Multi camera Vision Sensor MVS series

Digital CCD Vision sensor

color

Digital Camera Unit
MVS-PM

Controller with touch panel display
MVS-DN

Easy operation by Touchscreen

OPTEX FA

SICK OPTEX World Standard

Up to three Cameras with Vision processor built in

Optex-FA Jan,2008

Multi camera

Multiple cameras for multiple inspections

Up to three Cameras are available for one controller

High cost performance!! You don't need three controllers for three cameras. You just have one controller for three cameras.

Each camera can inspect individually by its build-in vision processor. You don't have to worry about speed for having multiple cameras.

The Multi Camera Vision Sensor
MVS series

Excellent Technology

Enabled High speed vision processing and cutting cost

Original LSI with CPU integrated

Eco-Engine: OPTimum CPU Ver.5

We utilized a Technology, low heat generation and low power dissipation technology that we developed for CVS series as all in one concept, for MVS. With original LSI with CPU integrated, we succeeded to integrate vision process engine into camera unit. This solution will provide you high speed and accurate inspection for various purpose.

No impact to its speed by connecting three cameras

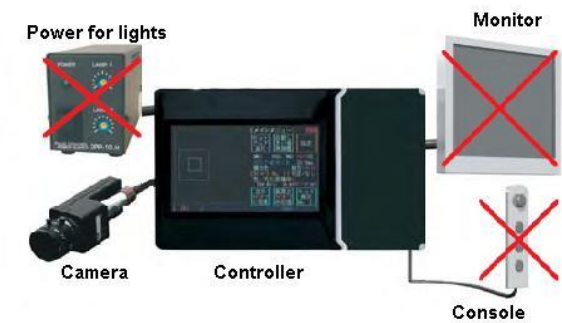
Three Cameras inspect individually

We utilized a Technology, low heat generation and low power dissipation technology that we developed for CVS series as all in one concept, for MVS. With original LSI with CPU integrated, we succeeded to integrate vision process engine into camera unit. This solution will provide you high speed and accurate inspection for various purpose.

Because of build-in technology

High cost Performance and easy installation

The controller has not only touch panel, display and ten-key but also power supply for external lighting for each camera. You simply just connect cameras and lights to a controller. You don't need external monitor, power for lights and console.



Inspection Mode

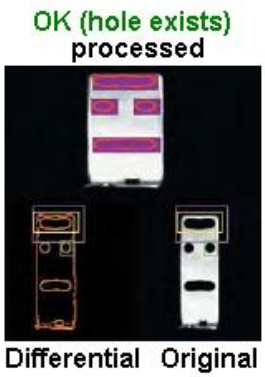
For inspection of Color, Flaw, Blob, Shape, etc.

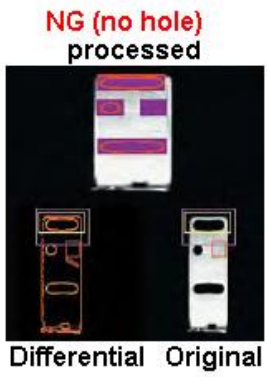
6 inspection modes are available

Stain

Inspect ratio of number of pixels that binarized differential result of target by threshold to all pixels in inspection window. When it exceeds upper limit or less than lower limit, it's defined as NG.

This is for the case to detect existence of metal object and stain on the object.





Contour

Contour image is created by binarizing differential image with a threshold. Inspect number of pixels that lack in the Target contour sector. Inspect number of pixels with same color of target contour in background as Stain.

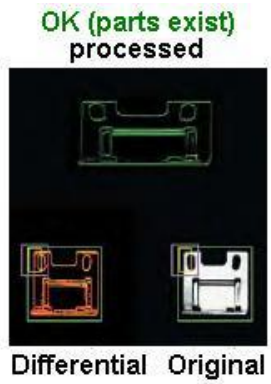
When either number of those pixels exceeds threshold, it’s defined as NG.

