

# TOSHIBA TELI USB3 Vision CAMERA BU Series

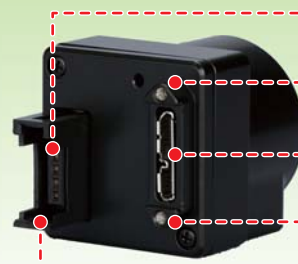
Featuring  
**new IP core**  
technology

**Industry-smallest !**



## IMAGING REVOLUTION

**USB**<sup>TM</sup>  
VISION



- GPIO 2 output 5V
- LED Status Indicator
- USB3.0 Micro B
- Screw lock
- ECON Connector

**CCD type**

29mm × 29mm × **13mm**

**27g**

**CMOS type**

29mm × 29mm × **16mm**

**32g**

**TOSHIBA TELI CORPORATION**

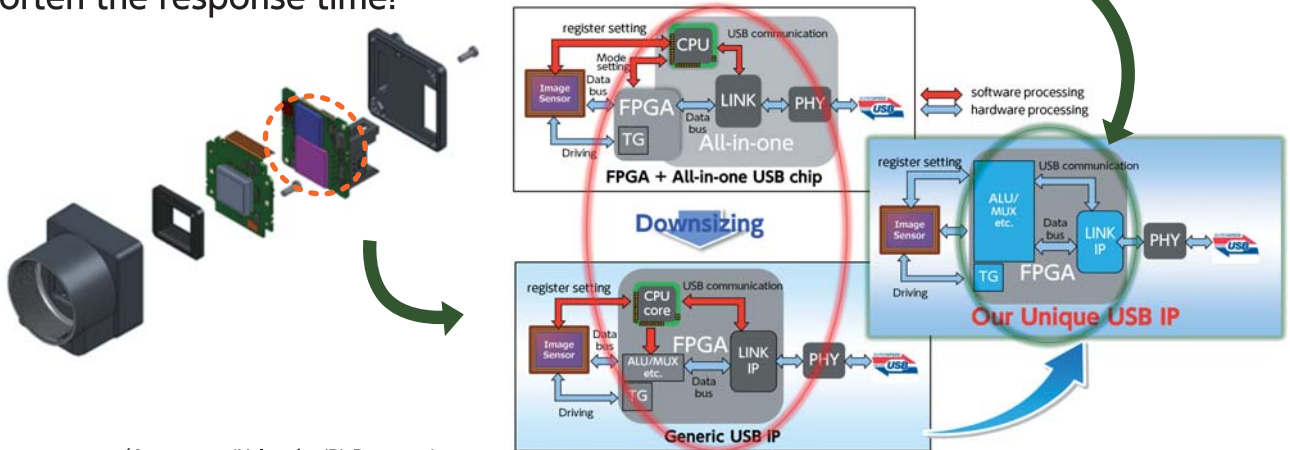
[www.toshiba-teli.co.jp/index.htm](http://www.toshiba-teli.co.jp/index.htm)



# TOSHIBA TELI USB3 Vision CAMERA

## Featuring TELI original IP Core technology

- Achieved high integration with TELI's original technology.
- Shorten the response time!



Access response (Average : (L):Intel - (R):Renesas)

Command	Our Unique USB IP	Generic USB IP	All in one USB chip
			100 times faster
		10 times faster	
Read register	2.2 - 5 $\mu$ s	40.8 - 44.6 $\mu$ s	223 - 546 $\mu$ s
Software trigger (write register)	2.2 - 5.4 $\mu$ s	46.9 - 71.0 $\mu$ s	314 - 324 $\mu$ s

Pursuing Performance

## Event notifications

- Camera notifies status information via event Packet!



- 1 Frame Trigger : Reception of Frame Start Trigger
- 2 Frame Trigger Error : Rejection of Frame Start Trigger
- 3 Frame Trigger Wait : Start of waiting for Frame Start Trigger
- 4 Frame Transfer Start : Start of transferring Streaming data
- 5 Frame Transfer End : End of Transferring Streaming data
- 6 Exposure Start : Start of Exposure
- 7 Exposure End : End of Exposure
- 8 Timer0Start : Start of strobe out control
- 9 Timer0End : End of strobe out control

