Canon

ML‑100 EF
ML‑100 M58

Multi-Purpose Camera   Firmware ver. 1.0.1.0

Before using the camera, be sure to read this instruction manual to ensure correct use.
Store this instruction manual in a safe place so that you can refer to it whenever necessary.

**Instruction
Manual**

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1 Introduction

Safety Precautions

Be sure to read these precautions in order to operate the product safely. Observe them to prevent injury or harm to the operator of the product and other persons.

⚠ **WARNING**   Denotes the risk of serious injury or death.

- Stop using the product in any case of unusual circumstances such as the presence of smoke or a strange smell.
- Do not touch any exposed internal parts.
- Do not insert foreign objects or liquids into the product.
- Do not disassemble or modify the product.
- Do not expose the product to strong shocks or vibration.
- During lightning storms, do not touch the connected device's power cord or the connection cable.
  This may cause electric shock.
- Be sure to use the correct voltage.
  Using a power source with a voltage other than that specified can cause fire or electric shock.
- Do not use organic solvents such as alcohol, benzine, or paint thinner to clean the product.
- Do not use the product where flammable gases may be present.
  This may cause electric shock, explosion, or fire.
- Do not shoot the sun directly or point a camera/ camcorder at the sun.
  Even when the sun does not appear on the screen or is behind the subject, the lens may concentrate the sunlight and cause a malfunction or fire.
- Do not wrap the product in cloth or other materials when in use or shortly after use when the product is still warm in temperature.
- Do not allow the product to maintain contact with the same area of skin for extended periods of time during use.
  This may result in low-temperature contact burns, including skin redness and blistering, even if the product does not feel hot.
- Keep the product out of the reach of young children.
- Follow any indications to turn off the product in places where its use is forbidden.
  Not doing so may cause other equipment to malfunction due to the effect of electromagnetic waves and even result in accidents.
- Before installing, be sure the surface is capable of supporting the total weight of the camera and connected devices, and sufficiently reinforce the surface if necessary.
- Do not place the product on an unstable surface.
  This can cause the camera to fall or tip over and cause injury.

⚠ **CAUTION**   Follow the cautions below. Otherwise physical injury or property damage may result.

- Do not leave the product in places exposed to extremely high or low temperatures.
  The product may become extremely hot/cold and cause burns or injury when touched.

Handling Precautions

- Do not store the camera in places where there is a lot of dust, sand, water, mud, and salt. A failure may occur if such substances get inside the camera.
  After using the camera, prevent dust and sand getting on the lens by removing the lens in a place where there is not much dust, etc. Also, be sure to attach the body cap.

- For details on connecting and disconnecting the connection cable, be sure to refer to the instruction manual of the device to be connected to the camera.

- Do not use the camera near strong electromagnetic fields such as near powerful magnets and motors, MRI machines or high-voltage power lines. Using the camera in such places may cause anomalies in the video, or audio/video noise.

- Do not point the camera towards a strong light source, such as the sun on a sunny day or an intense artificial light source. Doing so may damage the image sensor or the camera's internal components. Be especially careful not to allow direct sunlight, etc. to enter inside due to changes in the camera angle while carrying the camera. When you will not use the camera, remove the lens and attach the body cap.

- Do not touch the lens contacts on the lens mount. Dirty contacts may cause a poor contact between the camera and the lens resulting in incorrect operation of the camera.

- After removing the lens, make sure to attach the body cap to the lens mount and the lens cap and dust cap to the lens. Dirt, scratches, fingerprints, etc. on the contacts may result in poor contact or corrosion, which may cause the camera or lens to not operate accurately.

- If the camera is brought into a warm room while it is cold or if the room is heated quickly, condensation may form on the camera's external or internal surfaces. Using the camera in such a state may cause a failure.

- Before cleaning the camera, be sure to disconnect the connection cable from the camera.

- Use a soft, dry cloth to clean the camera's body. Never use chemically treated cloths or volatile solvents such as paint thinner.

About the CMOS Sensor

The CMOS sensor is produced using high-precision manufacturing techniques. However, if a pixel does not operate to specification, the effect might appear as a white or black dot on a monitor. This is the nature of CMOS image sensors and does not represent a malfunction.

Disposal

- Do not dispose with normal waste. Do not include the camera in waste that will be taken to a landfill.

- Observe the rules and regulations of your local authorities when disposing.

Read This Before Use

- **Be Sure to Check Video**
  Before using the camera, check that video is output normally to the connected device. In the event that the camera does operate normally, consult a Canon Service Center.

- **Canon Cannot Compensate for Recording Data**
  Please note that Canon will not compensate for recording data even if recording or playback was not possible due to a malfunction of the camera, connected device, etc.

- **Notes on Privacy and Publicity Rights Regarding the Use of Video**
  When using the camera, it is the full responsibility of the user to protect privacy and avoid any violation of publicity rights. For example, obtain consent to install the camera in advance when certain buildings or rooms are to be monitored. Canon shall have no liability whatsoever in this regard.

- **Legal Notice**
  In some cases, camera monitoring may be prohibited by law or regulation, the details of which differ by country or region. Before using the camera, check the laws and regulations of the country or region where the camera is to be used.

- **Copyrights**
  Please note that using and publishing your recorded videos and images without the consent of the copyright holder is a violation of copyright law.

- Do not disconnect the connection cable during operation of the camera. The data may be damaged.

- Canon is not liable for any damage to the camera due to how the connection cable is connected.

- Do not use the camera with medical devices or other life-sustaining systems.
  Highly accurate video transmission cannot be guaranteed because video may be delayed or experience dropped frames depending on the computer and network being used.

Canon shall have no liability whatsoever for any accident or damage arising from use of the camera in such cases.

Product Configuration

Before using the camera, check that all of the following items are included.

- Camera
- Body cap (attached to the camera)

Conventions Used in This Manual

This manual uses the following conventions.

❗	IMPORTANT	Precaution that must be observed
ⓘ	NOTES	Point to know
📖		Reference page

- The explanations in this manual contain illustrations and diagrams of a prototype. They may therefore differ from the actual product.

- The company and product names in this manual are either registered trademarks or trademarks of their respective companies.

Overview

This product is a CoaXPress standard compatible camera capable of high-sensitivity color shooting. It facilitates image data transfer, camera control, and power receiving (PoCXP: Power Over CoaXPress) [1] via a single coaxial cable.

ML-100 EF

You can use a Canon EF lens or EF Cinema lens[2]. The focus, iris, and zoom[3] of the lens can be controlled using GenICam compatible application software.

ML-100 M58

You can use an M58 mount lens, or a lens such as an F mount lens or C mount lens via a converter adapter.

● Lens that can be attached to the ML-100 M58

Use a lens with a protrusion from the lens mount surface that does not exceed 7.2 mm.

Features

- The maximum frame rate with full-pixel readout is approximately 97 fps.
- Bayer RAW 8 bit, 10 bit, 12 bit, and 16 bit output can be selected.
- The exposure time can be set from a short to long exposure within the range from 30 μsec to approximately 10 seconds[4] in 30-μsec increments.
- The exposure can be controlled automatically (via gain) in addition to manually.
- Partial readout of the shooting region (ROI: Region of Interest) is possible from a minimum of 128 x 128. High frame rate shooting is possible at a maximum of approximately 164 fps depending on the extraction position and size.
- The shooting mode can be switched between continuous shooting mode and trigger mode, so shooting can be started by inputting a trigger signal.

[1] Use an external power supply when using a Canon EF lens or COMPACT-SERVO lens.
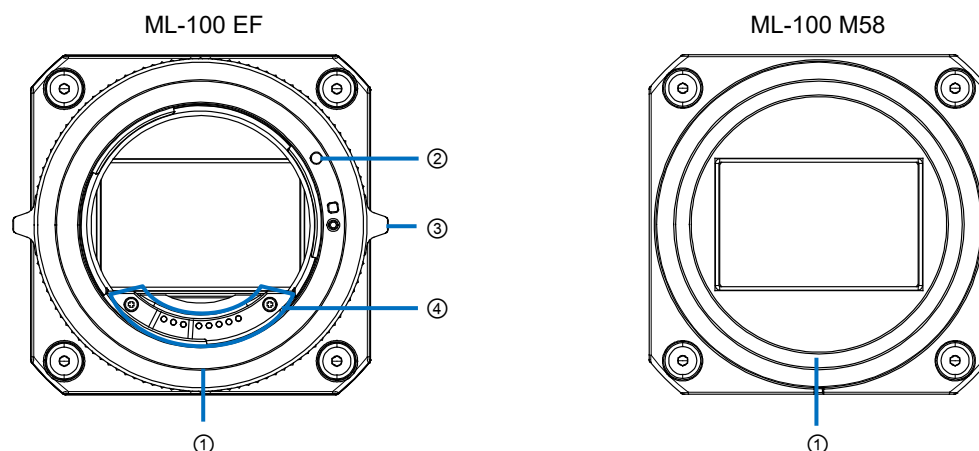[2] For the lens for which operation has been verified, visit your local Canon website.
[3] Only when a COMPACT-SERVO lens is used.
[4] 1 μsec (microsecond) is a millionth of a second.

Names of Parts

Front view

ML-100 EF

①   EF mount

      Attach a Canon EF lens or COMPACT-SERVO lens.

②   EF lens mount index (red)

③   Lock ring

④   EF lens contacts

      Used to supply power to a Canon EF lens or COMPACT-SERVO lens and control the lens from the camera.

ML-100 M58

①   M58 mount

      Attach an M58 mount lens or mount converter adapter.

Preparing the Lens

Attach/remove a lens quickly in a place where there is not much dust. Refer also to the instruction manual of the lens to be attached.

🛈 IMPORTANT

- When attaching/removing a lens, avoid direct sunlight or strong lighting. Also, be careful not to drop the camera or lens.
- When attaching/removing a lens, power off the camera.
- This camera does not incorporate a UV-IR cut filter. Before color shooting in visible light, attach a UV-IR cut filter (commercially available) to the lens.
 For the UV-IR cut filters for which operation has been verified, visit your local Canon website.

ⓘ NOTES

- When the lens is removed
  - Do not touch the lens or camera's lens mount or any part inside the lens mount with a hand.
  - Attach the body cap to the camera's lens mount and the dust cap to the lens. Remove dirt and dust from the caps before using them.

Attaching a Lens (EF Lens or COMPACT-SERVO Lens)

For the lens for which operation has been verified, visit your local Canon website.

