Synchronous 0.36M pixels progressive
USB2.0 COLOR(BW) CMOS CAMERA
(Global shutter)

ARTCAM-036MI(BW)-TWIN

INSTRUCTION BOOKLET

ARTRAY CO.,LTD.

Contents

1. Description

ARTCAM-036MI is a 1/3" CMOS color(BW) camera developed for industrial use. Image can be saved directly to your PC with high-speed transfer via USB2.0 interface. In addition, this camera is greatly suitable for the ITS, alignment measurement and three-dimensional photographing because it works by the same clock.

2. Main Features

*Image synchronization of 2 cameras

With special interface, images from 2 cameras can be captured simultaneously(8bit).

* Flange-back adjustment

With Artray's original mechanism, flange-back is adjustable while real-time image is displayed.

* Electric shutter

Shutter speed can be adjusted on software screen. An object moving at high-speed can be captured by global shutter.

* Frame rate

By adjusting image size, ARTCAM-036MI can be used as high speed camera. VGA ：30FPS Equivalent to QVGA：90FPS (e.g. 640x120) *Impossible to change size in horizontal.

* Gain

"Gain" can be controlled from the PC.

* Offset

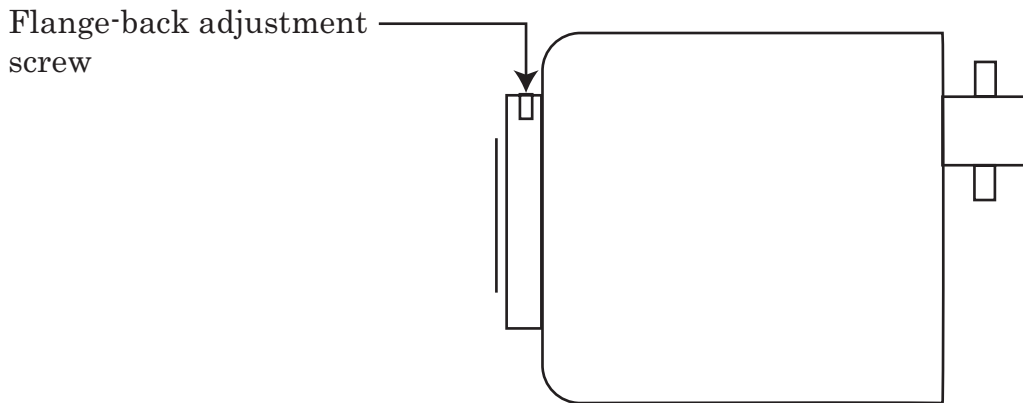"Offset" can be controlled from the PC.

* B/W sensor camera

ARTCAM-036MI-BW-TWIN

3. List of Items

1) Camera   2(equiopped with tripod breaket, but not lens)
2) User Instruction 1
3) Software CD   1
4) LVDS cable   1
《Option》
1)Filing & 2D measuring system
2)SDK(ARTCCM-SDK)
3)5.0m USB2.0 cable
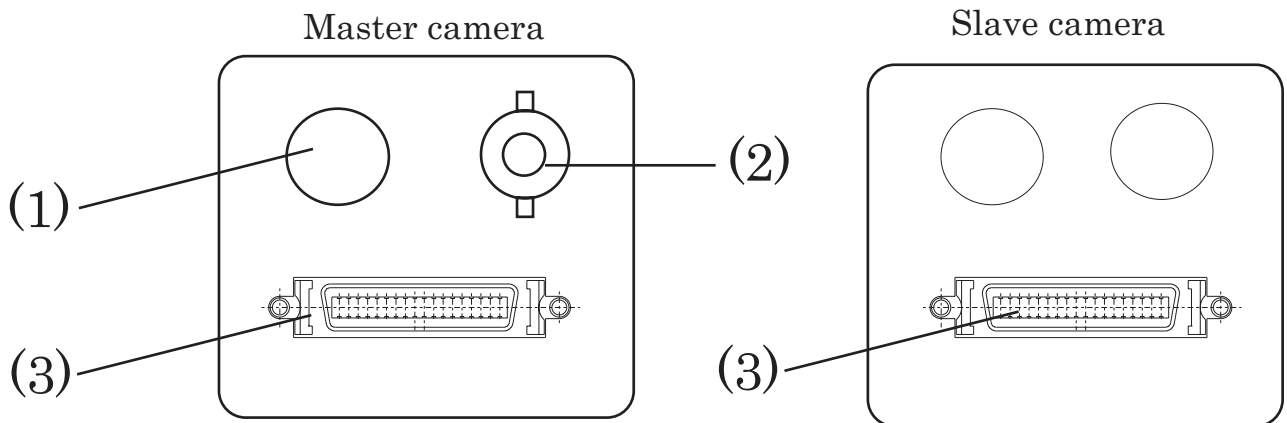
4. Position of Each Part

