Make Production More Intelligent

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*Features and specifications are subject to latest changes without prior notice.

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CODE READER

·PRODUCT MANUAL·

www.irayple.com/en

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CODE
READER

COMPANY PROFILE

Zhejiang HuaRay Technology Co., Ltd. is a company dedicated in research & development, manufacturing, and sales & marketing of machine vision and autonomous mobile robot (AMR) products. With focus in smart manufacturing technologies and logistics innovation, we are committed to creating and delivering value for our customers by enabling a smart factory transformation.

As a national high-tech enterprise, HuaRay aims to bring the latest technological innovations to our valuable customers. More than 60% of its employees are dedicated in R&D, and the company has filed over 300 patent applications. With its investment in R&D, HuaRay has developed deep know-how in its embedded software, image optimization, recognition algorithms, network transmission, navigation, positioning, scheduling, motion control, and other technical fields.

HuaRay' s products and solutions are widely applied in various industries such as logistics, automotive, 3C, lithium battery, photovoltaic, semiconductor, pharmaceutical, and so on. Our machine vision products include industrial area scan cameras, line scan cameras, smart industrial cameras, vision sensors, 3D industrial cameras, and lenses. These products have been used for code recognition, OCR, vision measurement, positioning, defect detection, etc. In addition, our autonomous mobile robot (AMR) products include latent lift, towing, forklifts, and sorting robots are widely used for warehouses and material handling applications.

CORPORATE SURVEY

500 +
R&D Engineers

420 +
Number of Patents

30 +
Covering Countries and Regions

CORPORATE CULTURE

Values
Customer-oriented and committed to customer success

Mission
Enabling a smart factory transformation

Vision
Provide customers with high quality products and solutions

INTRODUCTION

The intelligent code reader series was upgraded through its algorithms, optics and vari-focal lens to constantly improve the accuracy and speed of code reading. It offers numerous models and optical accessories that support automatic training of the device to simplify deployment. With its powerful AI capabilities and high code reading ratio, it is suitable for us in a variety of industries.

FEATURES

Numerous Products

Multiple types of models and series that come with a resolution ranging from 0.4 to 25 MP.

Built-in Deep Learning Algorithms

Adopts deep learning algorithms, has low time consumption reading codes in milliseconds and reads complex codes really well, allowing the code reader to read high speed moving codes.

Independently Researched and Developed

Offers a high code reading ratio that comes from the independent research and development of algorithms and the rich experience we have in the industry.

Multiple Scenes

With its outstanding design and accessories, it meets the requirements of a variety of scenes.

All-in-one Products

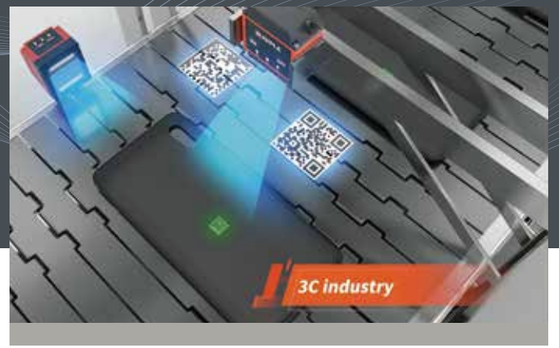
All-in-one product series with high integration, supports automatic focus and training and is easy for operation and deployment.

