

TOSHIBA

Toshiba BC Series Instruction Manual

Cmos camera

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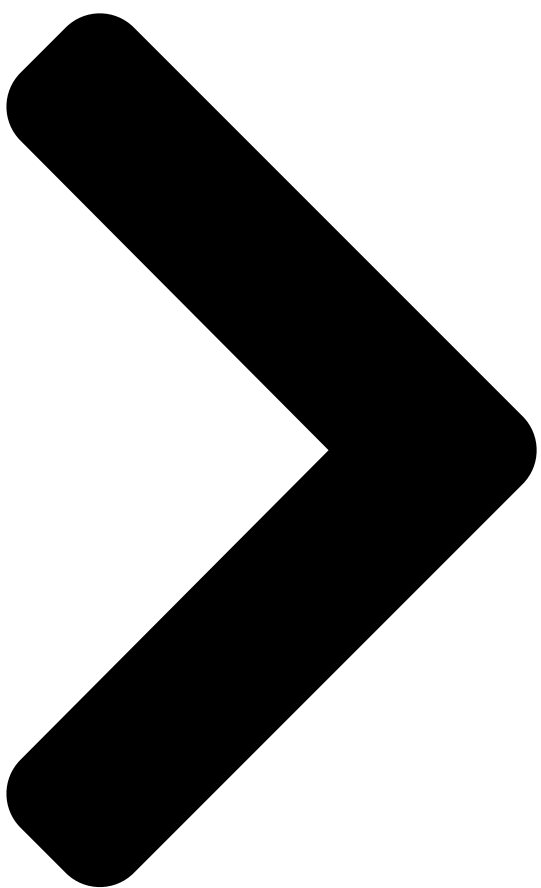
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BC Series CMOS Camera Instruction Manual

Model

Mono Camera

Thank you for purchasing our product.

Before using this CMOS camera, please read through this instruction manual carefully in order to use this product correctly and safely.
After reading, keep this instruction manual handy so that you can refer to, whenever you need it.

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: BC040M / BC160M

D4296087A

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Related Manuals for Toshiba BC Series

[Digital Camera Toshiba BU406M Instruction Manual](#)

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[Digital Camera Toshiba BU406M Specifications](#)

Cmos camera bu series (27 pages)

[Digital Camera Toshiba BU205M Specifications](#)

Cmos camera (34 pages)

[Digital Camera Toshiba BU238M Instruction Manual](#)

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[Digital Camera Toshiba PDR-M500 Instruction Manual](#)

Toshiba pdr-m500: owners manual (120 pages)

[Digital Camera Toshiba IK-TU51CU Service Manual](#)

Ccd camera (80 pages)

[Digital Camera Toshiba PDR-2300 Owner's Manual](#)

Toshiba pdr-2300: owner manual (98 pages)

[Digital Camera Toshiba PDR-2 Quick Reference Manual](#)

Toshiba pdr-2: quick start (21 pages)

Summary of Contents for Toshiba BC Series

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[Page 3: Safety Precautions](#)

The content of prohibition is shown by a picture or words beside the symbol. This sign indicates MANDATORY ACTION (You are required to do). MANDATORY The content of action is shown by a picture or words beside the symbol. 1 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 4: General Handling](#)

□ Do not be handled roughly, damaged, fabricated, bent forcefully, pulled, twisted, bundled, placed under heavy objects or heated the power cable and the connection cable. Avoid Otherwise, fire or electric shock may result. 2 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 5](#) (every approx five years). Accumulation of dust inside the equipment may result in fire or electric shock. For inspection and cleaning costs, contact your sales representative. Instruction 3 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 6: Cases For Indemnity \(Limited Warranty\)](#)

● The item that is not described in specifications of this product is out of the guarantee. ● The case of damages or losses which are caused by incorrect connection of the cable is out of the guarantee. 4 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 7: Restriction For Use](#)

(*2): Equipment relating to maintenance of public services/functions involving factors of safety refers to. - Traffic control systems for air transportation, railways, roads, or marine transportation - Equipment for nuclear power generation - Equipment related to the above 5 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 8: Notes On Using This Product](#)

7.9mm or less ● Mounting to pedestal When mounting this product to a pedestal, make sure carefully that lens doesn't touch with the pedestal. 6 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 9](#) Never use alcohol, benzene, thinner, or other chemicals because such chemicals may damage or discolor the paint and indications. If the image pickup surface becomes dusty, contaminated, or scratched, consult your sales representative. 7 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 10](#) Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be require to correct the interference at his own expense. 8 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 11](#) The brightness of the upper part of the screen may be different from that of the lower part. Note that this is a characteristic of a CMOS image sensor and is not a fault. 9 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

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[Page 13: Specifications](#)

Specifications Overview This BC series is an integrated-(one-body)-type camera that adopts a global shutter CMOS sensor. These are BC040M (0.4M 1/2.9 type), BC160M (1.6M 1/2.9 type). It is easy to integrate into industrial equipment. Features ● High frame rate and high resolution

Supporting high frame rate, BC040M 523fps, BC160M 148fps.

