MITSUBISHI ELECTRIC
Changes for the Better

MACHINE VISION SOLUTION

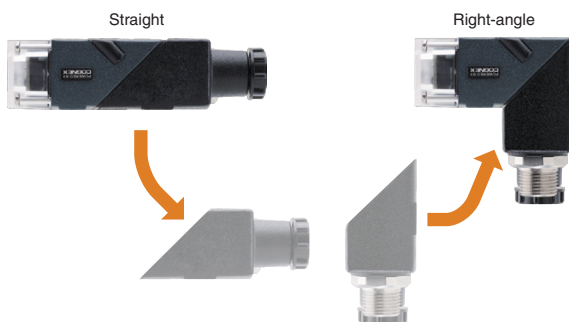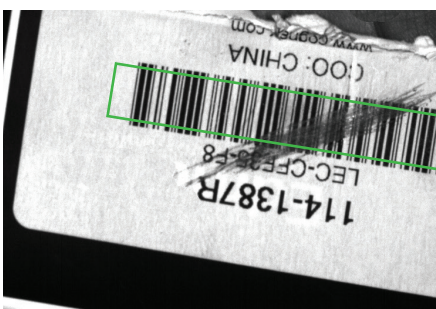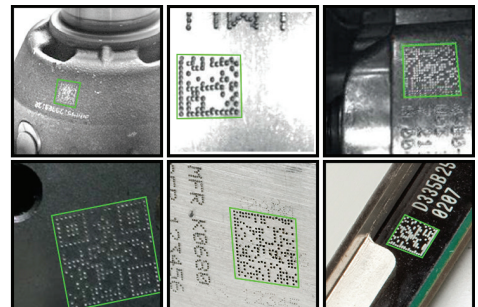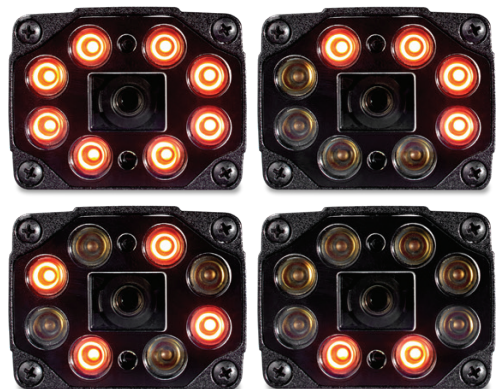## Vision System Vision Sensor Code Reader

e-F@ctory

MELSENSOR

สมาร์ท รวดเร็ว ใช้งานง่าย

CF26

CF37

Customizable

Straight

Right-angle

Independent lighting controls

Codes at different distances

Adjustable-focus by high speed liquid lens technology
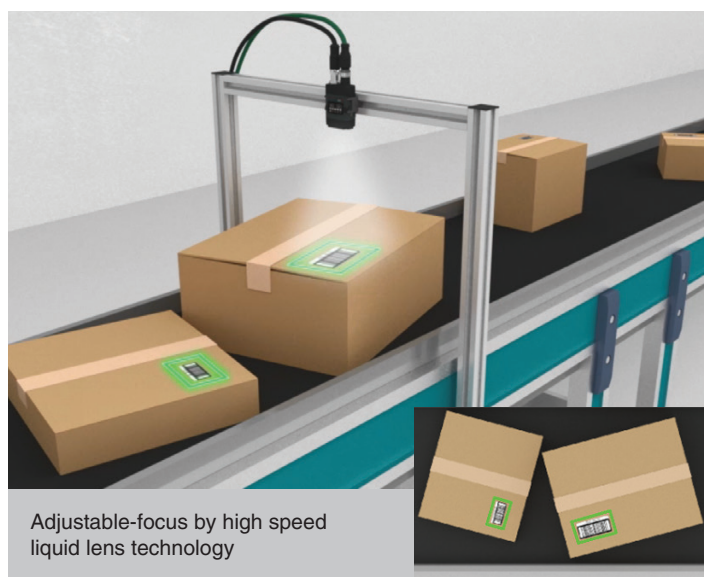
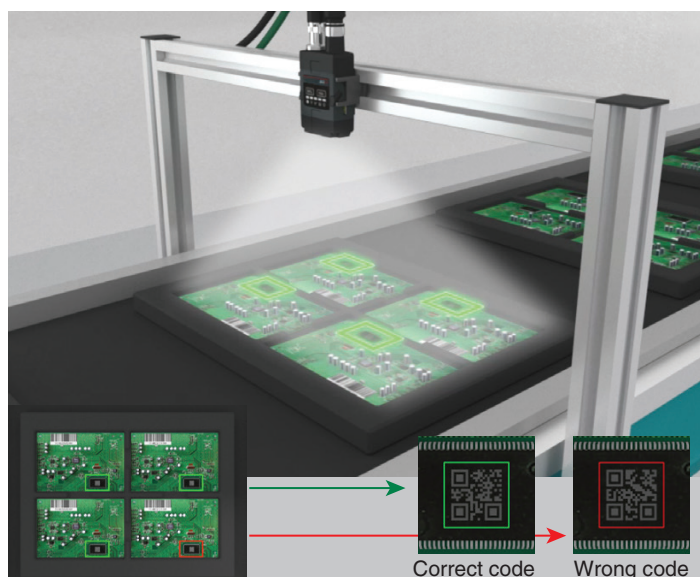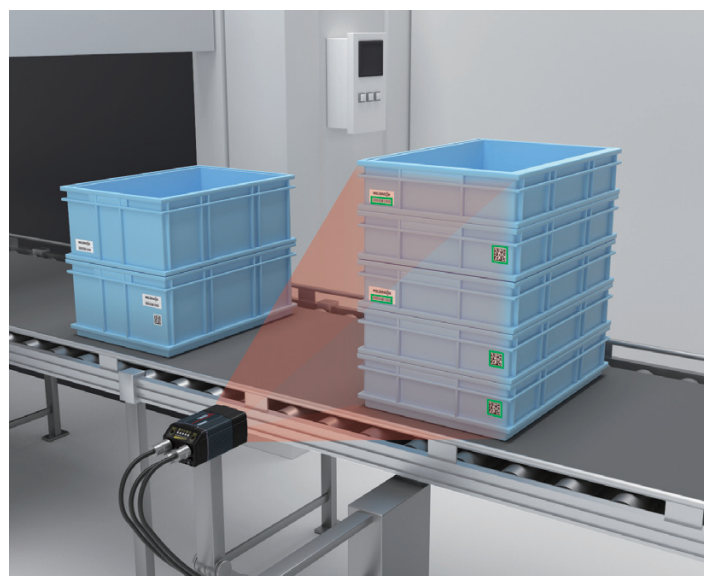## Codes at different places

Correct code | Wrong code

High resolution

High-speed decoding

High Dynamic Range (HDR) Imaging

HDR imaging, to globally enhance image quality and contrast.