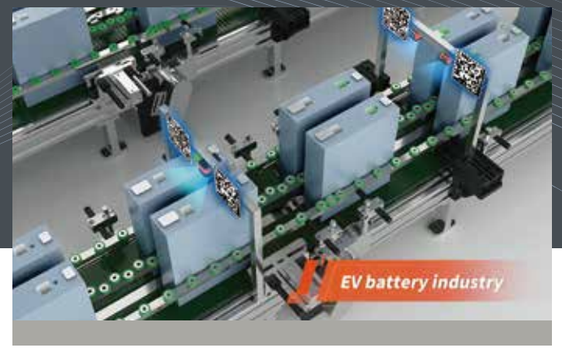
Industrial Grade Design

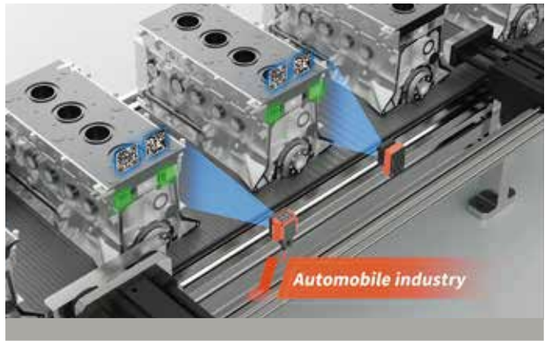
Industrial grade design with multiple types of ports and communication protocols to meet the requirements of a variety of industrial applications.

APPLICATION SCENES

With the rapid development of intelligent manufacturing and the needs of efficiency improvement and quality control, information traceability is being used more and more widely, including the areas such as raw materials, production and finished product circulation, after-sales traceability and more. The bar code and two dimensional code are the most widely used in information traceback. The intelligent code reader of iRAYPLE is the vision solution for the scenes. The code reader of iRAYPLE is not only able to track back information, but also can be more accurate and efficient. It can be applied to different industries.

