

CIS

CIS

Camera & Imaging Systems
PRODUCT LINEUP

CIS Corporation

- HQ・Factory
539-5, Higashi Asakawa-machi, Hachioji-shi, Tokyo,
193-0834, JAPAN
Tel 042-664-5535 fax 042-669-7471
- Hachioji OFFICE (Sales Div. / Engineering Div.)
6F, 9-8, Azuma-cho, Hachioji-shi, Tokyo,
192-0082, JAPAN
Tel 042-664-5568 fax 042-645-0441
- Higashi Nakano OFFICE (Solution Development Center)
2F, 5-5-5, Tokumasu Bldg., Higashi Nakano,
Nakano-Ku, Tokyo, 164-0003, JAPAN

E-mail: cisinfo@ciscorp.co.jp
URL http://www.ciscorp.co.jp/index_en.php

Distributor

● Please visit our web site, http://www.ciscorp.co.jp/index_en.php for the details.
● Information on this catalogue is subject to change without prior notice.
● All other brand and product names appearing in this document are registered trademarks or trademarks of their respective holders

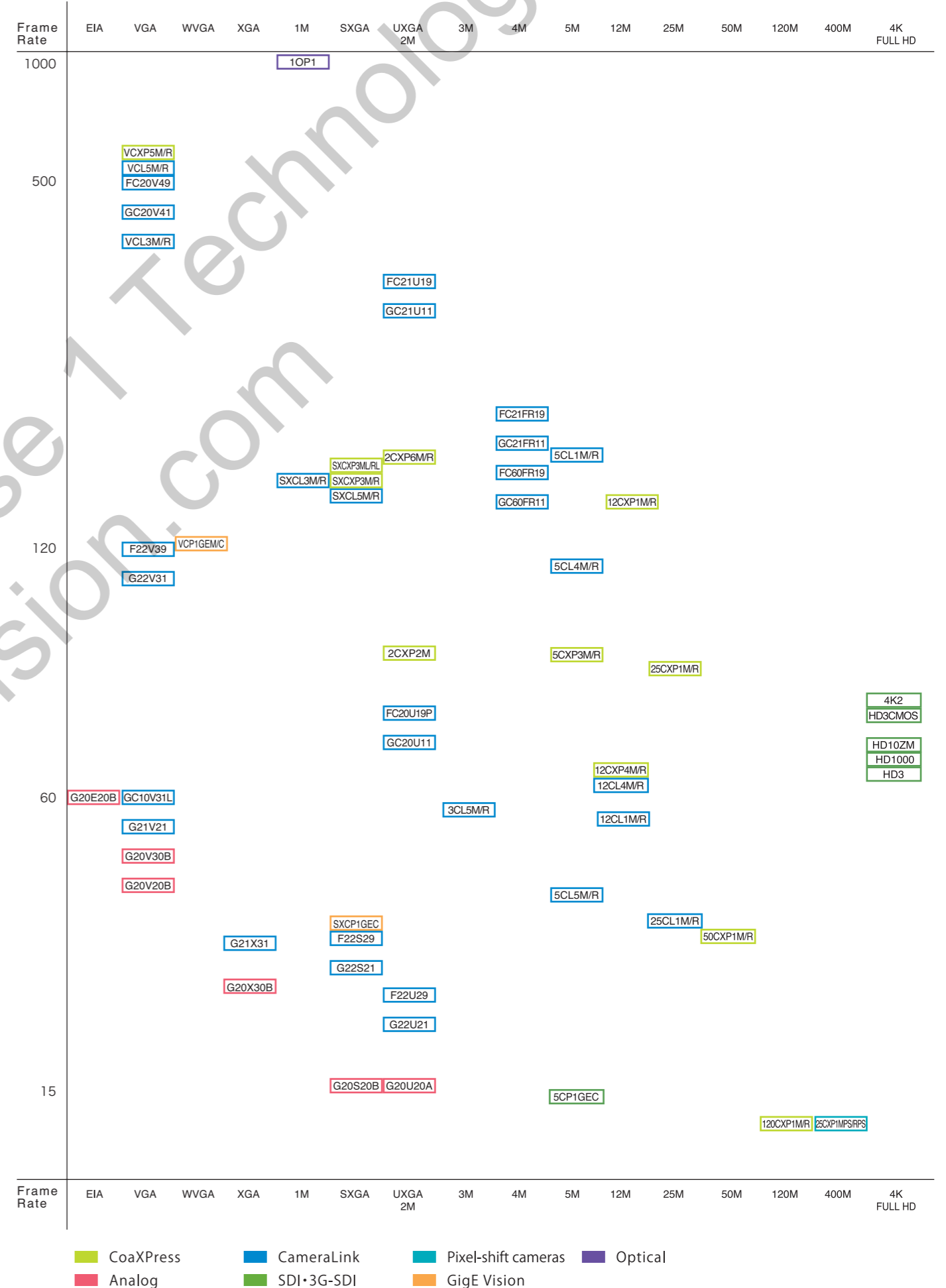


Selection Guide

Interface	Sensor	Resolution
CoaXPress	CMOS	VGA•SXGA•2M•5.3M•12M•25M•50M•120M•400M
Camera Link	CMOS	VGA•SXGA•2M•3M•4M•5M•5.2M•12M•25M
Camera Link	CCD	VGA•XGA•SXGA•UXGA
Optical	CMOS	1M
SDI•3G-SDI	CMOS	4K•Full HD
GigE Vision (PoE)	CMOS	WVGA•5M
Analog	CCD	EIA•VGA•XGA•SXGA•UXGA

Index

Corporate Profile	P.3 - P.4	About us
Pixel-shift Technology	P.11 - P.12	Pixel-shift Technology • Sensor-shift Technology • Customized Piezo Stage
High Speed Camera Systems	P.13	High Speed Camera Systems
ISP Algorithm	P.15	Introduction to Clairvu™
Information	P.17 - P.18	Board Cameras • Semi-custom Lens • Image Processing System Solutions



About us

Corporate name	CIS Corporation
HQ location	Head Quarter / Factory 539-5, Higashi Asakawa-machi, Hachioji-shi, Tokyo, 193-0834, JAPAN Tel 042-664-5535 fax 042-669-7471
Foundation	September 1st, 1978
Employees	128
Office locations	Hachioji OFFICE (Sales Div., Engineering Div.) 6F, 9-8, Azuma-cho, Hachioji-shi, Tokyo, 192-0082, JAPAN Tel 042-664-5568 fax 042-645-0441 Higashi Nakano OFFICE (Solution Development Center) 2F, 5-5-5, Tokumasu Bldg., Higashi Nakano, Nakano-Ku, Tokyo, 164-0003, JAPAN
ISO	ISO9001:2008 edition ISO14001