MITSUBISHI ELECTRIC

AN-6376

I/C : CF37-LR

I/N : CF37-LR

AN-6376
Code 128, 3.12 PPM

CF37-LR
Code 128, 3.09 PPM

CF37-LR
Code 128, 3.09 PPM

CF37-LR,MELSENSOR CF37 Series Co...
QR, 9.37 PPM

Product List

Code reader

Name	Model	Outline
CF26	CF26-SR	Short distance, 6.2 mm liquid lens, clear lens cover
	CF26-LR	Long distance, 16 mm liquid lens, half-polarized extended lens cover
CF37	CF37-SR	Short distance, 10.3 mm liquid lens, polarized lens cover
	CF37-LR	Long distance, 24 mm liquid lens, polarized lens cover

Option product

Type	Model	Outline
Lens		
Liquid lens	DM260-KIT-16LL	16 mm liquid lens set for CF26 (16 mm F7.0 liquid lens, liquid lens module, high-powered red illumination, half-polarized extended lens cover)
Lens cover		
Lens cover	DM150-CVR-CLR	Clear lens cover for CF26-SR
	DM150-CVR-ESD	Clear lens cover with electrostatics protection for CF26-SR
	DM260-LENS-62CVR-F	Fully Polarized lens cover for CF26-SR
	DM260-LENS-16CVR	Un-polarized extended lens cover for CF26-LR
	DM260-LENS-16CVR-P	Half-polarized extended lens cover for CF26-LR
	DM260-LENS-16CVR-F	Fully polarized extended lens cover for CF26-LR
Lens cover with integrated LED	DM360-HIPIL-RE	Unpolarized front cover with red LED, ESD Safe, for CF37
Light		
LED	DM150-LED-WHT	White LED for CF26, Using with a 6.2 mm lens only
	DM150-LED-BLU	Blue LED for CF26, Using with a 6.2 mm lens only
Mounting bracket		
Mounting bracket	DM100-UBRK-000	General-purpose mounting bracket
	DM100-PIVOTM-00	Pivot mounting bracket
	DM-TPODAP-00	Bracket for UNC1/4 mount
Cable		
Breakout cable	CCB-M12X12FS-05	5 m cable, M12 connector⇔12 stranded wires, unshielded cable, straight
	CCB-PWRIO-05	5 m cable, M12 connector⇔12 stranded wires, shielded twisted-pair cable, straight
	CCB-PWRIO-10	10 m cable, M12 connector⇔12 stranded wires, shielded twisted-pair cable, straight
	CCB-PWRIO-15	15 m cable, M12 connector⇔12 stranded wires, shielded twisted-pair cable, straight
Ethernet cable	CCB-84901-2001-01	0.6 m cable, M12 connector⇔RJ-45 connector, straight
	CCB-84901-2001-02	2 m cable, M12 connector⇔RJ-45 connector, straight
	CCB-84901-2001-05	5 m cable, M12 connector⇔RJ-45 connector, straight
	CCB-84901-2001-10	10 m cable, M12 connector⇔RJ-45 connector, straight
	CCB-84901-2001-15	15 m cable, M12 connector⇔RJ-45 connector, straight

DM100-UBRK-000

DM100-PIVOTM-00

DM-TPODAP-00

Specifications

General specifications

Item	CF26	CF37
Operating ambient temperature	0…40°C	
Storage ambient temperature	−10…60°C	−20…80°C
Maximum humidity	Less than 95% RH, non-condensing	
Vibration resistance	IEC 60068-2-6: A vibration of 10 G (10...500 Hz at 100 m/s² with 15 mm width) was applied to each of the three main axes for 2 hours.	IEC 60068-2-6: A vibration of 10 G (10...500 Hz at 100 m/s² with 15 mm width) was applied to each of the three main axes for 2 hours.
Shock resistance	IEC 60068-2-27: 1000 half sinusoidal shocks with 11 G in 10 ms were applied.	IEC 60068-2-27: A shock of 80 G (800 m/s² at 11 ms, half-sinusoidal) was applied to each of the three main axes 18 times.
Protective structure	IP65	IP67
Installation location*[1]	Outside a control panel	

*1. Do not install it in the following places:
 • Where the ambient temperature or humidity exceed the applicable ranges
 • Where condensation occurs due to sudden temperature changes
 • Where there is corrosive or flammable gas
 • Where there are a lot of conductible dust, iron filings, or salt
 • Where in danger of organic solvents, such as benzene, thinner, and alcohol or strong alkaline substances such as caustic soda to adhere
 • Where subject to much vibration or shock
 • Where in danger of liquid such as water, oil, or chemicals to adhere

Performance specifications

Item	CF26-SR	CF26-LR	CF37-SR	CF37-LR
Supported codes				
1-D code	Code 128, Code 25, Code 93, Code 39, PharmaCode, Codabar, Interleaved 2 of 5, UPC/EAN/JAN, MSI		Code 128, Code 25, Code 93, Code 39, Codabar, Interleaved 2 of 5, UPC/EAN, MSI	
2-D code	Data Matrix (ECC 0, 50, 80, 100, 140, 200), QR Code, Micro QR Code, MaxiCode, Aztec Code, VeriCode*[2]		Data Matrix (ECC 0, 50, 80, 100, 140, 200), QR Code, Micro QR Code, MaxiCode, Aztec Code	
Stacked code	PDF 417, EAN.UCC Composite, Micro PDF 417, DataBar		PDF 417, Micro PDF 417	
Reading direction				
Reading direction for 1-D code	All directions			
Algorithm				
Reading algorithm	1DMax, 2DMax (PowerGrid technology is available), HotBars II			
Optical characteristic				
Image sensor	1/3 inch CMOS, 4.8 mm × 3.6 mm (W × H), 3.75 µm sq.pixels, global shutter		1/1.8 inch CMOS, 7.2 mm × 5.4 mm (W × H), 3.45 µm sq.pixels	
Lens	S-mount/6.2 mm F: 5, liquid lens	S-mount/16 mm F: 7, liquid lens	S-mount/10.3 mm F: 5, liquid lens	C-mount/24 mm F: 10, liquid lens
Image resolution (pixels)	1280 × 960		2048 × 1536	
Processing speed				
Maximum image acquisition speed*[3] (frame/s)	45		55	
Maximum decode rate (code/s)	45			
Power supply				
Power supply requirements	External power supply: 24 V DC ±10% LPS or NEC class 2 only		External power supply: 24 V DC ±10% LPS or NEC class 2 only	
Current consumption	Typ. 0.25 A, Max. 1.0 A*[4]		Typ. 0.3 A, Max. 1.5 A*[4]	
Input/output				
Input 0 (trigger)		Opto-isolated image acquisition trigger input × 1		
Input 0 (trigger) — Voltage (V DC)	ON: 15…25 (standard 24), OFF: 0…5 (standard 0)		ON: 15…28 (standard 24) OFF: 0…5 (standard 0)	
Input 0 (trigger) — Current (mA)	4.2/24 V DC			
Input 1*[5] (general-purpose input)	Opto-isolated general-purpose input × 1		Opto-isolated general-purpose input × 3	
Input 1*[5] — Voltage (V DC)	ON: 15…25 (standard 24), OFF: 0…5 (standard 0)		ON: 15…28 (standard 24) OFF: 0…5 (standard 0)	
Input 1*[5] — Current (mA)	4.2/24 V DC			
Output 0…3		Opto-isolated general-purpose output × 4		
Output 0…3 — Voltage (V DC)	28 maximum through external load		26.4 maximum through external load	
Output 0…3 — Current	ON: Max. 50 mA (sink or source) OFF: Leakage current Max. 100 µA External load resistance: 150 Ω/12 V DC, 470 Ω/24 V DC		ON: Max. 50 mA (sink or source) OFF: Leakage current Max. 100 µA External load resistance: 200 Ω/12 V DC	
Communication				
Communication	RS-232 (R x D, T x D (TIA/EIA-232-F compliant)), Ethernet, CC-Link IE Field Network Basic, SLMP Scanner, FTP		RS-232 (R x D, T x D (TIA/EIA-232-F compliant)), Ethernet, CC-Link IE Field Network Basic, SLMP Scanner, MODBUS®/TCP, FTP, EtherNet/IP™	
RS-232 communication method	Full-duplex communication or half-duplex communication			
Ethernet communication speed	10/100 Mbps		10/100/1000 Mbps	
Others				
Material	Aluminum			
Installation	M3 screw hole × 4			
External dimensions (mm)	Straight-configuration: 44.0 × 22.5 × 79.3 Right-angle configuration: 44.0 × 52.0 × 49.3	Straight-configuration: 44.0 × 22.5 × 94.5 Right-angle configuration: 44.0 × 52.0 × 64.5	54.0 × 42.0 × 91.4	
Weight (kg)	0.14	0.19	0.28	0.29