1. Power off the camera.
2. Remove the body cap from the EF mount and the dust cap from the lens.
3. Align the index (②) on the camera with the mount index (red) on the lens.
4. Insert the lens into the EF mount of the camera.
5. Lock the lens by turning the lock ring (③) counterclockwise while holding the lens.
   • To remove the lens, power off the camera and turn the lock ring clockwise while holding the lens.
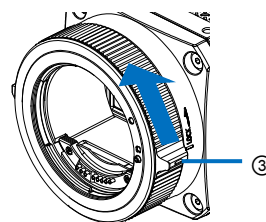
❗ IMPORTANT

● When removing an EF lens equipped with Image Stabilizer, set the lens's Image Stabilizer switch to OFF.

Side View (top/bottom and left/right are common)

ML-100 EF   ML-100 M58
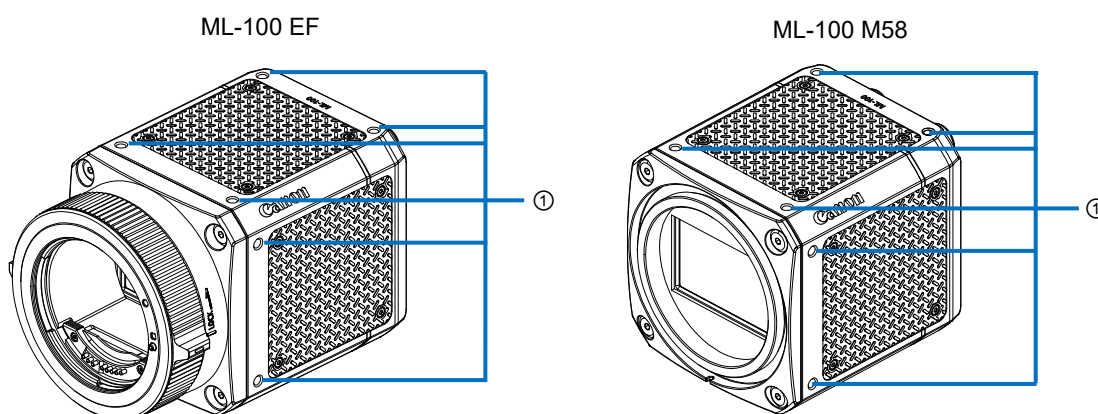
① Screw holes

Screw holes to secure the camera when installing it.

Top/bottom: 4-M4, depth 5 mm   Left/right: 2-M4, depth 5 mm

Rear View

① UPDATE terminal

Used to update the camera's firmware via RS422. To perform an update, you will need to prepare a connection cable for the update. For details on the firmware update, consult a Canon Service Center.

- Connector (camera)   Manufacturer: ODU GmbH & Co. KG, Model No.: 756.271.081.108.111
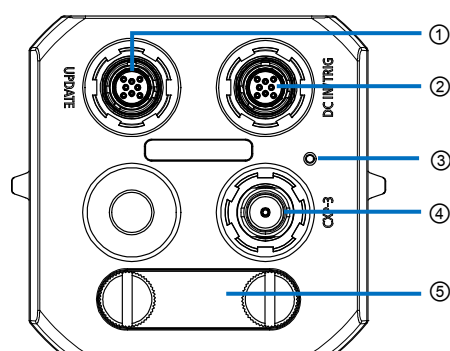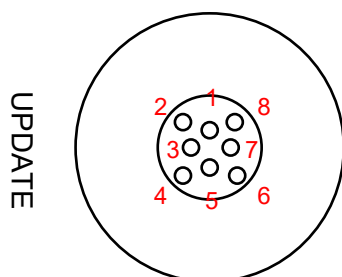- Compatible plug (cable)   Manufacturer: ODU GmbH & Co. KG, Model No.: 756.271.081.208.120

Pin No.	Signal Name	Input/Output
1	NC	-
2	GND	-
3	RS422 TX -	Output
4	RS422 TX +	Output
5	GND	-
6	RS422 RX -	Input
7	RS422 RX +	Input
8	NC	-

② DC IN/TRIG terminal

This terminal is for external power supply input and external trigger input and output.

- Connector (camera)   Manufacturer: ODU GmbH & Co. KG, Model No.: 756.271.081.108.211
- Compatible plug (cable)   Manufacturer: ODU GmbH & Co. KG, Model No.: 756.271.081.208.220

Pin No.	Signal Name	Input/Output
1	NC	-
2	GND	-
3	NC	-
4	DC IN (10 V to 29 V DC)	Input
5	Trigger OUT (Line3_Opt_OUT_1)	Output (open collector)
6	Trigger IN (Line0_Opt_IN_0)	Input
7	Trigger OUT (Line2_Opt_OUT_0)	Output (open collector)
8	COMMON	-

③ Operation lamp

LED lamp to indicate the camera status. You can also deactivate this lamp.

④ CXP-3 (CoaXPress) terminal

This BNC terminal is for transferring image data compatible with the CoaXPress standard and controlling the camera. It also supports PoCXP. Connection speeds from CXP-1 (1.25 Gbps) to CXP-3 (3.125 Gbps) are supported.

⑤ DIP switch protective cover

DIP Switch

Change the DIP switch setting depending on how power is to be supplied to the camera.
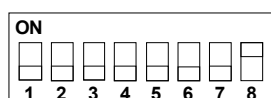When power will be supplied by power over CoaXPress (PoCXP), set number 8 of the DIP switch to ON.
When an external power supply will be used, set number 8 of the DIP switch to OFF.
Leave all of the other switches set to OFF.

2 Connection Method

System Configuration

The camera can be used by connecting it to a CoaXPress compatible frame grabber board of the user system (host) with a 75 Ω coaxial cable. There are two ways to supply power to the camera.

For how to attach a lens, refer to □8.

[*1] When an external power supply will be used
[*2] Commercially available product
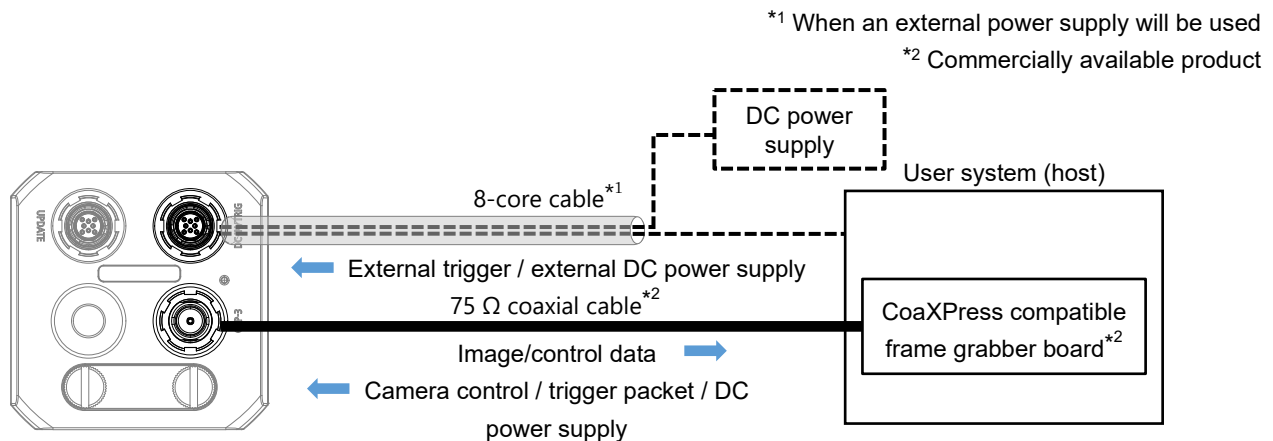
IMPORTANT

- For the 75 Ω coaxial cable, use a BELDEN 1694A or a coaxial cable with equivalent or higher characteristics.
- In case the camera does not boot up, power off the camera and wait at least 3 seconds before powering it on again.

Connecting to the User system

When connecting the camera to the user system (host), use power over CoaXPress (PoCXP) or a commercially available external power adapter for supplying power to the camera. Refer also to the instruction manual of the device to be connected.

IMPORTANT

- Be sure to set other than number 8 of the DIP switch to OFF.
- When an external power supply will be used, be sure to set number 8 of the DIP switch to OFF. If it is ON, camera operation will be unstable.
- Be sure to use an external power supply when using a Canon EF lens or COMPACT-SERVO lens. The power consumption of PoCXP of the CoaXPress standard may exceed 13 W. (ML-100 EF only)

Connecting Using PoCXP

Use the CoaXPress terminal (BNC) to supply power from the user system host via a 75 Ω coaxial cable.

Preparation
- 75 Ω coaxial cable (commercially available)
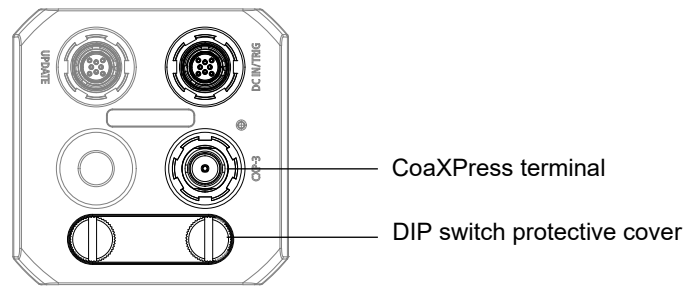
CoaXPress terminal

DIP switch protective cover

1. Remove the DIP switch protective cover from the rear of the camera and set number 8 of the DIP switch to ON.
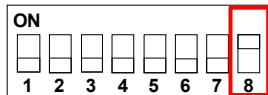
2. Use a 75 Ω coaxial cable to connect the CoaXPress terminal (BNC) on the camera and the frame grabber board of the user system (host).

Connecting Using an External Power Adapter

Use the DC IN/TRIG terminal to supply power from the connected external power adapter. Refer also to the instruction manual of the device to be connected.

🛈 IMPORTANT
- Use an insulated power supply for commercial use.
- Use a device with a double-insulated construction for the external power supply.
- Use products that meet the safety standards in the country or region of use for the external power adapter and power cable.

Preparation (*Commercially available)
- 75 Ω coaxial cable*
- External power adapter*
  <Specifications> Output voltage: 10 V to 29 V DC   Output current: 3 A or higher
- Power cable*
  <Specifications> Rated voltage: At least double the input voltage
                  Current-carrying capacity: 3 A or higher
  Use an ODU connector (male)*.
  Refer to the pin assignment of the DC IN/TRIG terminal of the camera (📖10).

