MV-SC3020XM

2 MP Mono Vision Sensor



Introduction

With built-in high-precision vision algorithms, MV-SC3020XM vision sensor can realize counting, existence, measurement, recognition and other functions. It can be easily configured and operated via the SCMVS client software, and it uses RS-232 and Ethernet to output vision tool results and customized results.

Available Models

Mechanical Focusing

- 8 mm focal length: MV-SC3020XM-08M-WBN
- 12 mm focal length: MV-SC3020XM-12M-WBN
- 16 mm focal length: MV-SC3020XM-16M-WBN

Liquid Lens Focusing

- 8 mm focal length: MV-SC3020XM-08L-WBN
- 12 mm focal length: MV-SC3020XM-12L-WBN
- 16 mm focal length: MV-SC3020XM-16L-WBN

Applicable Industry

Consumer electronics, food and pharmaceutical, and automotive industries.

Key Features

- Adopts embedded hardware platform for high-speed image processing.
- Built-in high-precision positioning, measurement and recognition algorithms for counting, defects, existence, positioning and other functions.
- Supports RS-232, TCP, UDP, FTP, Modbus, PROFINET, EtherNet/IP and other communication modes.
- Adopts multiple IO interfaces for input and output signals.
- Supports viewing the device's status in real time via 360° visual indicator, convenient for debugging and maintenance.
- Rotatable cable tail design, suitable for narrow space.
- Adopts polarized and full-transparent multiple optical lighting with good environmental adaptability.
- IP67 protection without fear of harsh industrial application environments.

Specification

Model	MV-SC3020XM-**M-WBN	MV-SC3020XM-**L-WBN[1]
Tool		
Vision tool	● Measurement tools: P2P measurement, P2L measurement, contrast measurement, grayscale size, edge width measurement, width measurement, brightness average value, L2L angle, diameter measurement, line angle	
	● Existence tools: Spot existence, edge existence, contour existence, pattern existence, circle existence, line existence, anomaly judge, existence detection	
	● Count tools: Multi-object count, spot count, edge count, contour count, pattern count, learning-based count, count[2]	
	● Recognition tools: Code recognition, category recognition, classification registration, object registration, OCR, learning-based OCR	
	● Logic tools: Calculator, if module, logic judge, format output, condition judge, character comparison, combination judge	
	● Location tools: Calibration convert, single point alignment, point rectify, point grasp, scale transformation, fixture	
	● Deep learning tools: DL classification, DL object detection	
	● Defect detection tools: Anomaly detection, golden sample learning, character horizontal stripe detection	
	● Industry tool: OCR and defect detection	
Solution capacity	Supports importing and exporting solutions, up to 32 solutions can be stored.	
Communication protocol	RS-232, TCP, UDP, FTP, PROFINET, Modbus, EtherNet/IP, MELSEC/SLMP, FINS, Keyence KV	
Camera		
Sensor type	CMOS, global shutter	
Pixel size	3.45 μm × 3.45 μm	
Sensor size	1/2.53"	
Resolution	1536 × 1264	
Max. frame rate	100 fps	60 fps
Gain	0 dB to 37 dB	0 dB to 15 dB
Exposure time	35 μs to 1 sec	
Pixel format	Mono 8	
Mono/color	Mono	
Electrical feature		
Data interface	Fast Ethernet (100 Mbit/s)	
Digital I/O	12-pin M12 connector provides power and I/O, including isolated input (Line 0/1/2) × 3, isolated output (Line 3/4/5) × 3, RS-232 × 1 Supports device triggering via pressing top trigger button	
Power supply	24 VDC	
Power consumption	Avg.: 7 W @ 24 VDC (light source enabled) Max.: 24 W @ 24 VDC (light source enabled)	Avg.: 6.5 W @ 24 VDC (light source enabled) Max.: 22 W @ 24 VDC (light source enabled)
Mechanical		
Lens mount	M12-mount, mechanical focus supported	D14-mount, liquid lens focus supported
Focal length	8 mm/12 mm/16 mm	
Lens cap	Polarized + diffuser + full-transparent lens cap	Polarized + full-transparent lens cap
Light source	White spot light by default. Red/blue/IR light source is optional	

