

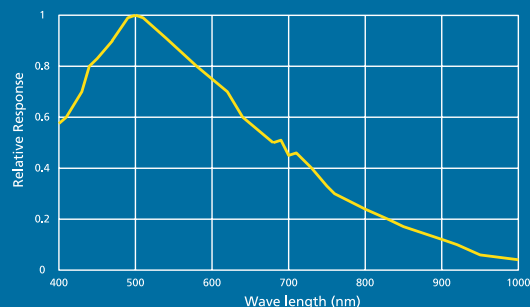
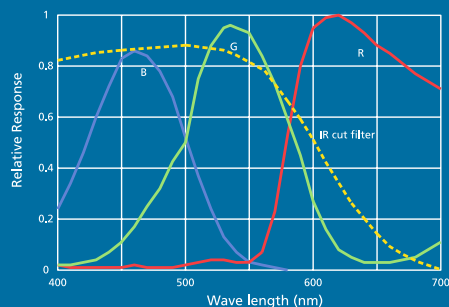
IMT-CCD2



- ▶ 2MP CCD 카메라(Sony 센서)
- ▶ 미리보기 2MP해상도 15fps, 최대 61fps
- ▶ 실시간 자동 화이트 밸런스(white balance)
- ▶ 컴팩트 사이즈 28(W)×28(H)×37(D)mm
- ▶ 일본 국내 생산(Made in Japan)

Spectral Sensitivity Characteristics

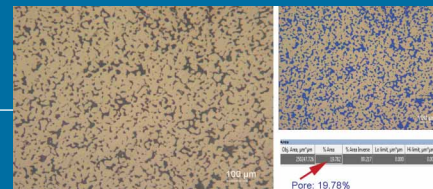
IMT-CCD2 (with IR cut filter)



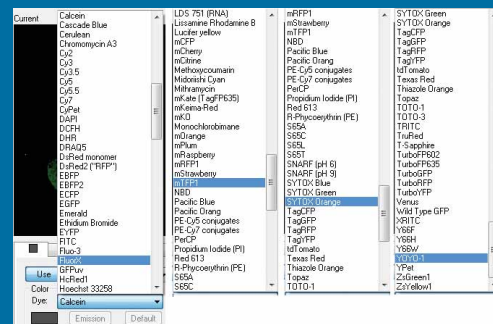
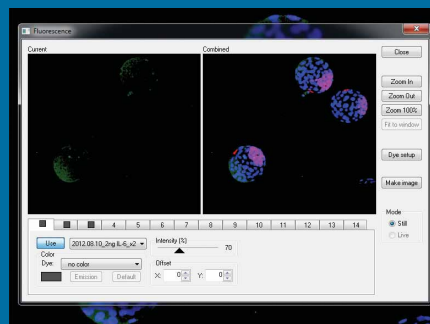
Product			IMT-CCD2
Electronic Specifications	Image Sensor		1/1.8" Interline UXGA color progressive CCD: ICX274AQ(Sony)
	Total Picture Element		1699 (H) × 1248 (V)
	Effective Picture Element		1628 (H) × 1236 (V)
	Chip Size		8.50 (H) × 6.80 (V) mm
	Cell Size		4.40 (H) × 4.40 (V) μm
	Scanning System		Progressive
	Resolution		1600 (H) × 1200 (V) (Full scanning) 1600 (H) × 544 (V) (1/2 partial scanning) 1600 (H) × 208 (V) (1/4 partial scanning)
	Scanning Methods		Full scanning 1/1 partial scanning 1/2 partial scanning 1/4 partial scanning Variable partial scanning
	Maximum Frame Rate	Full Scanning	15.32fps (Normal) / 7.66fps (1/2clock) / 3.83fps (1/4clock)
		1/2 Partial Scanning	30.63fps (Normal) / 15.31fps (1/2clock) / 7.65fps (1/4clock)
		1/4 Partial Scanning	61.27fps (Normal) / 30.63fps (1/2clock) / 15.31fps (1/4clock)
	Pixel Frequency		36.818MHz (Normal) / 18.409MHz (1/2clock) / 9.20453MHz (1/4clock)
	Video Output		8bit / 10bit / 12bit
	Minimum Scene Illumination		7.7Lux at F1.2
	Sync. System		Internal
			Auto / Manual (software selectable)
	Electronic Shutter	Normal	1/36,818,18 to 1/15,32 seconds
		1/2 Clock	1/18,409,091 to 1/7.66 seconds
			1/9,204,545 to 1/3.83 seconds
	Gain		Auto / Manual (software selectable)
	Gamma		Manual (software selectable)
	White Balance		Auto / Manual / One shot (software selectable)
	Trigger Mode		Free-run / Edge preset trigger / Pulse with trigger / Start & stop trigger (software selectable)
	Input / Output		USB 2.0 High Speed
	Power	Input Voltage	+5Vdc through USB connector (+4.4 to +5.25V)
		Consumption	< 450mA
Mechanical Specifications	Dimensions		28 (W) × 28 (H) × 42 (D) mm (excluding connector)
	Lens Mount		C Mount
	Weight		Approximately 45g
	Interface Connector		USB: mini-B USB connector IO signal: 6pin connector (HR10A-7R-6PB or equivalent)
Environmental Specifications	Operational Temperature		-0°C ~ 40°C
	Storage Temperature		-30°C ~ 65°C
	Vibration		20Hz to 200Hz to 20Hz (5min./cycle), acceleration 10G, 3 directions 30min. each
	Shock		Acceleration 70G, half amplitude 6ms, 3 directions 3 times each
	Standard Compliance		EMS: EN61000-6-2, EMI: EN61000-6-3 (Class B)
	RoHS		RoHA Compliant