4-1 Side panel

Flange-back adjustment screw

Caution

Do NOT remove the cover. This may break camera or cause static electricity.
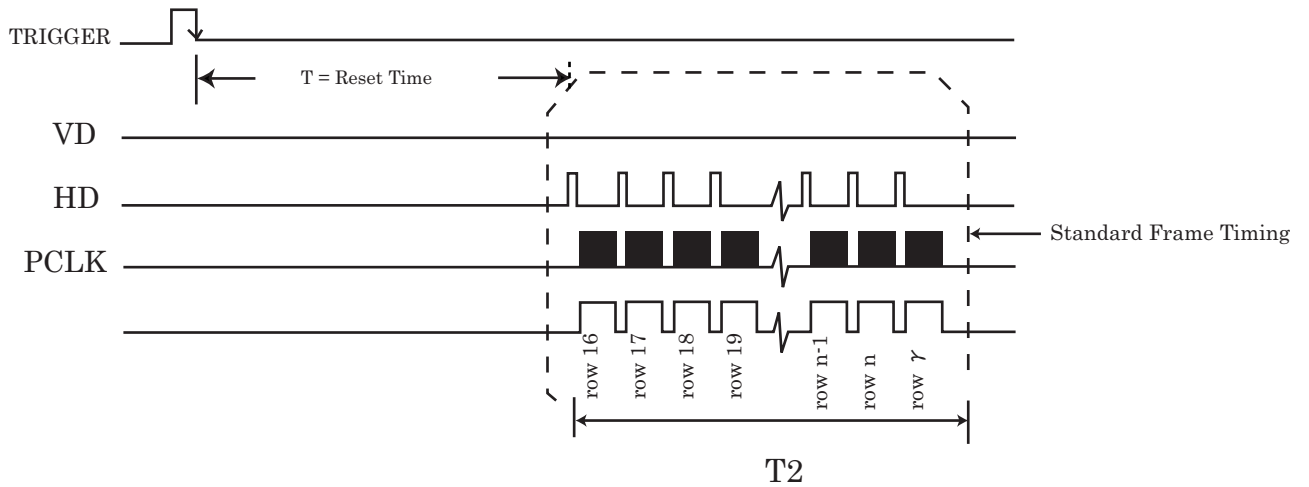
Master camera

(1)

(2)

(3)

Slave camera

(3)

4-2 Back panel

(1) USB
: USB2.0 interface cable

(2) TRG （BNC)
: External contact trigger(Option)

(3)036TWIN Sychronous cable conector
: Hirose DX20-36S
*cable : DX30-36P　1m, Cover:DX-36-CV

* (2)External Trigger is Optional.

4-3 EXTERNAL TRIGGER(Option)

1. Timing

TRIGGER

T = Reset Time

VD

HD

PCLK

Standard Frame Timing

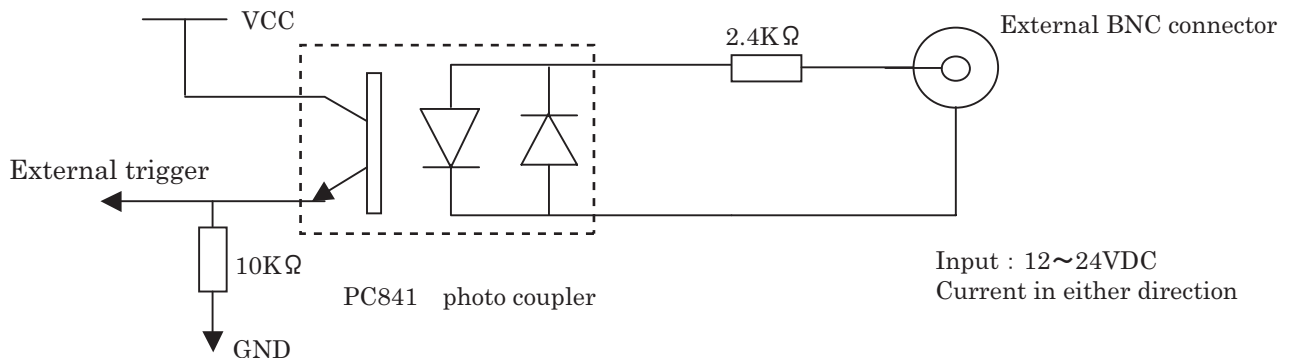row 16　row 17　row 18　row 19　row n-1　row n　row γ