[Page 14: Configuration](#)

To fix a camera to a tripod; attach this to the bottom of the camera. *1: Optional part. Contact your dealer / distributor for details of option units. 12 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 15: Connection](#)

Disturbances in the captured image may occur by an electrical characteristic of the transmission line of using CameraLink devices (CameraLink cable, Grabber Board). 13 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 16: Connector Pin Assignment](#)

Port C6 B[6] B[6] Port A7 A[7] A[7] A[7] Port B7 B[7] B[11] Port C7 B[7] B[7] *The allocation of the port conforms to the CameraLink standard. 14 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 17: Outline Drawing](#)

Outline Drawing 15 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 18: General Specifications](#)

Conductive between circuit GND and camera body (*1) 3tap is not supported * Underbar is factory default (*2) 83MHz / 3tap setting (*3) 83MHz / 2tap setting 16 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 19](#) - In addition, use a mounting screw free from defects and dirt. Otherwise, the camera may be unable to be removed. - As for the C-mount lens used combining this camera, the projection distance from bottom of the screw should use 7.9mm or less. 17 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 20: Timing Specification](#)

1tap 51.09 68.12 113.08 BC040M 2tap 100.27 133.69 221.93 3tap 147.64 196.85 258.57 1tap 25.79 34.39 57.08 BC160M 2tap 51.09 68.12 113.08 3tap 75.91 101.21 168.02 18 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 21](#) 333.57 436.74 Mono8 22.74 30.31 50.36 1tap Mono10/Mono12 22.74 30.31 50.36 BC160M Mono8 45.07 60.05 99.88 2tap Mono10/Mono12 45.07 60.05 99.88 3tap Mono8 66.99 89.23 148.26 19 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 22: Typical Spectral Response](#)

- Operating Assurance Temperature: -5°C ~ 45°C Humidity: (no condensation) 90% or less - Storage Assurance Temperature: -20°C ~ 60°C Humidity: 95% or less (no condensation) 20 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 23: Communication Protocol](#)

For Legacy protocol and GenCP, BC series has multiple register for control of camera feature. The accessing to IIDC2 registers is possible by using Legacy protocol and GenCP. The accessing to Legacy registers is possible by using only Legacy protocol.

[Page 24: Legacy Protocol](#)

The camera responds to the write command with No Error (ACK) or Error (NAK), as follows. No Error (ACK) Error (NAK) *Setting scalable is reflected by writing the "Scalable update" register. 22 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved.

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Page 25 Actually, the camera responds to the read request as minimum data length: For example, to read data 0x10 to address 0x91, the camera responds as follows. 23 / 73
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Page 26: Gencp

+0x2 +0x3 0x00 0x0100 (preamble) CCD checksum 0x04 SCD checksum 0x0000 (channel_id)
0x08 status code 0x0803 (command_id) 0x0C 0x0004 (length) request_id 0x10 0x0000
(reserved) length written 24 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

Page 27 =0x0000+0x4000+0x0802+0x000C+0x89AB =0xD1B9 One's complement
=0xFFFF-0xD1B9 =0x2E46 - SCD checksum in the example One's complement sum =(CCD
checksum complement)+0x0000+0x0000+0x0020+0x405C+0x0000+0x00FF
=0xD1B9+0x0000+0x0000+0x0020+0x405C+0x0000+0x00FF =0x11334 =0x001+0x1334
=0x1335 One's complement =0xFFFF-0x1335 =0xECCA 25 / 73 D4296087A Copyright © 2019
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Page 28: Register Map

Register Map BC series has GenCP and Legacy protocol as command communication protocol.
IIDC2 Address The following address is possible to control by GenCP and Legacy protocol.
Register Read Memory AC(*) Default Register name Description address Write save 0x0020
005C R.O.

