

TOSHIBA TELI USB3 Vision CAMERA BU/DU Series

USB[®]
VISION

NEW IP Core inside

The industry's smallest

0.4 MP
BU040M Series
Sony IMX287 COMING SOON

1.6 MP
BU160M Series
Sony IMX273 COMING SOON



Pregius

2.3 MP
BU238M Series
Sony IMX174



Pregius

3.1 MP
BU302M Series
Sony IMX252 NEW

5 MP
BU505M Series
Sony IMX250 NEW



Pregius

8.8 MP
DU806M Series
Sony IMX255 PLANNING

12.3 MP
DU1207M Series
Sony IMX253 NEW



Pregius

6.5 MP
DU657M Series
TELI Original 6.5M



0.3 MP
0.8 MP
1.3 MP

BU030 Series
BU031 / BU080
BU130 Series
Sony CCD



1.3 MP
BU132M
e2v EV76C560



2 MP
BU205M
CMOSIS CMV2000



4 MP
BU406M Series
CMOSIS CMV4000



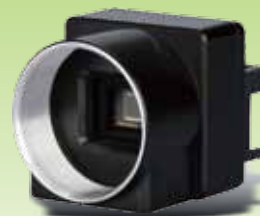
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IMAGING REVOLUTION

USB3.0 Board Level Camera - Concept model -

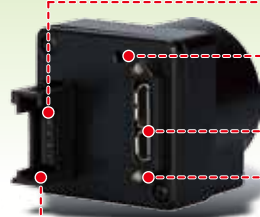


- Thinner, more compact & lighter weight than BU series
- Flexible optical mounting
- Big heat dissipation effect
- VGA - 12MP
- Same as BU series camera functions



BU series CCD model
29mm × 29mm × 13mm

27g



BU series CMOS model
29mm × 29mm × 16mm

32g

- Trigger input / GPIO
- LED Status indicator
- USB3.0 Micro B connector
- Screw lock
- e-CON 4 pin connector

TOSHIBA TELI CORPORATION

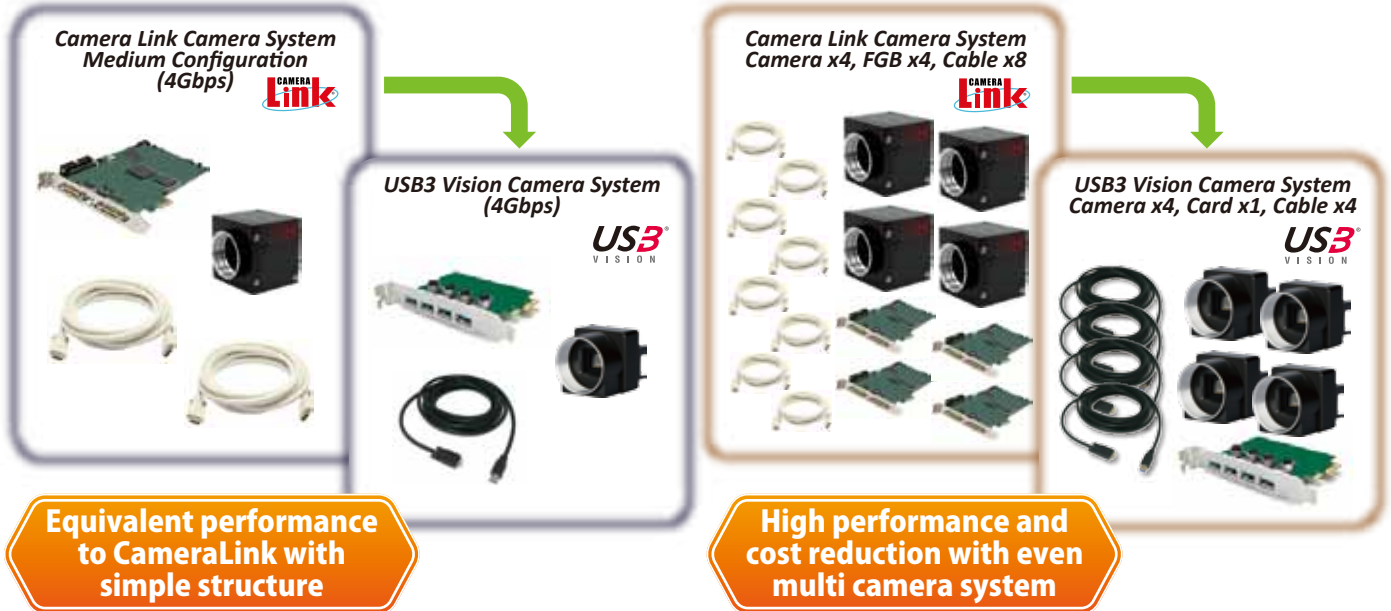
<http://www.toshiba-teli.co.jp/en/>



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;