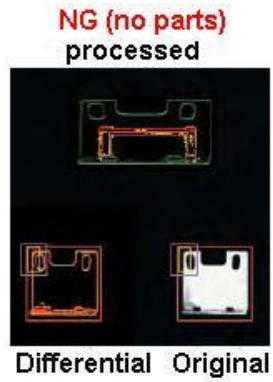
This function is for the case the contrast of the target object is high enough and expected to inspect the contour more accurately.

Differential

Inspect difference between differential image of stored master image and target object image. When it exceeds threshold, it's defined as NG.

This function is for the case to inspect pictures under unstable lighting. Not good for detecting color or its depth.



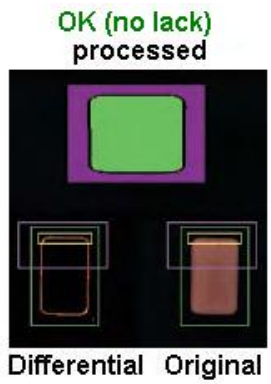


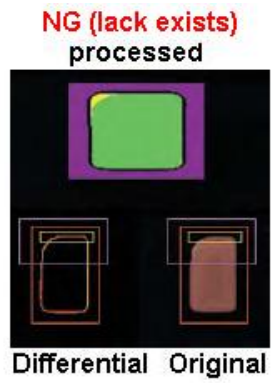
Color Shape

Inspect the shape of the area with color selected. It counts number of the pixels with different color in the area as Contour(Lack of pixel). It counts number of selected color in background as Stain.

When either number of those pixels exceeds threshold, it’s defined as NG.

This function is for the case the target color is close to background and difficult to inspect by its contour or differential image. Not so good for black and white objects.

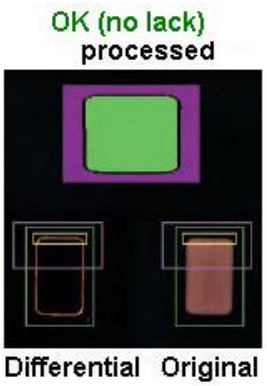


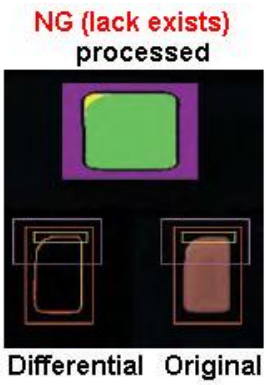


Color Area

Inspect the ratio of number of pixels with color selected vs. to all pixels in inspection window. When it exceeds upper limit or less than lower limit, it's defined as NG.

This is for the case to detect color difference especially when the color is not so stable and that there is no need to detect object shape.

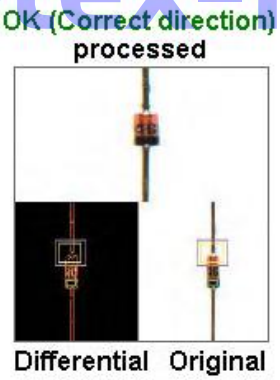


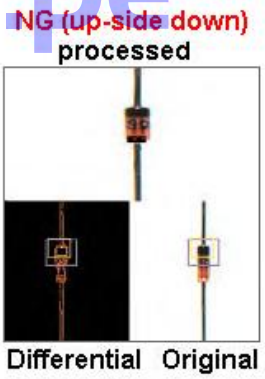


Full Color

Inspect difference of color between stored image and target image. When the sum of difference exceeds threshold, it's defined as NG.

This is for the case to inspect color and depth of pictures and prints under stable lighting.





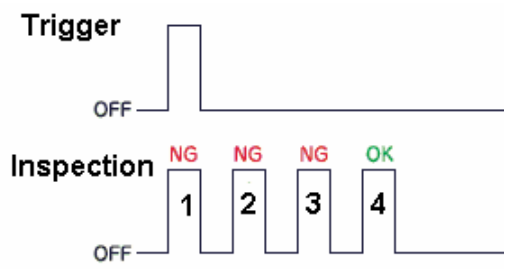
Prevent over-reject

For stable inspection and better process yield

5 functions are available

Continuous shooting

Shooting continuously until encounter OK result up to 6 shot. This is for the case the trigger is not stable and object position deviation is not stable.



