Toshiba BU238M Instruction Manual

Bu series cmos camera

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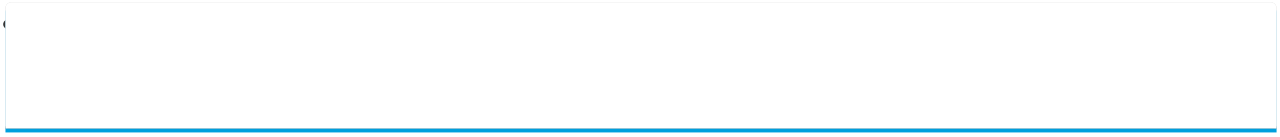

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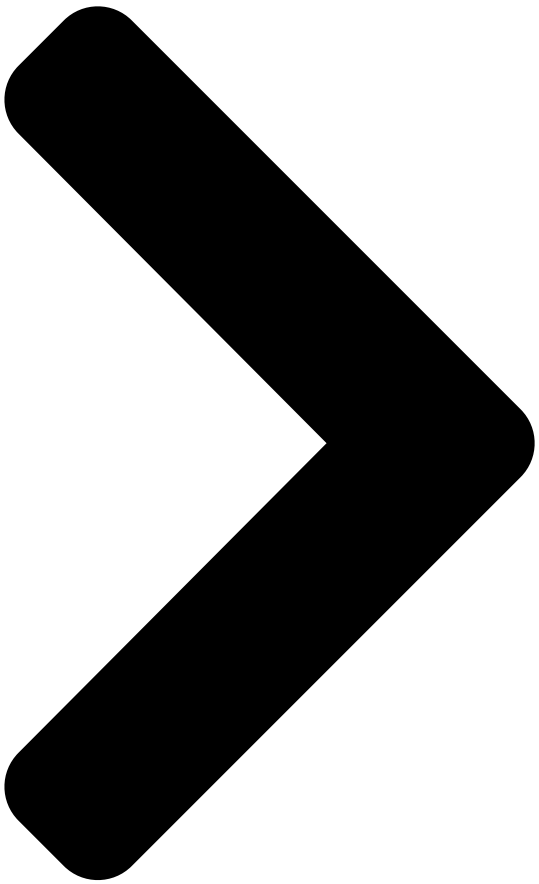

BU Series
CMOS Camera

Instruction Manual

Model
B/W Camera

: BU238M
Color Camera
: BU238MC / BU238MCF

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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D4235159A

http://www.toshiba-teli.co.jp/index.htm

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Related Manuals for Toshiba BU238M

Digital Camera Toshiba BU406M Instruction Manual

Bu series cmos camera (67 pages)

Digital Camera Toshiba BU406M Specifications

Cmos camera bu series (27 pages)

Digital Camera Toshiba BU205M Specifications

Cmos camera (34 pages)

Digital Camera Toshiba BU302MG Instruction Manual

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Digital Camera Toshiba BU302MG Manual

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Digital Camera Toshiba PDR-3300 Owner's Manual

Toshiba pdr-3300: owner manual (135 pages)

Digital Camera Toshiba PDR-4300 Software Manual

Toshiba pdr-4300: software manual (30 pages)

Digital Camera Toshiba PDR-M25 Owner's Manual

Toshiba pdr-m25: owner manual (102 pages)

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 BU238M

Page 1: Instruction Manual

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Page 2: Table Of Contents

FrameSynchronization .....67 LEDIndicatorLuminance ..... 68 DPCControl ..... 69 SequentialShutterControl .....71 Appendix .....74 MultiFrame and Bulk function difference .....74 Warranty rules ..... 77 Repair

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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. 3 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 4: General Handing

 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. 4 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

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 5 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

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. 6 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

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 7 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 8: Notes On Using This Product

C-mount lens 10mm or less ● Mounting to pedestal When mounting this product to a pedestal, make sure carefully that lens doesn’t touch with the pedestal. 8 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