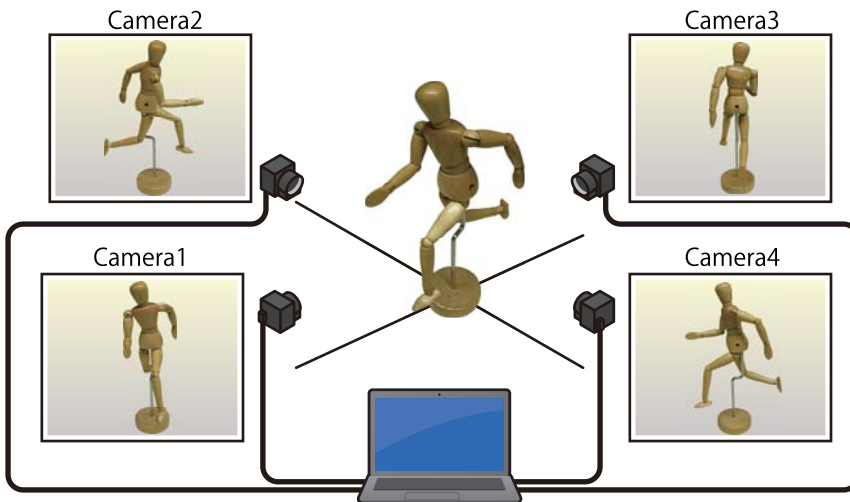
High speed notifications of camera status

# BU Series



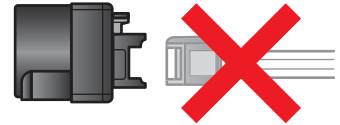
## Bus Synchronization

- Fully synchronized exposure timing among several cameras.



### Example

- Stereo camera
- Motion capture

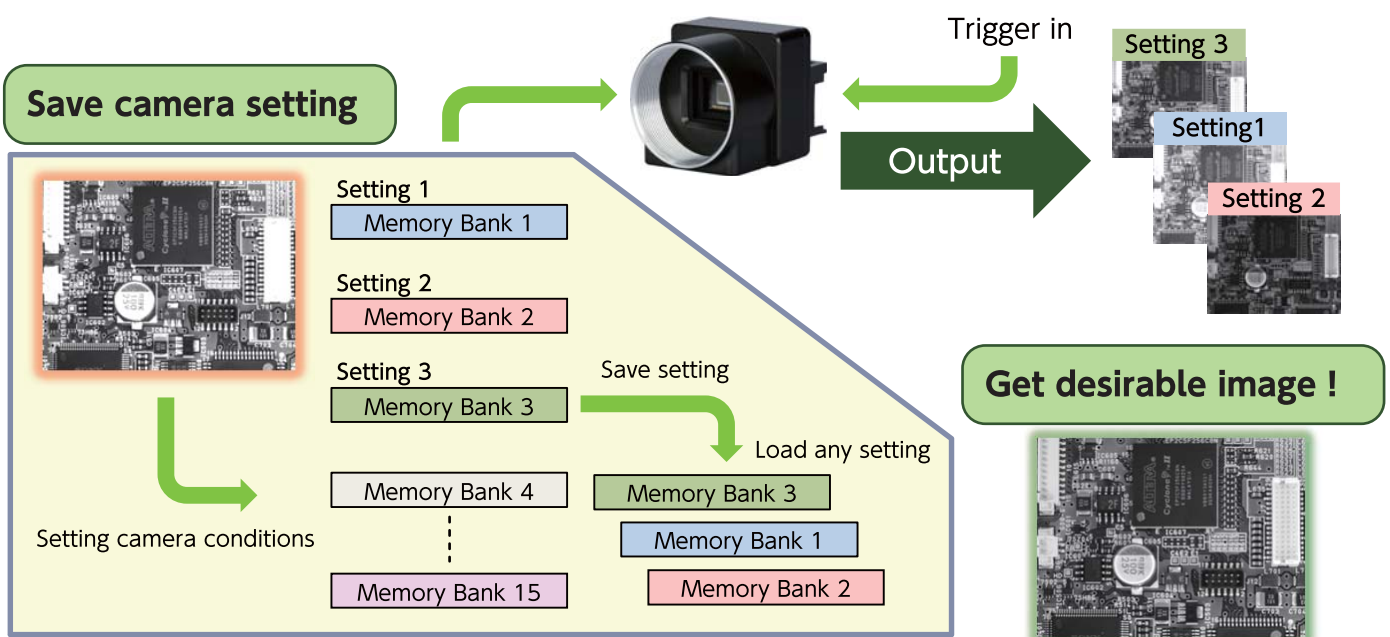


No cable needed for 'trigger in' !