Variable shutter speed

While it's shooting continuously, it changes shutter speed up to ±12%.

This is for the case the lighting is not stable.

Search function

360 deg. Rotation search

It searches in rotation not only in X and Y direction.

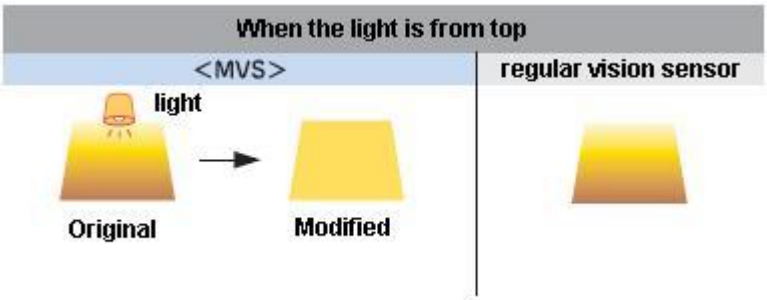
Scaling up/down

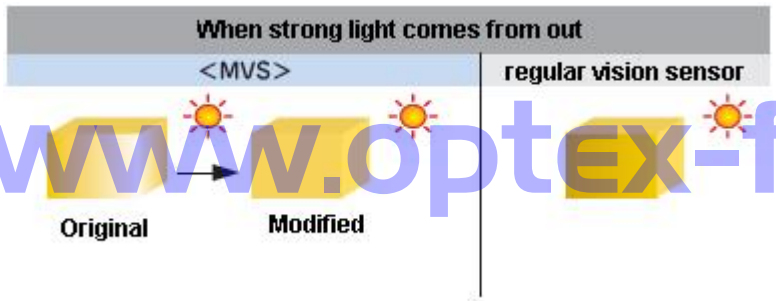
While it's shooting continuously, it scales up/down up to ±6%.

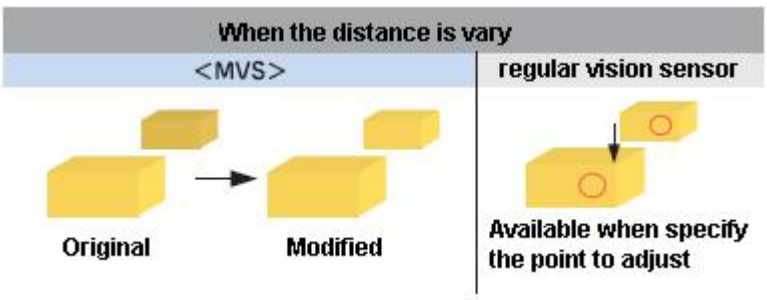
This is for the case the distance between camera and the object is not stable.

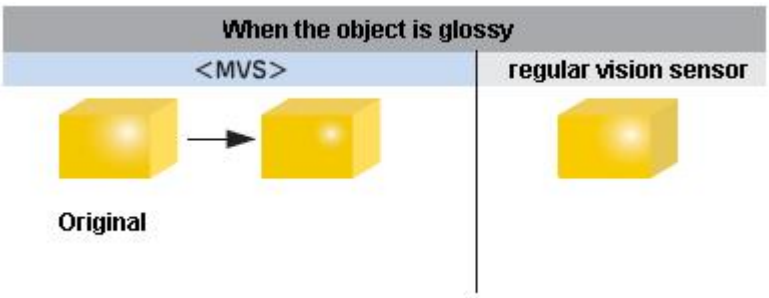
Dark Compensation

To inspect color stably, it calculates hue of each pixel.
By this function, it can capture images very stably even under unstable lighting and with distance deviation.