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. 9 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 10 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. 10 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 11 This information is applicable for People's Republic of China only. □□□□□□□□□□□□□□□□□ □□□□□□□□(□□□) Information on recycling of wrapping composition □□□□□□□□ □□□□□□·□ □□□□□Box Internal buffer materials□Bag □□□□□□□ □□ Paper board 11 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 12: Installation

● TOSHIBA TELI CORPORATION Top Page http://www.toshiba-teli.co.jp/index.htm ● Service & Support https://www.toshiba-teli.co.jp/cgi/ss/en/service.cgi Please refer to the TeliU3vSDK startup guide, about Operation environment, Installation, and Setup. 12 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 13: Specifications

Specifications Overview BU238M series is an integrated-(one-body)-type camera that adopts a global shutter 2.3M pixels CMOS sensor (1/1.2 type). Suffix [C] or [CF] are attached to the color models. For video output and camera control, the USB 3.0 interface standard is adopted for high transfer rate, and it is easy to integrate into industrial equipment.

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* IIDC2 is a unified standard established by JIIA (Japan Industrial Association). * e-CON (Easy & Economy connector) is a sensor connector that is normalized by the manufacturer of the sensor, FA equipment and connector. 14 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 15: Configuration

*1: Optional part. Contact your sales representative for details of option units. *2: Commercial items. 15 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 16: Connection

Please confirm wires' specifications before use them. Lost packets may occur by an electrical characteristic of the transmission line of USB3.0. (USB3.0 Interface Card, USB3.0 Cable, and USB3.0 HUB). 16 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 17: Connector Pin Assignment

* Matching connector is not an accessory of this product. Pin assignment ↑TOP *Above figure is connector view from insert side. Pin No. Signal Function GPIO(Line2) GPIO Output GPIO(Line1) GPIO Output Ground TRIG_IN(Line0) Trigger Input 17 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 18: Outline Drawing

Outline Drawing 18 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 19: General Specifications

29 mm(W) x 29 mm (H) x 16 mm (D) (Not including protrusion) Mass Approximately 32g Lens mount C-mount Flange back 17.526mm Camera body grounding: Non-Conductive between circuit GND and camera body insulation status 19 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

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Camera body grounding: Non-Conductive between circuit GND and camera body insulation status *1 F1.4, Gain: Maximum (+18dB), video level: 50% *2 at the all pixel readout 20 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 21

- As for the C-mount lens used combining this camera, the projection distance from bottom of the screw should use 10mm or less. Bottom of the screw C-mount lens 10mm or less 21 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 22: Led Status

Slow flash orange (ON: 400ms, OFF: 1600ms) Data being transferred Solid Green Error during data transfer Solid Red (Time period: 500ms) Stand-by Super slow flash orange (ON:200ms, OFF: 2800ms) 22 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 23: I/O Specification

: High active / Low active (initial factory setting: Low active) Signal Source : TIMER0 ACTIVE USER OUTPUT EXPOSURE ACTIVE FRAME ACTIVE FRAME TRANSFER FRAME TRIGGER WAIT ● Circuit diagram - Trigger Input Inside DC3.3V 10kΩ 23 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 24: Timing Specification

Default Framerate [ms] Frame Rate setting by the application. * If the value of T2 is not set by the application, it will be the same as T1. 24 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 25 When the interval of the input trigger signal is extremely short, or when the trigger signal is noisy, there is a possibility of causing the malfunction. In this case, please input a proper trigger signal. 25 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 26: Typical Spectral Response

Typical Spectral Response * The lens characteristics and light source characteristics is not reflected in table. ● BU238M 26 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 27 ● BU238MC ● BU238MCF 27 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 28: Operating Ambient Conditions

Please provide sufficient heat radiation depending on your installation. ● EMC Conditions - EMI (Electro-Magnetic Interference): EN61000-6-4 FCC Part 15 Subpart B Class A - EMS (Electro-Magnetic Susceptibility): EN61000-6-2 28 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 29 (Hitachi cable, Ltd.) Connection: e-CON GPIO(Line2) GPIO(Line2) GPIO(Line1) GPIO(Line1) TRIG IN(Line0) TRIG IN(Line0) Please confirm the EMC adaptability when it combines with parts other than them. 29 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 30: Functions

Functions This section introduces standard functions. BU238M series provides following functions. Category Function USB3 Vision Bootstrap Registers USB3 Vision standard registers DeviceControl DeviceControl Device information ImageFormatControl ImageFormatSelector Image format selection Scalable Scalable control Reverse Image flip PixelFormat Pixel format selection...