DC IN/TRIG terminal

CoaXPress terminal

DIP switch protective cover

1. Remove the DIP switch protective cover from the rear of the camera and set number 8 of the DIP switch to OFF.
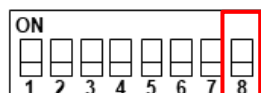
2. Connect a power cable with ODU connector to the DC IN/TRIG terminal of the camera.
3. Connect the power cable to the external power adapter.
4. Use a 75 Ω coaxial cable to connect the CoaXPress terminal (BNC) on the camera and the frame grabber board of the user system (host).
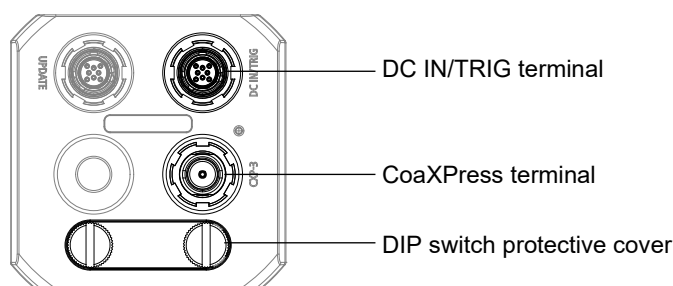
Checking the Camera Status

The camera turns on when power is supplied by PoCXP or from an external power supply. The camera status can be checked from the lighting state of the operation lamp.

Camera Status	Operation lamp
Power is off	Off
Starting	Lit in orange
Power is on but no connection (when using an external power supply)	Flashing slowly in red
Finding connection device (when connected by PoCXP)	Flashing quickly in green/orange
Finding connection device (when using an external power supply)	Flashing quickly in orange
Connected (not transferring data)	Lit in green
Connected (transferring data)	Flashing quickly in green
Connected (waiting for trigger input)	Flashing slowly in orange
Transferring connection test packets	Flashing slowly in green/orange
Connection error (when connected by PoCXP)	Flashing slowly in red/green
Connection error (when using an external power supply)	Flashing slowly in red/orange
Error during data transfer	Lit in red (500 ms)
System error (internal error)	Flashing quickly in red

ⓘ NOTES

● The operation lamp can be deactivated so that it does not light (📖 16).
● 1 ms (millisecond) is a thousandth of second.

3 Features

This chapter describes the features that can be set from the Feature Settings screen of the GenICam standard compatible application software. The settings in bold are the default settings. The displayed setting values may differ depending on the user system to which the camera is connected.

User ID | Device Control |

You can set any user ID with up to 16 single-byte alphanumeric characters and symbols.

Feature Name	Value
DeviceUserID (Set user ID)	**Null**

Reconnection | Device Control |

Execute [ConnectionReset] to reset the connection settings of the camera. The GenICam compatible application software may need to be restarted depending on the software.

Feature Name	Value
ConnectionReset (Reconnect with host)	**0** 1 (Execute reset)

Connection Speed | Device Control |

Set the data rate for transfer to the host. This can be selected when image capture is off.

Feature Name	Value
ConnectionConfig (Set connection speed)	**CXP3_X1** (3.125 Gbps) CXP2_X1 (2.5 Gbps) CXP1_X1 (1.25 Gbps)

Camera Restart | Device Control |

Restart the camera. The GenICam compatible application software may need to be restarted depending on the software.

Feature Name	Value
DeviceReset (Restart camera)	Execute() (Execute)

Operation Lamp   `Device Control`

Set the operation lamp to active or inactive.

Feature Name	Value
DeviceIndicatorMode (Activate/deactivate operation lamp)	**Active** (On) Inactive (Off)

Camera Temperature   `Device Control`

Select [DeviceTemperature] in [DeviceTemperatureSelector] to enable the temperature of the main board of the camera to be acquired.

Feature Name	Value
DeviceTemperatureSelector	Mainboard (Read-only)
DeviceTemperatureSelector > DeviceTemperature	Display the acquired temperature (°C).

Test Mode   `Device Control`

Select [On] in [TestMode] to send test packets to the host and count the number of sent packets. In addition, when the test packets are received from the host, the number of received packets and number of received data errors can be counted.

Feature Name	Value
TestMode	**Off** On (Transmit test packets)
TestErrorCountSelector	0 (Read-only)
TestErrorCountSelector > TestErrorCount	**0** • Count the number of received data errors. If you enter 0, the counter is cleared.
TestErrorCountSelector > TestPacketCountTx	**0** • Display the number of transferred packets. If you enter 0, the counter is cleared.
TestErrorCountSelector > TestPacketCountRx	**0** • Display the number of received packets. If you enter 0, the counter is cleared.

Image Sensor Pixel Format | Image Format Control |

You can select the pixel format of the image sensor incorporated in the camera. This can be selected when image capture is off.

Feature Name	Value
PixelFormat (Set pixel format)	**BayerRG8 (8 bit)** BayerRG10 (10 bit) BayerRG12 (12 bit) BayerRG16 (16 bit, 14 bits effective)

ROI (Region Of Interest) | Image Format Control |

Region of interest (ROI) is a function to extract and transfer a region that is a portion of the shooting area. You can set the size and starting position of the ROI. The parameters can be selected when image capture is off.
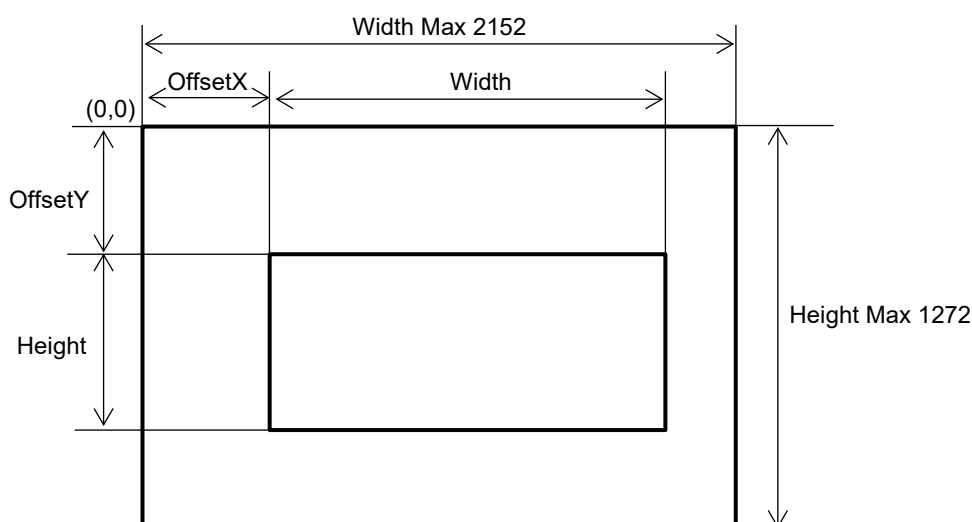
Feature Name	Value
Width (Set width of ROI)	128 to **2152** pixels (4-pixel increments)
Height (Set height of ROI)	128 to **1272** pixels (4-pixel increments)
OffsetX (Set starting position X coordinate in horizontal direction of ROI)	**0** to 2024 pixels (4-pixel increments)
OffsetY (Set starting position Y coordinate in horizontal direction of ROI)	**0** to 1144 pixels (4-pixel increments)

Shooting Mode   Acquisition Control

The camera has a continuous mode for shooting continuously and a trigger mode for shooting a still image in sync with an event called a trigger.

Continuous mode execution: Set [TriggerMode] to Off. When [AcquisitionStart] is executed, continuous shooting begins. When [AcquisitionStop] is executed during continuous shooting, shooting stops.

Trigger mode execution: Set [TriggerMode] to On (for details on trigger mode, 📖21).

Feature Name	Value
AcquisitionMode (Image acquisition mode)	Continuous (Continuous shooting; read-only)
AcquisitionStart (Start shooting)	Execute() (Execute)
AcquisitionStop (Stop shooting)	Execute() (Execute)
TriggerSelector (Trigger type)	FrameStart (Read-only)
TriggerSelector > TriggerMode (Enable/disable shooting upon trigger)	**Off** (Disable shooting upon trigger) On

Frame Rate   Acquisition Control

Set the frame rate for when [Continuous] (continuous shooting) is selected in [AcquisitionMode]. This can be selected when image capture is off.

Feature Name	Value
AcquisitionFrameRate (Set frame rate)	1 to 165 fps (**98**) (1-fps increments)

Frame Rate Limitations

The set frame rate and actual frame rate do not match exactly. The relational expression for the set frame rate "FRset" and actual frame rate "FR" is as follows. "ceil[ ]" in the expression is rounded up to a whole number.

$$FR = 1/\{\text{ceil}[1/(FRset \times 30 \times 10^{-6})] \times 30 \times 10^{-6}\} \quad (1)$$
$$\text{However, } FR \leq 164.20$$

Examples of the set frame rate and actual frame rate are shown in the following table. The maximum value for the actual frame rate is 164.20 fps.

Actual Frame Rate (Examples)

Frame Rate Setting Value [fps]	Actual Frame Rate [fps]
30	29.97
60	59.95
98	97.75
114	113.76
165 (maximum)	164.20 (maximum)

The frame rate calculated from expression (1) is limited by the following three items.

- Exposure time
- Sensor readout mode
- Connection speed and pixel format

The following explains the relationship between the above three items and the frame rate.

Limitation by Exposure Time

The frame rate upper limit "FRmax1" can be calculated from the following expression.
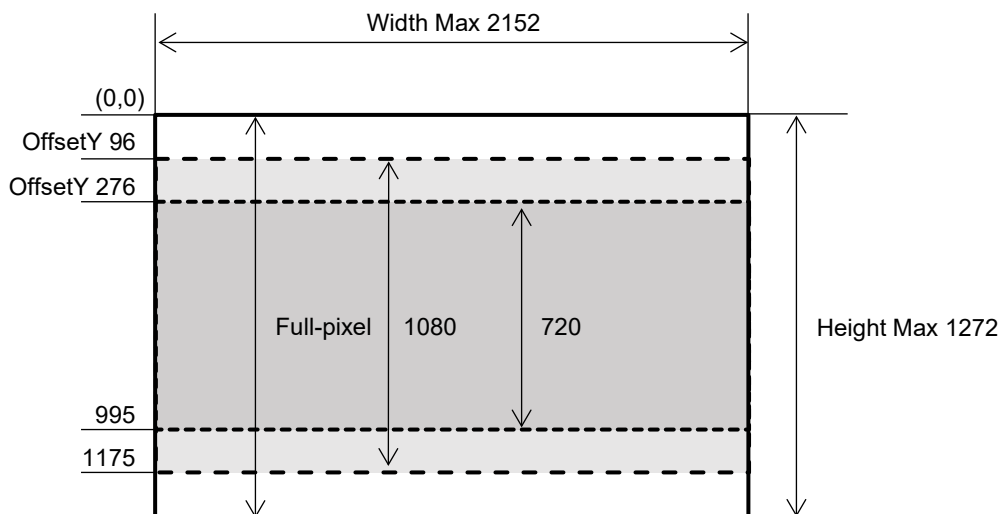
$$FRmax1 = 1/(Exposure\ time)\ \ (2)$$
$$However, FRmax1 \leq 164.20$$

If the frame rate upper limit "FRmax1" calculated from expression (2) is smaller than the frame rate "FR" calculated from expression (1), the actual frame rate is limited by the frame rate upper limit "FRmax1." Examples of frame rate upper limit "FRmax1" are shown in the following table. Even if the exposure time is set to "6090 μs or less", the frame rate upper limit "FRmax1" will be "164.20 fps".