Corporate History

Sep. 1978	Founded CAFLO Corporation
Mar. 1991	Started manufacturing VCC camera series (CCD models)
Jan. 1992	Renamed to CIS Corporation
May. 1995	Acquired ISO9002 certification
Nov. 1995	First shipment of CE certified products
Jun. 1996	Started manufacturing digital cameras
May 1998	Acquired ISO9001 certification
Dec. 2000	Acquired ISO14001 certification
Apr. 2002	Increased capital to 60 Million YEN
Nov. 2002	Acquired ISO9001 certification, year 2000 version
Aug. 2003	Certified as SONY Green Partner
Oct. 2004	Increased capital to 90 Million YEN
Oct. 2005	Established Software Development Center
Sep. 2007	Opened Hachioji Office
May. 2011	Opened Solution Development Center in Nakano, Japan
Mar. 2015	Required ISO14001 certification

From Camera to Imaging Systems

Imaging System Solution

CIS has consistently pursued "small footprint", "high speed", and "high performance" in our product design and development. While maintaining these key product features, CIS is pursuing new technologies such as new sensors, new digital interface, hardware and software integration, and proprietary signal processing algorithm.

CIS offers total imaging solution to meet with customers' various needs, by way of proposing optimal system architecture and the most suitable camera interface, electric and mechanical design, development of system software, and when applicable, development of image processing application software.

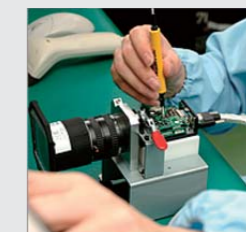
Expert Engineering Teams

We have in-house professional teams devoted to mechanical design, circuit design, FPGA logic development, system software development and algorithm development. From planning to design, entire engineering processes are handled within CIS.

We can provide one-stop-shop services for realizing your requirements in design, development and mass production of image processing systems and cameras.

Furthermore, we have started releasing unique, high image-quality color cameras incorporating Clairvu™, CIS's proprietary image processing engine.

Manufacturing



CIS runs its own clean rooms for the assembly and inspection in Tokyo, Japan.

With its thorough quality assurance system and know-hows acquired over 20+ years in operation, we have won high appraisal from our customers, and we shall strive to remain so.

VGA
SXGA
Models with LED controller



CMOS	VGA High speed 523fps	SXGA High speed	SXGA with LED control
Interface	CXP3 × 1lane	CXP1 - CXP3 × 1lane	CXP1 - CXP3 × 1lane
Model name	VCC-VCXP5M VCC-VCXP5R	VCC-SXCXP3M VCC-SXCXP3R VCC-SXCXP3NIR	VCC-SXCXP3ML
Sensor	Pregius IMX287	PYTHON 1300	PYTHON 1300
Sensor size	1/2.9 type CMOS	1/2 type CMOS	1/2 type CMOS
Unit cell size (μm)	6.9 μm × 6.9 μm	4.8 μm × 4.8 μm	4.8 μm × 4.8 μm
Effective pixels (H) × (V)	728 × 544	1280 × 1024	1280 × 1024
Resolution	VGA	SXGA	SXGA
Frame rate	587fps(atVGA), 523fps(8bit), 437fps(10bit), 320fps(12bit)	84fps(CXP1), 168fps(CXP2), 168fps(CXP3)	84fps(CXP1), 168fps(CXP2), 168fps(CXP3)
Pixel clock	74.25MHz	72 MHz	72MHz
Shutter	OFF~1/20,000s	OFF~1/10,000s	OFF~1/10,000s
Lens mount	C mount	C mount	C mount
Dimensions (W)x(H)x(D)mm	29 × 29 × 29	29 × 29 × 29	29 × 29 × 55
Features	Connector:BNC ROI, H&V flip, Defective pixel correction, Shading correction, Gain:0 ~ 42dB, Long distance transmission	Connector:BNC External trigger, Sub-sampling, ROI, Defective pixel correction, NIR model also available, PoCXP, Sequence control, Long distance transmission	Connector:BNC Sequence control (lighting can be controlled as well), PoCXP, External power supply shall be up to 46W, Long distance transmission

(Please ask us for compatible CCS products.)

2M
5.3M



CMOS	2M High speed	2M High speed	5.3M High speed
Interface	CXP1 - CXP3 × 1lane	CXP3 · CXP6 × 1lane	CXP1 - CXP6 × 1lane
Model name	VCC-2CXP2M	VCC-2CXP6M VCC-2CXP6R	VCC-5CXP3M VCC-5CXP3R VCC-5CXP3NIR
Sensor	PYTHON 2000	Pregius IMX422	PYTHON 5000
Sensor size	2/3 type CMOS	1/1.7 type CMOS	1 type CMOS
Unit cell size (μm)	4.8 μm × 4.8 μm	4.5 μm × 4.5 μm	4.8 μm × 4.8 μm
Effective pixels (H) × (V)	1984 × 1264	1632 × 1248	2592 × 2048
Resolution	2M	UXGA	5.3M
Frame rate	42fps(CXP1), 85fps(CXP2), 85fps(CXP3)	239fps (CXP6·8bit) 119.5fps (CXP3·8bit)	21fps (CXP1), 43fps(CXP2) 43fps (CXP3), 85fps (CXP5·CXP6)
Pixel clock	72MHz	74.25MHz	72MHz
Shutter	OFF~1/5,000s	TBD	OFF~1/10,000s
Lens mount	C mount	C mount	C mount
Dimensions (W)x(H)x(D)mm	29 × 29 × 29	29 × 29 × 55	29 × 29 × 55
Features	Connector:BNC External trigger, ROI, Defective pixel correction, Shading Correction, Sub-sampling, PoCXP, Long distance transmission	Connector:BNC 2 × 2 binning (B/W model only), Defective pixel correction, ROI (Vertical direction only), PoCXP, Long distance transmission	Connector:BNC, External trigger, Sub-sampling, ROI, Defective pixel correction, NIR model also available, PoCXP, Shading correction, Sequence control, Long distance transmission

12M
25M



CMOS	12M High speed	12M High speed 63fps	25M High speed
Interface	CXP1 - CXP6 × 4lanes	CXP3 - CXP6 × 2lanes	CXP6 × 4lanes
Model name	VCC-12CXP1M VCC-12CXP1R	VCC-12CXP4M VCC-12CXP4R	VCC-25CXP1M VCC-25CXP1R
Sensor	PYTHON 12K	Pregius IMX253	PYTHON 25K
Sensor size	4/3 type CMOS	1.1 type CMOS	APS-H CMOS
Unit cell size (μm)	4.5 μm × 4.5 μm	3.45 μm × 3.45 μm	4.5 μm × 4.5 μm
Effective pixels (H) × (V)	4096 × 3072	4096 × 3000	5120 × 5120
Resolution	12M	12M	25M
Frame rate	31fps(CXP1), 58fps(CXP2), 78fps(CXP3), 163fps(CXP6 × 4lanes)	65fps(CXP6 × 2lanes), 32fps(CXP6), 16fps(CXP3)	82fps (CXP6 × 4lanes)
Pixel clock	72MHz	74.25MHz	72MHz
Shutter	1/30~1/30,000s	OFF~1/51,000s	1/30~1/30,000s
Lens mount	M48 mount	M42 mount	M48 mount
Dimensions (W)x(H)x(D)mm	65 × 65 × 65	55 × 55 × 30	65 × 65 × 65
Features	Connector:DIN ROI, External trigger, Sub-sampling, Defective pixel correction, Sequence control, PoCXP, Long distance transmission	External trigger, 2 × 2 binning (B/W model only), Defective pixel correction, ROI (Vertical direction only), Shading correction, Gain 0~36dB, Long distance transmission	Connector:DIN ROI, Sub-sampling, Defective pixel correction, Sequence control, PoCXP, Long distance transmission