Page 31 ○ UserSetControl ○ ○ EventControl ○ ○ FrameSynchronization ○ ○ LEDIndicatorLuminance ○ ○ DPCControl ○ ○ SequentialShutterControl Details of each feature are described in following pages. 31 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 32: Bootstrap Registers

When opening and closing the stream channel, it is required to control StreamEnable plus SDK setups on your application. Please refer to the TeliU3vSDK for details. 32 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 33: Devicecontrol

DeviceModelName Beginner Returns the model name. DeviceManufacturerInfo Beginner Returns the manufacturer information. DeviceVersion Beginner Returns the device version. DeviceID Beginner Returns the device ID (serial number). 33 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 34: Imageformatcontrol

Set a following value to “ImageFormatSelector” register. Setting value is Enumeration type. ImageFormatSelector Function Format0 (*) Scalable Mode * initial factory setting ● Note Changing “ImageFormatSelector” register value is invalid during image stream data output. 34 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 35: Scalable

Sets horizontal offset (in pixels) from the origin to the region of interest. OffsetY Beginner Sets vertical offset (in pixels) from the origin to the region of interest. 35 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 36 64x64 Maximum unit size (*) 1920x1200 * initial factory setting ● Note Changing “Width”, “Height”, “OffsetX”, “OffsetY” register value is invalid during image stream data output. 36 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 37: Reverse

Set the following value to “ReverseX”, “ReverseY” registers. Setting value is Boolean type. Value Image reverse FALSE (*) Non reverse TRUE Reverse * initial factory setting ● Note 37 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 38: Pixelformat

* initial factory setting ● Note Bayer alignment of color models is dependent on its model. Changing “PixelSize” register value is invalid during image stream data output. 38 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 39: Testpattern

TestPattern BU series supports test pattern data output. Camera provides following Test patterns; Black White GreyA GreyB GreyHorizontalRamp GreyVerticalRamp Test pattern 39 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 40 All pixel = 255 @Mono8 GreyA All pixel = 170 @Mono8 GreyB All pixel = 85 @Mono8 GreyHorizontalRamp Horizontal Ramp GreyVerticalRamp Vertical Ramp * initial factory setting ● Note 40 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 41: Acquisitioncontrol

* initial factory setting - Set the number of frames to transfer (In MultiFrame mode) Set the number of frames to transfer to “AcquisitionFrameCount”. Setting value is Integer type. 41 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 42 Depends on your PC or USB3.0 interface card configurations, images may not be captured normally (e.g. frame drops may occur). In this case, change to frame rate setting lower. 42 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 43: Imagebuffer

- Read images from the buffer Read the number of AcquisitionFrameCount image(s) from the buffer by executing “ImageBufferRead” register command (it is equivalent to write value 10 to “AcquisitionCommand” register). 43 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 44 [Start] button in TeliU3vViewer can’t deal with “StreamEnable” register alone. Please substitute procedure “StreamEnable” = 1 to following instructions. - Push [Start] button on TeliU3vViewer main window. - Execute [AcquisitionStop] in XML window. 44 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 45: Triggercontrol

Random Trigger Shutter mode Trigger pulse width control SoftwareTrigger -Edge mode:TriggerSequence0 -Bulk mode:TriggerSequence6 “ExposureTime” register control * The camera operation not mentioned above is not guaranteed. 45 / 79 D4235159A Copyright ©