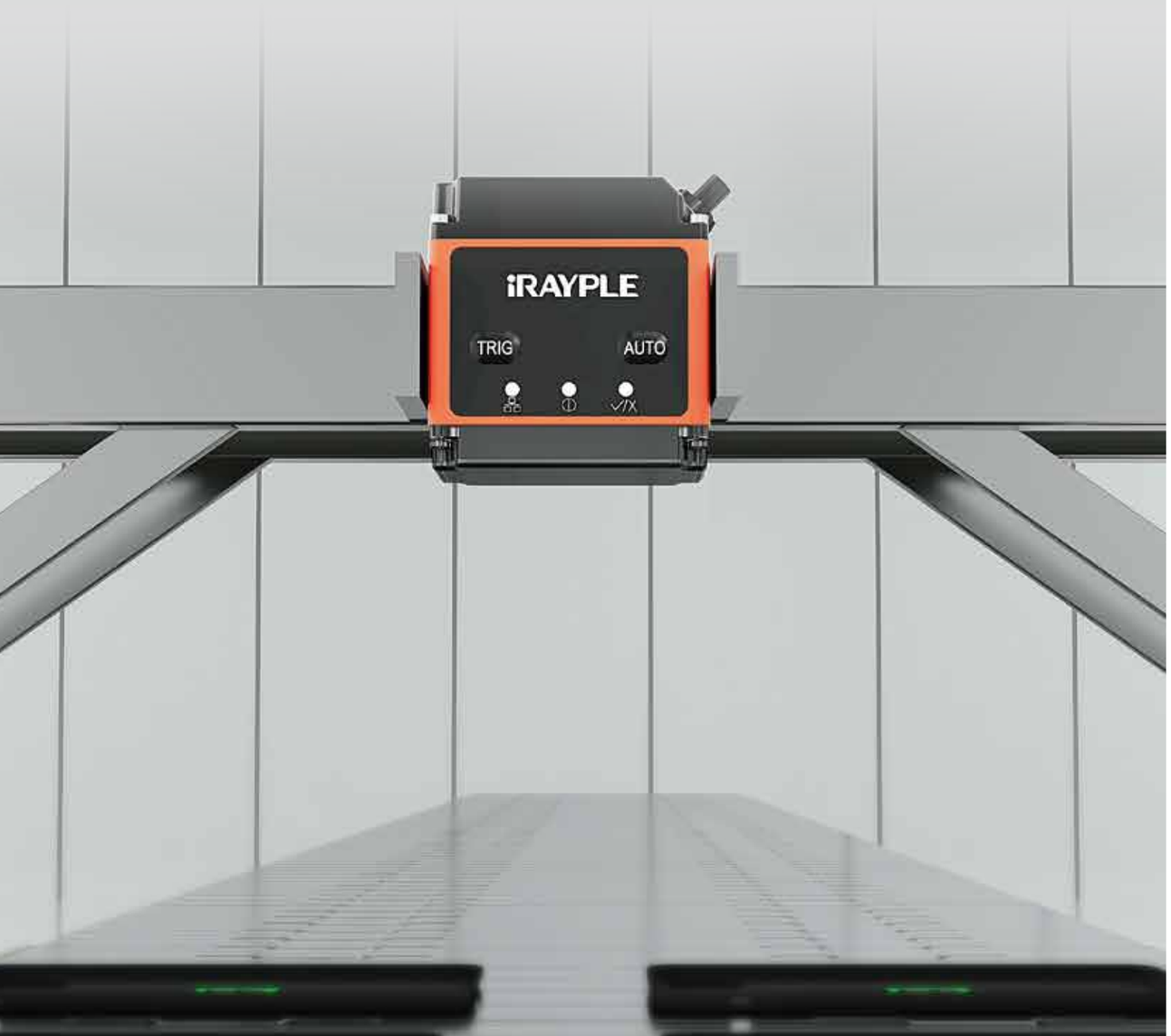






3000 SERIES CODE READER

Compact Design and Cost-Effective



3000 SERIES CODE READER

Compact, Cost-Effective

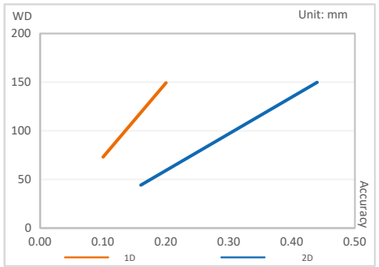
- Two-way lighting and compact design.
- Multiple working modes including software trigger, external trigger and free run.
- Industrial grade 100 Mbps Ethernet port.
- Built-in IO ports, Ethernet port, RS-232 port and GPIO port.
- Supplies with power consumption ≤4.5W.
- Support decoding various symbologies such as
  1D: CODE128/EAN/CODE39/CODE93/CODEBAR/ITF25/UPCA/UPCE
  2D: DM/QR/DPM etc.