Frame Rate Upper Limit "FRmax1"

Exposure Time [μs]	Frame Rate Upper Limit FRmax1 [fps]
33,360	29.97
16,680	59.95
10,230	97.75
8,790	113.76
6,090	164.20 (maximum)

Limitation by Image Sensor Readout Mode

The image sensor incorporated in the camera is equipped with three readout modes (full-pixel, 1080, and 720) according to the specification range of the region of interest (ROI) . The time required to read out the pixel value from the sensor differs depending on the readout mode. The frame rate upper limit "FRmax2" can be calculated from the following expression.

$$FRmax2 = 1/(Readout\ Time)\ \ (3)$$

If the frame rate upper limit "FRmax2" calculated from expression (3) is smaller than the frame rate "FR" calculated from expression (1), the actual frame rate is limited by the frame rate upper limit "FRmax2".

Frame Rate Upper Limit "FRmax2"

Readout Mode		Readout Time	Frame Rate Upper Limit FRmax2
Full-pixel readout		10.29 ms	97.18 fps
Partial readout (center extraction)	1080	8.79 ms	113.76 fps
	720	6.09 ms	164.20 fps

Limitation by Connection Speed and Image Transfer Data Volume

You can select from three connection speeds. The selectable connection speeds and communication bandwidths are as shown in the following table.

Connection Speed and Communication Bandwidth

Connection Speed	Communication Bandwidth*
CXP1_X1	1.25×10^9 bps
CXP2_X1	2.5×10^9 bps
CXP3_X1	3.125×10^9 bps

* bps: bits per second

The image transfer data volume of the camera is set by calculating the product of the values selected in "Width (128 to 2152)," "Height (128 to 1272)", and "PixelFormat (BayerRG8/BayerRG10/BayerRG12/BayerRG16)".
The frame rate upper limit "FRmax3" can be calculated from the following expression. "ceil[ ]" in the expression is rounded up to a whole number and "floor[ ]" is rounded down to a whole number. Furthermore, "0.768" is the transmission efficiency taking into consideration the overhead when 8b/10b encoding and image transfer.

$$\text{FRmax3} = 1/\{\text{ceil}[1/(\text{floor}[\text{Communication bandwidth} \times 0.768/\text{Data volume}] \times 30 \times 10^{-6})] \times 30 \times 10^{-6}\} \ (4)$$
$$\text{However, FRmax3} \leq 164.20$$

If the frame rate upper limit "FRmax3" calculated from expression (4) is smaller than the frame rate "FR" calculated from expression (1), the actual frame rate is limited by the frame rate upper limit "FRmax3". The actual frame rate will be the smallest value out of the frame rate "FR" calculated from expression (1) and "FRmax1" to "FRmax3" calculated from expressions (2) to (4) above.

The following table shows examples of the frame rate upper limit depending on the PixelFormat, readout mode, and connection speed. The displayed numerical values are further limited by the frame rate and exposure time settings.

Frame Rate Upper Limit (Examples)

PixelFormat [bit]	Readout Mode		Width [pixel]	Height [pixel]	CXP1_X1 [fps]	CXP2_X1 [fps]	CXP3_X1 [fps]
BayerRG8	Full-pixel readout		2152	1272	42.96	86.81	97.18
	Partial readout (center extraction)	1080	1920	1080	56.98	113.76	113.76
		720	1280	720	129.70	164.20	164.20
BayerRG10	Full-pixel readout		2152	1272	34.98	69.88	86.81
	Partial readout (center extraction)	1080	1920	1080	45.98	91.83	113.76
		720	1280	720	103.84	164.20	164.20
BayerRG12	Full-pixel readout		2152	1272	28.99	57.97	72.94
	Partial readout (center extraction)	1080	1920	1080	37.97	76.98	95.79
		720	1280	720	85.91	164.20	164.20
BayerRG16	Full-pixel readout		2152	1272	20.99	42.96	53.94
	Partial readout (center extraction)	1080	1920	1080	27.99	56.98	71.99
		720	1280	720	64.98	129.70	161.81

(i) NOTES

● The desired frame rate may not be achieved depending on the computer, frame grabber board, and display used.

Trigger Mode | Acquisition Control |

Trigger Source Setting

Set [TriggerMode] to On to enable capturing one still image upon trigger input. You can select from three trigger sources. This can be selected when image capture is off.

- Software (software trigger)
- CoaXPress (trigger packet)
- Line0_Opt_IN_0 (external trigger)

A software trigger is a trigger of a command defined in the GenICam standard. A trigger packet is a trigger defined in the CoaXPress standard. A software trigger and trigger packet are transferred from the host to the camera via a cable connected to the CoaXPress terminal.

An external trigger is a trigger signal input from the DC IN/TRIG terminal on the rear of the camera.

Exposure Mode Settings

You can select the exposure mode for shooting from [Timed] and [TriggerWidth] of [ExposureMode]. This can be selected when image capture is off.

When [Timed] is selected: An image is shot at the exposure time set in [ExposureTime], and the function is enabled for all of the trigger sources of [TriggerSource].

When [TriggerWidth] is selected: The pulse width of the trigger packet or external trigger input signal will be the exposure time. This is enabled when trigger packet or external trigger.

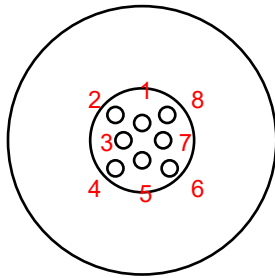| Feature Name	Value
TriggerSelector (Trigger type)	FrameStart (Read-only)
TriggerSelector > TriggerMode (Enable/disable shooting upon trigger)	**Off** On (Enable shooting upon trigger)
TriggerSelector > TriggerSource (Select trigger source)	**Software** (Software trigger) CoaXPress (trigger packet) Line0_Opt_IN_0 (external trigger)
TriggerSelector > TriggerSoftware (Software trigger)	Execute() (Execute software trigger)
ExposureMode (Exposure mode)	Off **Timed** (Shoot at exposure time) TriggerWidth (Shoot at pulse width of trigger packet or external trigger)

Exposure Time | Acquisition Control |

You can be set the exposure time when [ExposureMode] is [Timed]. It cannot be set when [ExposureMode] is [TriggerWidth].

Feature Name	Value
ExposureMode (Exposure mode)	Off (Continuous mode) **Timed** TriggerWidth
ExposureTime (Exposure time)	30 to 9999990 µs (**10200.000**) (30-µs increments)

External Trigger Input/Output

When an external trigger will be used, prepare the cable for the trigger while referring to the following pin assignment. Also refer to the external trigger input/output connection example and output timing example shown below.

- Connector (camera)   Manufacturer: ODU GmbH & Co. KG, Model No.: 756.271.081.108.211
- Compatible plug (cable)   Manufacturer: ODU GmbH & Co. KG, Model No.: 756.271.081.208.220

Pin No.	Signal Name	Input/Output
1	NC	-
2	GND	-
3	NC	-
4	DC IN (10 V to 29 V DC)	Input
5	Trigger OUT (Line3_Opt_OUT_1)	Output (open collector)
6	Trigger IN (Line0_Opt_IN_0)	Input
7	Trigger OUT (Line2_Opt_OUT_0)	Output (open collector)
8	COMMON	-

External Trigger Input/Output Connection Example
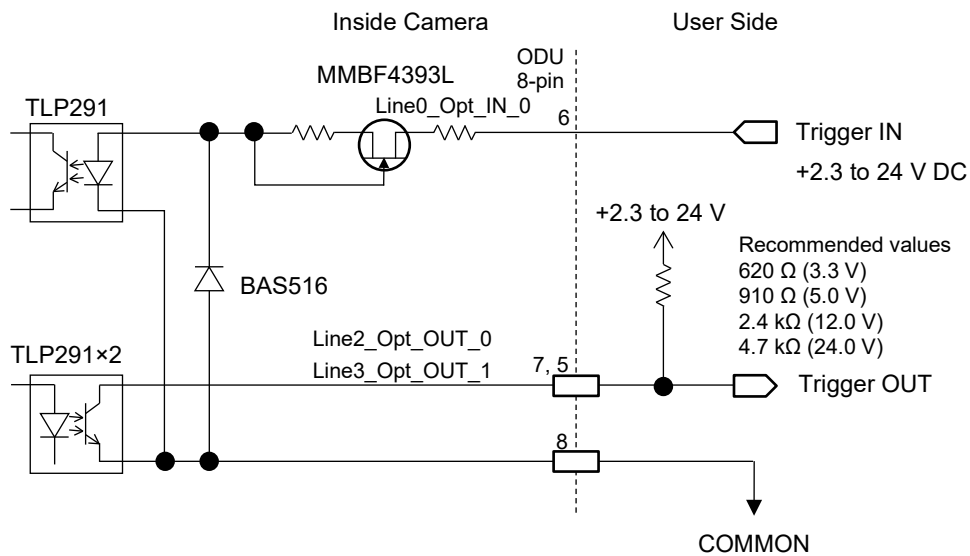
Input Timing (Example)

External Trigger IN

Inside Camera

t1
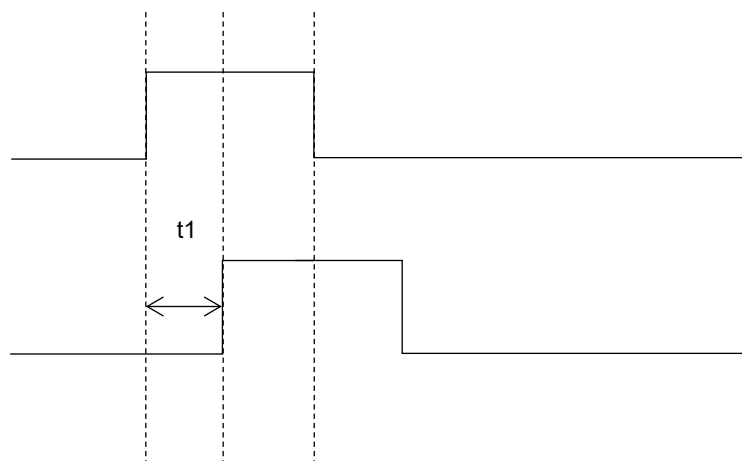
	3.3 V	5.0 V	12.0 V	24.0 V
t1	5.1 µs	2.8 µs	1.3 µs	1.0 µs

Output Timing (Example)

Output Inside Camera

t2   t3   t4   t5

External Trigger OUT
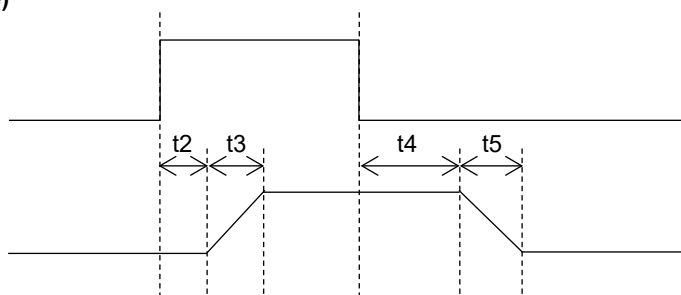
	3.3 V	5.0 V	12.0 V	24.0 V
t2*	28.0 µs	27.0 µs	27.4 µs	27.9 µs
t3*	15.4 µs	17.6 µs	28.3 µs	41.9 µs
t4*	1.2 µs	1.2 µs	1.1 µs	1.1 µs
t5*	2.1 µs	2.3 µs	3.7 µs	5.7 µs

* Value measured with resistance of recommended value.

