

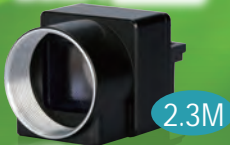
# TOSHIBA TELI USB3 Vision CAMERA BU/DU Series

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

NEW IP Core inside

Industry-smallest!

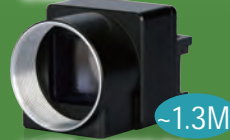
Sony  
IMX174 Pregius



2.3M

BU238M  
BU238MC/MCF

Sony  
CCD



~1.3M

BU030 BU030C/CF  
BU031 BU080  
BU130 BU130C/CF

Sony  
IMX252 Pregius



NEW

3M

BU302MG  
BU302MCG/MCF

e2v  
EV76C560



NEW

1.3M

BU132M

Sony  
IMX250 Pregius



NEW

5M

BU505MG  
BU505MCG/MCF

CMOSIS  
CMV2000



2M

BU205M

Sony  
IMX178 STARVIS



6M

BU602M  
BU602MC/MCF

Sony  
IMX255 Pregius



8M

DU806M  
DU806MC/MCF

Sony  
IMX226 STARVIS



NEW

12M

BU1203MC/MCF

Sony  
IMX253 Pregius



12M

DU1207M  
DU1207MC/MCF

TELI Original  
6.5M



NEW

6.5M

DU657M  
DU657MC

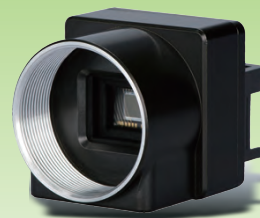
Pregius logo and STARVIS logo are trademarks of Sony Corporation.

## IMAGING REVOLUTION

### USB3.0 Board Level Camera - Concept model -



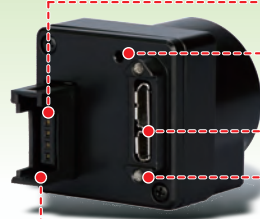
- More thin, compact & light weight than BU series
- Flexible optical mounting
- Big heat dissipation effect
- VGA ~ 12M
- Same as BU series camera functions



BU series CCD model

29mm × 29mm × 13mm

27g



BU series CMOS model

29mm × 29mm × 16mm

32g

- Trigger input LVTTL to 24V
- GPIO 2 output 5V
- \* 1 input/output (selectable) 5V, 1 output 5V (BU302M Series, BU505M Series, BU132M)
- LED Status indicator
- USB3.0 Micro B connector
- Screw lock
- e-CON 4 pin connector

TOSHIBA TELI CORPORATION

<http://www.toshiba-teli.co.jp/en/>



# TOSHIBA TELI USB3 Vision CAMERA

## Simple & High-performance USB3 Vision camera BU/DU series

■ Example of USB3 Vision camera system and Camera Link camera system;