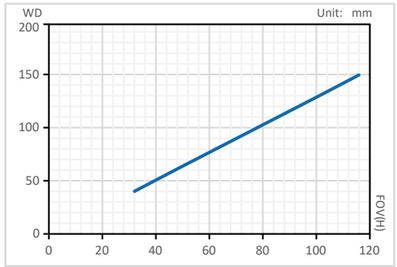
R3000 Series

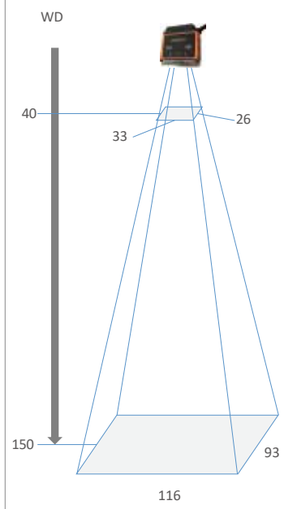
Model	R3004MG-07-WGG110E	R3004MG-07H-WGG01E	RH3124MG011-111E	RH3124MG011E	RH3124MG011-112E	RH3124MG111E
Resolution	640×512		1280×1024			
FPS	60 fps		20 fps			
Max. Decoding Speed	40 codes/s		20 codes/s			
Focal	6.7mm	6.7mm	6.7mm	6.7mm	6.7mm	6.7mm
WD	110 mm	40-150mm	40mm	70mm	110mm	40-150mm
FOV	86×69 mm	33×26-116×93 mm	26×20mm	42×32mm	65×50mm	26×20-18×66mm
Min. Decoding Accuracy	1D: 0.15mm/ 2D: 0.34mm	1D: 0.06mm/ 2D: 0.13mm	1D 0.05mm/ 2D 0.08mm	1D 0.05mm/ 2D 0.08mm	1D 0.06mm/ 2D 0.13mm	1D 0.05mm/ 2D 0.08mm
Illumination	Dual-channel White Light		Dual-channel Red & White Light			
Result Indicator	Green Indicator		/			
Aimer	Red Aimer					
Status Indicator	Power, Network and Decoding Result					
Focusing	Fixed	Manual	Fixed			Manual
Symbologies	1D: Code 39, Code 93, Code 128, CodaBar, EAN8, EAN13, UPCA, UPCE, ITF25 and more. 2D: QR, DM, DPM and more.					
Software	Easy ID					
Trigger Modes	Software Trigger, External Trigger and Free Run					
Connector	Industrial Grade M12 Ethernet and GPIO Connectors					
Network	100 Mbps Ethernet					
GPIO	RS232, 1 Opto-isolated Input, 1 Opto-isolated Output, 1 Configurable Input and Output					
Communication Ports	RS232, Ethernet					
Communication Protocols	SDK, TCP Client, TCP Server, FTP, RS232, Profinet, Modbus, EtherNet/IP, MCUDP, MCTCP, FinsUDP, FinsTCP, MELSEC					
Power Supply	9~26 VDC, 0.5 A Input, Suitable for Industrial Voltage					
Power Consumption	<4.5W	<4.5W	<2W	<2W		<2W
Protection	IP65					
Material	Aluminum Alloy (Excluding front Cover)					
Operating Temperature	-20°C~+50°C					
Operating Humidity	20%~95%, Non-condensing					
Storage Temperature	-30°C~+70°C					
Certifications	CE, FCC, KC					
Weight	<130g					
Dimensions	52mm×50mm×28.5mm (Excluding Cable)		50mm×50mm×28.5mm (Excluding Cable)			
Dimension Type	A		B			

Decoding Capability LUT (Typical)

R3004MG-07H-WGG01E



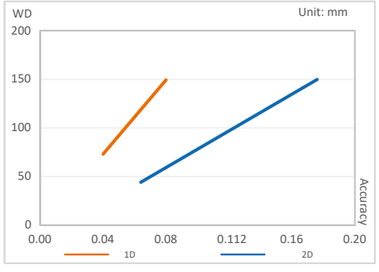


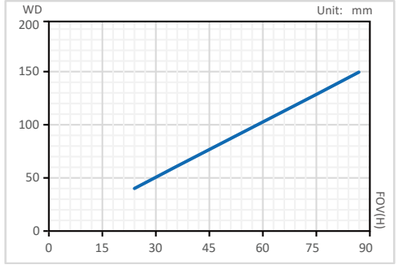


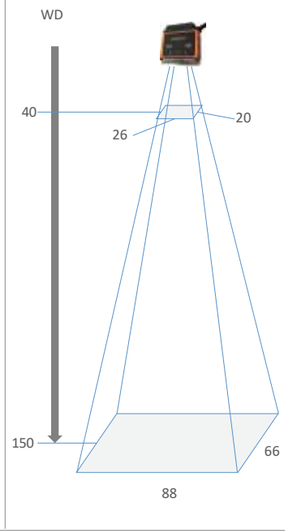
WD & Decoding Accuracy			Unit mm
	WD	1D	2D
Decoding Accuracy	40	0.06	0.13
	70	0.09	0.21
	110	0.15	0.34
	130	0.17	0.39
	150	0.20	0.45

WD & FOV			
	WD	Horizontal	Vertical
Field of View	40	33	26
	70	55	44
	110	86	69
	130	101	81
	150	116	93

