sick@sick.fi

France

Phone +33 1 64 62 35 00
E-Mail info@sick.fr

Germany

Phone +49 (0) 2 11 53 010
E-Mail info@sick.de

Greece

Phone +30 210 6825100
E-Mail office@sick.com.gr

Hong Kong

Phone +852 2153 6300
E-Mail ghk@sick.com.hk

Hungary

Phone +36 1 371 2680
E-Mail ertekezes@sick.hu

India

Phone +91-22-6119 8900
E-Mail info@sick-india.com

Israel

Phone +972 97110 11
E-Mail info@sick-sensors.com

Italy

Phone +39 02 27 43 41
E-Mail info@sick.it

Japan

Phone +81 3 5309 2112
E-Mail support@sick.jp

Malaysia

Phone +603-8080 7425
E-Mail enquiry.my@sick.com

Mexico

Phone +52 (472) 748 9451
E-Mail mexico@sick.com

Netherlands

Phone +31 (0) 30 229 25 44
E-Mail info@sick.nl

New Zealand

Phone +64 9 415 0459
0800 222 278 – tollfree
E-Mail sales@sick.co.nz

Norway

Phone +47 67 81 50 00
E-Mail sick@sick.no

Poland

Phone +48 22 539 41 00
E-Mail info@sick.pl

Romania

Phone +40 356-17 11 20
E-Mail office@sick.ro

Russia

Phone +7 495 283 09 90
E-Mail info@sick.ru

Singapore

Phone +65 6744 3732
E-Mail sales.gsg@sick.com

Slovakia

Phone +421 482 901 201
E-Mail mail@sick-sk.sk

Slovenia

Phone +386 591 78849
E-Mail office@sick.si

South Africa

Phone +27 10 060 0550
E-Mail info@sickautomation.co.za

South Korea

Phone +82 2 786 6321/4
E-Mail infokorea@sick.com

Spain

Phone +34 93 480 31 00
E-Mail info@sick.es

Sweden

Phone +46 10 110 10 00
E-Mail info@sick.se

Switzerland

Phone +41 41 619 29 39
E-Mail contact@sick.ch

Taiwan

Phone +886-2-2375-6288
E-Mail sales@sick.com.tw

Thailand

Phone +66 2 645 0009
E-Mail marcom.th@sick.com

Turkey

Phone +90 (216) 528 50 00
E-Mail info@sick.com.tr

United Arab Emirates

Phone +971 (0) 4 88 65 878
E-Mail contact@sick.ae

United Kingdom

Phone +44 (0)17278 31121
E-Mail info@sick.co.uk

USA

Phone +1 800.325.7425
E-Mail info@sick.com

Vietnam

Phone +65 6744 3732
E-Mail sales.gsg@sick.com

Detailed addresses and further locations at www.sick.com