50M
120M



CMOS	50M High resolution	120M High Resolution
Interface	CoaXPress 12.5Gbps complied	CXP3/6 × 4 lanes, 6 × 2lanes
Model name	VCC-50CXP1M VCC-50CXP1R	VCC-120CXP1M VCC-120CXP1R
Sensor	CMV50000	120MXSM
Sensor size	35mm CMOS	APS-H CMOS
Unit cell size (μm)	4.6 μm × 4.6 μm	2.2 μm × 2.2 μm
Effective pixels (H) × (V)	7920 × 6004	13264 × 9180
Resolution	50M	120M
Frame rate	30fps	9.4fps
Pixel clock	69MHz	1152MHz
Shutter	TBD	OFF~1/20,000s
Lens mount	M58 mount	M48 mount
Dimensions (W)x(H)x(D)mm	75 × 75 × 85	65 × 65 × 68
Features	CoaXPress bit rates CXP-3/6/12, PoCXP IF 4lanes, External trigger, Exposure, Gain setting, ROI, Defective pixel correction, Shading correction, Long distance transmission	Ultra-high resolution, High-speed processing, Strobe out, Long time exposure, PoCXP, Long distance transmission

VGA



CMOS	VGA 1TAP,2TAP,3TAP	VGA 1TAP,2TAP,3TAP Pixel clock selectable	VGA
Interface	PoCL・non-PoCL (Auto selection)	PoCL・non-PoCL (Auto selection)	PoCL・non-PoCL
Model name (B/W/Color)	VCC-VCL3M VCC-VCL3R	VCC-VCL5M VCC-VCL3R	VCC-GC20V41CL / PCL VCC-FC20V49CL / PCL
Sensor	PYTHON 300	Pregius IMX287	CMV2000
Sensor size	1/4 type CMOS	1/2.9 type CMOS	1/4 type CMOS
Unit cell size (μm)	4.8 μm × 4.8 μm	6.9 μm × 6.9 μm	5.5 μm × 5.5 μm
Effective pixels (H) × (V)	640 × 480	720 × 540	640 × 480
Resolution	VGA	VGA	VGA
Frame rate	Base: 538fps(3tap) 268fps(2tap) 134fps(1tap)	Base: 519fps(3tap/at full pixel) / 578fps(3tap/at VGA) 317fps(2tap) 175fps(1tap)	Base: 502fps(2tap)
Pixel clock	72MHz・36MHz (Selectable at 2TAP output)	74.25MHz・64.969MHz・37.125MHz (Selectable)	79.99MHz
Shutter	OFF ~ 1/10,752s	OFF ~ 1/50,000s	OFF ~ 1/50,000s
Lens mount	C mount	C mount	C mount
Dimensions (W)×(H)×(D)mm	29×29×29	29×29×29	29×29×29
Features	Corresponds to 3TAP, External trigger, ROI, Sub-sampling, Defective pixel correction, Power auto selection	Corresponds to 3TAP, Defective pixel correction, One push white balance, Power auto selection, External trigger, ROI, 8bit/10bit/12bit output, Shading correction, Cursor indication, H&V flip	High speed 500fps, External trigger, ROI, Low power consumption 1.6W

2M

3M

4M



※CIS provides customer support for this model only to the customers who currently use this model.

CMOS	2M High speed	3M High speed	4M High speed/Thin type
Interface	PoCL・non-PoCL	PoCL・non-PoCL (Auto selection)	PoCL・non-PoCL (Selectable)
Model name (B/W/Color)	VCC-GC20U11CL / PCL VCC-FC20U19CL / PCL	VCC-3CL5M VCC-3CL5R	VCC-GC60FR11CL VCC-F60FR19CL
Sensor	CMV2000	Pregius IMX265	CMV4000
Sensor size	2/3 type CMOS	1/1.8 type CMOS	1 type CMOS
Unit cell size (μm)	5.5 μm × 5.5 μm	3.45 μm × 3.45 μm	5.5 μm × 5.5 μm
Effective pixels (H) × (V)	2048 × 1088	2064 × 1544	2048 × 2048
Resolution	2M	3M	4M
Frame rate	Base: 71fps(2tap)	Base: 55fps(3tap) 45fps(2tap) 22fps(1tap)	Base: 17fps(1tap), 34fps(2tap) Med: 68fps(4tap) Full: 135fps(8tap)
Pixel clock	79.99MHz	74.25MHz	72MHz
Shutter	OFF ~ 1/50,000s	OFF ~ 1/50,000s	OFF ~ 1/50,000s
Lens mount	C mount	C mount	M42 mount
Dimensions (W)×(H)×(D)mm	29×29×29	29×29×29	55×55×25
Features	External trigger, ROI, Manual gain control, 8bit/12bit output, Gain: 0 ~ 12dB	External trigger, ROI, Manual gain control, Power auto selection, Gain: 0 ~ 42dB	External trigger, Vertical 8 positions ROI, Manual gain control, 8bit/10bit output(1TAP, 2TAP, 4TAP, 8TAP), Gain: 0 ~ 12dB