RH3124MG111E



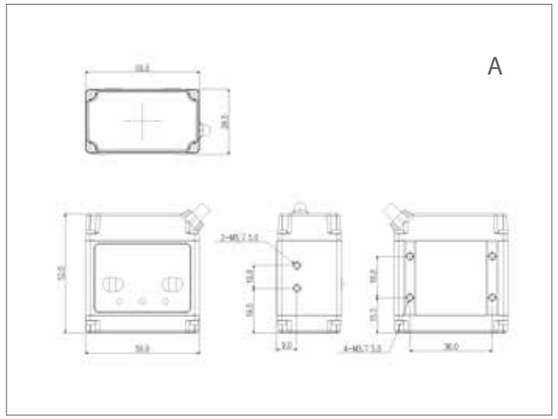


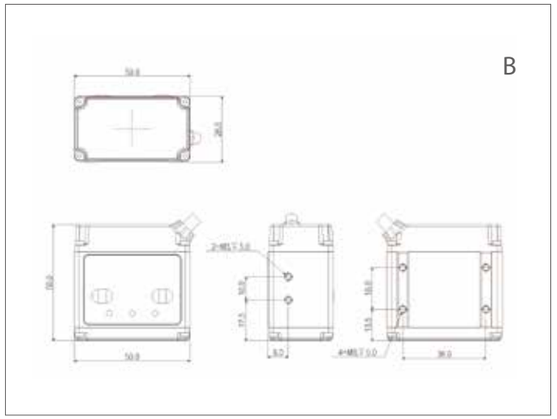


WD & Decoding Accuracy			Unit mm
	WD	1D (Min)	2D (Min)
Decoding Accuracy	40	0.05	0.08
	70	0.05	0.08
	110	0.06	0.13
	150	0.08	0.17

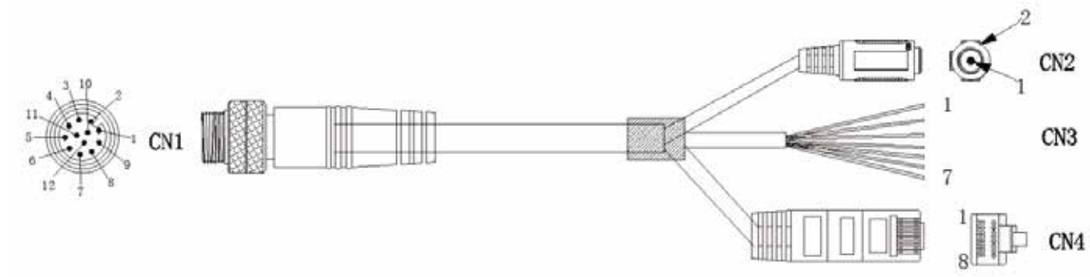
WD & FOV			
	WD	Horizontal	Vertical
Field of View	40	26	20
	70	42	32
	110	65	50
	150	88	66

Dimensions (Unit: mm)