**Camera Link Camera System  
Medium Configuration  
(4Gbps)**

**USB3 Vision Camera System  
(4Gbps)**

**Camera Link Camera System  
Camera x4, FGB x4, Cable x8**

**USB3 Vision Camera System  
Camera x4, Card x1, Cable x4**

**Equivalent performance to CameraLink with simple structure**

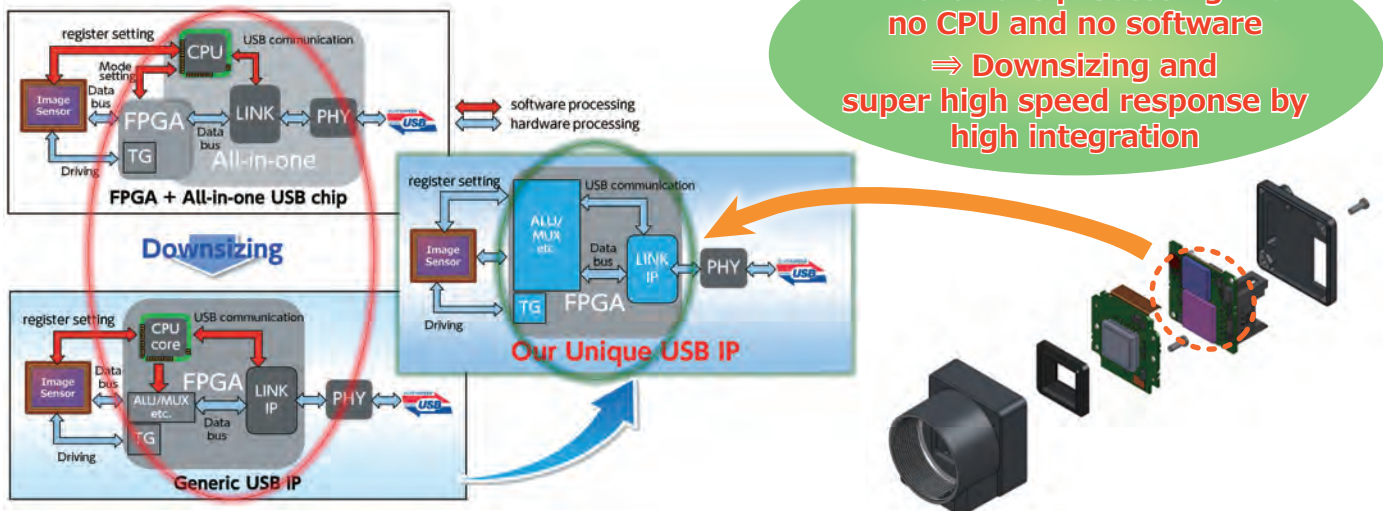
**High performance and cost reduction with even multi camera system**

## Featuring TELI original IP Core technology "TELI IP Core"

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

### TELI IP Core

All hardware processing with no CPU and no software  
 ⇒ Downsizing and super high speed response by high integration



Access response (Average) PC (Board) side IC : Intel / Renesas

Command	Our Unique USB IP	Generic USB IP	All in one USB chip
			<b>100 times faster</b>
		<b>10 times faster</b>	
Read register	<b>2.2 / 5 μs</b>	40.8 / 44.6 μs	223 / 546 μs
Software trigger (write register)	<b>2.2 / 5.4 μs</b>	46.9 / 71.0 μs	314 / 324 μs

**Super high speed response, 100 times faster\***

\* Comparison value of read register access response with 'All-in-one USB chip' built-in model