VGA

SXGA



CMOS	VGA Ultra small 22mm cubic in size	SXGA 1TAP,2TAP,3TAP Pixel clock selectable	SXGA 1TAP,2TAP,3TAP Pixel clock selectable
Interface	PoCL-Lite	PoCL・non-PoCL (Auto selection)	PoCL・non-PoCL (Auto selection)
Model name (B/W/Color)	VCC-GC10V31L	VCC-SXCL3M VCC-SXCL3R	VCC-SXCL5M VCC-SXCL5R
Sensor	MT9V024	PYTHON 1300	Pregius IMX273
Sensor size	1/3 type CMOS	1/2 type CMOS	1/2.9 type CMOS
Unit cell size (μm)	6.0 μm × 6.0 μm	4.8 μm × 4.8 μm	3.45 μm × 3.45 μm
Effective pixels (H) × (V)	752 × 480	1280 × 1024	1440 × 1080
Resolution	VGA	SXGA	SXGA
Frame rate	60fps	Base: 152fps(3tap) 84fps(2tap) 42fps(1tap)	Base: 136fps(3tap) 91fps(2tap) 46fps(1tap)
Pixel clock	24.545 MHz	72MHz・36MHz (Selectable at 2TAP output)	74.25MHz・64.969MHz・37.125MHz (Selectable)
Shutter	OFF ~ 1/30,000s	OFF ~ 1/10,000s	1/24 ~ 1/50,000s
Lens mount	NF mount	C mount	C mount
Dimensions (W)×(H)×(D)mm	22×22×22	29×29×29	29×29×29
Features	Ultra compact size (22mm cubic, 19g), External trigger, ROI, Low power consumption 0.65W, NIR sensitivity	Corresponds to 3TAP, External trigger, ROI, Sub-sampling, Defective pixel correction, Power auto selection, NIR model also available	Corresponds to 3TAP, Defective pixel correction, 2×2 Binning (B/W model only), One push white balance, Power auto selection, External trigger, ROI, 8bit/10bit/12bit output, Shading correction, Cursor indication, H&V flip

5M

5.2M



CMOS	5M 29mm Cubic size	5M High speed/Variou features/Thin type	5.2M High speed/Variou features/Thin type
Interface	PoCL・non-PoCL (Auto selection)	PoCL・non-PoCL (Selectable)	PoCL・non-PoCL (Selectable)
Model name (B/W/Color)	VCC-5CL5M/VCC-5CL5M63 VCC-5CL5R/VCC-5CL5R63	VCC-5CL4M/VCC-5CL4MHS VCC-5CL4R/VCC-5CL4RHS	VCC-5CL1M VCC-5CL1R
Sensor	Pregius IMX264	Pregius IMX250	Lincc 5M
Sensor size	2/3 type CMOS	2/3 type CMOS	1 type CMOS
Unit cell size (μm)	3.45 μm × 3.45 μm	3.45 μm × 3.45 μm	5.0 μm × 5.0 μm
Effective pixels (H) × (V)	2464 × 2056	2448 × 2048	2560 × 2048
Resolution	5M	5M	5.2M
Frame rate	Base: 15fps (1tap) 29fps (2tap) 36fps (3tap)	Base: 28fps(2tap) 8bit/10bit Base: 42fps(3tap) 8bit Med: 57fps(4tap) 8bit/10bit Full: 114fps(8tap) 8bit Deca: 114fps (8tap) 10bit Deca: 163fps (10tap 8bit) HS model	Base: 30fps(2tap) Med: 59fps(4tap) Full: 117fps(8tap) Deca: 140fps (10Tap 8bit), 117fps (8Tap 10bit)
Pixel clock	74.25MHz(5CL5 series)/63.643MHz(Only 63 model is selectable)	74.25MHz / 84.9MHz (HS model)	80MHz
Shutter	OFF ~ 1/20,000s	OFF ~ 1/55,000s OFF ~ 1/60,000s (HS model)	OFF ~ 1/99,000s (10Tap Configuration)
Lens mount	C mount	M42 mount	M42 mount
Dimensions (W)×(H)×(D)mm	29×29×29	55×55×25	65×65×31
Features	External trigger, ROI, Defective pixel correction, Manual gain control, Gain: 0 ~ 42dB	External trigger, Vertical ROI, Defective pixel correction, Gain: 0 ~ 36dB	External trigger, ROI, Sequence function, Manual gain control, Binarization, Shading correction, AE, AGC, Binning, Gain: 0 ~ 36dB

12M



CMOS	12M High speed/Various features	12M
Interface	PoCL・non-PoCL (Selectable)	PoCL・non-PoCL (Selectable)
Model name (B/W/Color)	VCC-12CL1M VCC-12CL1R	VCC-12CL4M VCC-12CL4R
Sensor	KAC-12040	Pregius IMX253
Sensor size	4/3 type CMOS	1.1 type CMOS
Unit cell size (μm)	4.7 μm × 4.7 μm	3.45 μm × 3.45 μm
Effective pixels (H) × (V)	4000 × 3000	4096 × 3000
Resolution	12M	12M
Frame rate	Med: 22fps (4tap) Full: 43fps (8tap) Deca: 54fps (10tap・8bit), 43fps (8tap・10bit)	Base: 13fps (2tap) Med: 27fps (4tap) Full: 53fps (8tap) Deca: 63fps (10tap・8bit), 53fps (8tap・10bit)
Pixel clock	72MHz	84.86MHz
Shutter	OFF ~ 1/34,000s (10Tap Configuration)	OFF ~ 1/51,000 s
Lens mount	M42 mount	M42 mount
Dimensions (W) × (H) × (D) mm	65 × 65 × 50	55 × 55 × 25
Features	External trigger, Sequence function, Binarization, Shading correction, AE, AGC, ROI, Connector position is selectable at order	Camera Link, Base, Medium, Full, 8tap10bit, 10tap8bit complied, Fixed trigger shutter mode, Pulse width trigger shutter mode, Gain: 0 ~ 36dB

25M



CMOS	25M High speed/Various features
Interface	PoCL・non-PoCL (Selectable)
Model name (B/W/Color)	VCC-25CL1M VCC-25CL1R
Sensor	PYTHON25K
Sensor size	APS-H CMOS
Unit cell size (μm)	4.5 μm × 4.5 μm
Effective pixels (H) × (V)	5120 × 5120
Resolution	25M
Frame rate	Base: 5fps (2tap) 8bit / 10bit Med: 11fps (4tap) 8bit / 10bit Full: 22 / 25fps (8tap) 8bit Deca: 32fps (10tap) 8bit
Pixel clock	72MHz (2・4・8tap) / 85MHz (8・10tap)
Shutter	1/32 ~ 1/30,000s
Lens mount	M48 mount
Dimensions (W) × (H) × (D) mm	65 × 65 × 40.5
Features	External trigger, ROI, Defective pixel correction, Shading correction, Sequence function, Binning

VGA

XGA

Since CCD Camera Link cameras are to be discontinued, CIS provides customer support for these models only to the customers who currently use them.