Page 29 ✓ ✓ ReverseY 0x0:OFF, 0x1:ON 0x0:OFF 0x1:Black 0x2:White 0x3:GreyA 0x0021
F13C ✓ TestPattern 0x4:GreyB 0x5:GreyHorizontalRamp 0x6:GreyScale 0x8:GreyVerticalRamp
Only BC040M model. 0x0021 F59C HighFramerateMode ✓ ✓ 0x0:OFF,0x1:ON 27 / 73
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Page 30 Stop image output (0x0) → register setting / write command → Start image output
(0x08) □Read / Write possible R.O. □Read Only W.O. □Write Only N.A. □Not available 28 / 73
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Page 31: Gencp

* For registers other than those mentioned above, please refer to the GenCP Standard Ver.1.0.
□Read / Write possible R.O. □Read Only W.O. □Write Only N.A. □Not available 29 / 73
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Page 32: Legacy

0x0:FIX mode (default),0x1:pulse width mode ✓ 0x93 Trigger polarity
0x0:Negative(default),0x1:Positive ✓ 0.4M:0x7D Only ShortExposureMode=OFF 0xA0 Shutter
speed denominator ✓ 1.6M:0x1F 0x1(1)□0x107EF(67567) Only ShortExposureMode=OFF 0xA4
Shutter speed numerator ✓ 0x1(1)□0x10(16) 30 / 73 D4296087A Copyright © 2019 Toshiba Teli
Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

Page 33 If camera teruned off, the data in memory for SS is erased. * 0.4M : BC040M, 1.6M :
BC160M □Read / Write possible R.O. □Read Only W.O. □Write Only N.A. □Not available 31 / 73
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Page 34: Functions

BlackLevel Gamma Gamma correction LUTControl LUTControl LUT control UserSetControl
UserSetControl Load / Save user setting SequentialShutterControl SequentialShutterControl
Sequential shutter control DPCControl DPCControl Defect pixel correction control 32 / 73
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[Page 35: Transportlayercontrol](#)

(Write to 0x00 to AcquisitionCommand (0x0020 303C)). After change setting of CameraLink Tap / CameraLink CLK, restart image output (Write to 0x08 to AcquisitionCommand (0x0020 303C)).
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[Page 36: Baudrate](#)

The camera only receives commands at the specified baudrate. Please refer to GenCP specification for switching sequence. Legacy mode is disabled during the baudrate specification operation.
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[Page 37: Devicecontrol](#)

1/2.9 B/W Manufacture Info 0x0000 0143 0x0000 0144 ex)1000001 Serial Number 0x0000 0183 0x0000 0184 Null User-programmable device identifier. User Define Name ✓ string 0x0000 0193 35 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved.
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[Page 38](#) 0x00 [Null] 0x0D 0x00 [Null] 0x0E 0x00 [Null] 0x0F 0x00 [Null] * In the case of GenCP, access must be performed in units of 4 bytes.
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[Page 39](#) Sets the byte number of R/W length of user area. 0xDC 0x10 number 0x1, 0x4, 0x8, 0x10(16) Specify the number of bytes to write / read in batch in the user area / data register.
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[Page 40: Scalable](#)

A + 4 * m Model Name BC040M BC160M Width/OffsetX setting unit Height/OffsetY setting unit Minimum unit size (H)×(V) 64×64 64×64 Maximum unit size (H)×(V) 720×540 1440×1080
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[Page 41](#) 0.4M:0x2D0 0.4M:0x40 (64) 0x2D0 (720) Width setting unit 4 Width 0xD0 ✓ 1.6M:0x5A0 1.6M:0x40 (64) 0x5A0 (1440) Width setting unit 4 * 0.4M : BC040M, 1.6M : BC160M
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[Page 42](#) Height (0xC8) OffsetY (0x0020 209C), OffsetX (0xCC) Height (0x0020 20A0) Width (0xD0) Write AcquisitionCommand Update scalable (0x0020 303c) 0x08 (0xC0) Scalable setting end Scalable setting end
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[Page 43: Binning](#)