2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 46 And you can add delay time from trigger edge to exposure start by register setting. Trigger signal TriggerDelay Exposure USB bus Image Trigger Delay Details of Random Trigger Shutter operation, refer to "Timing" of "Specification". 46 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 47 - Select trigger source Set the following value to “TriggerSource” register. Setting value is Enumeration type. TriggerSource Function Line0 (*) Hardware trigger TriggerSoftware Software trigger * initial factory setting 47 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 48 When executes “TriggerSoftware” register command, software trigger command is generated. Camera starts exposure by receiving software trigger command. ● Note In SoftwareTrigger operation, the delay time from “TriggerSoftware” to exposure is not guaranteed. 48 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 49: Exposuretime

The frame rate is determined by giving priority to ExposureTime setting value. * initial factory setting Model BU238M/C ExposureTime (*) 5000 [µs] ExposureTimeMin 30 [µs] ExposureTimeMax 16000000 [µs] * initial factory setting ● Note 49 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 50: Digitaliocontrol

- Select the Line of the I/O connector Set the following value to “LineSelector” register. Select the line to output “LineSource” signal. Setting value is Enumeration type. 50 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 51 Each bit corresponds to each Line (bit0=Line0, bit1=Line1). Line1 and Line2 are available. Line0 is dedicated trigger input. UserOutputValueAll Function 0 (*) Low level output High level output * initial factory setting 51 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 52 FrameTriggerWait UserOutput UserOutputValueAll[2] GPIO_OUT (Line2) Line2 LineModeAll LineInverterAll LineSource GPIO internal circuit diagram ● Note About the details of Timer0Active signal, refer to “TimerControl” of "Functions". 52 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 53: Timercontrol

TimerDuration Beginner Sets the width of Timer0Active signal. TimerDelay Beginner Sets the delay of Timer0Active signal. TimerTriggerSource Beginner Selects the source of Timer0Active pulse to start. 53 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 54 HardwareTrigger and Software Trigger mode, and not to be responsed at FrameTriggerError. ExposureStart is available in both HardwareTrigger and Software Trigger mode, and not to be responsed at Timer0Active pulse delays TiggerDelay+TimerDelay[us]. FrameTriggerError. 54 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 55: 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. 55 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 56: Blacklevel

Set the following value to “BlackLevel” register. Setting value is Float type. BlackLevel Value Minimum -25.00[%] Maximum +25.00[%] * initial factory setting = 0.00[%] ● Note 56 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved.

http://www.toshiba-teli.co.jp/index.htm...

Page 57: Gamma

- Set Gamma correction Set the following value to “Gamma” register. Setting value is Float type. Gamma Value Minimum 0.45 Maximum (*) 1.00 * initial factory setting ● Note 57 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 58: Balanceratio

Setting value is Enumeration type. BalanceRatioSelector Function None (*) None of component is selected. BalanceRatio = Red Gain Blue BalanceRatio = Blue Gain * initial factory setting 58 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 59 Too high white balance gain increases noises. After adjusting the white balance of the image, I ask you to have final image quality checked with your environment. 59 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 60: Balancewhiteauto

Offl (*) No operation Once Execute auto white balance once. * initial factory setting ● Note BalanceRatio and BalanceWhiteAuto controls are available in following PixelForamt modes. Bayer*8 60 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 61: Lutcontrol

“LUTIndex” register value is input level of LUT, and “LUTValue” register value is output level of LUT. LUTIndex / LUTValue setting value Minimum (*) Maximum 1023 * initial factory setting ● Note 61 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 62: Usersetcontrol

UserOutputValueAll LineSelector DigitalIOControl CounterAndTimerControl LineSource TimerTriggerSource TimerDuration CounterAndTimerControl TimerDelay (*) DPC and SequentialShutter entries are stored to a single channel. Entries are shared with all channels. 62 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 63 * initial factory setting ● Note “UserSetDefault” register value is stored to non-volatile memory when “UserSetSave” is executed. Thus, “UserSetSelector” shall be set other than “Default” in advance. 63 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 64: Eventcontrol