iSolution Auto plus

- ▶ 51개 자동측정 항목
- ▶ 측정 결과의 통계, 분류, 차트
- ▶ 면적 분할 자동측정
- ▶ 자동 / 수동 스레솔드
- ▶ 25개 수동측정 항목
- ▶ 최대 14개 형광 채널 합성
- ▶ 142개 형광 칼라 지원



Class	Count	% Count	Sum, μm	% Sum
Class1	283	34.428	780.21	18.704
Class2	350	43.579	1168.44	40.428
Class3	120	14.598	868.376	20.817
Class4	40	4.866	397.621	9.932
Class5	16	1.944	202.493	4.054
Class6	8	0.973	116.385	2.79
Class7	2	0.243	35.871	0.859
Class8	0	0	0	0
Class9	1	0.122	22.341	0.535
Class10	0	0	0	0
Class11	0	0	0	0
Class12	2	0.243	61.602	1.476



Input Device

- 1) Direct Driver
- 2) DirectShow
- 3) Twain
- 4) Many cameras supported by SDK

Image Capture

- 1) Time Lapse Capture
- 2) Movie Recordings by AVI, MPG, MPEG, MOV
- 3) Crosshair Generation on Live Preview Window
- 4) Grid Mask on the live preview window based on calibrated scale
- 5) Measurement on live preview window

Image File Format

jpg, jpeg, jpe, tif, tiff, bmp, gif, pcx, tga, mpg, mpeg, avi, mov, img, rpt, txt, scr, dr and etc.

Overlay

- 1) Crosshair
- 2) Grid mask
- 3) Image
- 4) Marker
- 5) Time Stamp
- 6) Measure

Save

- 1) Saving Data by TXT File Format
- 2) Saving Image and the measurement data together by img File Format

Image

Mode Change, Clone, Crop, ROI, Resize, Rotate, Split, Combine Color Plane

Image Mode Change

Grayscale, RGB, HSB, YUV, 8bit and 16bit per Channel ROI Control

- 1) Rectangle, Arbitrary Rectangle, Ellipse, Arbitrary Ellipse, Polygon, Spline Shape, Magic Wand

- 2) Copy, Paste, Crop ROI

Combine

- 1) Split Color Plane RGB, HSB, YUV
- 2) Combine Color Plane RGB, HSB, YUV
- 3) Combine Color Images directly by Mean, RGB, Fluorescence Mask and Add

Sequence Control

- 1) Play Forward and Backward
- 2) Making Movie File(mpg, avi, mov) by captured Images
- 3) Split Images from a Sequence Movie FileMode

View

Zoom Tools

- 1) Zoom In, Out, and 100%
- 2) Zoom In Window for More Accurate Edge Detection
- 3) Zoom 10% to 1600% Fit to Window Context Window to Manipulate Several Images

Edit

Undo, Redo, Copy, Paste, Paste New, Delete, Delete All, Annotate, Image Information, Annotate, Line, Polyline, Spline, Rectangle, Ellipse, Text label

Process

Filter, BCG Control, Pseudo Color

Filter

- 1) Edge : Gradient, Kirsch, Laplas, Sobel, Variance
- 2) Enhance : Auto Brightness and Contrast, Average, Background Correction, Equalize, Median, Sharpen, Smooth
- 3) Morphology: Clean, Close, Dilate, Erode Fill Holes, Open, Split
- 4) Special : Emboss, Negative