Aiming system	1 LED	
Indicator	360° visual indicator	
Dimension	Straight angle: 80.1 mm × 43 mm × 43.5 mm (3.2" × 1.7" × 1.7") Right angle: 58.5 mm × 43 mm × 64.6 mm (2.3" × 1.7" × 2.5")	Straight angle: 80.1 mm × 43 mm × 43.5 mm (3.2" × 1.7" × 1.7") Right angle: 61.8 mm × 43 mm × 64.6 mm (2.4" × 1.7" × 2.5")
Weight	Approx. 190 g (0.4 lb.)	
Ingress protection	IP67 (under proper installation of lens and wiring)	
Temperature	Working temperature: 0 °C to 50 °C (32 °F to 122 °F) Storage temperature: –30 °C to 70 °C (–22 °F to 158 °F)	Working temperature: 0 °C to 40 °C (32 °F to 104°F) Storage temperature: –30 °C to 70 °C (–22 °F to 158 °F)
Humidity	20% RH to 95% RH (no condensation)	
Vibration resistance	Meets standard IEC 60068-2-6:2007. Device only (without installation bracket): 10 Hz to 55 Hz, 1.5 mm peak-to-peak amplitude, 2 hours per axis (X, Y, Z)	
Shock resistance	Meets standard IEC 60068-2-27:2008. Device only (without installation bracket): 30 g / 11 ms, half-sine wave, 500 shocks per axis (6 directions)	
General		
Client software	SCMVS	
Certification	CE, KC	

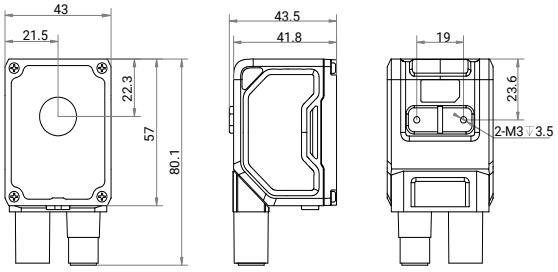
[1]The appearance varies with mechanical focusing models and liquid lens focusing models, and the actual condition shall prevail.

[2]Count refers to dynamic counting that predicts the target trajectory based on position and velocity.

Dimension

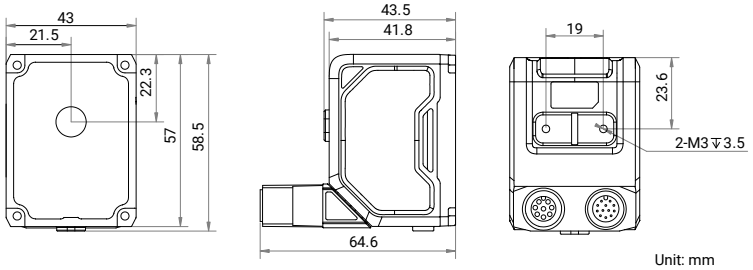
MV-SC3020XM-M-WBN**

Device (Straight Angle)



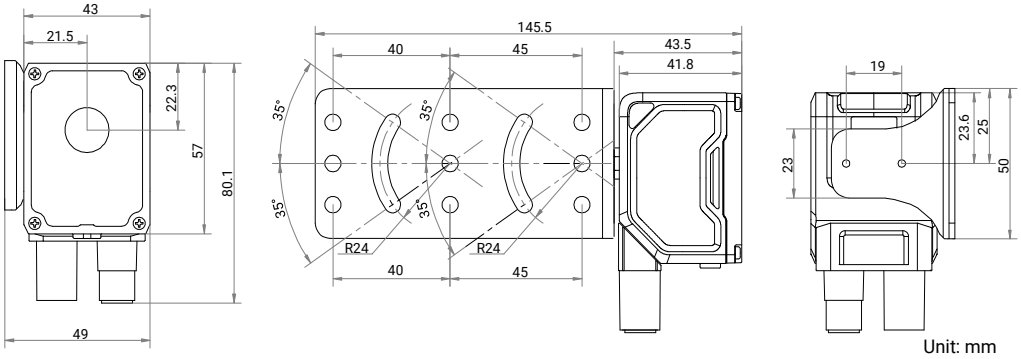
Unit: mm

Device (Right Angle)



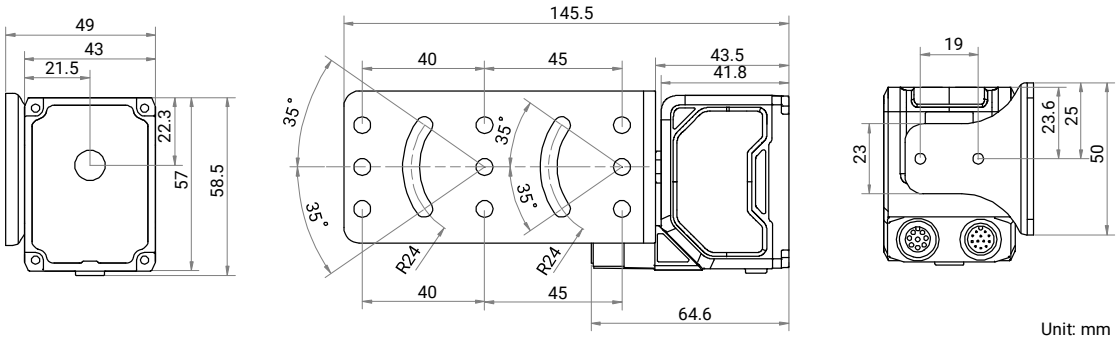
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Device and Installation Bracket (Straight Angle)