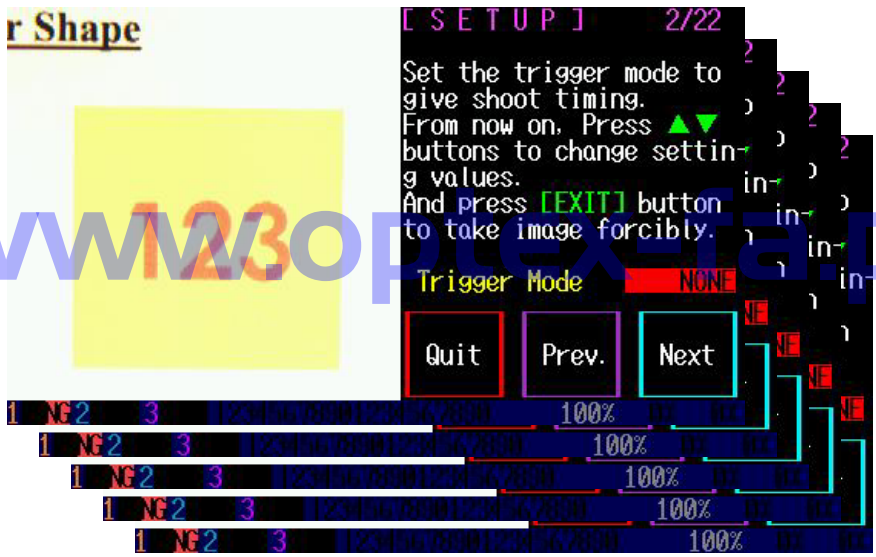
Easy setup

Just do it as explanation on the display!

Easy and Speedy by “SETUP Menu”

Concept: manual-less

Setup button leads you to SETUP menu that shows what to do next.



Backlight leading buttons
Help functions (by “ ? ” button)

Back UP

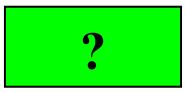
Useful function support after installation

5 functions support anyone

Trouble Shoot

button leads you Trouble Shooting menu. From the menu, you will see what you have to do.

Help function

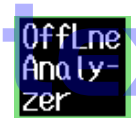


button in the ten-key shows you what the parameter means and what you have to do.

Auto Threshold setting

You just sample some OK object to re-setup threshold. You can chose level of accuracy when it calculate threshold from sampling data.

Offline analyzer



button leads you into offline analyzer menu. You can load NG image and investigate why the image was NG and try changing every parameter with the NG image.

Storing NG images

You can store NG images up to 63 into controller memory (from 64th image will be over write from 1st one). You can also download the image into PC and ask our support advice what to do by sending the image through e-mail.

Models

Camera unit

Photo	Image sensor	Capture mode	Model No.
	CCD (color)	Color / Monochrome	MVS-PM

Controller

Photo	Camera No.	I/F	Model No.
	Max. 3	Touch panel display , Ten-key	MVS-DN

- PNP output type is MVS-DP

Camera cable

MVS-C2S : 2m
MVS-C5S : 5m

Extension cable

MVS-C5E : 5m

CCTV Lens (C mount)

Model No.	FASV-03514	FASV-0813	FASV-1614	FASV-2514	FASV-5018
Photo					
Focus distance	3.5mm	8mm	16mm	25mm	50mm
F No.	F 1.4	F 1.3	F 1.4	F 1.4	F 1.8
Filter size	—	M25.5 P0.5	M27 P0.5	M27 P0.5	M30.5 P0.5

Polarizing filter

Model No.	FASV-PL255-RS	FASV-PL270-RS	FASV-PL305-RS
Photo			
Size	M25.5 P0.5	M27 P0.5	M30.5 P0.5