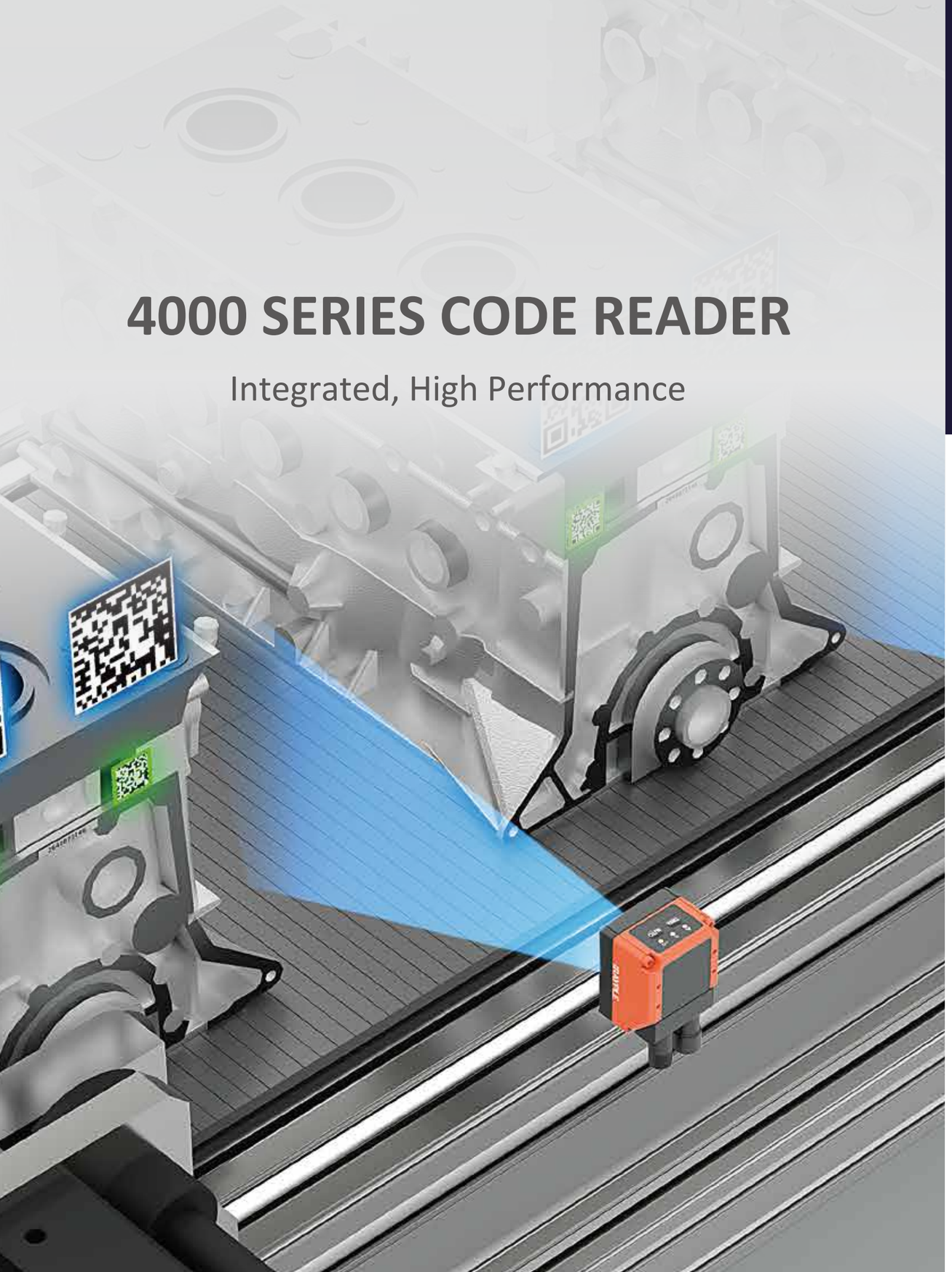
Connector Pin-out



Pin	Cable Color	Signal	Description
1	Red	VCC_EXTPER	Power
2	Black	PGND	Power GND
3	Brown	OPT_OUT0	Opto-isolated Output
4	Purple & White	OPT_GND	Opto-isolated GND
5	Yellow	OPT_IN0	Opto-isolated Input
6	Blue	DIRECT_IO	Configurable IO
7	Green	MD1_P	/
8	Green & white	MD1_N	/
9	Orange	MD0_P	/
10	Orange & white	MD1_N	/
11	Purple	RS232_RXD	Received Data
12	Grey	RS232_TXD	Transmit Data