*2. A license needs to be purchased from Veritec Iconix Ventures Inc.
*3. Maximum frame rate at minimum exposure
*4. May be reached if the optics module operates while reading a code.
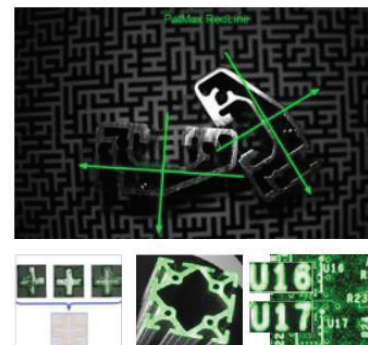*5. The CF37 supports input 1 to 3.

VS80 มาพร้อมฟังก์ชั่นที่จำเป็นครบครัน

PatMax

I/O Connector

Ethernet Connector

PatMax AutoTune   *Perspective patMax*   *Multi-model PatMax*

Super Compact (31mm x 31mm x 75mm) &Saving Wiring

- PoE (Connection by only an Ethernet Cable)
- Highly compatible with Mitsubishi Electric products

Product lineup (23 models)

Select products according to applications.

■ Monochrome

Item		VS80M-100 VS80M-100-E	VS80M-200 VS80M-200-□	VS80M-400 VS80M-400-□	VS80M-202 VS80M-202-□	VS80M-402 VS80M-402-□
Image resolution (pixels)	640 x 480	●	●	●	-	-
	1600 x 1200	-	-	-	●	●
Maximum image acquisition speed (frame/s)		217			53	
Processor performance*1 (times)		1	1.5	2	1.5	2
PatMax RedLine®		VS80M-□-R, VS80M-□-ER: supported VS80M-□, VS80M-□-E: not supported*2				
EasyBuilder		●	●	●	●	●
Spreadsheet		VS80M-□, VS80M-□-R: supported VS80M-□-E, VS80M-□-ER: not supported*2				

■ Color

Item		VS80C-100	VS80C-200-R	VS80C-400-R	VS80C-202-R	VS80C-402-R
Image resolution (pixels)	640 x 480	●	●	●	-	-
	1600 x 1200	-	-	-	●	●
Maximum image acquisition speed (frame/s)		135			33	
Processor performance*1 (times)		1	1.5	2	1.5	2
PatMax RedLine®		Not supported	Supported			
EasyBuilder		●	●	●	●	●
Spreadsheet		Supported				

*1. Magnification based on the VS80M-100-E
*2. Please refer to page 9 for details.

VS70 — การปกป้องที่สมบูรณ์
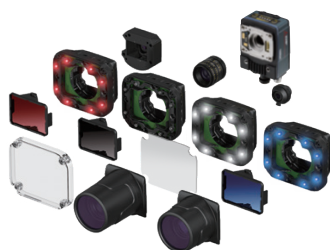

Lens
Lighting

- Integrated LED Lighting (Option)

- Various options
  • LED Lighting
  • Adjustable-focus module
  • Lens cover

- IP67

Power & I/O Connector
External Lighting Connector
Ethernet Connector

- PatMax

Various options

LED Indicator

LED

Product lineup (15 models)

Select products according to applications.

■ Monochrome

Item		VS70M-600 VS70M-600-□	VS70M-800 VS70M-800-□	VS70M-802 VS70M-802-□
Image resolution (pixels)	640 x 480	●	●	-
	800 x 600	●	●	-
	1600 x 1200	-	-	●
Maximum image acquisition speed (frame/s)		When image resolution is set to 640 x 480: 217 When image resolution is set to 800 x 600: 165		53
Processor performance[1] (times)		1	1.25	1.25
PatMax RedLine®		VS70M-□-R, VS70M-□-ER: supported VS70M-□, VS70M-□-E: not supported[2]		
EasyBuilder		●	●	●
Spreadsheet		VS70M-□, VS70M-□-R: supported VS70M-□-E, VS70M-□-ER: not supported[2]		

■ Color

Item		VS70C-600-R	VS70C-800-R	VS70C-802-R
Image resolution (pixels)	640 x 480	●	●	-
	800 x 600	●	●	-
	1600 x 1200	-	-	●
Maximum image acquisition speed (frame/s)		When image resolution is set to 640 x 480: 135 When image resolution is set to 800 x 600: 100		33
Processor performance[1] (times)		1	1.25	1.25
PatMax RedLine®		Supported		
EasyBuilder		●	●	●
Spreadsheet		Supported		

*1. Magnification based on the VS70M-600-E
*2. Please refer to page 9 for details.

VS20 เซ็นเซอร์ระดับสูง

Compact! Integrated lighting & filter

Power I/O Connector
Ethernet Connector
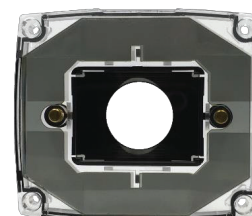IP65