CCD	VGA	VGA	XGA
Interface	PoCL・non-PoCL・PoCL-Lite	PoCL	PoCL・non-PoCL・PoCL-Lite
Model name (B/W/Color)	VCC-G22V31ACL/APCL VCC-F22V39ACL/APCL	VCC-G21V21ACL/APCL	VCC-G21X31ACL/APCL
Sensor	ICX424L・ICX424AQ	ICX414AL	ICX204AL
Sensor size	1/3 type CCD	1/2 type CCD	1/3 type CCD
Unit cell size (μm)	7.4 μm × 7.4 μm	9.9 μm × 9.9 μm	4.65 μm × 4.65 μm
Effective pixels (H) × (V)	659 × 494	659 × 494	1034 × 779
Resolution	VGA	VGA	XGA
Frame rate	120fps	60fps	36fps
Pixel clock	49MHz	24.54MHz	36MHz
Shutter	OFF (1/120s) ~ 1/100,000s	OFF (1/60s) ~ 1/50,000s	OFF (1/36s) ~ 1/48,000s
Lens mount	C mount	C mount	C mount
Dimensions (W) × (H) × (D) mm	29 × 29 × 29	29 × 29 × 29	29 × 29 × 29
Features	External trigger, Partial scan, 8bit/10bit output	External trigger, Partial scan, 8bit/10bit output	External trigger, ROI, Partial scan, Binning, 8bit/10bit output

SXGA

UXGA



CCD	SXGA	UXGA
Interface	PoCL・non-PoCL・PoCL-Lite	PoCL・non-PoCL・PoCL-Lite
Model name (B/W/Color)	VCC-G22S21ACL/APCL VCC-F22S29ACL/APCL	VCC-G22U21ACL/APCL VCC-F22U29ACL/APCL
Sensor	ICX267AL・ICX267AK	ICX274AL・ICX274AQ
Sensor size	1/2 type CCD	1/1.8 type CCD
Unit cell size (μm)	4.65 μm × 4.65 μm	4.4 μm × 4.4 μm
Effective pixels (H) × (V)	1392 × 1040	1628 × 1236
Resolution	SXGA	UXGA
Frame rate	25fps	20fps
Pixel clock	49MHz	49MHz
Shutter	OFF (1/25s) ~ 1/90,000s	OFF (1/20s) ~ 1/40,000s
Lens mount	C mount	C mount
Dimensions (W) × (H) × (D) mm	29 × 29 × 29	29 × 29 × 29
Features	External trigger, Partial scan, ROI, 8bit/10bit output	External trigger, Partial scan, ROI, 8bit/10bit output

400M



CMOS	Max400M pixels Ultra-high resolution
Interface	CoaXPress
Model name	(B/W) VCC-25CXP1MPS (Color) VCC-25CXP1RPS
Sensor	PYTHON25K
Sensor size	APS-H CMOS
Unit cell size (μm)	4.5 μm × 4.5 μm
Effective pixels(H) × (V)	5120 × 5120
Resolution	(B/W) 25M·100M·400M (Color) 25M·25M(Equivalent to 3CMOS True color)·104M(Equivalent to 3CMOS True color)
Frame rate	(B/W) 81fps·10fps·2.5fps (Color) 81fps·4fps
Pixel clock	72MHz
Shutter	1/30~1/30,000s
Lens mount	M48 mount
Dimensions(W)x(H)x(D)mm	65×65×77
Features	Global shutter, DIN connector B/W : 20480 × 20480 Color : 5120 × 5120 / 10240 × 10240 (Equivalent to 3CMOS True color) Build-in Piezo actuator drive unit

Pixel-shift Technology

CIS realized ultra-high resolution cameras by using patented piezo-actuator-based pixel shift technology.

This technology increases the resolution by shifting the sensor in μm order, creating virtual pixels in between physical pixels, and by synthesizing images obtained at each position. For color models, the same technology is applied for obtaining all R, G, and B information in each and every pixel, thereby producing an image quality equivalent to 3-image sensor cameras. These cameras are suitable not only for Machine Vision applications, but also for research applications and image archiving purposes.

Enlarged images using pixel-shift technology.

108M Pix 324M Pix

Images of LCD captured by 12M color pixel-shift camera.

Non-pixel shift Pixel shift

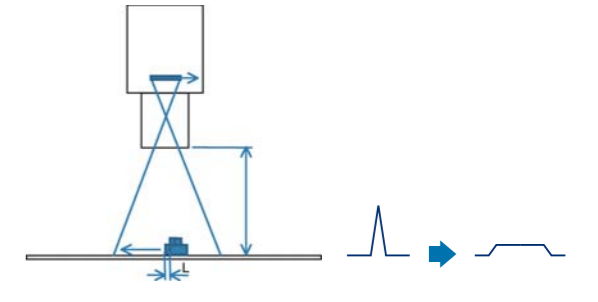
Sensor shift Technology

When shooting a fast moving object for image measurement and image analyzing applications, image blur occurs due to the movement of the object during exposure. The conventional method to avoid this issue was to shorten the exposure time, resulting in the need for stronger lighting, hence higher cost.

Sensor shift technology enables longer exposure time, resulting in crisper images under normal lighting conditions.

【Key advantages】

- ◆ Clear and crisp images without blur...
Improves measurement and recognition accuracy
- ◆ Longer exposure time
Lighting: Increase exposure time and reduce power
Lens: Bigger F value and increase depth of field
Camera: Lower gain level and improve image quality



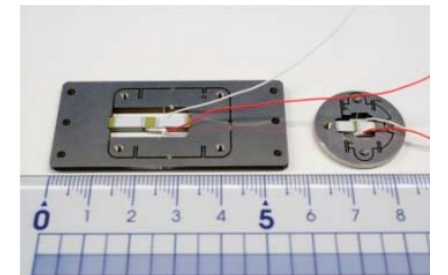
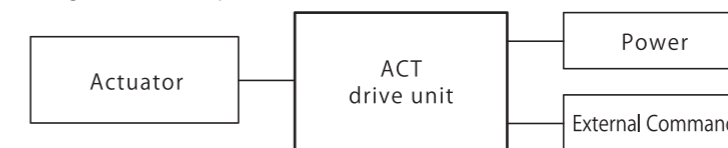
Custom Motion-stage Solutions

We provide custom piezo-actuator-based motion stages featuring high accuracy and high cycle time.

【Features】

- High accuracy positioning
(Guaranteed accuracy via proprietary open-loop control)
- High cycle time
- Control and drive circuit
- Customized configuration/XY axis available.
- Small drive unit

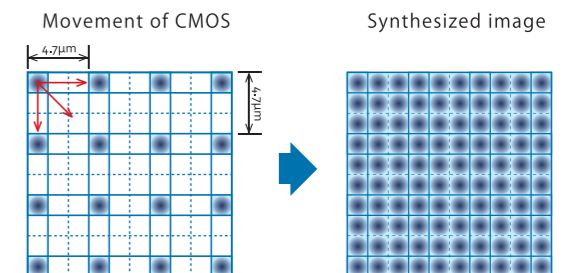
【Configuration Example】



【Precise image sensor positioning】

In the case of VCC-12CL1RPS, an ultra high def image of 324M pix. is generated using 12M pixel CMOS. This is done by shifting X and Y axes between the sensor's pixel pitch 5 times in each direction (5x5 of 4.7 μm/5), capturing images at each position, and synthesizing them to create a single image.

Displacement accuracy of the pixel shift is less than ±0.2 μm.
The time required for the CMOS to move to the predefined position is less than 10ms.