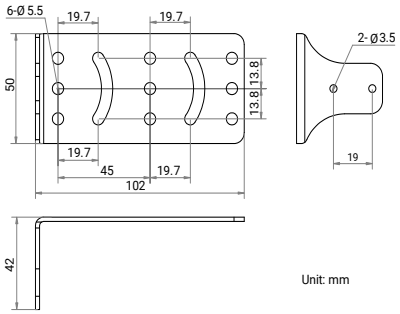
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Device and Installation Bracket (Right Angle)



Unit: mm

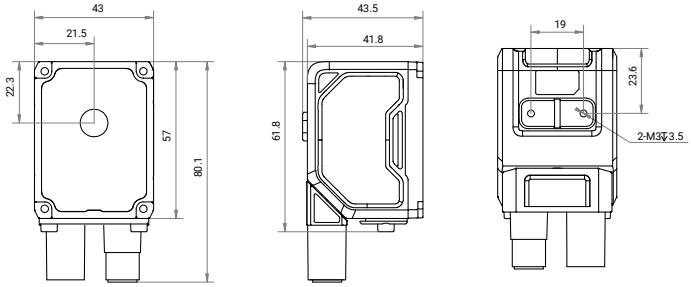
Installation Bracket:



Unit: mm

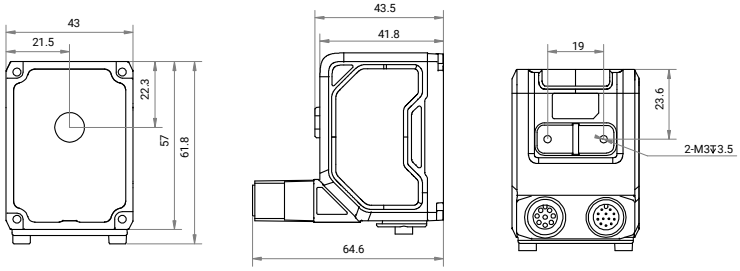
MV-SC3020XC-**L-***

Device (Straight Angle)



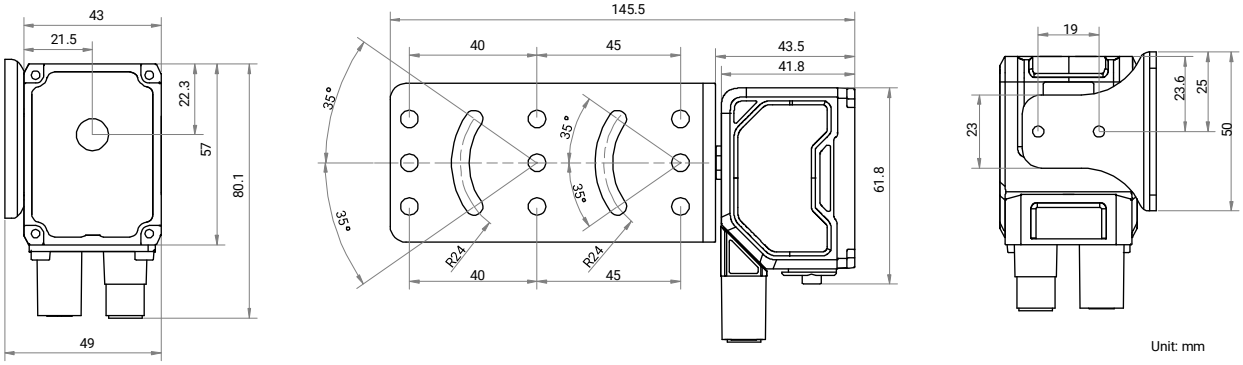
Unit: mm

Device (Right Angle)



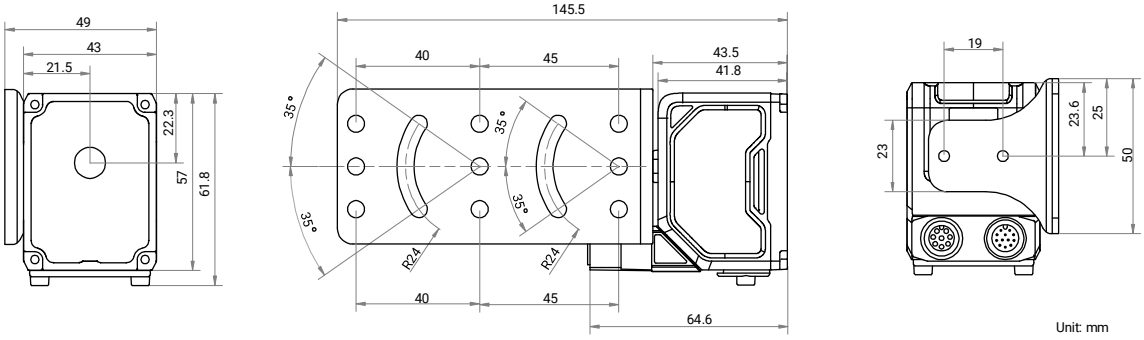
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Device and Installation Bracket (Straight Angle)