Close-up ring

Rings bundled	Model No.
 0.5mm 1mm 5mm 10mm 22mm	FASV-EXR-LT

External light

Photo	Method	Spec	Model No.
	Direct ring	White LED x 60 Cable: 500mm	MVS-LW60

I/O connector cable

MVS-C3IO : 3m

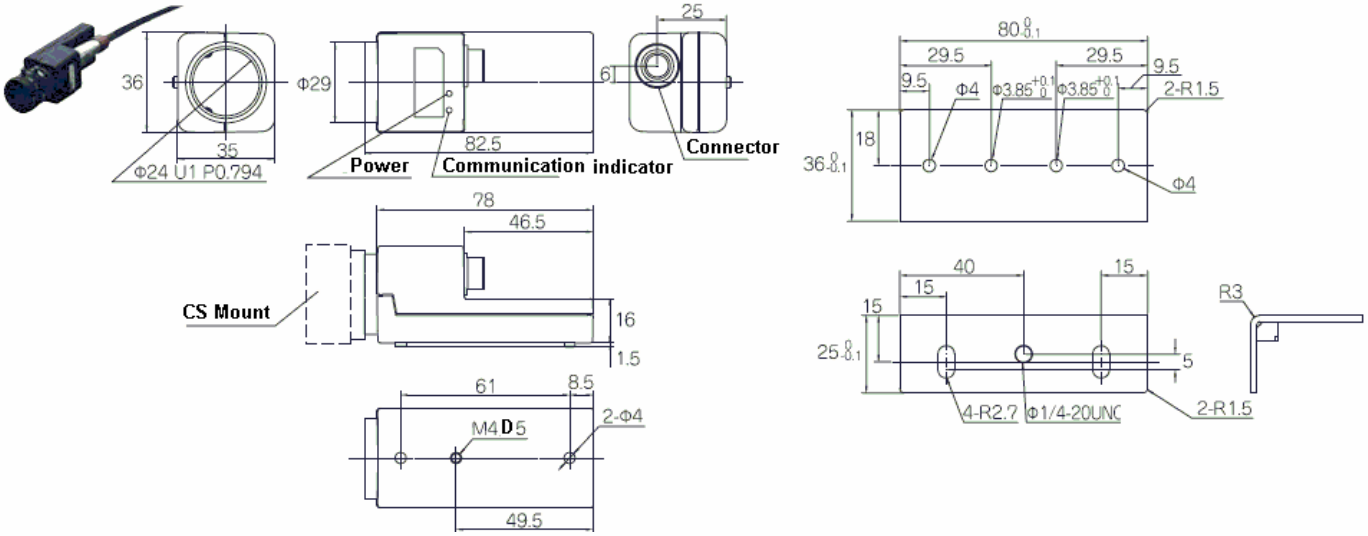
Touch panel protective sheet

MVS-TP

Dimensions

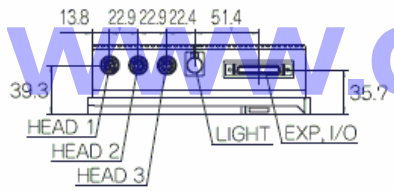
Camera unit

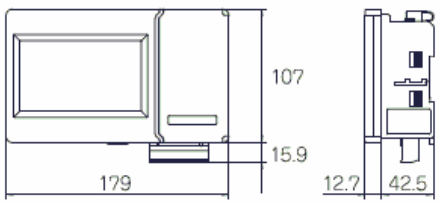
MVS-PM

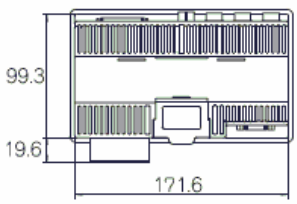


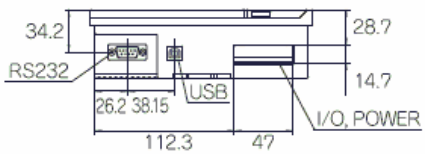
Controller

MVS-DN

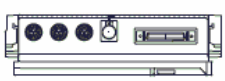


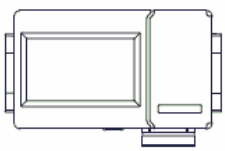


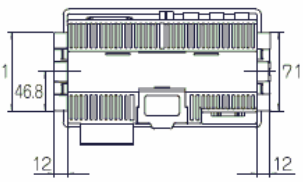




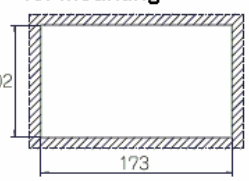
Panel mount adaptor installation





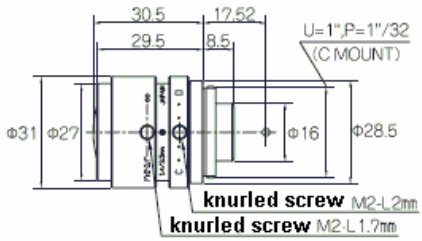


Recommended opening for mounting

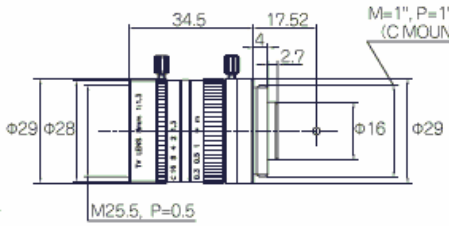


Lens

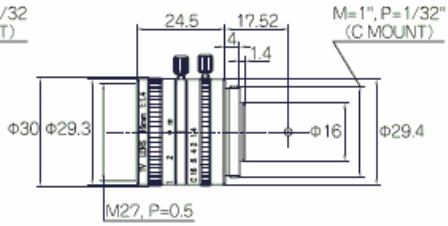
FASV-03514
Forcus :3.5mm



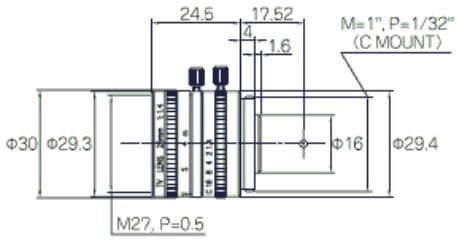
FASV-0813
Forcus :8mm



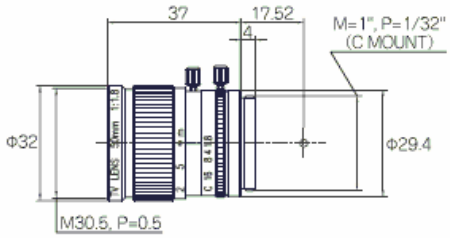
FASV-1614
Forcus :16mm



FASV-2514