High-intensity LED

Lens can be selected

3.6mm, 6mm, 8mm, 12mm, 16mm, 25mm

The configuration can be changed

Bracket

LED can be changed
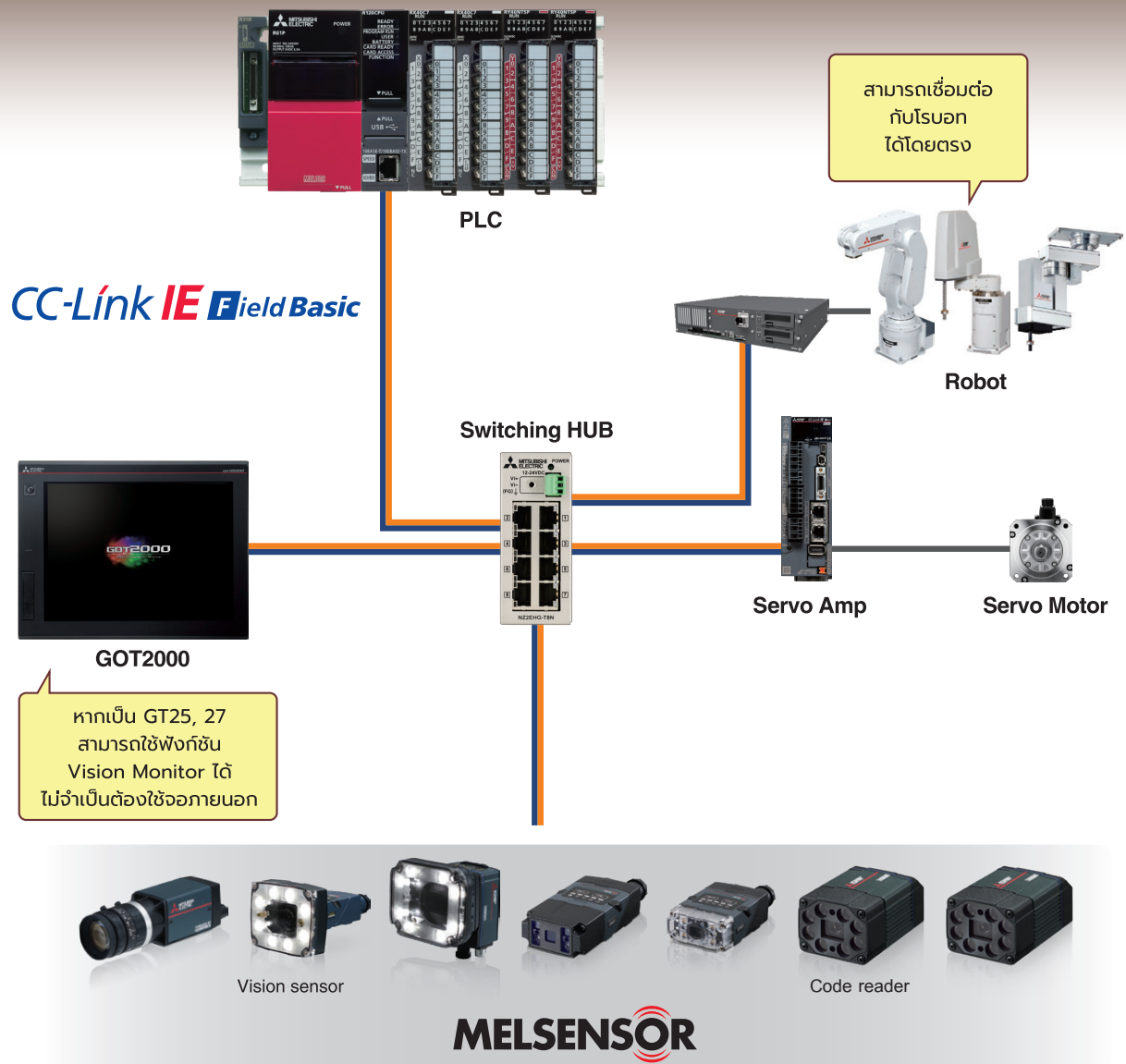(White, Blue, Red, IR)

Polarizer

VS20 (5 models)

Items		VS20M-11F310	VS20M-12F410	VS20C-12F410	VS20M-13F410	VS20C-13F410
Image		Monochrome	Monochrome	Color	Monochrome	Color
Image resolution (pixel)	640 x 480 (standard)	●	●	●	●	●
	640 x 480 (2 x image magnification)	–	●	●	●	●
	800 x 600 (2 x image magnification)	–	–	–	●	●
Maximum image acquisition speed [frame/s]		40	75	55	75	55
Processor performance[1] [Times]		1	2	2	2	2
Location tools	Pattern	●	●	●	●	●
	Edge, edge intersection, and circle[2]	–	–	–	●	●
Presence/absence tools	Pattern	●	●	●	●	●
	Color pixel count, brightness, contrast	–	●	●	●	●
	Edge, circle	–	–	–	●	●
Measurement tools	Distance, angle, and diameter of circle	–	–	–	●	●
Counting tools	Pattern, edge	–	–	–	●	●
Communication		CC-Link IE Field Basic, SLMP scanner, SLMP, MODBUS® /TCP, TCP/IP, UDP, FTP, Telnet (Native Mode), RS-232, EtherNet/IP™				
I/O		Opto-isolated image acquisition trigger input 1 point, opto-isolated general input 1 point, Opto-isolated high-speed output 4 point				

*1. Considering VS20M-11F310 as 1.
*2. Location information detected can be used for inspection by other tools.

Compatible with Mitsubishi FA Products

PLC

CC-Link IE Field Basic

สามารถเชื่อมต่อ
กับโรบอท
ได้โดยตรง

Robot

Switching HUB

GOT2000

Servo Amp   Servo Motor

หากเป็น GT25, 27
สามารถใช้ฟังก์ชัน
Vision Monitor ได้
ไม่จำเป็นต้องใช้จอภายนอก

Vision sensor   Code reader

MELSENSOR

GOT Vision Sensor Monitor Function
Auto-Detection! Up to 64 vision sensors.

Parameter	Value
Job.Status	1
Job.Reset_Counters	Reset
Math_1.Maximum	2.400
Math_1.Minimum	2.300
Job.Fail_Count	0
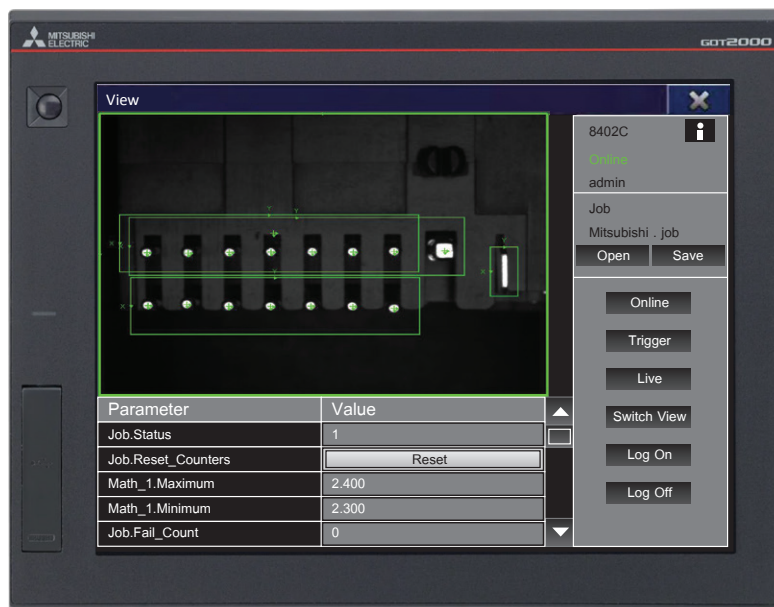
Product list