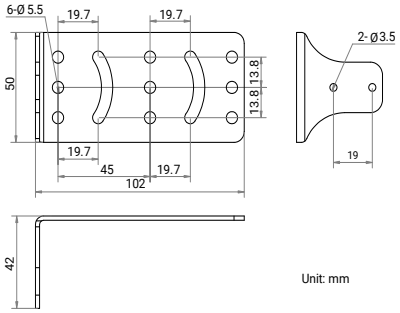
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Device and Installation Bracket (Right Angle)



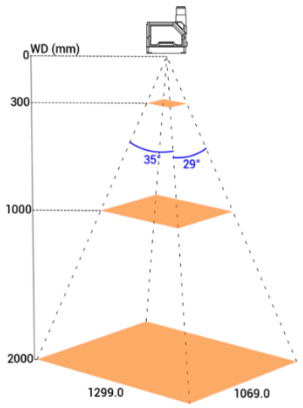
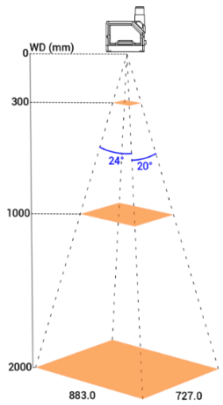
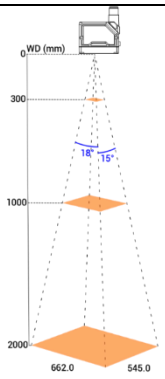
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Installation Bracket:

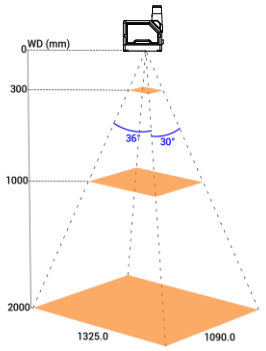
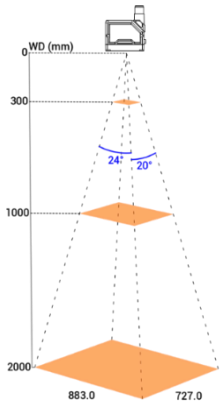
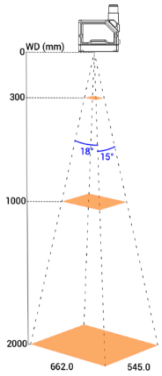


Unit: mm

Detection Range

MV-SC3020XM -**M-*** (Unit: mm)					
Lens Focal Length	Working Distance	Field of View		Single Pixel Accuracy	Diagram of Field of View
		H	V		
8	30	19	16	0.01	
	100	65	53	0.04	
	200	130	107	0.08	
	300	195	160	0.13	
	600	390	321	0.25	
	1000	649	534	0.42	
	2000	1299	1069	0.85	
12	60	26	22	0.02	
	100	44	36	0.03	
	200	88	73	0.06	
	300	132	109	0.09	
	600	265	218	0.17	
	1000	442	363	0.29	
	2000	883	727	0.58	
16	110	36	30	0.02	
	200	66	55	0.04	
	300	99	82	0.06	
	600	199	164	0.13	
	1000	331	273	0.22	
	2000	662	545	0.43	

Detection Range

MV-SC3020XM-**L-*** (Unit: mm)					
Lens Focal Length	Working Distance	Field of View		Single Pixel Accuracy	Diagram of Field of View
		H	V		
8	60	40	33	0.03	
	100	66	55	0.04	
	300	199	164	0.13	
	600	397	327	0.26	
	1000	662	545	0.43	
	1500	994	818	0.65	
	2000	1325	1090	0.86	
12	80	35	29	0.02	
	100	44	36	0.03	
	300	132	109	0.09	
	600	265	218	0.17	
	1000	442	363	0.29	
	1500	662	545	0.43	
	2000	883	727	0.58	
16	100	33	27	0.02	
	200	66	55	0.04	
	300	99	82	0.06	
	600	199	164	0.13	
	1000	331	273	0.22	
	1500	497	409	0.32	
	2000	662	545	0.43	

Note: For liquid lens models, the minimum working distance in Fast Focus (ToF autofocus) mode is 100 mm.

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