T2

Remark1 : T is the time required for reset.

Start reset from trailing edge of trigger terminal.

Remark2 : The actual time for capturing is at least twice as long as the time

indicated in Remark1 (@ 8 bits).

T2 is the transfer time. IsCaptureFinish() is returned when T2 is completed.

2. External trigger hardware

Remark3 : Serial NO0963 has been altered to photo-isolation type as below.
The following is the internal equivalent circuit.

VCC

External BNC connector

2.4KΩ

External trigger

10KΩ

PC841　photo coupler

Input : 12〜24VDC
Current in either direction

GND

Specifications may be altered withtout preliminary notice.

5. Functions and operation

5-1 Selection of lens

The mount of lens is C-mount.
C-mount fixing screw is installed in the camera.

5-2 Camera connection

Image output/power connection

USB2.0 Cable

PC monitor

USB2.0
host adaptor

PC

6.Dimension

50

R5

47

9

30

0.5 (Adjustment)   59.3

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Focus ring

φ3.2

0.5   1

φ2.2

SECTION   A-A
2 spots   S:4/1

1/4-20UNC

M6   M6

26.35

15.35   22

43.3

32

20

8.5

2-φ10

Hirose
Connector DX20-36S
Cable : DX30-36P   1m
Cover : DX-36-CV
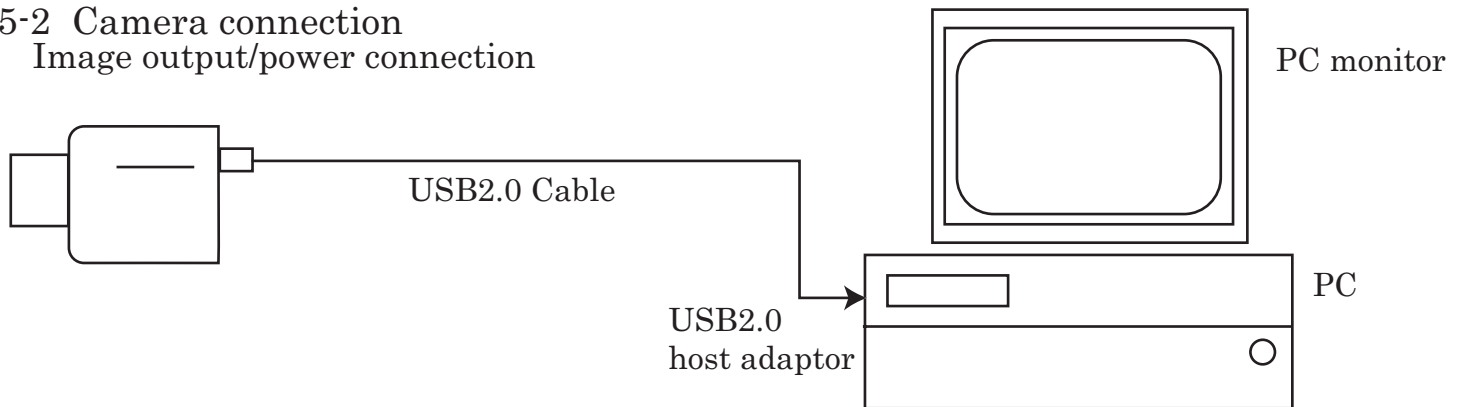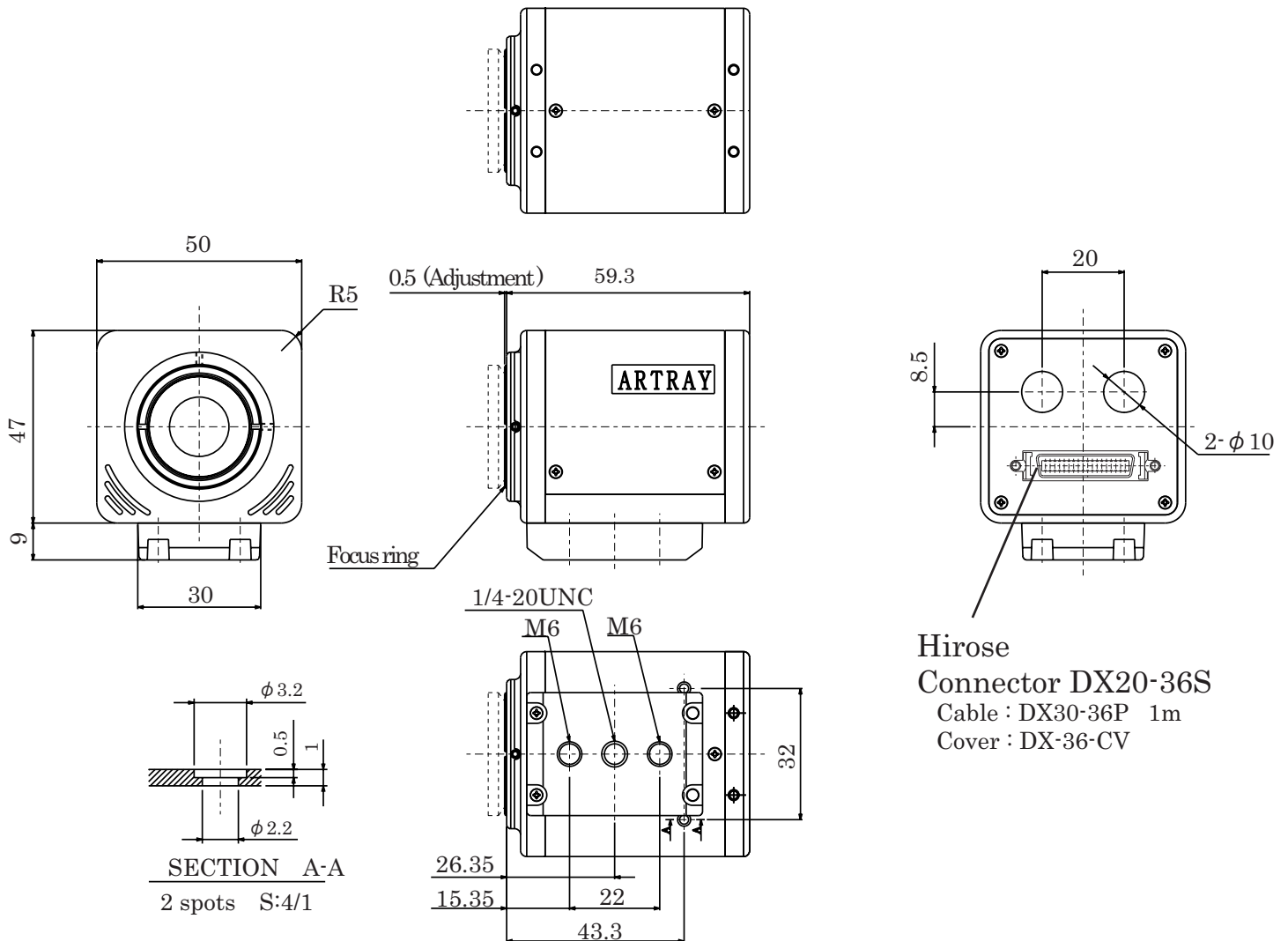
ARTCAM-036MI-TWIN

7. Specifications of camera

	ARTCAM-036MI
1.　Image pick up device	1/3"CMOS
2.　Color mothod	Single-panel CMOS color method
3.　Max. resoluion	0.36M pixel
4.　Lens size	1/3"format
5.　Soan mode	Progressive
6.　Pixel size	6.0μm x 6.0μm (4.51 x 2.88 pixel areas)
7.　S/N ratio	54dB
8.　Sensitivity	2.0V/Lux-sec(550nm)
9.　Electric shutter mode	Manual 1/30-1/20000, Global shutter
10.　White balance	Manual/auto, switchable
11.　Synchro system	Internal syschro
12.　Flange back	Manual adjustment
13.　Lens mount	C mount(Lens is NOT included)
14.　Offset	Manual adjustment
15.　Gain	Manual adjustment
16.　Power supply	DC5V（SELV）
17.　Power condensing	2.4W approx
18.　Ambient temperature and humidity	0-35℃(recommended), 80%(non-condensing)
19.　Dimension and weight	50(W)×56(H)×59.3(D)mm,180g approx 　 x 2