## Sequential Shutter mode + Bulk Trigger mode

(BU238M BU238MC/MCF BU205M BU406M BU406MC/MCF)

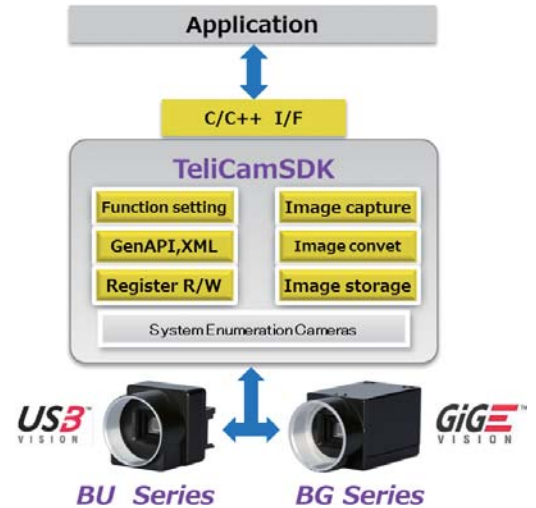
- Output several images of different setting with one trigger pulse.
- Easy to capture the images for desirable inspection.



# TeliCamSDK

- Easy to capture images.
- More than 70% reduction of mounting code.
- GEN<i>CAM available.
- Varieties of functions for easy programming.
- Abundant sample code.
- Easy to understand manuals.
- Unified SDK for USB3.0 & GigE.

Makes developing terms shorter !



## Specifications

B/W	BU030	BU031	BU080	BU130	BU205M	BU238M	BU406M	*DU657M
Image sensor	ICX424AL	ICX414AL	ICX204AL	ICX445AL	CMV2000	IMX174	CMV4000	TELI Original
Image sensor size	1/3 CCD	1/2 CCD	1/3 CCD	1/3 CCD	2/3 GS-CMOS	1/1.2 GS-CMOS	1.0 GS-CMOS	1.1 GS-CMOS
Unit pixel size	7.4 x 7.4 μm	9.9 x 9.9 μm	4.65 x 4.65 μm	3.75 x 3.75 μm	5.5 x 5.5 μm	5.86 x 5.86 μm	5.5 x 5.5 μm	5 x 5 μm
Pixels	0.3M	0.3M	0.8M	1.3M	2M	2.3M	4M	6.5M
Resolution	640×480	640×480	1024×768	1280×960	2048×1088	1920×1200	2048×2048	2560×2560
Frame rate	125fps	125fps	40fps	30fps	170fps	165fps	90fps	Scheduled
Highspeed response	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Event notifications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bus synchronization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bulk trigger	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Image buffer					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sequential shutter					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TBD

Color	BU030C/CF	BU130C/CF	BU238MC/MCF	BU406MC/MCF	*DU657MC	*BU1203MCF
Image sensor	ICX424AQ	ICX445AQA	IMX174	CMV4000	TELI Original	IMX226
Image sensor size	1/3 CCD	1/3 CCD	1/1.2 GS-CMOS	1.0 GS-CMOS	1.1 GS-CMOS	1/1.7 RS-CMOS
Unit pixel size	7.4 x 7.4 μm	3.75 x 3.75 μm	5.86 x 5.86 μm	5.5 x 5.5 μm	5 x 5 μm	1.85 x 1.85 μm
Pixels	0.3M	1.3M	2.3M	4M	6.5M	12M
Resolution	640×480	1280×960	1920×1200	2048×2048	2560×2560	4000×3000
Frame rate	125fps	30fps	165fps	90fps	55fps	TBD
Highspeed response	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Event notifications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bus synchronization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bulk trigger	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Image buffer			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sequential shutter			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TBD	

\* Concerning IR cut filter for color camera C : Not equipped CF / M C F : Equipped

\* Concerning shutter of CMOS GS-CMOS : Global shutter RS-CMOS : Rollig shutter

## Patent

- Bus Synchronization mode.  
Patent pending by TOSHIBA TELI CORPORATION.

**TOSHIBA TELI CORPORATION**  
URL: <http://www.toshiba-teli.co.jp/index.htm>