Forcus :25mm



FASV-5018
Forcus :50mm

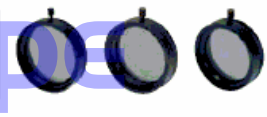


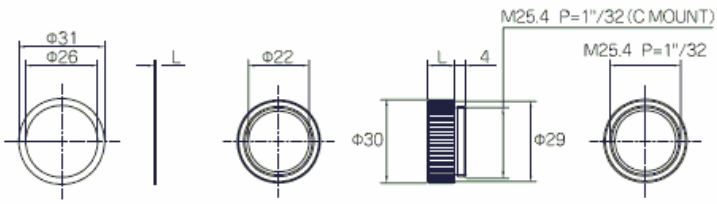
Close up ring

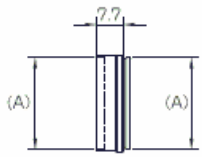
FASV-EXR-LT

Polarizing filter

FASV-PL255-RS
FASV-PL270-RS
FASV-PL305-RS



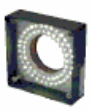


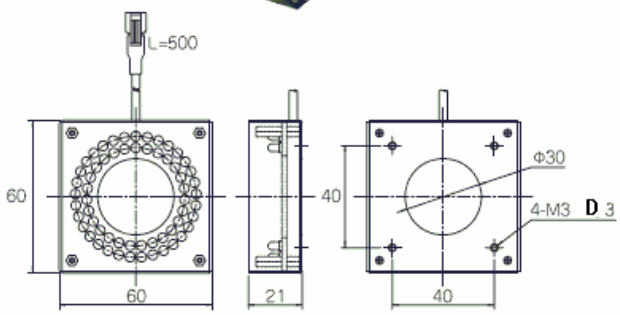


形 式	FASV-PL255-RS	FASV-PL270-RS	FASV-PL305-RS
(A)	M25.5 P0.5	M27 P0.5	M30.5 P0.5

LED

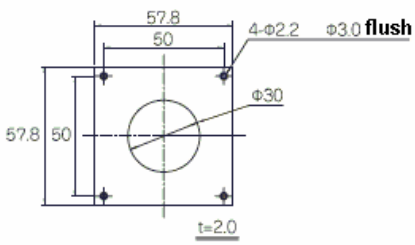
MVS-LW60





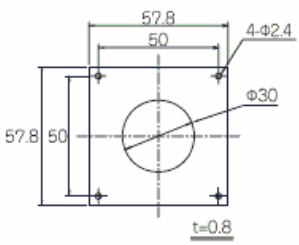
Diffusing plate

DF80-MVS-LW60



Polarizing plate

PL-MVS-LW60

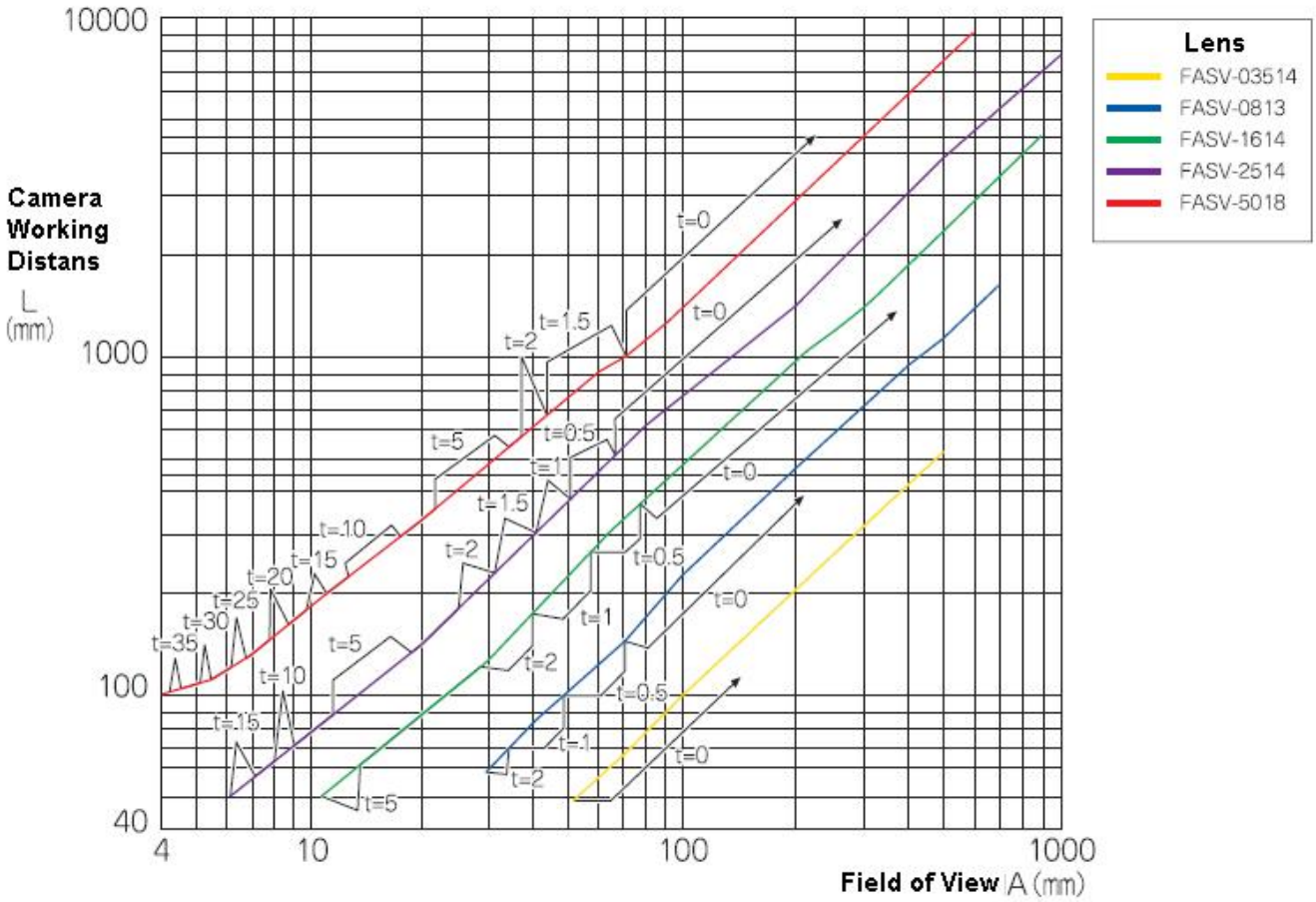


Specifications

MODEL	MVS-PM
Supply Voltage	DC 6V ±10% (From Controller)
Power	Max. 100mA / 24V DC (in Controller)
Image sensor	430000 Pixel 1/3" CCD Color Image Sensor
Resolution	512 X 512 (512 X 256 by interlace processing)
Pixel size	H: 6.5 X V: 6.3 μm (512 X 512 => 3.33 X 3.23 mm)
Lens type	CS mount (C mount adapter is attached)