Electric characteristics

NO	Parameter	SPEC	Comment	Remark
1	Power	+5V 0.48A		supplied by USB port
2	Shutter control	Manual adjustment		software control
3	Gain control	Manual adjustment		software control
4	S/N ratio	54dB		
5	γ characteristics	1.0 fixed		
6	Power consumption	<2.0W		
7	Image interface	USB2, digital output		

Image pick up device

NO	Parameter	SPEC	Comment	Remark
1	Imager	MI9V022		
2	Optical size	Equivalent to 1/3"		
3	Total resolution			
4	Max resolution	752 x 480		
5	Pixel size	6.0 x 6.0 um		
6	Sensitivity	2.0V/Lux-sec(550nm)		
7	IR cutting filter	color:have		

Physical specifications

NO	Parameter	SPEC	Comment	Remark
1	Lens	C mount		
2	Max weight	180g approx x2 (with cable)		
3	Dimension	50 x 56 x 59.3mm		
4	Material of enclosure	Aluminium		

Operating environment

NO	Parameter	SPEC	Comment	Remark
1	Operating temperature	-10-50℃ (10-95%RH、non-condesing)		
2	Storage temperature	-35-80℃ (10-95%RH、non-condesing)		
3	MTBF	70K hours(at 60℃)		
4	EMI	EN61000-6-4		
5	EMS	EN61000-6-2		
6	Vibration	Acceleration:29.4M/S Frequency:5-200Hz Sweep cycle:10min Test time: Ups and down 2h Left and right 2h Back and fouth 2h Tesk OK		

Technical standard

NO	Parameter	SPEC	Comment	Remark
1	UL approved	Materials used in wiring are compliant with UL. Storage temperature (10-95%RH, non-condensing)		
2	CE	Under Application		

<<System requirements>>
PCs which use south-bridge of ICH4,ICH5 and ICH6 are recommended
*CPU: Pentium4 1.7GHz or higher
  Embedded USB2.0 port (PCI/PCMCIA USB2.0 ports are not compliant)
*Memory 512MB or higher
*OS Windows 2000(SP4)/XP(SP1)

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Refer to the restrictions below when using ARTCAM/ARTCNV

1. USB host chip

Use the USB host chip which is Intel authorized USB2 host controller.
Make sure if you find "Intel®82801DB/DBM USB2 ENHANCED HOST CONTROLLER" on USB
Controller window according to the following procedure.

"Control Panel" -> "Hardware" -> "Device Manager" -> "USB Controller"

NOTICE: We cannot guarantee the proper operation of this camera/converter when you use the
external USB host card due to its design and its transfer rate. The transfer speed is slow because
it is connected to host via PCI bus. In case of using ARTCNV, color transfer is not available.
(Only Monochrome.)

2. Hyper Thread Bios

Disable this function in case of PC with a built-in Intel hyper thread.

3. With the other USB2.0 hardware

  You may be unable to use the other USB2.0 hardware such as Memory stick, External HDD,
External DVD, CDROM and etc. when you use this camera/converter due to bulk transfer mode
of this camera/converter.
  It is because bulk transfer device is not recognized, especially in case of Cypress control chip,
due to handshaking of USB port and PC bios.
  It is hard to solve this matter for the reason that it is related to the lower firmware of control
chip and PC bios.
  As a recommended measure, add PCI USB host card on PC and use its USB ports for the
external USB hardware.

4. Extension of USB2.0 cable

  We cannot guarantee the proper operation of the extension cable even though it is compatible
with USB2.0 except the extension cables below we have confirmed its proper operation because
USB transfer frequency of this camera is 192MHz.

For the recommended extension cable, we refer you to our sales dep't. (TEL: +81-3-3389-5488)

  In case of the trouble using the extension cable, you may have "Camera error", "Disappearance
of Device driver", " Operation error in high-speed mode", "Unknown USB device" and etc.