External Trigger Input | Acquisition Control |

When shooting using an external trigger, you can select the signal format for which to enable shooting from [TriggerActivation]. The formats that can be selected differ depending on [ExposureMode]. Furthermore, this can be selected when image capture is off.

When [ExposureMode] is [Timed]

[RisingEdge]: Shooting starts at the rising edge of the external trigger input signal.

[FallingEdge]: Shooting starts at the falling edge of the external trigger input signal.

When [ExposureMode] is [TriggerWidth]

[LevelHigh]: Exposure and shooting are performed while the **level** of the external trigger input signal is High.

[LevelLow]: Exposure and shooting are performed while the level of the external trigger input signal is Low.

Feature Name	Value
TriggerSelector (Trigger type)	FrameStart (Read-only)
TriggerSelector > TriggerMode (Enable/disable shooting upon trigger)	**Off** On (Enable shooting upon trigger)
TriggerSelector > TriggerSource (Select trigger source)	**Software** (Software trigger) CoaXPress (trigger packet) Line0_Opt_IN_0 (external trigger)
TriggerSelector > TriggerActivation (Signal format to enable)	**RisingEdge** (Start shooting at the rising edge of the input signal) FallingEdge (Start shooting at the falling edge of the input signal) LevelHigh (Perform exposure and shooting while the input signal level is High) LevelLow (Perform exposure and shooting while the input signal level is Low)
ExposureMode (Exposure mode)	Off **Timed** (Shoot at exposure time) TriggerWidth (Shoot at pulse width of external trigger)

External Trigger Output | Digital I/O Control |

You can select the [ExposureActive] (exposure active) or [TriggerError] (trigger error) status information to be output from the two ports (5-pin and 7-pin) of DC IN/TRIG terminal on the rear of the camera.

[ExposureActive]: The "exposure active" status information is a notification signal that is externally output during the period from the start of exposure of the first line to the end of reading out of the last line of the image sensor. The polarity can be inverted for the output signal.

[TriggerError]: The "trigger error" status information is a notification signal that is externally output as an error when a trigger is input again during the exposure period upon trigger input or up until the end of data transfer. The error signal continues to be output until the next trigger is input after data transfer ends. The polarity can be inverted for the output signal.

Feature Name	Value
LineSelector (Select output port of external trigger)	**Line2_Opt_OUT_0** Line3_Opt_OUT_1
LineSelector > LineInverter (Invert polarity of output signal)	**FALSE** (Not inverted) TRUE (Inverted)
LineSelector > LineFormat (Output signal format)	OptoCoupled (Read-only)
LineSelector > LineSource (Output signal source)	**Off** ExposureActive (Status notification of exposure active) TriggerError (Status notification of trigger error)

External Trigger Input/Output Example 1

When [ExposureMode] is [Timed]
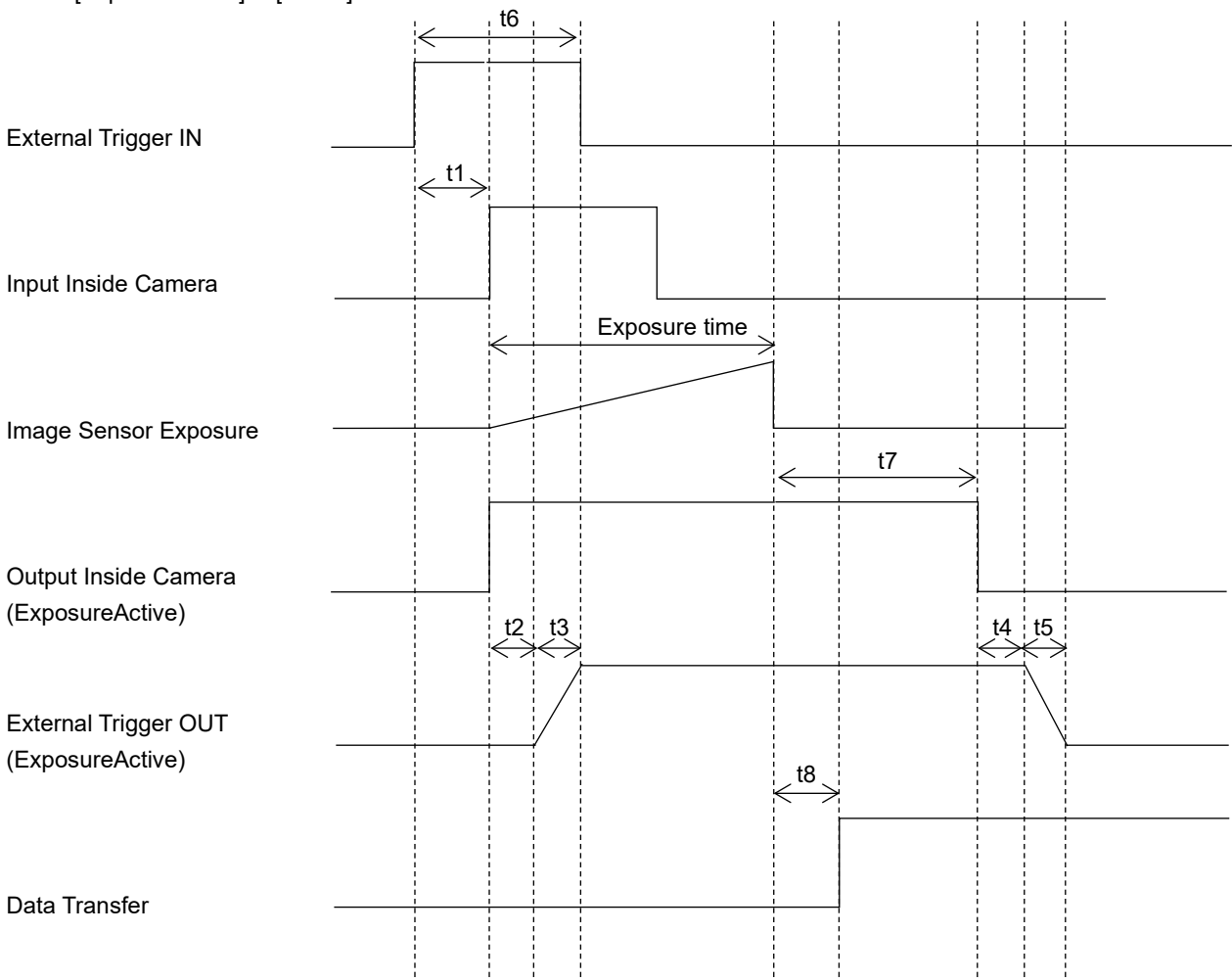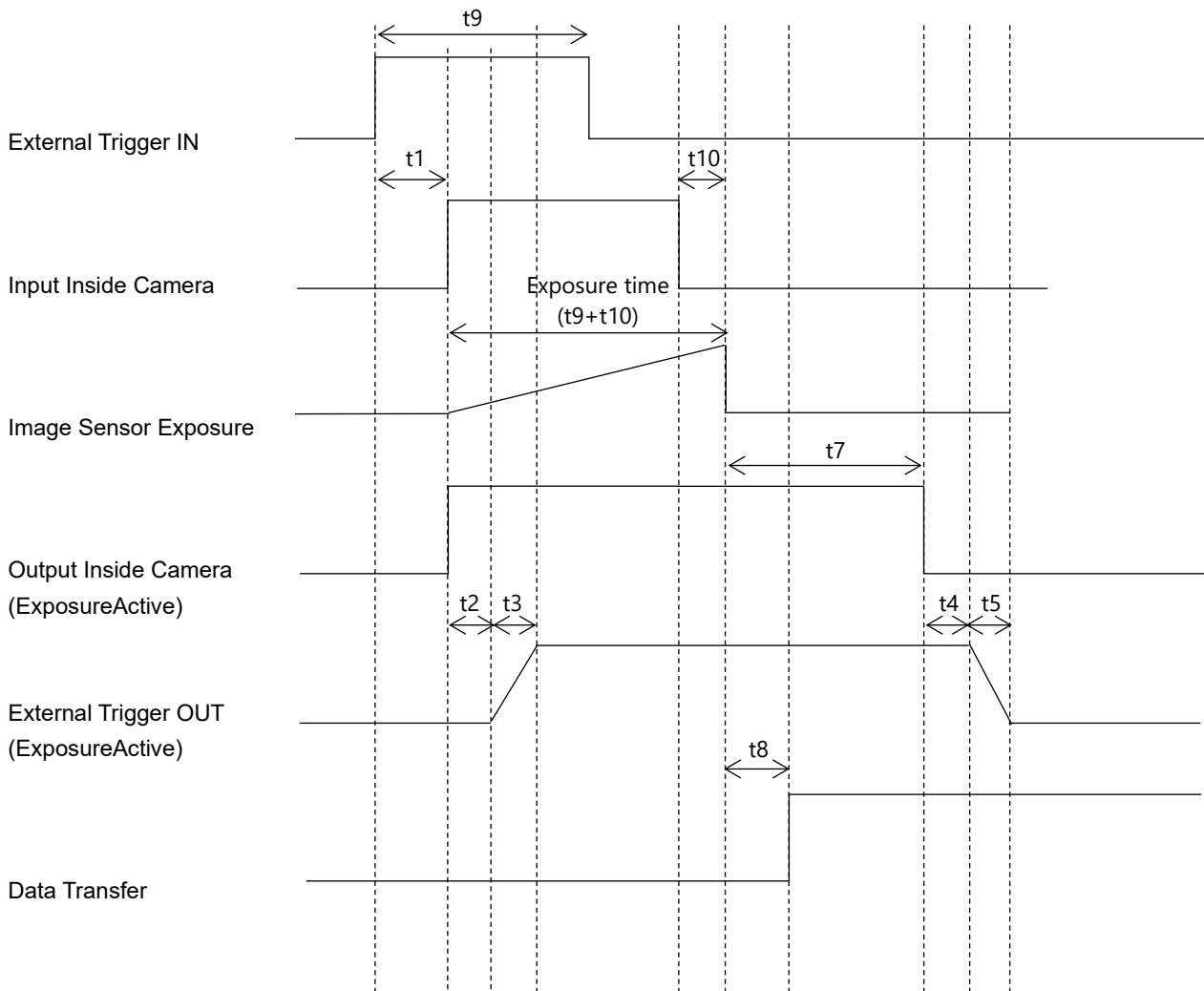

t6	t7	t8
30 µs (minimum)	11 ms (maximum)	800 µs (standard)