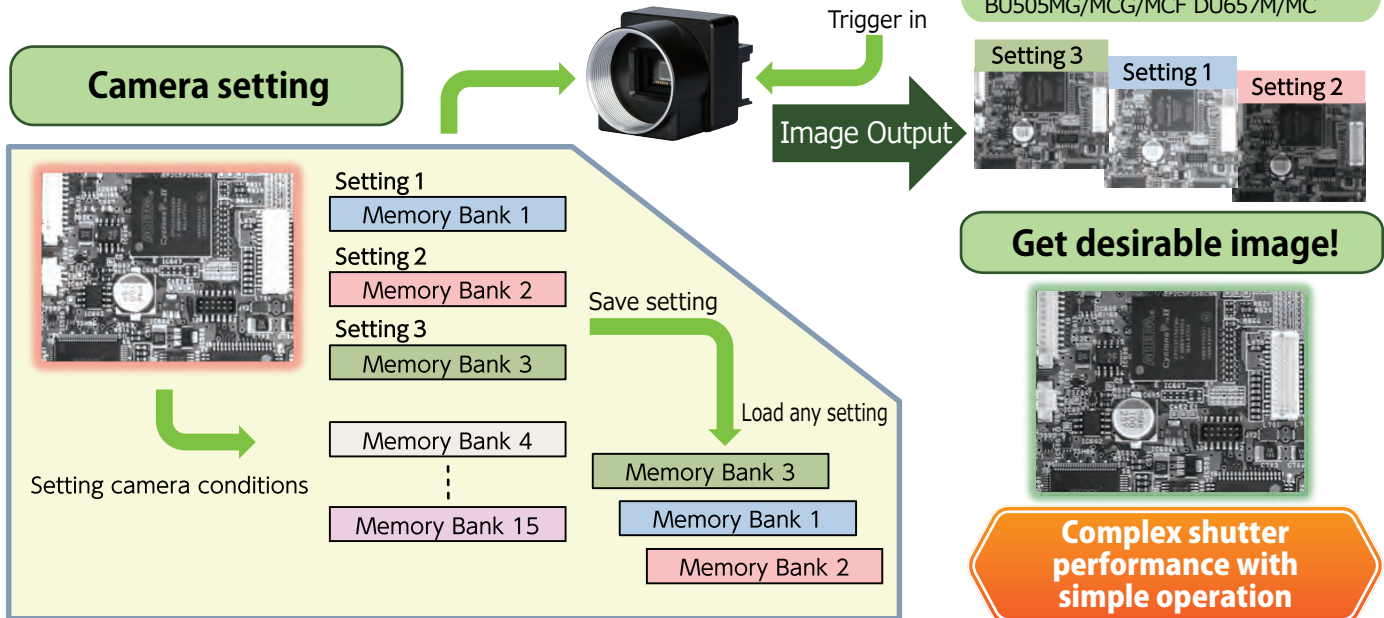
# BU/DU Series



## Sequential Shutter mode + Bulk Trigger mode

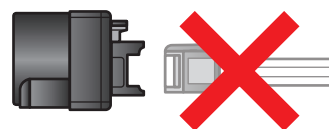
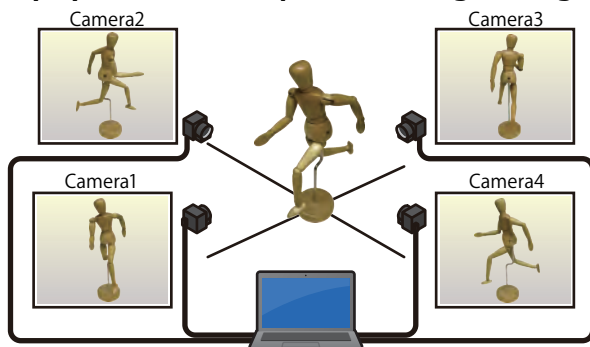
- Output several images of different setting with one trigger pulse.
- Easy to capture the images for desirable inspection.

**Corresponding Cameras;**  
 BU132M BU205M BU238M/MC/MCF  
 BU302MG/MCG/MCF BU406M/MC/MCF  
 BU505MG/MCG/MCF DU657M/MC



## Bus Synchronization

- Fully synchronized exposure timing among several cameras.



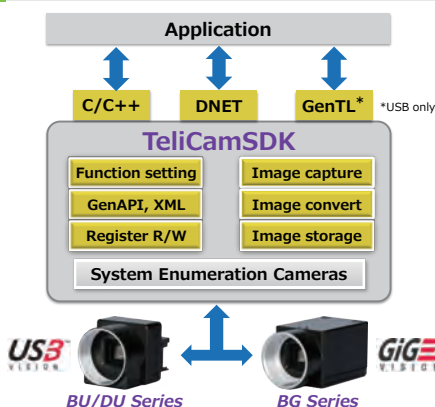
**No cable needed for 'Trigger in'!**

**Example;**  
 • Stereo camera  
 • Motion capture

**Synchronizing multiple cameras without external trigger**

● Bus Synchronization mode is patent on TOSHIBA TELI CORPORATION.

## 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 & Gig-E.

**Makes developing terms shorter!**

# Event Notifications

■ Camera notifies status information via event packet!