1M 1000fps



CMOS	Optical Interface 1M 1000fps
Interface	Optical
Model name	^(B/W) ^(Color) VCC-10P1M VCC-10P1R
Sensor	LUX1310
Sensor size	2/3 type CMOS
Unit cell size (μm)	6.6 μm × 6.6 μm
Effective pixels (H) × (V)	1280 × 1024
Resolution	1.3M
Frame rate	1077fps (at 1M mode) / 874fps (at SXGA mode)
Pixel clock	77MHz
Shutter	OFF ~ 1/90,000s
Lens mount	M42 mount
Dimensions (W)x(H)x(D)mm	65 × 65 × 101.5
Features	Opt-C:Link, Optical I/F, Fixed trigger, Pulse width trigger shutter mode, Shading correction, Sequence control, HDR, Binarization, ROI, Optical cable 150m (noiseless), H&V flip

Option

OPTION	
Optical cable (2 cables required for one camera)	5, 10, 20, 50, 100, 150m
Lens for high speed camera	SV-17095 (17mm, F0.95) SV-25095 (25mm, F0.95) VS-25085 (25mm, F0.85)
Lens mount adaptor	M42-F mount conversion M42-C mount conversion

VCC-10P1M/R is an optical interface camera with 2/3 type SXGA CMOS image sensor. With high speed data output rate of 6.25Gbps x 2ch., the camera outputs max.1077fps at 1024 x 1024 resolution, and 874fps at SXGA resolution. Optical I/F enables transmission of images over longer distance, and is extremely immune to environmental noise, which make this camera suitable for shooting high speed images under various conditions.

Ultra-High Speed Camera Systems

High speed imaging system for recording and replaying of images captured using VCC-10P1 R/M HS model. The frame rate at 1M pixel is 1000fps, and at 640x2 resolution, 120,000fps. Good for observing movements too fast for the human eyes to see.

【System Configuration example】

Category	Model Name	Without PC (Example of System Configuration)	With PC (Example of System Configuration)
High speed camera	VCC-10P1RHS (Color) VCC-10P1MHS (Monochrome)	Color, B/W Selection	Color, B/W Selection
PC Interface Board	APX-3800	○	—
Image Recording PC with RAID	ASI-1323optT6FH 16G RAID 2T	—	○
SDK	AZP-ACAPPLUS-01 (with recording software)	○	○
AC/DC Adaptor	S12-1.5A (12pin 12V 1.5A)	○	○
Tripod Attachment	Tripod base for 10P1	○	○
Lens for high speed camera	SV-25095 (25mm, F0.95)	○	○
Lens mount adaptor	M42-C mount conversion	○	○
Optical cable	Optical cable 1m	○	○

Frame rate	Horizontal resolution H 1280	Horizontal resolution H 1024	Horizontal resolution H 640
874 fps	1280 x 1024	1024 x 1024	640 x 1024
1,000 fps	1280 x 892	1024 x 1024	640 x 1024
2,000 fps	1280 x 440	1024 x 545	640 x 843
3,477 fps	1280 x 248	1024 x 308	640 x 480
4,000 fps	1280 x 214	1024 x 265	640 x 415
6,000 fps	1280 x 138	1024 x 173	640 x 273
8,000 fps	1280 x 101	1024 x 127	640 x 201
10,000 fps	1280 x 78	1024 x 99	640 x 159
12,000 fps	1280 x 63	1024 x 80	640 x 130
15,000 fps	1280 x 48	1024 x 62	640 x 102
23,000 fps	1280 x 26	1024 x 36	640 x 62
35,000 fps	1280 x 12	1024 x 18	640 x 36
57,000 fps	1280 x 2	1024 x 6	640 x 18
80,000 fps			640 x 8
120,000 fps			640 x 2

Setting examples of frame rate



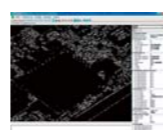
High speed camera



PC Interface Board



RAID PC



SDK

※Opt-C:Link is the registered trade mark of AVAL DATA.

- EIA
- VGA
- XGA
- SXGA
- UXGA

Since analog cameras are to be discontinued, CIS provides customer support for these models only to the customers who currently use them.



CCD	EIA double speed output	VGA	VGA
Interface	Analog	Analog	Analog
Model name	^(B/W) VCC-G20E20B	VCC-G20V20B	VCC-G20V30B
Sensor	ICX418AL	ICX414AL	ICX424AL
Sensor size	1/2 type CCD	1/2 type CCD	1/3 type CCD
Unit cell size (μm)	8.4 μm × 9.8 μm	9.9 μm × 9.9 μm	7.4 μm × 7.4 μm
Effective pixels (H) × (V)	768 × 494	659 × 494	659 × 494
Resolution	380K EIA	VGA	VGA
Frame rate	30fps/60fps	30fps/60fps	30fps/60fps
Pixel clock	14.318 / 28.636MHz	12.273 / 24.545MHz	12.273 / 24.545MHz
Shutter	OFF ~ 1/20,000s (Double speed)	OFF ~ 1/20,000s	OFF ~ 1/20,000s
Lens mount	C mount	C mount	C mount
Dimensions (W)x(H)x(D)mm	29 × 29 × 29	29 × 29 × 29	29 × 29 × 29
Features	Analog EIA TV format output, External trigger, Restart · Reset function, Double speed output	Analog VS output, External trigger, Partial scan	Analog VS output, External trigger, Partial scan

CCD	XGA	SXGA	UXGA
Interface	Analog	Analog	Analog
Model name	^(B/W) VCC-G20X30B	VCC-G20S20B	VCC-G20U20A
Sensor	ICX204AL	ICX267AL	ICX274AL
Sensor size	1/3 type CCD	1/2 type CCD	1/1.8 type CCD
Unit cell size (μm)	4.65 μm × 4.65 μm	4.65 μm × 4.65 μm	4.4 μm × 4.4 μm
Effective pixels (H) × (V)	1034 × 779	1392 × 1040	1628 × 1236
Resolution	XGA	SXGA	UXGA
Frame rate	30fps	15fps	15fps
Pixel clock	30MHz	28.636MHz	36MHz
Shutter	OFF ~ 1/10,000s	OFF ~ 1/10,000s	OFF ~ 1/10,000s
Lens mount	C mount	C mount	C mount
Dimensions (W)x(H)x(D)mm	29 × 29 × 29	29 × 29 × 29	29 × 29 × 29
Features	Analog VS output, External trigger, Partial scan	Analog VS output, External trigger, Partial scan	Analog VS output, External trigger, Partial scan

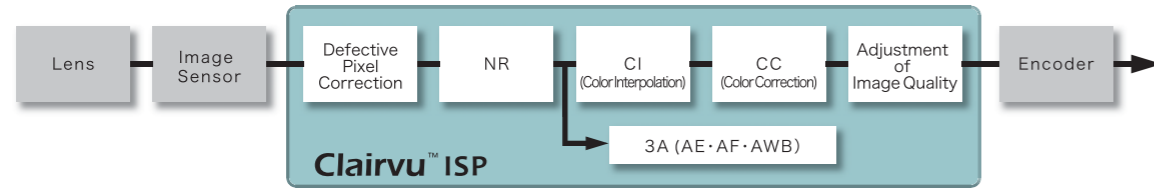
Accessories



	Camera lens mount conversion ring			AC adaptor	
Model name and part number	M48-F mount conversion ring	M42-F mount conversion ring	M42-C mount conversion ring	6pins AC adaptor	12V-1.5A-S6-A-A
				12pins AC adaptor	12V-1.5A-S12-A-A
Features	Conversion ring from M48 to F lens mount	Conversion ring from M42 to F lens mount	Conversion ring from M42 to C lens mount	In warranty only when connected to the corresponding CIS cameras and accessories.	