This increases the sensitivity of the image. It's alike scalable, the frame rate can be faster. 1440 1080 All pixel readout Binning Horizontal Binning Binning Vertical Horizontal / Vertical Binning operation (e.g. BC160M pixel, 2x2 binning)
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[Page 44](#) 1tap approx.168fps approx.225fps approx.374fps 2tap Incompatible approx.326fps approx.433fps approx.502fps 3tap approx.472fps approx.502fps approx.502fps 1tap approx.168fps approx.225fps approx.374fps 2tap Incompatible approx.326fps approx.433fps approx.502fps 3tap approx.472fps approx.502fps approx.502fps
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[Page 45](#) 2tap Incompatible approx.166fps approx.116fps approx.166fps 3tap 1tap approx.168fps approx.225fps approx.317fps 2tap Incompatible approx.317fps approx.317fps approx.317fps 3tap 1tap approx.168fps approx.225fps approx.317fps 2tap Incompatible approx.317fps approx.317fps approx.317fps 3tap
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[Page 46](#) (Write to 0x08 to AcquisitionCommand (0x0020 303C)). ● Note - Binning is disabled when the camera is running in Decimation mode. - Binning Horizontal / Vertical = 3 is not

[Page 47: Decimation](#)

Decimation feature can make frame rate faster, and decrease interface bandwidth occupation. 1440 1080 All pixel readout Decimation Horizontal Decimation Decimation Vertical Horizontal / Vertical Decimation operation (e.g. BG160M, 2x2 decimation) 45 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 48](#) 1tap approx.168fps approx.225fps approx.374fps 2tap Incompatible approx.326fps approx.433fps approx.502fps 3tap approx.472fps approx.502fps approx.502fps 1tap approx.168fps approx.225fps approx.374fps 2tap Incompatible approx.326fps approx.433fps approx.502fps 3tap approx.472fps approx.502fps approx.502fps 46 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 49](#) 3tap Incompatible 1tap approx.168fps approx.225fps approx.317fps 2tap Incompatible approx.317fps approx.317fps approx.317fps 3tap Incompatible 1tap approx.168fps approx.225fps approx.317fps 2tap Incompatible approx.317fps approx.317fps approx.317fps 3tap Incompatible 47 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 50](#) Horizontal / Decimation Vertical, restart image output (Write to 0x08 to AcquisitionCommand (0x0020 303C)). ● Note - Decimation is disabled when the camera is running in Binning mode. - Decimation Horizontal / Vertical = 3 is not available. 48 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 51: Reverse](#)

AcquisitionCommand (0x0020 303C)). After change setting of ReverseX / ReverseY, restart image output (Write to 0x08 to AcquisitionCommand (0x0020 303C)). Legacy address The change is applied immediately by write to ReverseX register (0x8A) or ReverseY register (0x8B). 49 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 52: Pixelformat](#)

303C)). After change setting of PixelSize, restart image output (Write to 0x08 to AcquisitionCommand (0x0020 303C)). Legacy address The change is applied immediately by write to Output bit register (0x87). 50 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 53: Testpattern](#)

Grey A = All pixels 170 LSB @ 8-bit Grey B = All pixels 85 LSB @ 8-bit Horizontal ramp waveform Vertical ramp waveform Grey scale Test pattern (e.g. BC160M @Mono8) 51 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 54](#) 0x6:GreyScale 0x8:GreyVerticalRamp Legacy address Register Read Memory Default Register name Description address Write save 0x0:OFF 0x1:Black 0x2:White 0x3:GreyA 0x88 Test pattern ✓ 0x4:GreyB 0x5:GreyHorizontalRamp 0x6:GreyScale 0x8:GreyVerticalRamp 52 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 55: Acquisitioncontrol](#)

0.4M:0x71 Calculated from [CamerainkCLK / Cameraink Tap]. 0x80 R.O. Frame rate 1.6M:0x1D Scalable: Calculated from number of output lines. * 0.4M : BC040M, 1.6M : BC160M 53 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 56](#) Also, the actual exposure time may vary depending on the individual differences and the operating environment (such as the operating temperature).When using the HighFramerateMode, I ask you to have final image quality checked with your environment. 54 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved.

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[Page 57: Triggercontrol](#)

-Level mode:TriggerSequence1 Random Trigger Shutter mode Trigger pulse width control -Fix mode:TriggerSequence0 SoftwareTrigger 'ExposureTime' register control * The camera operation not mentioned above is not supported. 55 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 58](#) 566.7 Mono8 10.6 26.0 565.1 566.0 Mono10/Mono12 OFF/ON 16.7 34.3 566.4 567.3 * T1 and T3 are typical value * T2 = electronic shutter setting value 56 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 59](#) The delay time from the input of the trigger signal to the start of exposure can be set. TRIG Exposure FVAL LVAL DVAL DATA OUT TriggerDelay For details of Random Trigger Shutter operation, please refer to 'Timing' section in 'Specification'. 57 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 60](#) ● Note - In SoftwareTrigger operation, the delay time from 'TriggerSoftware' to exposure is not guaranteed. - TriggerDelay is applied to both of HardwareTrigger and SoftwareTrigger. 58 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 61: Exposuretimecontrol](#)