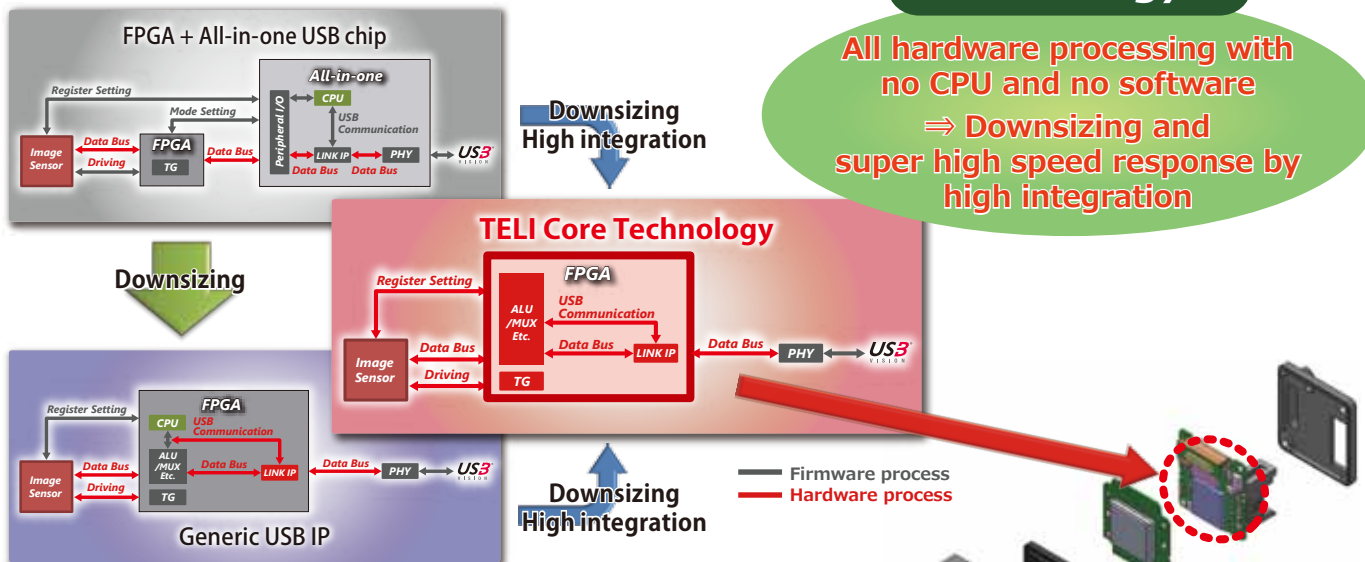


Featuring TELI original IP "TELI Core Technology"

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

TELI Core Technology

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



Access response (Average) PC (Board) side host controller : Intel / 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 μs	40.8 / 44.6 μs	223 / 546 μs
Software trigger (write register)	2.2 / 5.4 μs	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