ISP Algorithm Clairvu™

Proprietary ISP (Image Signal Processor) engine for crisp, low pseudo-color, and low artifact, color image processing.



High Quality Image

Crisp, low pseudo-color, and low artifact color interpolation process produces high quality images equivalent to that of non-real time PC-based DPE application software.

(CC) Precise Color Correction

Enables precise color reproduction by way of sophisticated color compensation technology (multiple-axis division of the color plain)

High Speed yet Cost Effective

Algorithm engine that processes 1920x1080 progressive image signals at 60fps can be implemented into a relatively small, a medium sized FPGA.

(CI) Color Interpolation

Color interpolation process produces color images out of signal output from Bayer array color sensor, and significantly affects its image quality. "Clairvu™" enables high resolution, low pseudo-color, and low noise at the same time.

(AE) Auto Exposure

According to the detected luminance conditions, diaphragm (lens iris), gain level, and shutter speed are controlled to keep the brightness of the image constant.

(AF) Auto Focus

Contrast detection method that defines the focus position for the maximum contrast as the full focus. Eliminating signal noises as much as possible, auto focus function is effective even for difficult scenes, such as the one under low illumination, telescopic zooming, and others.

(AWB) Auto White Balance

Human eyes are color flexible and sense the original colors even when the ambient light source changes. To acquire natural images, cameras need to have a similar function to human eyes, in other words, the function to correct the color depending on illuminating conditions. This is a so-called "White Balance" function. In addition to the conventional AWB to make the average color of the image be close to gray, CIS developed auto white balance algorithm to control its balance more precisely, estimating the color of the lighting source.

<Signal Processing Technologies – Examples >

Color Correction

Sophisticated Color Compensation Technology

Color Interpolation

Low Pseudo-color

AWB

Auto white balance for natural color

- SDI·3G-SDI
- 4K
- FULL HD



CMOS	BT.2100 complied 4K UHD 60fps	BT.2100 complied 4K UHD 60fps	Lens mount Built-in ×18/×30 zoom lens
Interface	Quad 3G-SDI	Quad 3G-SDI	3G-SDI / HD-SDI
ModelName (Color)	VCC-4K2	DCC-4K2	VCC-HD10ZM (x18) VCC-HD30ZM (x30)
Sensor	Pregius IMX255	Pregius IMX255	MN34220
Sensor size	1 type CMOS	1 type CMOS	1/3 type CMOS
Unitcellsize (μm)	3.45 μm × 3.45 μm	3.45 μm × 3.45 μm	2.75 μm × 2.75 μm
Effectivepixels(H) x (V)	3840 x 2160	3840 x 2160	1944 × 1213
Video output	2160p, 1080p, 1080i	2160p, 1080p, 1080i	1080p, 1080i, 720p
SignalI/F	3G-SDI × 4ch, 3G-SDI × 1ch, HD-SDI × 1ch	3G-SDI × 4ch, 3G-SDI × 1ch, HD-SDI × 1ch	3G-SDI, HD-SDI, BNC75 Ω
Sync system	Internal sync / External sync	Internal sync / External sync	Internal sync / External sync
Shutter	OFF ~ 1/13,600s	OFF ~ 1/13,600s	1/4 ~ 1/8,000s
Lens mount	M42 mount	M42 mount	With ×18 zoom lens fw=4.7mm, ft=84.6mm
Dimensions(W)x(H)x(D)mm	65 × 65 × 110	Lens mount block 65 × 65 × 12, Main block 29 × 65 × 89 (Excluding projection)	61.2 × 55 × 98.8 (102M) 55.6 × 67.2 × 101.3 (30ZM)
Features	Image with no distortion with global shutter, ISP Clairvu™, Max. 4K 60fps high speed processing capability, SQD · 2SI system complied, Conform to Gamma curve BT.2100 (HLG), Conform to BT.709 and BT.2020, Color correction, HDR, Knee selectable, NR, LTC, GenLock, OSD	Image with no distortion with global shutter, ISP Clairvu™, Max. 4K 60fps high speed processing capability, SQD · 2SI system complied, Conform to Gamma curve BT.2100 (HLG), Conform to BT.709 and BT.2020, Color correction, HDR, Knee selectable, NR, LTC, GenLock, OSD	Rolling shutter, ISP Clairvu™, Max. 1080/60p (at 3G-SDI output) high speed processing output, Color correction, WDR, 3DNR, LTC, GenLock, OSD HD10ZM ··· ×18fw=4.7mm, ft=84.6mm HD30ZM ··· ×30fw=4.3mm, ft=129.0mm



CMOS	Compact size 1080p 60fps	Compact size 1080p 60fps	Ultra-high sensitivity FullHD 0.0005lux
Interface	3G-SDI / HD-SDI	3G-SDI / HD-SDI	3G-SDI / HD-SDI
ModelName (Color)	VCC-HD3/VCC-HD3N	DCC-HD3	VCC-HD1000 DCC-HD1000
Sensor	Pregius IMX265	Pregius IMX265	35mmFHDXSC
Sensor size	1/1.8 type CMOS	1/1.8 type CMOS	35mm Full size
Unitcellsize (μm)	3.45 μm × 3.45 μm	3.45 μm × 3.45 μm	19 μm × 19 μm
Effectivepixels(H) x (V)	1920 × 1080	1920 × 1080	1920 × 1080
Video output	1080p, 1080i, 720p	1080p, 1080i, 720p	1080p, 1080i, 720p
SignalI/F	3G-SDI, HD-SDI, BNC75 Ω	3G-SDI, HD-SDI, BNC75 Ω	3G-SDI, HD-SDI, BNC75 Ω
Sync system	Internal sync / External sync	Internal sync / External sync	Internal sync / External sync
Shutter	OFF ~ 1/13,600s	OFF ~ 1/13,600s	1 ~ 1/11,200s
Lens mount	C/CS mount (C mount conversion ring attached)	None	EF/F mount
Dimensions(W)x(H)x(D)mm	29 × 29 × 77	Sensor board 25.4 × 25.4, Main board 25.4 × 38, Driver board 25.4 × 43	75 × 75 × 85
Features	Image with no distortion with global shutter, ISP Clairvu™, Max. 1080/60p (at 3G-SDI output) high speed processing output, Color correction, NR, LTC, GenLock, OSD [VCC-HD3N additional function] BT.709 Gamma curve, GenLock Offset	Image with no distortion with global shutter, ISP Clairvu™, Max. 1080/60p (at 3G-SDI output) high speed processing output, Color correction, NR, LTC, GenLock, OSD	Rolling Shutter, ISP Clairvu™, Max. 1080/60p (at 3G-SDI output) high speed processing output, Ultra-high sensitivity 0.0005lux equivalent to ISO 4,000,000, Color correction, HDR, Knee selectable, NR, LTC, GenLock, OSD