0.4M:0x7D Only ShortExposureMode=OFF 0xA0 Shutter speed denominator ✓ 1.6M:0x1F 0x1(1) 0x107EF(67567) Only ShortExposureMode=OFF 0xA4 Shutter speed numerator ✓ 0x1(1) 0x10(16) * 0.4M : BC040M, 1.6M : BC160M 59 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 62](#) - The brightness of the upper part of the screen may be different from that of the lower part. Note that this is a characteristic of a CMOS image sensor and is not a fault. 60 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 63: Digitaliocontrol](#)

Register name Description address Write save Selects the inversion of Line0(CC1). 0x0020 9050 ✓ LineInverterAll 0x0:Negative,0x1:Positive 0x0020 9070 R.O. LineStatusAll Returns the current status of Line0(CC1). 61 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 64: Gain](#)

- Setting the gain value too high increases noises. When you adjust the brightness of the image, I ask you to have final image quality checked with your environment. 62 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 65: Blacklevel](#)

0x0020 405C BlackLevel 0xFFFFFFFF (-25%) 0x100(+25%) ✓ Legacy address Register Read Memory Default Register name Description address Write save 0x70 Setup 0xFFFFFFFF (-25%) 0x100(+25%) ✓ 63 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 66: Gamma](#)

Gamma input luminance ● Register IIDC2 address Register Read Memory Default Register name Description address Write save 0x0020 409C 0x64 Gamma Min:0x2D($\gamma=0.45$) Max:0x64($\gamma=1.0$) ✓ 64 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 67: Lutcontrol](#)

Write to 'Value[0]' to 'Value[4095]' of 'LUTValueAll' register to set the output level of LUT. The index of 'Value' register means the input level of LUT. 65 / 73 D4296087A Copyright © 2019

[Page 68: UserSetcontrol](#)

SequentialShutterEntry(*) AcquisitionFrameIntervalControl DPCControl DPCCEnable(*)
AcquisitionFrameInterval DPCNumber(*) HighFramerateMode DPCCentryX(*) DPCCentryY(*) (*)
DPC and SequentialShutter entries are stored to a single channel. Entries are shared with all channels. 66 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 69](#) Select a channel of user setting by 'UserSetDefault' register. Save the user settings by writing '0x9' to 'UserSetCommand' register, and the user setting channel to be loaded at camera startup is saved. 67 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 70: Sequentialshuttercontrol](#)

Register name Category Register name ImageFormatControl OffsetX AnalogControl Gain OffsetY
BlackLevel ExposureControl ExposureTime Gamma LUTControl LUTEnable Notes on
SequentialShutter: In Sequential Shutter mode, window size is unchangeable. 68 / 73
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[Page 71](#) Contents saved using 'SequenceMemorySave' of Legacy address control are saved in volatile memory. Therefore, the contents saved using 'SequenceMemorySave' will disappear when the power is turned off. 69 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 72: Dpccontrol](#)

Sets the Y coordinate of defective pixel (255th) 0.4M:0x0(0) 0X21B(539) 0x0040 07FC
DPCValue [Y 1.6M:0x0(0) 0X437(1079) Legacy address Register Read Memory Default Register
name Description address Write save 0x89 Defective pixel correction 0x0:OFF, 0x01:ON ✓ 70 /
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[Page 73](#) 'DPCValue' register. If defective pixel exists plural number, these defective pixels are corrected by set coordinate to another 'DPCValue' register. DPCNumber DPCValue[X]
DPCValue[Y] Minimum Maximum WidthMax-1 HeightMax-1 71 / 73 D4296087A Copyright ©
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[Page 74: Warranty Rules](#)

9. Forgery product, products which does not have proper serial number, products of which serial number is forged, damaged or deleted 10. All defects that happened after the expiration for a warranty term 72 / 73 D4296087A Copyright © 2019 Toshiba Teli Corporation, All Rights Reserved. <http://www.toshiba-teli.co.jp/en/...>

[Page 75: Repair](#)

10. The immunity from responsibility of the product is applied in the repair completion products.
* Please refer for the inquiry about the software to our website or sales personnel. 73 / 73
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This manual is also suitable for:

Bc040mBc160m