Vision sensor

Type	Model	Outline
VS80	VS80M-100-E	Monochrome, 640 x 480, processor performance x 1
	VS80M-100	Monochrome, 640 x 480, processor performance x 1, spreadsheet is supported
	VS80M-200-E	Monochrome, 640 x 480, processor performance x 1.5
	VS80M-200-ER	Monochrome, 640 x 480, processor performance x 1.5, PatMax RedLine®
	VS80M-200	Monochrome, 640 x 480, processor performance x 1.5, spreadsheet is supported
	VS80M-200-R	Monochrome, 640 x 480, processor performance x 1.5, spreadsheet is supported, PatMax RedLine®
	VS80M-400-E	Monochrome, 640 x 480, processor performance x 2
	VS80M-400-ER	Monochrome, 640 x 480, processor performance x 2, PatMax RedLine®
	VS80M-400	Monochrome, 640 x 480, processor performance x 2, spreadsheet is supported
	VS80M-400-R	Monochrome, 640 x 480, processor performance x 2, spreadsheet is supported, PatMax RedLine®
	VS80M-202-E	Monochrome, 1600 x 1200, processor performance x 1.5
	VS80M-202-ER	Monochrome, 1600 x 1200, processor performance x 1.5, PatMax RedLine®
	VS80M-202	Monochrome, 1600 x 1200, processor performance x 1.5, spreadsheet is supported
	VS80M-202-R	Monochrome, 1600 x 1200, processor performance x 1.5, spreadsheet is supported, PatMax RedLine®
	VS80M-402-E	Monochrome, 1600 x 1200, processor performance x 2
	VS80M-402-ER	Monochrome, 1600 x 1200, processor performance x 2, PatMax RedLine®
	VS80M-402	Monochrome, 1600 x 1200, processor performance x 2, spreadsheet is supported
	VS80M-402-R	Monochrome, 1600 x 1200, processor performance x 2, spreadsheet is supported, PatMax RedLine®
	VS80C-100	Color, 640 x 480, processor performance x 1, spreadsheet is supported
	VS80C-200-R	Color, 640 x 480, processor performance x 1.5, spreadsheet is supported, PatMax RedLine®
	VS80C-400-R	Color, 640 x 480, processor performance x 2, spreadsheet is supported, PatMax RedLine®
	VS80C-202-R	Color, 1600 x 1200, processor performance x 1.5, spreadsheet is supported, PatMax RedLine®
	VS80C-402-R	Color, 1600 x 1200, processor performance x 2, spreadsheet is supported, PatMax RedLine®
VS70	VS70M-600-E	Monochrome, 640 x 480/800 x 600, processor performance x 1
	VS70M-600-ER	Monochrome, 640 x 480/800 x 600, processor performance x 1, PatMax RedLine®
	VS70M-600	Monochrome, 640 x 480/800 x 600, processor performance x 1, spreadsheet is supported
	VS70M-600-R	Monochrome, 640 x 480/800 x 600, processor performance x 1, spreadsheet is supported, PatMax RedLine®
	VS70M-800-E	Monochrome, 640 x 480/800 x 600, processor performance x 1.25
	VS70M-800-ER	Monochrome, 640 x 480/800 x 600, processor performance x 1.25, PatMax RedLine®
	VS70M-800	Monochrome, 640 x 480/800 x 600, processor performance x 1.25, spreadsheet is supported
	VS70M-800-R	Monochrome, 640 x 480/800 x 600, processor performance x 1.25, spreadsheet is supported, PatMax RedLine®
	VS70M-802-E	Monochrome, 1600 x 1200, processor performance x 1.25
	VS70M-802-ER	Monochrome, 1600 x 1200, processor performance x 1.25, PatMax RedLine®
	VS70M-802	Monochrome, 1600 x 1200, processor performance x 1.25, spreadsheet is supported
	VS70M-802-R	Monochrome, 1600 x 1200, processor performance x 1.25, spreadsheet is supported, PatMax RedLine®
	VS70C-600-R	Color, 640 x 480/800 x 600, processor performance x 1, spreadsheet is supported, PatMax RedLine®
	VS70C-800-R	Color, 640 x 480/800 x 600, processor performance x 1.25, spreadsheet is supported, PatMax RedLine®
	VS70C-802-R	Color, 1600 x 1200, processor performance x 1.25, spreadsheet is supported, PatMax RedLine®
VS20	VS20M-11F310	Monochrome, 640 x 480 (standard), processor performance x 1
	VS20M-12F410	Monochrome, 640 x 480 (standard, 2 x image magnification), processor performance x 2
	VS20C-12F410	Color, 640 x 480 (standard, 2 x image magnification), processor performance x 2
	VS20M-13F410	Monochrome, 640 x 480 (standard, 2 x image magnification)/800 x 600 (image magnification x 2), processor performance x 2
	VS20C-13F410	Color, 640 x 480 (standard, 2 x image magnification)/800 x 600 (image magnification x 2), processor performance x 2

Option

VS80

Product name	Model	Description
Lens		
C-mount lens	LM5JCM-V-MTH	5mm, F2.8/F4/F5.6/F8
	LM8JCM-V-MTH	8mm, F1.4/F4/F8/F16
	LM12JCM-V-MTH	12mm, F1.4/F4/F8/F16
	LM16JCM-V-MTH	16mm, F1.4/F4/F8/F16
	LM25JCM-V-MTH	25mm, F1.4/F4/F8/F16
	LM35JCM-V-MTH	35mm, F2/F4/F8/F16
	LM50JCM-V-MTH	50mm, F2.8/F4/F8/F16
	LM75JC1MS-MTH	75mm, F2.5~F22
	LM100JC1MS-MTH	100mm, F2.8~F32
Cable		
Ethernet cable	CCB-84901-2001-02	Ethernet cable, 2m
	CCB-84901-2001-05	Ethernet cable, 5m
	CCB-84901-2001-10	Ethernet cable, 10m
	CCB-84901-2001-15	Ethernet cable, 15m
Breakout cable	CCB-M8IO-05	Breakout cable, 5m
	CCB-M8IO-10	Breakout cable, 10m
	CCB-M8IO-15	Breakout cable, 15m
PoE adapter		
PoE adapter	POE-ADAPT-G-00	Power Over Ethernet Adapter, Gigabit
Mounting kit		
Mounting kit	BKT-IS8K-01	Bracket for In-Sight8000, VS80
I/O module		
I/O module	CIO-MICRO	IS, VS IO module (Ethernet, M8DSIO)
I/O module cable	CCB-M8DSIO-02	IO Module cable, 2m, for VS80
	CCB-M8DSIO-05	IO Module cable, 5m, for VS80
	CCB-M8DSIO-10	IO Module cable, 10m, for VS80
	CCB-M8DSIO-15	IO Module cable, 15m, for VS80

VS70

Product name	Model	Description
Lens		
S-mount/M12 lens	LM12-06-01	Lens, S-Mount M12 6mm f/2 (fixed aperture)
	LM12-12-01	Lens, S-Mount M12 12mm f/1.9 (fixed aperture)
	LM12-12-01-F2.3	Lens, S-Mount M12 12mm f/2.3 (fixed aperture)
	LM12-16-01	Lens, S-Mount M12 16mm f/2.5 (fixed aperture)
	LM12-25-01	Lens, S-Mount M12 25mm f/2 (fixed aperture)
C-mount lens	LM5JCM-V-MTH	5mm, F2.8/F4/F5.6/F8
	LM8JCM-V-MTH	8mm, F1.4/F4/F8/F16
	LM12JCM-V-MTH	12mm, F1.4/F4/F8/F16
	LM16JCM-V-MTH	16mm, F1.4/F4/F8/F16
	LM25JCM-V-MTH	25mm, F1.4/F4/F8/F16
	LM35JCM-V-MTH	35mm, F2/F4/F8/F16
	LM50JCM-V-MTH	50mm, F2.8/F4/F8/F16
	LM75JC1MS-MTH	75mm, F2.5~F22
	LM100JC1MS-MTH	100mm, F2.8~F32
Adjustable-focus module	ISAF-7000-8MM	8mm F2.2 Lens included
Tool kit		
Installation tool kit	ISLN-7000-SMNT	S-Mount M12 installation tool kit
Lens cover		
Standard lens cover	COV-7000-CMNT	Standard C Mount Lens Cover
Extended lens cover	COV-7000-CMNT-EX	Extended C Mount Lens Cover