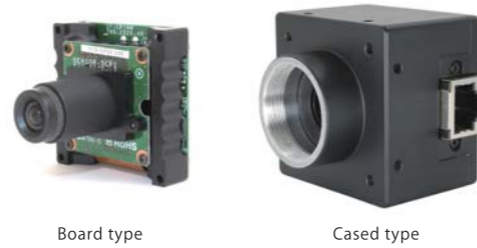


CMOS	Full HD 3CMOS camera 60fps	Remote Control Unit
Interface	3G-SDI	
ModelName (Color)	VCC-HD3CMOS	RU-100
Sensor	Pregius IMX265LL × 3	
Sensor size	1/1.8 type 3CMOS	
Unitcellsize (μm)	3.45 μm × 3.45 μm	
Effectivepixels(H) x (V)	1920 × 1080	
Resolution	1080p, 1080i, 720p	
SignalI/F	3G-SDI, HD-SDI	
Sync system	Internal sync	
Shutter	OFF ~ 1/13,600s	
Lens mount	C mount	
Dimensions(W)x(H)x(D)mm	55 × 55 × 60	
Features	Image with no distortion with global shutter, ISP Clairvu™, Max. 1080/60p (at 3G-SDI output) high speed processing output, Color correction, Day/Night lens control output, D-Range, LTC, OSD	With RU-100 connected to CIS cameras, camera settings can be done with OSD (On Screen Display). RU-100 also can be used as a converter from USB to RS-232C so that you can use it to set camera settings via PC.
Connectable Cameras	VCC-/DCC-HD3/N VCC-HD10ZM VCC-HD30ZM VCC/DCC-4K2 VCC/DCC-HD1000 VCC-HD3CMOS	

Board Cameras

Board Cameras

Must have functions ready and supports several kinds of interfaces with various sensors.
GigE Vision PoE supported, high image quality with image processing function, yet cost effective.
Both board type and cased type are prepared.



Resolution	5M		WVGA	
	GigE (PoE)		GigE (PoE)	
Interface	GigE (PoE)		GigE (PoE)	
Model name (B/W) (Color)	DCC-5CP1GEC	VCC-5CP1GEC	DCC-VCP1GEM	VCC-VCP1GEM
Type	Board	With casing	Board	With casing
Sensor	MT9P006	MT9P006	EV76C541	EV76C541
Sensor size	1/2.5type CMOS	1/2.5type CMOS	1/4type CMOS	1/4type CMOS
Unit cell size (μm)	2.2μm × 2.2μm	2.2μm × 2.2μm	4.5μm × 4.5μm	4.5μm × 4.5μm
Effective pixels (H)×(V)	2592 × 1944	2592 × 1944	752 × 480	752 × 480
Frame rate	6fps~112fps (Depends on the image size)	6fps~112fps (Depends on the image size)	30fps~120fps	30fps~120fps
Lens mount	M14mount	C mount	M14mount	C mount
Dimensions (W)×(H)×(D)mm	42 × 42 × 11.6	47 × 47 × 34	42 × 42 × 11.6	47 × 47 × 34
Features	Rolling shutter, AE/AWB, One Push WB, Gain control, Adaptor for M12 lens (Optional item)	Rolling shutter, AE/AWB, One Push WB, Gain control	Global shutter, AE, Shutter control, Gain control, Adaptor for M12 lens (Optional item)	Global shutter, AE, Shutter control, Gain control

Specification is subject to change without prior notice.

Semi-custom Lens

CIS offers versatile semi-custom lenses as well as general lenses that meet customer's requirements.

Features

High Image Quality

- Fixed lens placement resulting in accurate optical axis and less aberration.
- Provision of fixed iris throttle plate according to usage conditions resulting in less image deterioration compared to standard mount lenses.

Compact and Light Weight

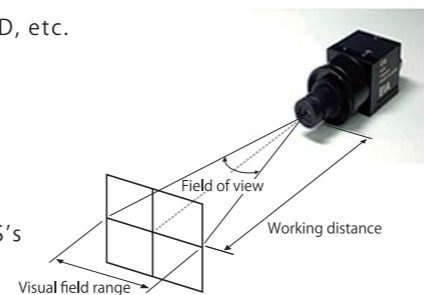
- Improves vibration and shock resistance.

Lens Variation

- Resolution: EIA, VGA, SXGA, UXGA, 5M, 12M, Full HD, etc.
- Focal range: 16mm, 25mm, 35mm, 50mm, etc.

Less prone to dust problems

- Lens cleansing and assembly all done in the CIS's clean room.



Development of Image Processing Systems

On top of cameras, CIS offers total imaging solution to meet wide variety of customers' needs as a one-stop-shop, proposing system architecture and the most appropriate interface, designing and manufacturing, development of system software, and optimizing customer's image processing application and implementation.

1. CIS has in-house professional teams of each field.

Mechanical design	Optical design knowledge, Heat dissipation design, Water & dust proof housing design, Miniaturization, Micro-motion control using piezo-actuator, Cost reduction know-how
Circuit design	Evaluation and design experience for various CCD and CMOS image sensors, Analog and digital circuit design, Miniaturization & low power dissipation design, High-speed interface circuit design (in the order of GHz)
System software development	System specification development, Real time image processing, System software development using RTOS, Embedded imaging application software development, PC application software development. We have deep experiences in design and development around TI's DSP.
Algorithm development	In order to draw maximum performance from the device, we provide optimization at an algorithmic level. Custom development of image processing application, Licensing of original image processing IPs.
Quality assurance	Product design verification (Electrical performance, functionality, anti-vibration, impact, dust and heat dissipation testing, conformance with various safety regulations including RoHS.) Reliability testing including product safety.
Production engineering	Design review at pre-production stage: Review done on both product quality and ease of production for higher field. Promotion of automated production by use of software.
Production	Fully controlled production environment.

2. From Proposal to Mass Production