External Trigger Input/Output Example 2

When [ExposureMode] is [TriggerWidth]

t9	t10
30 µs (minimum)	300 µs (standard)

External Trigger Input/Output Example 3

Trigger Error Output

Interval when prohibited
to input trigger again

External Trigger IN

Exposure time

Image Sensor Exposure

Data Transfer

External Trigger OUT
(TriggerError)
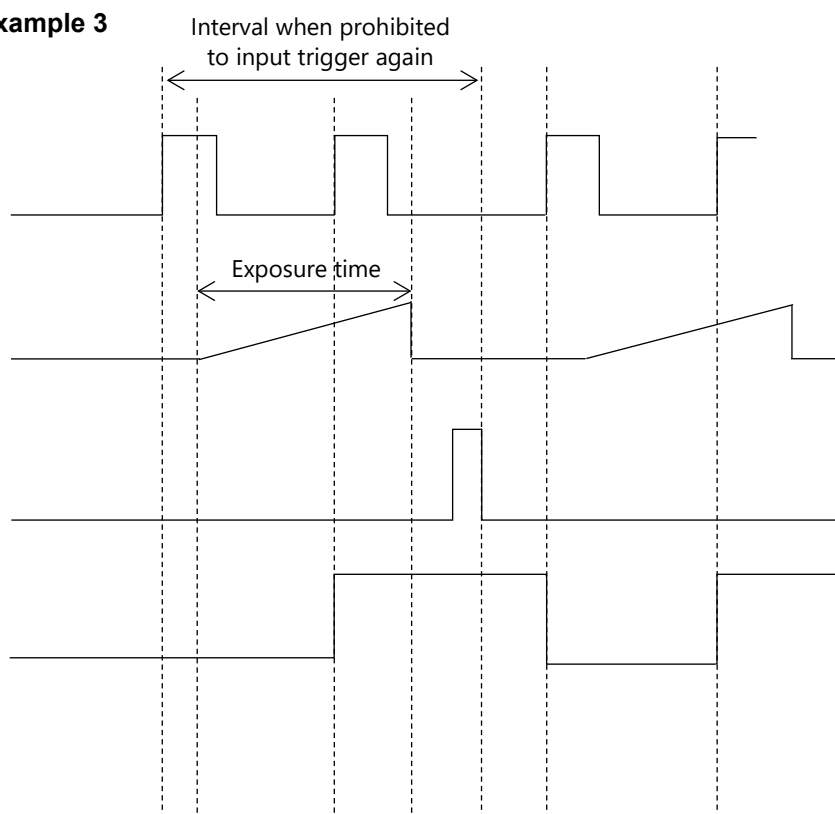
Gain   Analog Control

When [CameraMode] is [Manual], you can set the gain.

Feature Name	Value
GainSelector	All (Read-only)
GainSelector > Gain (Gain setting)	0 to **75** dB (3-dB increments)

IMPORTANT

- When the gain setting is high, image deterioration may occur due to light from a strong light source entering the image sensor.

AGC Limit   Analog Control

When [CameraMode] is other than [Manual], you can suppress the noise generated by the gain increasing if you set

the upper limit value for the automatic adjustment of gain.

AGC: Auto Gain Control

Feature Name	Value
GainSelector	All (Read-only)
GainSelector > AGCLimit (Set AGC limit)	24 to **75** dB (3-dB increments)

Black Level | Analog Control |

You can adjust the offsets for the red, green or blue component of black.

[All]: Allows you to adjust the offsets for the red, green and blue components of black simultaneously.
Setting range: -255 to +255
[Red]: Allows you to adjust the offset for the red component of black. Setting range: -255 to +255
[Blue]: Allows you to adjust the offset for the blue component of black. Setting range: -255 to +255

Feature Name	Value
BlackLevelSelector (Select target for black offset adjustment)	**All** Red Blue
BlackLevelSelector > BlackLevel (Black offset adjustment value)	-255 to +255 (**0**)

🚫 IMPORTANT
- If you change the gain value after adjusting the [BlackLevel] setting, it is necessary to adjust the setting again.
- When [CameraMode] is set to [AGC], select [BlackLevelAutoBalance] > [Once] to automatically adjust the black level.

Adjusting Black Level Automatically | Analog Control |

You can adjust the offsets for the red component and blue component of black automatically.

Feature Name	Value
BlackLevelAutoBalance (Automatic adjustment of black level)	**Off** Once (Automatic adjustment)
BlackLevelSelector > BlackLevel (Black offset adjustment value)	-255 to +255 (**0**)

🚫 IMPORTANT
- Completely shield the image sensor to prevent light from entering.

ⓘ NOTES
- Other menus are not available during the execution of black level automatic adjustment (Once).

Acquiring Black Level Automatic Adjustment Status | Analog Control |

When the offsets for the red component and blue component of black are adjusted automatically, you can acquire the following information.

[Idle] (Automatic adjustment off): Black level automatic adjustment is off.
[Busy] (Executing): Black level automatic adjustment is being executed.
[Success] (Succeeded): Black level automatic adjustment succeeded.
[Failure] (Failed): Black level automatic adjustment failed. Light may be entering the image sensor. Completely shield it to prevent light from entering.

Feature Name	Value
BlackLevelAutoBalanceStatus (Acquire black level automatic adjustment status information)	**Idle** (Automatic adjustment is off) Busy (Executing) Success (Succeeded) Failure (Failed)

White Balance   Analog Control

You can set the white balance depending on the lighting, sunlight, or other light source.

Before adjusting the white balance, attach a UV-IR cut filter (commercially available)*.

* For the UV-IR cut filters for which operation has been verified, visit your local Canon website.

To adjust manually

You can set the red gain or blue gain by selecting [Red] or [Blue] in [BalanceRatioSelector] and entering a setting value in [BalanceRatio]. This is enabled when [BalanceWhiteAuto] is [Off].

To adjust automatically

When [BalanceWhiteAuto] is set to one of the following, the white balance adjustment automatically functions as described below.

[Off]: Automatic adjustment of white balance is off.

[Once]: Point the camera at a gray card or white object to capture the reference white. After executing [Once], select
[Red] or [Blue] in [BalanceRatioSelector] and select [BalanceRatio] to display the setting value.

• Time (approximate) required for automatic adjustment

When [ExposureTime] is 30 to 999990 μs: Within 2 minutes

When [ExposureTime] is 1000020 to 4999980 μs: Within 10 minutes

When [ExposureTime] is 5000010 to 9999990 μs: Within 20 minutes

To stop automatic adjustment, change [BalanceWhiteAuto] to [Off].

[Continuous]: The white balance is adjusted automatically so that it is always appropriate. After executing [Continuous],
select [Red] or [Blue] in [BalanceRatioSelector] and select [BalanceRatio] to display the setting value.

Feature Name	Value
BalanceRatioSelector (Select adjustment target color)	**Red** Blue
BalanceRatioSelector > BalanceRatio (Color gain setting value)	0.0 to 63.0 (**1.0**)

ⓘ NOTES

● Other menus are not available during the execution of white balance automatic adjustment (Once).

Acquiring White Balance Automatic Adjustment Status   Analog Control

When the white balance is set to automatic adjustment (Once), you can acquire the following information.

[Idle] (Automatic adjustment off): White balance automatic adjustment is off.

[Busy] (Executing): White balance automatic adjustment is being executed.

[Success] (Succeeded): White balance automatic adjustment succeeded.

[Failure] (Failed): White balance automatic adjustment failed. Check "Troubleshooting" (📖43).

Feature Name	Value
BalanceWhiteAutoStatus (Acquire white balance automatic adjustment (Once) status information)	**Idle** (Automatic adjustment is off) Busy (Executing) Success (Succeeded) Failure (Failed)

Saving and Loading Setting Data | User Set Control |

The camera allows you to save and load the setting data to/from [UserSet0] or [UserSet1] selected in [UserSetSelector]. In addition, you can select [Default] to load the factory default setting data. The setting data of [Default], [UserSet0], or [UserSet1] selected from [UserSetDefault] can also be loaded at power-on.
For details on the setting data that can be saved, refer to 📖38.

Feature Name	Value
UserSetSelector (Select setting data to save or load)	**Default** UserSet0 UserSet1
UserSetSelector > UserSetLoad (Load setting data)	Execute() (Execute)
UserSetSelector > UserSetSave (Save setting data)	Execute() (Execute)
UserSetDefault (Select setting data to load at power-on)	**Default** UserSet0 UserSet1

Camera Mode | Canon Custom Control |

You can select the following modes in [CameraMode].

[Manual]: Adjust the gain, exposure time, and iris* manually.
[Tv] (Prioritize exposure time)*: Set the exposure time manually. When you set the exposure time, the iris and gain are adjusted automatically depending on the subject brightness.
[AGC] (automatic gain control): Set the exposure time and iris* manually. When you set the exposure time and iris, the gain is adjusted automatically depending on the subject brightness.

Feature Name	Value
CameraMode (Camera mode)	**Manual** Tv (Prioritize exposure time)* AGC (automatic gain control)

* ML-100 EF only

(i) NOTES
- If the brightness changes when [CameraMode] is other than [Manual], the exposure may not change smoothly.

Focus Control (ML-100 EF Only)   Canon Custom Control

The ML-100 EF can control the focus of the Canon EF lens or COMPACT-SERVO lens.
Select the focus mode (manual/auto) of the lens. For details, refer to the instruction manual of the lens.