Option

VS70

Product name	Model	Description
Light cover		
Light cover set including illumination with LED ring light	ISLM-7000-WHI	IS7000, VS70 GII Illumination accessory with pre-installed white light.
Light cover for LED ring light	COV-7000-CLR	Clear Light cover
	COV-7000-PL-Full	Polarized Light cover
Light		
LED ring light	ISL-7000-RD	Red, Used with the light cover for LED ring light attached.
	ISL-7000-IR	Infrared light, Used with the light cover for LED ring light attached.
	ISL-7000-BL	Blue, Used with the light cover for LED ring light attached.
	ISL-7000-WHI	White, Used with the light cover for LED ring light attached.
Bandpass filter	ISF-7000-RDBP605	Red
	ISF-7000-IRBP815	Infrared
	ISF-7000-BLBP435	Blue
Cable		
Breakout cable	CCB-PWRIO-05	Power&IO cable, 5m
	CCB-PWRIO-10	Power&IO cable, 10m
	CCB-PWRIO-15	Power&IO cable, 15m
Ethernet cable	CCB-84901-2001-02	Ethernet cable, 2m
	CCB-84901-2001-05	Ethernet cable, 5m
	CCB-84901-2001-10	Ethernet cable, 10m
	CCB-84901-2001-15	Ethernet cable, 15m
I/O module		
I/O module	CIO-MICRO	IS, VS IO module (Ethernet, M8DSIO)
	CIO-1400	IS, VS IO module (CCB-PWRIO-MOD)
I/O module cable	CCB-PWRIO-MOD-02	IO Module cable, 2m, for VS20, VS70
	CCB-PWRIO-MOD-05	IO Module cable, 5m for VS20, VS70
Mounting bracket		
Mounting bracket	ISB-7000-7K	Bracket for In-Sight7000, VS70

VS20

Product name	Model	Description
Lens		
S-mount (M12) lens	LM12-03-01	3.6 mm F2.0 fixed aperture lens
	LM12-06-01	6 mm F2 fixed aperture lens
	LM12-08-01-F25	8 mm F2.5 fixed aperture lens
	LM12-12-01	12 mm F1.9 fixed aperture lens
	LM12-16-01	16 mm F2.5 fixed aperture lens
	LM12-25-01	25 mm F2 fixed aperture lens
Spacer		
Lens spacer (M12)	LM12-SPACER-16-01	Use together with 16 mm lens
	LM12-SPACER-25-01	Use together with 25 mm lens
Filter and light cover		
Polarizer	IMPF-2000-POLAR2	Polarized light cover
Filter	IMRF-2000-BP635	Red bandpass filter
	IMBF-2000-BP470	Blue bandpass filter
	IMIF-2000-BP850	IR bandpass filter
Light cover	IFS-2000-HBRING-CV	Replacement ring light cover
Light		
LED ring light	IFS-2000-HBRING-RD	High-intensity red
	IFS-2000-HBRING-WH	High-intensity white
	IFS-2000-HBRING-BL	High-intensity blue
	IFS-2000-HBRING-IR	High-intensity near infrared
Cable		
Ethernet cable	CCB-84901-2001-02	Cable length 2 m, M12 connector ⇔RJ-45 connector, in-line
	CCB-84901-2001-05	Cable length 5 m, M12 connector ⇔RJ-45 connector, in-line
	CCB-84901-2001-10	Cable length 10 m, M12 connector ⇔RJ-45 connector, in-line
	CCB-84901-2001-15	Cable length 15 m, M12 connector ⇔RJ-45 connector, in-line
Breakout cable	CCB-PWRIO-05	Power&IO cable, 5m
	CCB-PWRIO-10	Power&IO cable, 10m
	CCB-PWRIO-15	Power&IO cable, 15m
Mounting bracket		
Plate adapter	BKT-2000-ADAPT-00	Flat surface mounting plate adapter
	DM100-UBRK-000	General-purpose mounting bracket
	DM100-PIVOTM-00	Pivot mounting bracket
	DM-TPODAP-00	Bracket for UNC1/4 mount
I/O module		
I/O module	CIO-1400	I/O extension module
I/O module cable	CCB-PWRIO-MOD-02	Cable length 2 m, M12 connector ⇔15pin connector (DB15)
	CCB-PWRIO-MOD-05	Cable length 5 m, M12 connector ⇔15pin connector (DB15)

Specifications

General specifications

Item	VS80	VS70	VS20
Ambient operating temperature	0…35°C (Case temperature: less than 50°C)	0…40°C (Case temperature: less than 50°C)	0…40°C
Ambient storage temperature	−20…80°C		−10…60°C
Maximum humidity	Less than 80% RH, non-condensing		Less than 95% RH, non-condensing
Vibration resistance	IEC 60068-2-6: A vibration of 10 G (10 to 500 Hz at 100 m/s² with 15 mm width) was applied to each X, Y, and Z direction for 2 hours. (VS70: with cables/cable plugs and appropriate lens cover attached)		
Shock resistance	IEC 60068-2-27: 18 half sinusoidal shocks (3 shocks for each X, Y, and Z direction) with 80 G (800 m/s² at 11 ms) were applied. (VS70: with cables/cable plugs and appropriate lens cover attached)		IEC 60068-2-27: 1000 half sinusoidal shocks with 11 G in 10 ms were applied.
Operating atmosphere	There is no danger of corrosive gases, flammable gases, and strong alkaline substances to adhere.		
Protective structure	IP40 (with cables connected and appropriate lens attached)	IP67 (with cables connected and appropriate lens attached)	IP65 (when all connectors are attached to cables or shielded by a sealing cap)
Installation location*1	Outside a control panel		

*1. Do not install it in the following places:
- Where the ambient temperature or humidity exceed the applicable ranges
- Where there is corrosive or flammable gas
- Where in danger of organic solvents, such as benzene, thinner, and alcohol or strong alkaline substances such as caustic soda to adhere
- Where subject to much vibration or shock
- Where condensation occurs due to sudden temperature changes
- Where there are a lot of conductible dust, iron filings, or salt
- Where in danger of liquid such as water, oil, or chemicals to adhere

Performance specifications

VS80

Specifications	VS80M-100 VS80M-100-E	VS80M-200 VS80M-200-□	VS80M-400 VS80M-400-□	VS80M-202 VS80M-202-□	VS80M-402 VS80M-402-□
Memory	512 MB flash memory, unlimited storage when storing in the remote network device image processing: 512MB SDRAM				
Imager type	1/1.8 inch CMOS, global shutter 3.6 mm diagonal, 4.5 x 4.5 µm square pixels			1/1.8 inch CMOS, global shutter 9 mm diagonal, 4.5 x 4.5 µm square pixels	
Lens	C-mount				
Image resolution (pixels)	640 x 480			1600 x 1200	
Bit depth	256 gray levels (8 bits/pixel)				
Electronic shutter speed	14 µs…520 ms			20 µs…940 ms	
Maximum image acquisition speed*2*3 (frame/s)	217			53	
Power consumption (W)	Max. 6.49 (supplied with PoE (class 2))				
Trigger	Opto-isolated image acquisition trigger input x 1, remote software commands via Ethernet				
Discrete inputs	N/A Option: General-purpose input x 8 (available when connecting a CIO-MICRO I/O module)				
Discrete outputs	Opto-isolated NPN/PNP high-speed output x 2 Option: General-purpose output x 8 (available when connecting a CIO-MICRO I/O module)				
Network communication	CC-Link IE Field Network Basic, SLMP scanners, SLMP, EtherNet/IP™, MODBUS® /TCP, TCP/IP, UDP, FTP, Telnet (native mode), DHCP (default at shipment from the factory), fixed and link local IP address setting				
Material	Zinc die-cast housing				
Installation	M3 screw hole x 4				
Dimensions (mm)	31.0 x 31.2 x 75.1				
Weight (g)	132.2				