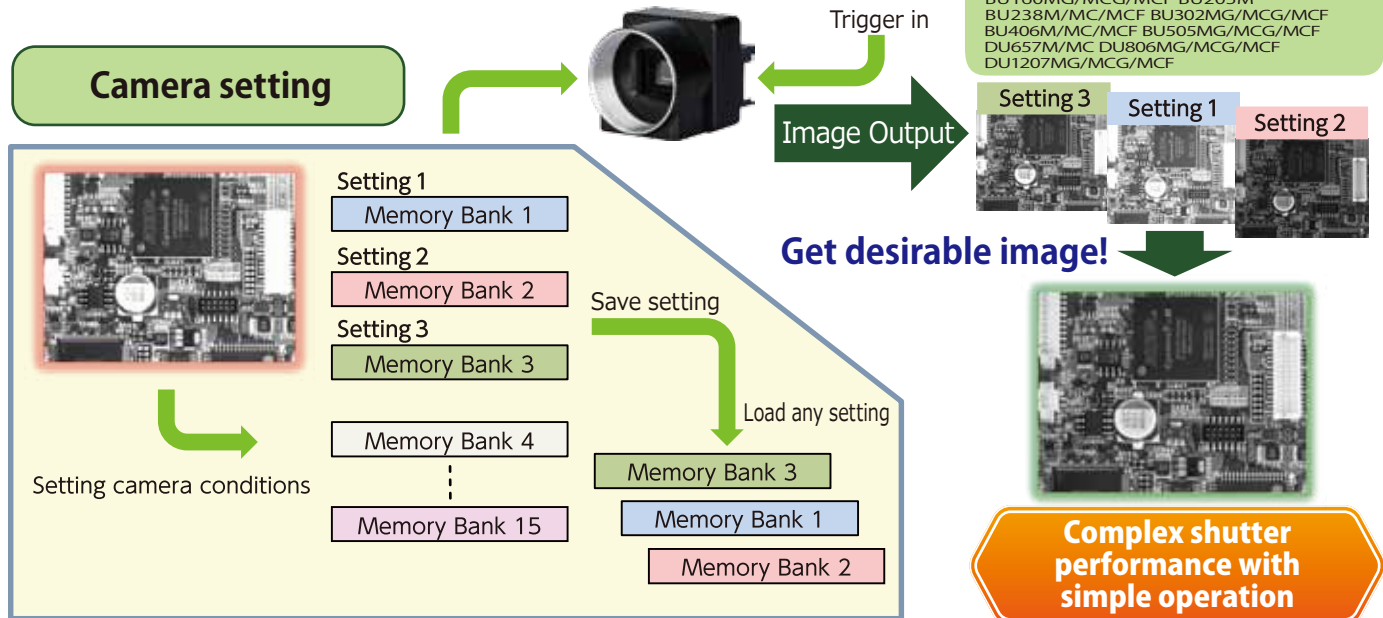


Sequential Shutter mode + Bulk Trigger mode

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

Corresponding Cameras of Sequential shutter mode;

BU040MG/MCG/MCF BU132M
 BU160MG/MCG/MCF BU205M
 BU238M/MC/MCF BU302MG/MCG/MCF
 BU406M/MC/MCF BU505MG/MCG/MCF
 DU657M/MC DU806MG/MCG/MCF
 DU1207MG/MCG/MCF

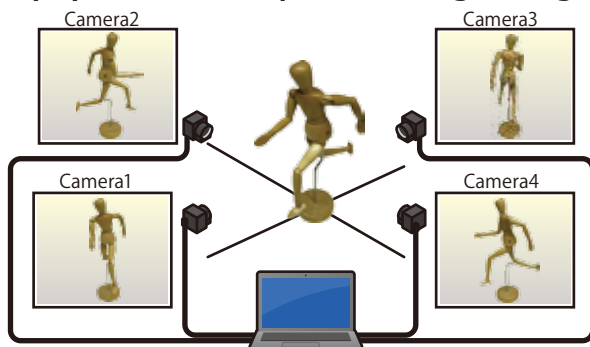


Bus Synchronization

- Fully synchronized exposure timing among several cameras.*

Corresponding Cameras;

BU030/C/CF BU031 BU040MG/MCG/MCF
 BU080 BU130/C/CF BU160MG/MCG/MCF
 BU205M BU238M/MC/MCF
 BU302MG/MCG/MCF BU406M/MC/MCF
 BU505MG/MCG/MCF DU657M/MC
 DU806MG/MCG/MCF DU1207MG/MCG/MCF



No cable needed for 'Trigger in'!

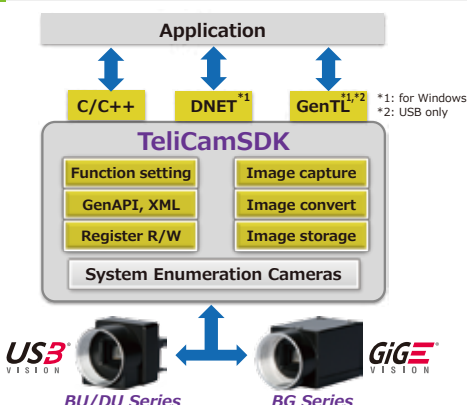
- Example;
- Stereo camera
 - Motion capture

Synchronizing multiple cameras without external trigger

Bus Synchronization mode is patent on TOSHIBA TELI CORPORATION.

* The time stamp in the USB bus is used. The camera with same time stamp can synchronize.

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.

Corresponding OS :

- Windows
 - 7 (32bit / 64bit)
 - 8.1 (32bit / 64bit)
 - 10 (32bit / 64bit)
- Linux
 - Ubuntu 14.04LTS amd64
 - Debian 8.1.0 amd64