- 1 FrameTrigger : Reception of Frame Start Trigger
- 2 FrameTriggerError : Rejection of Frame Start Trigger
- 3 FrameTriggerWait : Start of waiting for Frame Start Trigger
- 4 FrameTransferStart : Start of transferring Streaming Data
- 5 FrameTransferEnd : End of transferring Streaming Data
- 6 ExposureStart : Start of Exposure
- 7 ExposureEnd : End of Exposure
- 8 Timer0Start : Start of Timer "0"
- 9 Timer0End : End of Timer "0"

High speed notifications of camera status

# Specifications

MODEL*	BU030	BU030C BU030CF	BU031	BU080	BU130	BU130C BU130CF
B/W or COLOR	B/W	COLOR	B/W	B/W	B/W	COLOR
Pixels	0.3M		0.3M	0.8M	1.3M	
Imager model	ICX424A		ICX414A	ICX204A	ICX445A	
Imager size/type	1/3" CCD		1/2" CCD	1/3" CCD	1/3" CCD	
Resolution	640x480		640x480	1,024x768	1,280x960	
Frame rate	125fps		125fps	40fps	30fps	
Pixel size	7.4x7.4µm		9.9x9.9µm	4.65x4.65µm	3.75x3.75µm	
TELI IP Core*	V1		V1	V1	V1	
Event notifications	✓		✓	✓	✓	
Bus synchronization	✓		✓	✓	✓	
Bulk trigger	✓		✓	✓	✓	
Image buffer	-		-	-	-	
Sequential shutter	-		-	-	-	
Product availability	Available	Available	Available	Available	Available	Available

MODEL*	DU657M	DU657MC
B/W or COLOR	B/W	COLOR
Pixels	6.5M	
Imager model	TELI Original	
Imager size/type*	1.1" GS-CMOS	
Resolution	2,560x2,560	
Frame rate	55fps	
Pixel size	5.0x5.0µm	
TELI IP Core*	V3	
Event notifications	✓	
Bus synchronization	✓	
Bulk trigger	✓	
Image buffer	✓	
Sequential shutter	✓	
Product availability	Available	Available

MODEL*	BU132M	BU205M	BU238M	BU238MC BU238MCF	BU302MG	BU302MCG BU302MCF	BU406M	BU406MC BU406MCF	BU505MG	BU505MCG BU505MCF	BU1203MC BU1203MCF
B/W or COLOR	B/W	B/W	B/W	COLOR	B/W	COLOR	B/W	COLOR	B/W	COLOR	COLOR
Pixels	1.3M	2M	2.3M		3M		4M		5M		12M
Imager model	EV76C560	CMV2000	IMX174		IMX252		CMV4000		IMX250		IMX226
Imager size/type*	1/1.8" GS-CMOS	2/3" GS-CMOS	1/1.2" GS-CMOS		1/1.8" GS-CMOS		1.0" GS-CMOS		2/3" GS-CMOS		1/1.7" RS-CMOS
Resolution	1,280x1,024	2,048x1,088	1,920x1,200		2,048x1,536		2,048x2,048		2,448x2,048		4,000x3,000
Frame rate	60fps	170fps	165fps		120fps		90fps		75fps		30fps
Pixel size	5.3x5.3µm	5.5x5.5µm	5.86x5.86µm		3.45x3.45µm		5.5x5.5µm		3.45x3.45µm		1.85x1.85µm
TELI IP Core*	V4	V2	V2		V4		V2		V4		V2
Event notifications	✓	✓	✓		✓		✓		✓		✓
Bus synchronization	✓	✓	✓		✓		✓		✓		-
Bulk trigger	✓	✓	✓		✓		✓		✓		-
Image buffer	✓	✓	✓		✓		✓		✓		✓
Sequential shutter	✓	✓	✓		✓		✓		✓		-
Product availability	Mar/2016	Available	Available	Available	Mar/2016	Mar/2016	Available	Available	Available	Mar/2016	Available

- \* **MODEL suffix** C/MC: without IR-cut filter, CF/MCF: with IR-cut filter, G/CG: with Dust-proof (Optical) glass
- \* **Imager type** GS-CMOS: Global shutter type CMOS sensor, RS-CMOS: Rolling shutter type CMOS sensor
- \* **TELI IP Core** Featuring newly developed TELI original IP core technology (V: Version)



## Notes on Safety

- Before using this product, please read "Instruction Manual" carefully in order to use this product safely and correctly.
- If this product should be used in the extraordinary conditions or environments, or if you have any questions or problems, please contact our Sales division.

**TOSHIBA TELI CORPORATION**

URL: <http://www.toshiba-teli.co.jp/en/>

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