Feature Name	Value
Focus > FocusNear (Move to near end of focus)	Execute() (Execute)
Focus > FocusFar (Move to far end of focus)	Execute() (Execute)
Focus > FocusStep (Set step amount to move)	1 to **64** • When EF lens is attached: If the value is higher than "7," operation is with a step amount equivalent to "7."

Zoom Control (ML-100 EF Only)   Canon Custom Control

The ML-100 EF can control the zoom of the Canon COMPACT-SERVO lens.
Select the zoom mode (manual/servo zoom) of the lens. For details, refer to the instruction manual of the lens.

Feature Name	Value
Zoom > ZoomWide (Move to wide end of zoom)	Execute() (Execute)
Zoom > ZoomTele (Move to tele end of zoom)	Execute() (Execute)
Zoom > ZoomSpeed (Adjust zoom speed)	0 to **128**
Zoom > ZoomStop (Stop zoom)	Execute() (Execute)

Iris Control (ML-100 EF Only)   Canon Custom Control

The ML-100 EF can control the F-stop of the Canon EF lens or COMPACT SERVO lens. In [IrisIncrement], select the increment of the F-stop from "1/2," "1/3," and "Fine" (approx. 1/8). The F-stop is displayed when [ApertureValue] is selected. When [Fine] is set, rounded values in 1/3 increments are displayed.
Select the iris mode (manual/auto) of the lens. For details, refer to the instruction manual of the lens.

Feature Name	Value
Iris > IrisClose (Set iris to closed end)	Execute() (Execute)
Iris > IrisOpen (Set iris to opened end)	Execute() (Execute)
Iris > IrisIncrement (Set increment of F-stop)	**1/2** 1/3 Fine
Iris > ApertureValue (Acquire F-stop)	Display the acquired F-stop.

System Status | Canon Custom Control |

The camera can acquire the following error warnings.

[TemperatureError] (Temperature error)

[Fine]: The camera internal temperature is normal.

[Error]: The camera internal temperature is high. In this case, power off the camera and refrain from using it until the temperature lowers. If the problem is not resolved, consult a Canon Service Center.

[LensError] (Lens communication error (ML-100 EF only)

[Fine]: The camera is communicating with the Canon EF lens or COMPACT-SERVO normally.

[Error]: The camera cannot communicate with the Canon EF lens or COMPACT-SERVO normally. Turn the camera off and then back on. Also, clean the lens contacts (power off the camera and remove the lens before cleaning the lens contacts). If the problem is not resolved, consult a Canon Service Center.

Feature Name	Value
SystemStatus > TemperatureError (Temperature warning)	**Fine** (Normal) Error (Temperature error)
SystemStatus > LensError (Lens communication error)	**Fine** (Normal) Error (Lens communication error)

GenICam Command List

The settings in bold are the default settings. The displayed setting values may differ depending on the user system to which the camera is connected.

Device Control

Feature Name		Value	Access
Standard		3232209637	Read
Revision		65537	Read
XmlManifestSize		1	Read
XmlManifestSelector		0	Read
	XmlVersion	0x10000	Read
	XmlSchemaVersion	0x10100	Read
XmlUrlAddress		0xF000	Read
Iidc2Address		0	Read
DeviceVenderName		CANON Inc.	Read
DeviceModelName		ML-100 EF / ML-100 M58	Read
DeviceManufacturerInfo		-	Read
DeviceVersion		(Example) 1.0.0.0	Read
DeviceSerialNumber		(12 digits)	Read
DeviceUserID		NULL	Read/Write
WidthAddress		0x8000	Read
HeightAddress		0x8004	Read
AcquisitionModeAddress		0x8008	Read
AcquistionStartAddress		0x800C	Read
AcquistionStopAddress		0x8010	Read
PixelFormatAddress		0x8014	Read
DeviceTapGeometryAddress		0x8018	Read
Image1StreamIDAddress		0x801C	Read
ConnectionReset		**0** 1: Reset	Read/Write
DeviceConnectionID		0	Read
MasterHostConnectionID		-	Read/Write
ControlPacketSizeMax		512	Read
StreamPacketSizeMax		2048	Read/Write
ConnectionConfig		**CXP3_X1** CXP2_X1 CXP1_X1	Read/Write
ConnectionConfigDefault		CXP3_X1	Read
DeviceReset		Execute()	Write
DeviceIndicatorMode		**Active** Inactive	Read/Write

Feature Name		Value	Access
DeviceTemperatureSelector		Mainboard	Read
	DeviceTemperature	-	Read
TestMode		**Off** On	Read/Write
TestErrorCountSelector		0	Read
	TestErrorCount	0	Read/Write
	TestPacketCountTx	0	Read/Write
	TestPacketCountRx	0	Read/Write
HsUpconnection		0	Read

Image Format Control

Feature Name		Value	Access
SensorWidth		2152	Read
SensorHeight		1272	Read
WidthMax		2152	Read
HeightMax		1272	Read
Width		128 to **2152**	Read/Write
Height		128 to **1272**	Read/Write
OffsetX		**0** to 2024	Read/Write
OffsetY		**0** to 1144	Read/Write
PixelFormat		**BayerRG8** BayerRG10 BayerRG12 BayerRG16	Read/Write
DeviceTapGeometry		Geometry_1X-1Y	Read
Image1StreamID		0	Read

Acquisition Control

Feature Name		Value	Access
AcquisitionMode		Continuous	Read
AcquisitionStart		Execute()	Write
AcquisitionStop		Execute()	Write
AcquisitionFrameRate		1 to 165 (**98**)	Read/Write
TriggerSelector		FrameStart	Read
	TriggerMode	**Off** On	Read/Write
	TriggerSoftware	Execute()	Write
	TriggerSource	**Software** CoaXPress Line0_Opt_IN_0	Read/Write

Feature Name		Value	Access
	TriggerActivation	**RisingEdge** FallingEdge LevelHigh LevelLow	Read/Write
ExposureMode		Off **Timed** TriggerWidth	Read/Write
ExposureTime		30 to 9999990 (**10200.000**)	Read/Write

Analog Control

Feature Name		Value	Access
GainSelector		All	Read
	Gain	**0** to 75	Read/Write
	AGCLimit	24 to **75**	Read/Write
BlackLevelSelector		**All** Red Blue	Read/Write
	BlackLevel	-255 to +255 (**0**)	Read/Write
BlackLevelAutoBalance		**Off** Once	Read/Write
BlackLevelAutoBalanceStatus		**Idle** Busy Success Failure	Read
BalanceRatioSelector		**Red** Blue	Read/Write
	BalanceRatio	0.0 to 63.0 (**1.0**)	Read/Write
BalanceWhiteAuto		**Off** Once Continuous	Read/Write
BalanceWhiteAutoStatus		**Idle** Busy Success Failure	Read

Digital I/O Control

Feature Name		Value	Access
LineSelector		**Line2_Opt_OUT_0** Line3_Opt_OUT_1	Read/Write
	LineInverter	**FALSE** TRUE	Read/Write
	LineFormat	OptoCoupled	Read
	LineSource	**Off** ExposureActive TriggerError	Read/Write

User Set Control

Feature Name		Value	Access
UserSetSelector		**Default** UserSet0 UserSet1	Read/Write
	UserSetLoad	Execute()	Write
	UserSetSave	Execute()	Write
UserSetDefault		**Default** UserSet0 UserSet1	Read/Write

Canon Custom Control

Feature Name		Value	Access
CameraMode		**Manual** Tv* AGC	Read/Write
Zoom*	ZoomWide	Execute()	Write
	ZoomTele	Execute()	Write
	ZoomSpeed	0 to **128**	Read/Write
	ZoomStop	Execute()	Write
Focus*	FocusNear	Execute()	Write
	FocusFar	Execute()	Write
	FocusStep	1 to **64**	Read/Write
Iris*	IrisClose	Execute()	Write
	IrisOpen	Execute()	Write
	IrisIncrement	**1/2** 1/3 Fine	Read/Write

Feature Name		Value	Access
	ApertureValue	When EF lens is attached: F1.0 to F99.0 When COMPACT-SERVO lens is attached: F1.0 to CLOSED When lens is not attached: ---	Read
SystemStatus	TemperatureError	Fine Error	Read
	LensError*	Fine Error	Read

* ML-100 EF only

Setting Data That Can Be Saved (📖31)

DeviceControl	DeviceUserID	
	DeviceIndicatorMode	
ImageFormatControl	Width	
	Height	
	OffsetX	
	OffsetY	
	PixelFormat	
AcquisitionControl	AcquisitionFrameRate	
	TriggerSelector	TriggerMode
		TriggerSource
		TriggerActivation
	ExposureMode	
	ExposureTime	
AnalogControl	GainSelector	Gain
		AGCLimit
	BlackLevelSelector	
	BlackLevelSelector	BlackLevel
	BalanceRatioSelector	BalanceRatio
	BalanceWhiteAuto	
Digital I/O Control	LineSelector	
	LineSelector	LineInverter
		LineSource
UserSetControl	UserSetDefault	
CanonCustomControl	CameraMode	
	Zoom	ZoomSpeed
	Focus	FocusStep
	Iris	IrisIncrement

4 Specifications

Camera

System	
Image sensor	35 mm full-frame equivalent CMOS sensor Effective pixels: Approx. 2,740,000 pixels (2152 x 1272) Pixel size: 19 x 19 µm Effective screen area: Approx. 40.9 x 24.2 mm (diagonal 47.5 mm)
Minimum subject illumination	0.0005 lx or lower* * When maximum gain, F1.2, and exposure time of 0.033 seconds
Lens mount	ML-100 EF: Canon EF mount (Cinema Lock type) ML-100 M58: M58 mount (flange focal length: 15 mm)
Optical filters	Low pass filter (no ND filter and UV-IR cut filter)
Video output	CoaXPress Standard Version 1.1 compliant Output formats: Bayer RAW output 16/12/10/8 bit selectable Connection speeds: CXP-3 (3.125 Gbps), CXP-2 (2.5 Gbps), and CXP-1 (1.25 Gbps)
Frame rate	2152 x 1272 (full-pixel), approx. 97 fps (when BayerRG 8 bit)
Gain	0 to 75 dB (3-dB increments)
Shutter system	Rolling shutter
Iris*[1]	Manual (Iris increment: 1/2, 1/3, Fine), Auto
Exposure time	30 to 9999990 µs (30-µs increments)
Exposure control	Manual / Tv*[1] / AGC
White balance	Manual (Red/Blue gain), Auto (Continuous, Once)
Black Level	Manual (All, Red, Blue), Auto
Gamma	1.0
Lens control*[1]	Focus / zoom*[2] / iris automatic control
Input/Output Terminals	
CXP-3 terminal	BNC (75 Ω)
DC IN/TRIG terminal	8-pin connector
UPDATE terminal	8-pin connector (for RS-422)
Power and Other Specifications	
Power voltage	PoCXP compatible, external power input: 10 V to 29 V DC
Power consumption	Approx. 9.2 W (when 2152 x 1272 and 97 fps) (camera body only)
Operating environment	Temperature: -20 to +50 °C (-4 to +122 °F) Humidity: 5 to 85% RH (non-condensing)
Dimensions (W x H x D)	ML-100 EF: Approx. 76 x 76 x 112 mm (3.0 x 3.0 x 4.4 in.) (excluding protrusions) ML-100 M58: Approx. 76 x 76 x 83 mm (3.0 x 3.0 x 3.3 in.) (excluding protrusions)
Weight	ML-100 EF: Approx. 760 g (1.7 lb.) (camera body only) ML-100 M58: Approx. 540 g (1.2 lb.) (camera body only)