Specifications	VS80C-100	VS80C-200-R	VS80C-400-R	VS80C-202-R	VS80C-402-R
Memory	512 MB flash memory, unlimited storage when storing in the remote network device image processing: 512 MB SDRAM				
Imager type	1/1.8 inch CMOS, global shutter 3.6 mm diagonal, 4.5 x 4.5 µm square pixels			1/1.8 inch CMOS, global shutter 9 mm diagonal, 4.5 x 4.5 µm square pixels	
Lens	C-mount				
Image resolution (pixels)	640 x 480			1600 x 1200	
Bit depth	24-bit color				
Electronic shutter speed	14 µs…520 ms			20 µs…940 ms	
Maximum image acquisition speed*2*3 (frame/s)	135			33	
Power consumption (W)	Max. 6.49 (supplied with PoE (class 2))				
Trigger	Opto-isolated image acquisition trigger input x 1, remote software commands via Ethernet				
Discrete inputs	N/A Option: General-purpose input x 8 (available when connecting a CIO-MICRO I/O module)				
Discrete outputs	Opto-isolated NPN/PNP high-speed output x 2 Option: General-purpose output x 8 (available when connecting a CIO-MICRO I/O module)				
Network communication	CC-Link IE Field Network Basic, SLMP scanners, SLMP, EtherNet/IP™, MODBUS® /TCP, TCP/IP, UDP, FTP, Telnet (native mode), DHCP (default at shipment from the factory), fixed and link local IP address setting				
Material	Zinc die-cast housing				
Installation	M3 screw hole x 4				
Dimensions (mm)	31.0 x 31.2 x 75.1				
Weight (g)	132.2				

*2. The number of image sensor rows can be set in In-Sight Explorer. Decreasing the number of rows will increase the number of frames per second acquired by a vision sensor. For details, refer to the help of In-Sight Explorer.
*3. The maximum frame rate of full image frame capture when all of the following conditions are applied.
- Minimum exposure   • No connection with In-Sight Explorer   • Images are captured with an image acquisition trigger input

Specifications

Performance specifications

VS70

Specifications	VS70M-600 VS70M-600-□	VS70M-800 VS70M-800-□	VS70M-802 VS70M-802-□
Memory	7.2 GB flash memory, unlimited storage when storing in the remote network device image processing: 512 MB SDRAM		
Imager type	1/1.8 inch CMOS, global shutter 4.5 mm diagonal, 4.5 x 4.5 µm square pixels		1/1.8 inch CMOS, global shutter 9 mm diagonal 4.5 x 4.5 µm square pixels
Lens	C-mount, S-mount/M12, adjustable-focus[*1]		
Image resolution (pixels)	640 x 480, 800 x 600[*2]		1600 x 1200
Bit depth	256 gray levels (8 bits/pixel)		
Electronic shutter speed	14 µs…520 ms: image resolution 640 × 480 14 µs…550 ms: image resolution 800 × 600		20 µs…940 ms
Maximum image acquisition speed[*3][*4] (frame/s)	217: image resolution 640 × 480 165: image resolution 800 × 600		53
SD memory card	Micro SD memory card slot for saving jobs or image files x 1 Micro SD memory card: SDHC standard, maximum capacity 8 GB		
Power consumption	24 V DC ± 10 %, 36 W (1.5 A) maximum		
Power output	24 V DC/750 mA maximum to an external light		
Trigger	Opto-isolated image acquisition trigger input x 1, remote software commands via Ethernet		
Discrete inputs	General-purpose input x 3 (available when connected with a breakout cable[*5]) Option: General-purpose input x 8 (available when connecting a CIO-MICRO I/O module) General-purpose input x 7 (available when connecting a CIO-1400 I/O module)		
Discrete outputs	High-speed output x 4 (available when connected with a breakout cable[*5]) Option: High-speed output x 2, general-purpose output x 8 (available when connecting a CIO-MICRO I/O module) High-speed output x 2, general-purpose output x 6 (available when connecting a CIO-1400 I/O module)		
Network communication	CC-Link IE Field Network Basic, SLMP scanners, SLMP, EtherNet/IP™, MODBUS®/TCP, TCP/IP, UDP, FTP, Telnet (native mode), DHCP (default at shipment from the factory), fixed and link local IP address setting		
Material	Die-cast and extruded aluminum housing		
Installation	M3 screw hole x 4		
Dimensions (mm)	35.7 x 60.5 x 90.0		
Weight (g)	240		

Specifications	VS70C-600-R	VS70C-800-R	VS70C-802-R
Memory	7.2 GB flash memory, unlimited storage when storing in the remote network device image processing: 512 MB SDRAM		
Imager type	1/1.8 inch CMOS, global shutter 4.5 mm diagonal, 4.5 x 4.5 µm square pixels		1/1.8 inch CMOS, global shutter 9 mm diagonal 4.5 x 4.5 µm square pixels
Lens	C-mount, S-mount/M12, adjustable-focus[*1]		
Image resolution (pixels)	640 x 480, 800 x 600[*2]		1600 x 1200
Bit depth	24-bit color		
Electronic shutter speed	14 µs…520 ms: image resolution 640 × 480 14 µs…550 ms: image resolution 800 × 600		20 µs…940 ms
Maximum image acquisition speed[*3][*4] (frame/s)	135: image resolution 640 × 480 100: image resolution 800 × 600		33
SD memory card	Micro SD memory card slot for saving jobs or image files x 1 Micro SD memory card: SDHC standard, maximum capacity 8 GB		
Power consumption	24 V DC ± 10 %, 36 W (1.5 A) maximum		
Power output	24 V DC/750 mA maximum to an external light		
Trigger	Opto-isolated image acquisition trigger input x 1, remote software commands via Ethernet		
Discrete inputs	General-purpose input x 3 (available when connected with a breakout cable[*5]) Option: General-purpose input x 8 (available when connecting a CIO-MICRO I/O module) General-purpose input x 7 (available when connecting a CIO-1400 I/O module)		
Discrete outputs	High-speed output x 4 (available when connected with a breakout cable[*5]) Option: High-speed output x 2, general-purpose output x 8 (available when connecting a CIO-MICRO I/O module) High-speed output x 2, general-purpose output x 6 (available when connecting a CIO-1400 I/O module)		
Network communication	CC-Link IE Field Network Basic, SLMP scanners, SLMP, EtherNet/IP™, MODBUS®/TCP, TCP/IP, UDP, FTP, Telnet (native mode), DHCP (default at shipment from the factory), fixed and link local IP address setting		
Material	Die-cast and extruded aluminum housing		
Installation	M3 screw hole x 4		
Dimensions (mm)	35.7 x 60.5 x 90.0		
Weight (g)	240		

*1. Adjustable-focus can be performed up to 20000 times.
*2. The default resolution is 800 x 600 pixels. The resolution can be set as 640 x 480 pixels in In-Sight Explorer. For details, refer to the help of In-Sight Explorer.
*3. The number of image sensor rows can be set in In-Sight Explorer. Decreasing the number of rows will increase the number of frames per second acquired by a vision sensor. For details, refer to the help of In-Sight Explorer.
*4. The maximum frame rate of full image frame capture when all of the following conditions are applied.
　• Minimum exposure 　• No connection with In-Sight Explorer 　• Images are captured with an image acquisition trigger input
*5. "High-speed output 2/Input 2" and "High-speed output 3/Input 3" of a breakout cable can be used as a high-speed output or a general purpose input by changing the setting in In-Sight Explorer.
　These lines are set as output (high-speed output) by default.