4000 SERIES CODE READER

Integrated, High Performance



4000 SERIES CODE READER

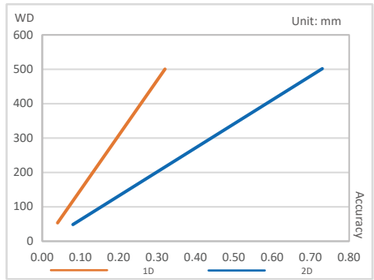
Integrated, Flexible, High Performance

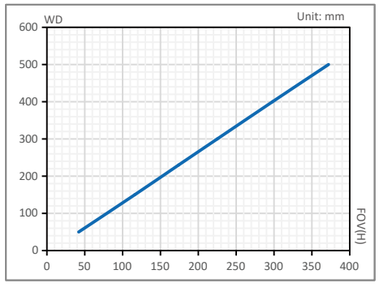
- Integrated light design, red/white/blue color options, multiple channel controlled independently.
- Built-in motorized lens, a variety of focal options and one-click auto focus.
- Industrial grade 100Mbps Ethernet interface, IP65 protection level.
- Built-in IO ports, Ethernet port, RS-232 port and GPIO port, and multiple communication protocols.
- Supports various symbologies and quality evaluation.
- Adopts deep learning algorithms and performs multi-parameter polling making it highly suitable for complex scenes.

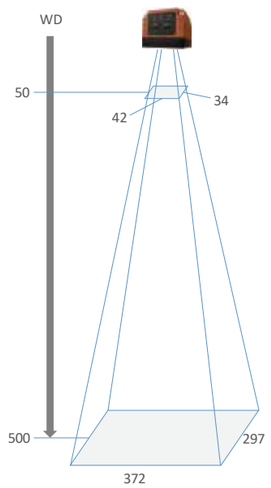
R4000 Series						
Model	R4013MG-07M -RGG01E	R4013MG-07M -WGG01E	R4013MG-07M -BGG01E	R4013MG-12M -RGG01E	R4013MG-12M -WGG01E	R4013MG-12M -BGG01E
Resolution	1280×1024					
FPS	60 fps					
Max. Decoding Speed	60 codes/s					
Max. Moving Speed	3m/s					
WD	50~500mm					
Focal	7mm			12mm		
FOV	116×92mm@150mm			64×51mm@150mm		
Min. Decoding Accuracy	1D: 0.04mm/2D: 0.08 mm			1D: 0.04mm/2D: 0.04mm		
Illumination	Red: Polarized/ Unpolarized/Uniformed	White: Unpolarized/ Uniformed	Blue: Polarized/ Unpolarized/Uniformed	Red: Polarized/ Unpolarized/Uniformed	White: Unpolarized/ Uniformed	Blue: Polarized/ Unpolarized/Uniformed
	Integrated Light Design, Red, Multiple Channel Controlled Independently					
Result Indicator	Red and Green Lights					
Aimer	2 × Red Aimers					
Status Indicator	Power, Network and Decoding Result					
Focusing	Motorized Lens and One-click Focus					
Symbologies	1D: Code128, Code39, Code93, EAN, and more. 2D: QR/DM/DPM, and more. Quality Evaluation: (ISO/IEC 29158 (AIM-DPM), ISO/IEC 15415, ISO/IEC 15416)					
Software	Easy ID					
Trigger Mode	Software Trigger, External Trigger and Free Run					
Connector	Industrial Grade M12 Ethernet and GPIO Connectors					
Network	100 Mbps Ethernet					
GPIO	RS232, 2 Opto-isolated Input and 3 Opto-isolated Output					
Communication Ports	RS-232 and Ethernet					
Communication Protocols	SDK, TCP Client, TCP Server, FTP, RS232, Profinet, Modbus, EtherNet/IP, MC (SLMP), FINS/UDP, FINS/TCP					
Power Supply	9-26VDC, 1.5A Input, Suitable for Industrial Voltage					
Power Consumption	<5W					
Protection	IP65					
Material	Aluminum Alloy (Excluding front Cover)					
Operating Temperature	-20°C~+50°C					
Operating Humidity	20%~95%, Non-condensing					
Storage Temperature	-30°C~+70°C					
Certification	FCC, CE					
Weight	<300g					
Dimensions	47mm×57.8mm×38mm (Excluding Connectors)					

Decoding Capability LUT (Typical)