: End of transferring streaming data. (6) ExposureStart : Start of Exposure. (7) ExposureEnd : End of Exposure. (8) Timer0Start : Start of Timer0. (9) Timer0End : End of Timer0. 64 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 65 Returns the timestamp at the time of Event. EventTimer0StartData EventTimer0StartTimestamp Expert Returns the timestamp at the time of Event. EventTimer0EndData EventTimer0EndTimestamp Expert Returns the timestamp at the time of Event. 65 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 66 Set the following value to “EventNotification” register. The setting value is Enumeration type. setting value Event notification Off (*) Inactive Active * initial factory setting ● Note 66 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 67: Framesynchronization

Set the following value to “FrameSynchronization” register. Setting value is Enumeration type. setting value function Internal synchronization Bus (*) Bus synchronization * initial factory setting ● Note 67 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 68: Ledindicatorluminance

- Set LED indicator luminance Set the following value to “LEDIndicatorLuminance” register. Setting value is Float type. LEDIndicatorLuminance Value Minimum 0.00(%) Maximum (*) 100.00(%) * initial factory setting ● Note 68 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 69: Dpccontrol

DPCIndex and setting coordinates DPCNumber DPCIndex Minimum (*) Maximum * initial factory setting DPCEntryX DPCEntryY Minimum (*) Maximum WidthMax-1 HeightMax-1 * initial factory setting 69 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 70 DPCEntryX and Y shall be sorted in order from the top left to the top right and to the bottom left to the bottom right. (X,Y)=(0,0) (WidthMax-1,0) DPCIndex[1] DPCIndex[2] DPCIndex[3] DPCIndex[4] (0,HeightMax-1) (WidthMax-1,HeightMax-1) Sorting of DPCIndex and DPCEntryX, Y 70 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 71: Sequentialshuttercontrol

Sets the number of Index to repeat the sequence. SequentialShutterIndex Expert Sets the sequence number to register. SequentialShutterEntry Expert Sets the UserSet number to register to the sequence. 71 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 72 For example, If you set [3] to “SequentialShutterTerminateAt” register, camera captures the images of Index1, Index2 and Index3. Then repeats capturing the images of Index1, Index2... 72 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 73 AcquisitionFrameCount EventControl EventNotification TriggerMode FrameSynchronization VendorUniqueControl TriggerSequence LEDIndicatorLuminance TriggerControl TriggerSource DPCEnable DPCControl TriggerAdditionalParameter DPCNumber TriggerDelay ExposureControl ExposureTime DigitalIOControl LineInverterAll UserOutputValueAll LineSelector LineSource TimerTriggerSource CounterAndTimerControl TimerDuration TimerDelay 73 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 74: Appendix

Frame 3 Frame 4 Frame 1 This exposure is *Exposure overlaps sensor readout. discarded. Stream USB Bus stops Frame 1 Frame 2 Frame 3 Frame 1 AcquisitionFrameCount 74 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 75 Frame 1 TriggerAdditionalParameter *Exposure overlaps sensor readout. *Exposure time is determined by ExposureTime setting. Stream USB Bus stops Frame 1 Frame 2 Frame 3 Frame 1 75 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 76 This exposure is discarded. TriggerAdditionalParameter *Exposure overlaps sensor readout. *Exposure time is determined by ExposureTime setting. Stream USB Bus stops Frame 1 Frame 2 Frame 1 AcquisitionFrameCount 76 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 77: 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 77 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights

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Page 78: 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 homepage or sales personnel. 78 / 79 D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

Page 79

□ It certainly occurs. □ It sometimes occurs. □ It occurs, after time passes. □ □ Others □ <For dealer use> Reception date : Receipt No. : JOB No. : Check : D4235159A Copyright © 2014 TOSHIBA TELI CORPORATION, All rights reserved. http://www.toshiba-teli.co.jp/index.htm...

This manual is also suitable for:

Bu238mcBu238mcf