Focus Enhancement (Extended depth of focus)

- 1) Combine Individual Partly Focused Images into a Single In-Focus Composite Image
- 2) Combine without Trace
- 3) Auto Compensating Displaced Images from Stereo Microscope
- 4) Live focus enhancement
- 5) Sub-pixel focus enhancement
- 6) Fast focus enhancement
- 7) Stereo microscope focus enhancement

Image Stitching

- 1) Perfect Auto Montage.
- 2) Auto and Manual Image Stitching
- 3) Stitching without Trace and Correcting any Irregularities in Brightness

Live Image Stitching

Calibration

Calibration

- 1) Full Auto Calibration
- 2) Semi-Auto Calibration
- 3) Special Calibration X and Y
- 4) Insert Calibration Marker
- 5) Split Calibration Marker 4 and 16
- 6) Save and Open Calibration
- 7) Protection by Password
- 8) Adjust by image size

Image

Mode Change, Clone, Crop, ROI, Resize

Rotate, Split, Combine Color Plane

Image Mode Change

Grayscale, RGB, HSB, YUV, 8bit and 16bit per Channel ROI Control

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Manual Measurement

25 measurement parameters Point, Straight Line, Horizontal line, Vertical line, Width and Height, Circle by radius, Circle by N points, Circle by diameter, Best Fit Circle, Circle by 3 Points, Arc by 3 points, Rectangle, Polygon, Spline, Polyline, Angle, Angle between 2 Lines, Distance, Parallel line, Lines from common points, Irregular diameter, Auto trace, Perpendicular width measurement, perpendicular from common line, Perpendicular distance

Measurement objects

Rectangle, Arbitrary Rectangle, Circle, Ellipse, Arbitrary Ellipse, Polygon, Spline Shape, Magic Wand, Invert objects, Separate objects, Connect objects, Disconnect objects

Auto Count and measurement

Auto Count Objects

- 1) Auto Object Detection
- 2) Edit the Counted Objects by Add, Subtract, Cut, Split, and Morphological Filters
- 3) Set the Measurement Range

Threshold

- 1) Manual threshold (Red, Green, Blue, and Gray)
- 2) Manual threshold (Hue, Saturation, Brightness)
- 3) Manual threshold (Y, U, V)

Automatic threshold

Peaks, Entropy, Fuzzy sets, Iteration, Minimum error, Dark/Bright objects

Auto Measurement Parameters

51 Auto measurement parameters Area, Hole area, Perimeter, Hole perimeter, Max length, Max width, Average dimension, Average chord free, Size by X, Size by Y, Average chord X, Min chord X, Max chord X, Std Dev chord X, Average chord Y, Min chord Y, Max chord Y, Std Dev chord Y, Min Feret Diameter, Max Feret Diameter, Average Feret Diameter, Min/Max Feret Diameter, Equal Circle Diameter, Major Ellipse Diameter, Minor Ellipse Diameter, Line Length, Line Width, Ribbon Length, Ribbon Width, Circle SF, Ellipse SF, Roundness, Roundness-ALT, Elongation, Center X, Center Y, Angle, Red Color, Green Color, Blue Color, Hue, Intensity(Min), Intensity(Max), Intensity(Mean), Intensity(Integral), Intensity(Standard Deviation), Intensity(Mode), Intensity(Median), %Area, %Hole, Convex hull

Measurement Data

- 1) Measurement Data
- 2) Statistics Data from all Parameters
- 3) Classification and Statistics for all Parameters
- 4) Export to Excel Original Image, Overlay image Measurement Data, Statistics, Classification, and Chart
- 5) Export to customized Excel template

Advanced Fluorescence

- 1) Max 14 color channel merge ability
- 2) 142 predefined Dye color
- 3) Custom color define ability
- 4) Intensity adjustment and Offset for each color channel
- 5) Zoom In and Out preview window
- 6) Live and Still mode

Export to Excel

- 1) Export to Excel Gray Image Data
- 2) Export to Excel Overlay and Original Image Measurement Data, Statistics, Chart
- 3) Export to Excel by template

Report

Report Generator

- 1) Create Report
- 2) Insert Image and Data
- 3) Insert other OLE Objects

Window

Split Horizontal, Split Vertical, Cascade Tile Horizontal, Tile Vertical, Arrange icons

Dynamic User Interface (UI)

- 1) Classic
- 2) Modern

Development

Customized Modules and Application