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	BU040MG	BU040MCG BU040MCF	BU080	BU130	BU130C BU130CF	BU132M	BU160MG	BU160MCG BU160MCF	BU205M	BU238M	BU238MC BU238MCF
B/W or COLOR	B/W	COLOR	B/W	B/W	COLOR	B/W	B/W	COLOR	B/W	B/W	COLOR	B/W	B/W	COLOR
Pixels	0.3M		0.3M	0.4M		0.8M	1.3M		1.3M	1.6M		2M	2.3M	
Imager model	Sony ICX424A		Sony ICX414A	Sony IMX287		Sony ICX204A	Sony ICX445A		e2v EV76C560	Sony IMX273		CMOSIS CMV2000	Sony IMX174	
Imager size/type	1/3" CCD		1/2" CCD	1/2.9" GS-CMOS		1/3" CCD	1/3" CCD		1/1.8" GS-CMOS	1/2.9" GS-CMOS		2/3" GS-CMOS	1/1.2" GS-CMOS	
Resolution	640 x 480		640 x 480	720 x 540		1,024 x 768	1,280 x 960		1,280 x 1,024	1,440 x 1,080		2,048 x 1,088	1,920 x 1,200	
Frame rate	125 fps		125 fps	436 fps		40 fps	30 fps		60 fps	226 fps		170 fps	165 fps	
Pixel size	7.4 x 7.4 μm		9.9 x 9.9 μm	6.90 x 6.90 μm		4.65 x 4.65 μm	3.75 x 3.75 μm		5.3 x 5.3 μm	3.45 x 3.45 μm		5.5 x 5.5 μm	5.86 x 5.86 μm	
TELI Core Technology*	U3V-V1		U3V-V1	U3V-V4		U3V-V1	U3V-V1		U3V-V4	U3V-V4		U3V-V2	U3V-V2	
Event notifications	✓		✓	✓		✓	✓		✓	✓		✓	✓	
Bus synchronization	✓		✓	✓		✓	✓		-	✓		✓	✓	
Bulk trigger	✓		✓	✓		✓	✓		✓	✓		✓	✓	
Image buffer	-		-	64MB		-	-		64MB	64MB		64MB	64MB	
Sequential shutter	-		-	✓		-	-		✓	✓		✓	✓	
Product availability (CY)	Available		Available	Q4/2017		Planning	Available		Available	Q4/2017		Planning	Available	

MODEL*	BU302MG	BU302MCG BU302MCF	BU406M	BU406MCG BU406MCF	BU505MG	BU505MCG BU505MCF	BU602M	BU602MCG BU602MCF	DU657M	DU657MC	DU806MG	DU806MCG DU806MCF	BU1203MC BU1203MCF	DU1207MG	DU1207MCG DU1207MCF	
B/W or COLOR	B/W	COLOR	B/W	COLOR	B/W	COLOR	B/W	COLOR	B/W	COLOR	B/W	COLOR	COLOR	B/W	COLOR	
Pixels	3.1M		4M		5M		6.2M		6.5M		8.8M		12M		12M	
Imager model	Sony IMX252		CMOSIS CMV4000		Sony IMX250		Sony IMX178		TELI Original		Sony IMX255		Sony IMX226		Sony IMX253	
Imager size/type*	1/1.8" GS-CMOS		1.0" GS-CMOS		2/3" GS-CMOS		1/1.8" RS-CMOS		1.1" GS-CMOS		1.0" GS-CMOS		1/1.7" RS-CMOS		1.1" GS-CMOS	
Resolution	2,048 x 1,536		2,048 x 2,048		2,448 x 2,048		3,072 x 2,048		2,560 x 2,560		4,096 x 2,160		4,000 x 3,000		4,096 x 3,000	
Frame rate	120 fps		90 fps		75 fps		60 fps		55 fps		40 fps		30 fps		32 fps 31 fps	
Pixel size	3.45 x 3.45 μm		5.5 x 5.5 μm		3.45 x 3.45 μm		2.40 x 2.40 μm		5.0 x 5.0 μm		3.45 x 3.45 μm		1.85 x 1.85 μm		3.45 x 3.45 μm	
TELI Core Technology*	U3V-V4		U3V-V2		U3V-V4		U3V-V4		U3V-V3		U3V-V5		U3V-V2		U3V-V5	
Event notifications	✓		✓		✓		✓		✓		✓		✓		✓	
Bus synchronization	✓		✓		✓		-		✓		✓		-		✓	
Bulk trigger	✓		✓		✓		-		✓		✓		-		✓	
Image buffer	64MB		64MB		64MB		64MB		64MB		256MB		64MB		256MB	
Sequential shutter	✓		✓		✓		-		-		✓		-		✓	
Product availability (CY)	Available		Available		Available		Q4/2017		Q4/2017		Available		Planning		Available	

* MODEL suffix C/MC: without IR-cut filter, CF/MCF: with IR-cut filter, G/CG: with Dust-proof Glass
 * Imager type GS-CMOS: Global shutter type CMOS sensor, RS-CMOS: Rolling shutter type CMOS sensor
 * TELI Core Technology U3V-V: TELI Core Technology version for USB3 Vision Camera



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.

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