*[1] ML-100 EF only   *[2] Only when a COMPACT-SERVO lens is used.
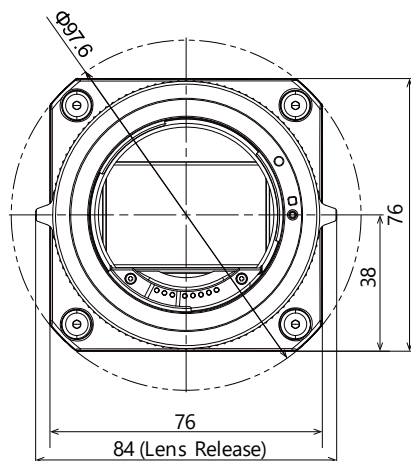
Compatible Lens and Functions

The firmware of the lens may need to be updated depending on when the lens was purchased. For details, consult a Canon Service Center.

For the lens for which operation has been verified, visit your local Canon website.
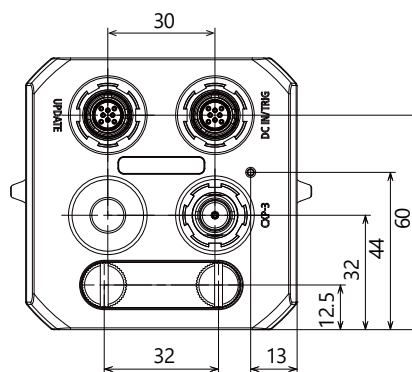
Lens		Functions adjustable from camera		
		Iris	Focus	Zoom
EF Lens		●	●	—
EF Cinema Lens	CN-E70-200mm T4.4 L IS KAS S	●	●	●

Dimensional Drawings (ML-100 EF)

Front view

Rear View

Top view

M4 Depth 5

Right side view

Flange Focal Length (in Air)

Focal Plane

M4 Depth 5

Left side view

M4 Depth 5

Bottom view

M4 Depth 5
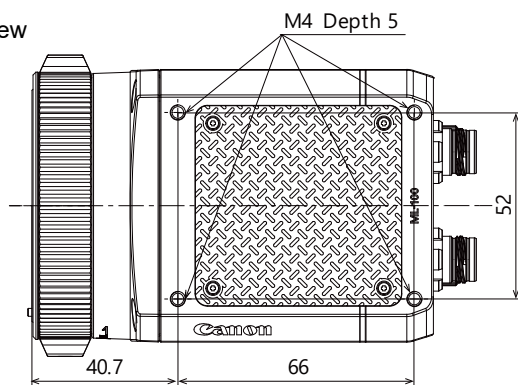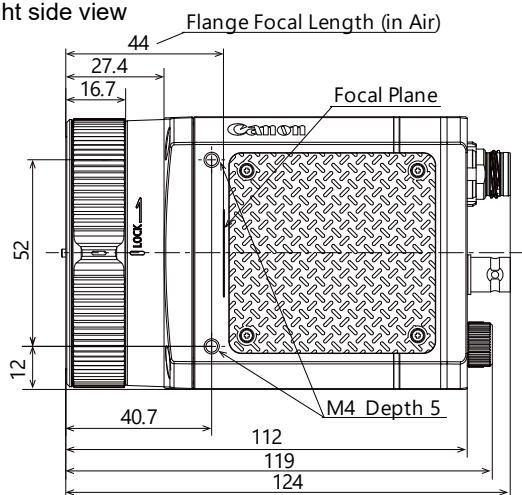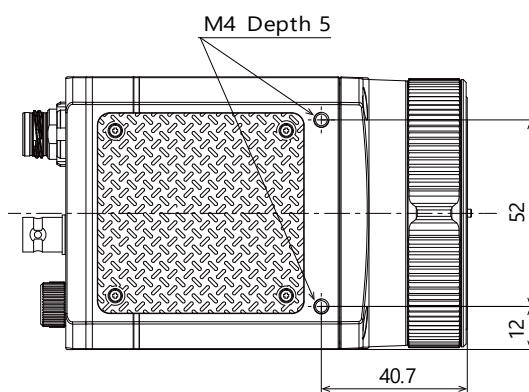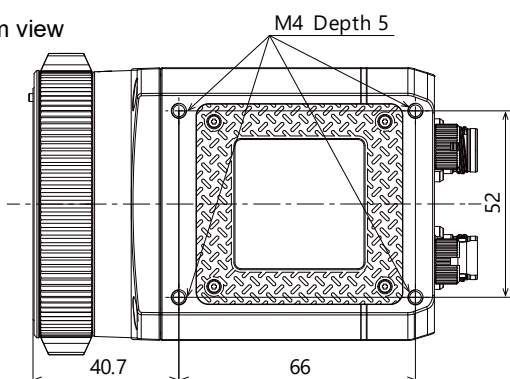
Unit: mm

Dimensional Drawings (ML-100 M58)

Front view

Rear View
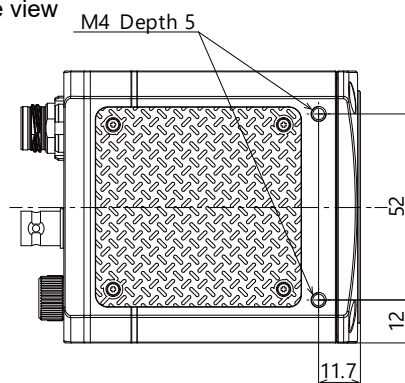
Top view

M4 Depth 5

Right side view

Flange Focal Length (in Air)

Focal Plane

M4 Depth 5

Left side view

M4 Depth 5

Bottom view

M4 Depth 5
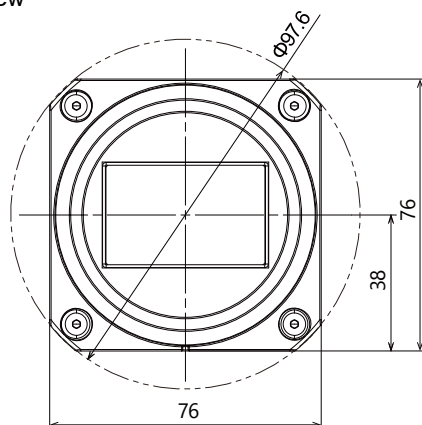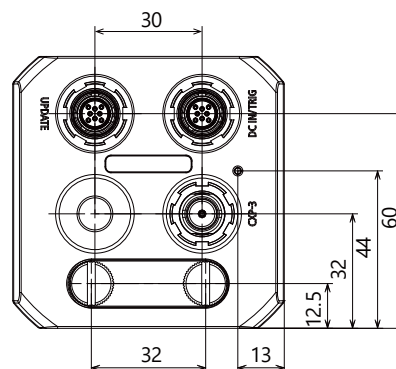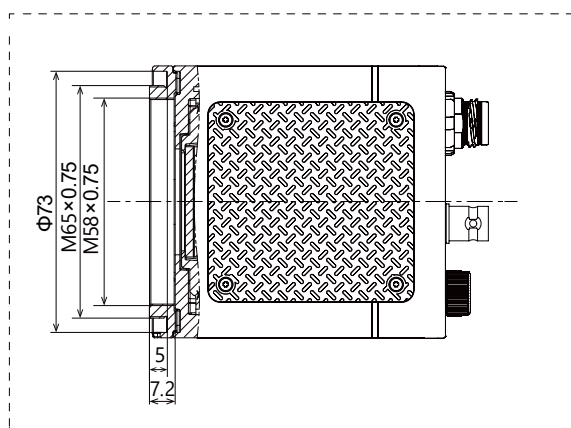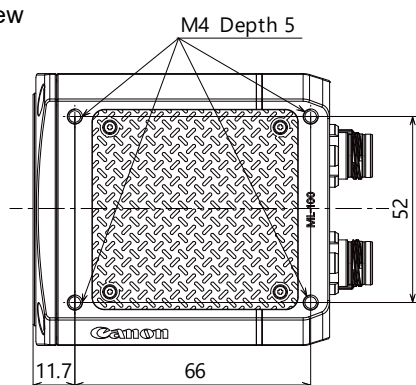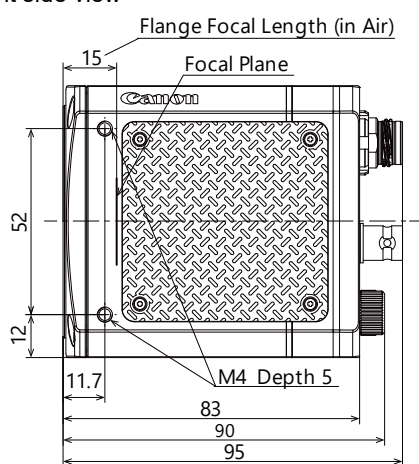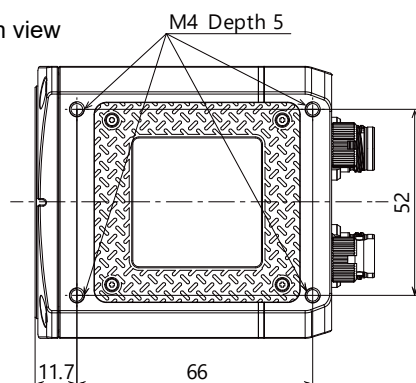
Unit: mm

5 Additional Information

Troubleshooting

Symptom	Cause and Measure
White balance automatic adjustment (Once) failed. ([BalanceWhiteAutoStatus] > [Failure])	● Image is too bright or too dark. Change the brightness by changing the camera settings, subject, and shooting conditions and then perform white balance automatic adjustment again. ● The brightness or color of the subject changed during shooting. Change the camera settings, subject, and shooting conditions so that the brightness and color are uniform and then perform white balance automatic adjustment again.

Canon