Image processing function	- Searching rotating 360 degree - 16 Inspection Window - Judgment of Contour and Background, Color Normalized Correlation, Differential Normalized Correlation, Color Shape, Color Area, Stain Area - Variable shutter speed continuous capturing (up to 6 times) - Automatic Color/Black&White changeover - External Teaching (Auto-Shutter/Threshold/Color Extracting)
Communication	LVDS (100Mbps) dedicated for Controller (Max. 10m)
Indicator	LED (Power, Status)
Operating Temp./Humid.	0~50° C, 35~85%/RH (Non Condensing)
Storage Temp.,	-20~70° C, 25~95%/RH (Non Condensing)
Vibration, Shock	Vibration : 10~ 55Hz /1.5mm, Shock : 15G
Approvals	CE (EN55011 Class-A, EN61000-4-2~6), RoHS
Material	Aluminum
Protection	IP50
Weight	Approx. 90g
Attachment	C mount adapter, mounting bracket

MODEL	MVS-DN/DP
Supply Voltage	DC 24V ±10% (DC 12V is possible without external Light)
Power consumption	Controller : Max. 80mA / 24V DC With external light : max 1.5A (Light power consumption X 150%) + Power consumption of all camera heads
Number of camera	Max. 3 heads
Output	NPN/PNP open collector Residual voltage is less 1.0V OK, NG : 1 each for every camera head (Total: 6) max. 100mA Extra output : Total 20 max. 50mA
Input	Synchronous: 3, Extra: 10
I/O connector	Power/OK/NG/Synchronous : Terminal block 12P Expansive I/O : IEEE1284 half pitch connector 50P
External Light out	12V PWM control (87kHz, 256steps) Out: 3, Total 24W
Communication I/F	USB1.1 (max 12Mbps) : USB standard connector RS232 (max 500kbps) : D-Sub 9P
Display, Control device	4.3" wide TFT LCD, Touchscreen, Panel SW Indicator : Power, Head No.LED
Timer accuracy	-45sec. ~ +1min. 15sec. Per Month (Typical)
Timer backup battery	primary cell : 5 year with power off (Typical) secondary super capacitor : 7.8 year (Typical with 3 days backup)
Operating	0~50° C, 35~85%/RH (Non Condensing)
Storage Temp.,	-20~70° C, 25~95%/RH (Non Condensing)
Vibration, Shock	Vibration : 10~ 55Hz /1.5mm, Shock : 15G
Approvals	CE (EN55011 Class-A, EN61000-4-2~6), RoHS
Material	polycarbonate
Protection	IP20
Weight	Approx. 570g
Attachment	Panel mount attachment

WD vs. FOV



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