Specifications
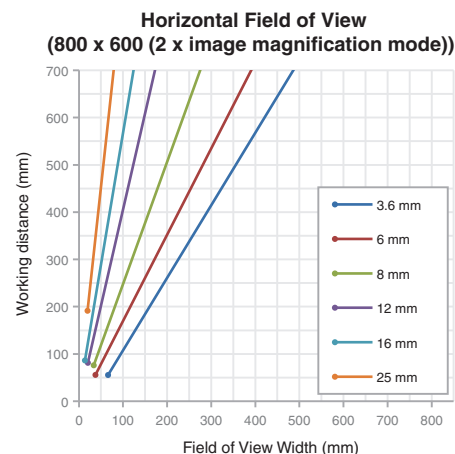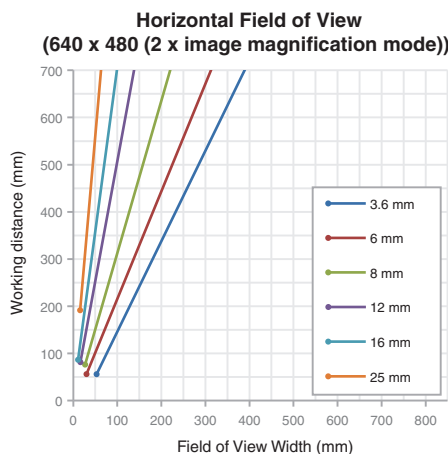
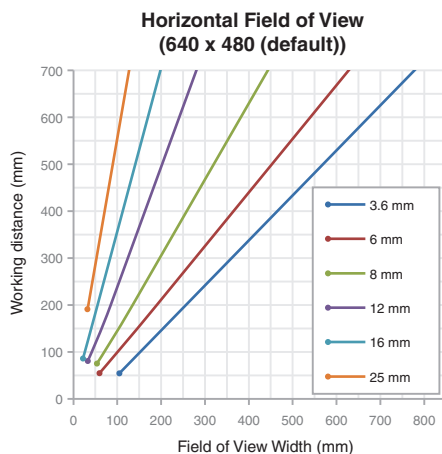## Performance specifications

VS20

Specifications		VS20M-11F310	VS20M-12F410	VS20C-12F410	VS20M-13F410	VS20C-13F410
Memory		32 MB flash memory, unlimited storage when storing in the remote network device image processing: 128 MB SDRAM				
Imager type		1/3-inch CMOS, 4.8 mm x 3.6 mm (W x H), 3.75 μm sq. pixels				
Imagery		Monochrome	Monochrome	Color	Monochrome	Color
Lens		S-Mount/M12, 8 mm (standard), options: 3.6 mm, 6 mm, 12 mm, 16 mm, 25 mm				
Image resolution (pixels)		640 x 480 (standard)	640 x 480 (standard) 640 x 480 (2 x image magnification mode)		640 x 480 (standard) 640 x 480 (2 x image magnification mode) 800 x 600 (2 x image magnification mode)*1	
Bit depth		256 gray levels (8 bits/pixel)		24-bit color	256 gray levels (8 bits/pixel)	24-bit color
Lighting		Equipped as standard: LED ring light (white), option: LED ring light (red, blue, near-infrared)				
Electronic shutter speed		1μs…1000 ms				
Maximum image acquisition speed*2 (frame/s)		40	75	55	75	55
Power consumption		24 V DC ± 10%, 48 W (2.0 A) maximum when the illumination is ON.				
Trigger		• Opto-isolated image acquisition trigger input x 1 • Remote software commands via Ethernet				
	Voltage	• ON: 15…24 V DC (standard 24 V DC) • OFF: 0…5 V DC (standard 0 V DC)				
	Current	3.6 mA/12 V DC, 7.5 mA/24 V DC, resistance: Max. 5.48 kΩ				
Discrete inputs		Opto-isolated general-purpose input x 1 Option: General-purpose input x 7: available when connecting a CIO-1400 I/O module				
	Voltage	ON: 15…24 V DC (standard 24 V DC), OFF: 0…5 V DC (standard 0 V DC)				
	Current	3.6 mA/12 V DC, 7.5 mA/24 V DC, resistance: Max. 5.48 kΩ				
Discrete outputs		Opto-isolated high-speed output x 4 Option: High-speed output x 2, general-purpose output x 6: available when connecting a CIO-1400 I/O module				
	Voltage	28 V DC maximum through external load				
	Current*3	ON status: Max. 50 mA (sink or source), leakage current in OFF status: Max. 100 μA, external load resistance: 240 Ω to 10 kΩ Each line is rated at a maximum 50 mA and protected against over-current, short circuits, and transients from switching inductive loads. A protection diode is required for a high inductive load.				
Network communication		CC-Link IE Field Network Basic, SLMP scanner, SLMP, EtherNet/IP™, MODBUS®/TCP, TCP/IP, UDP, FTP, Telnet (native mode), DHCP (default at shipment from the factory), fixed and link local IP address setting				
Other communications		RS-232 (R x D, T x D (TIA/EIA-232-F compliant))				
Material		Aluminum housing				
Installation		M3 screw hole x 4				
Dimensions (mm)		In-line configuration: 92 x 60 x 52, Right-angle configuration: 62 x 60 x 67				
Weight (g)		200				

*1. The default resolution is 640 x 480 pixels. The resolution can be set as 800 x 600 pixels in In-Sight Explorer. For details, refer to the help of In-Sight Explorer.

*2. The maximum frame rate when all of the following conditions are applied.
  • Minimum exposure
  • No connection with In-Sight Explorer
  • Image resolution: 640 x 480 (2 x image magnification mode for VS20M-12F410 and VS20M-13F410 models).

*3. When I/O module (CIO-1400) is connected, high-speed output is sink type up to 50 mA only and general-purpose output is sink type or source type up to 100 mA which can be set by the user.

Horizontal Field of View (640 x 480 (default))

Horizontal Field of View (640 x 480 (2 x image magnification mode))

**Horizontal Field of View (800 x 600 (2 x image magnification mode))**

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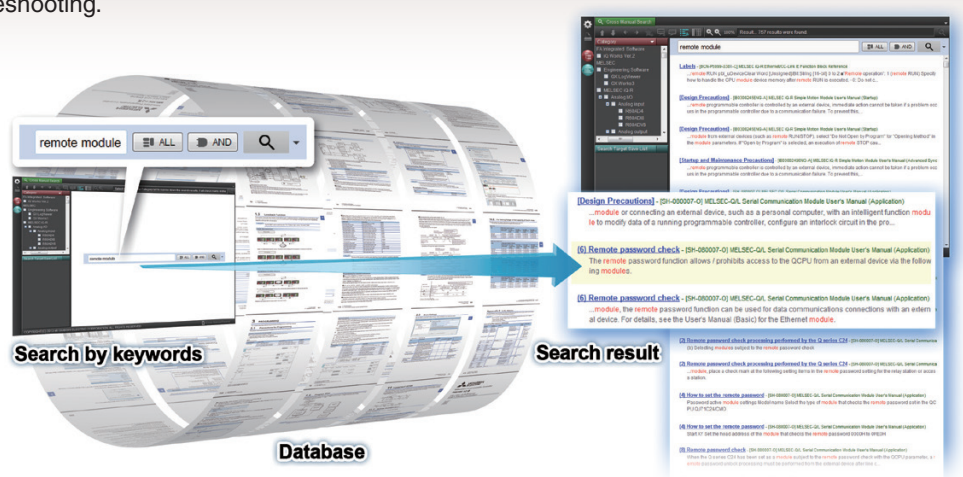
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