R4013MG-07M-RGG01E



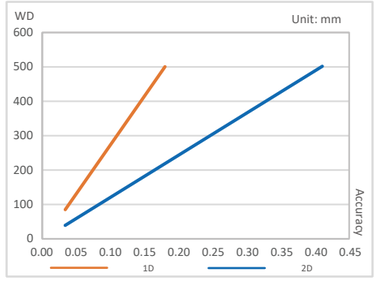


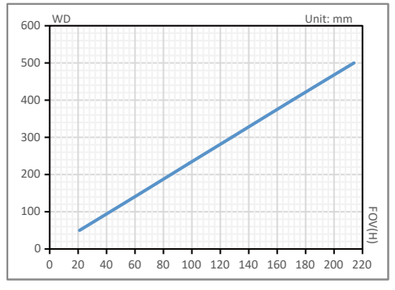


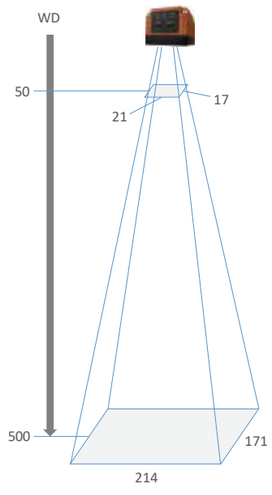
WD & Decoding Accuracy			Unit mm
	WD	1D	2D
Decoding Accuracy	50	0.04	0.08
	150	0.10	0.23
	230	0.15	0.34
	300	0.19	0.44
	400	0.26	0.58
	500	0.32	0.73

WD & FOV			Unit mm
	WD	Horizontal	Vertical
Field of View	50	42	34
	150	116	92
	230	174	139
	300	225	180
	400	298	239
	500	372	297

R4013MG-12M-RGG01E



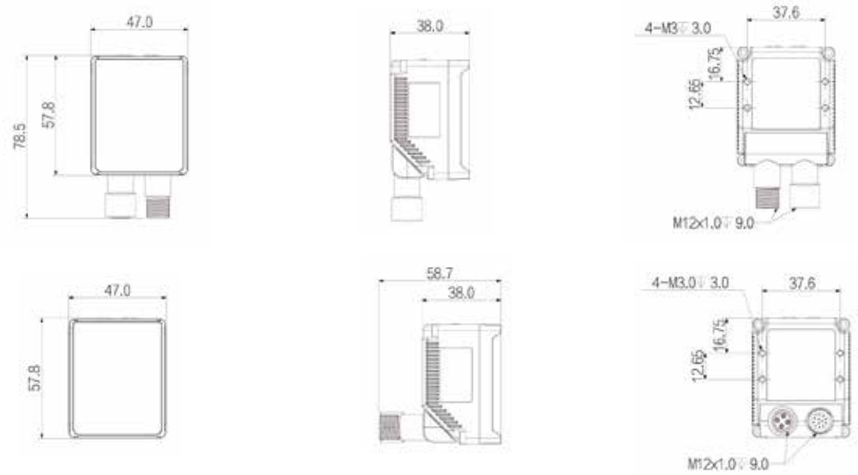




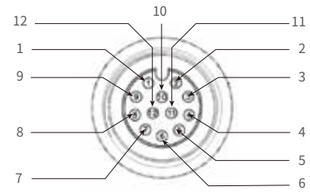
WD & Decoding Accuracy			Unit mm
	WD	1D	2D
Decoding Accuracy	50	0.04	0.04
	150	0.06	0.13
	230	0.08	0.19
	300	0.11	0.25
	400	0.15	0.33
	500	0.18	0.42

WD & FOV			Unit mm
	WD	Horizontal	Vertical
Field of View	50	21	17
	150	64	51
	230	98	79
	300	128	103
	400	171	137
	500	214	171

Dimensions (Unit: mm)



Connector Pin-out



Pin	Cable Color	Signal	Description
1	Brown and white	OPT_OUT2	Opto-isolated Output 2 (LINE 4)
2	Grey	RS232_TXD	Transmit Data
3	Purple	RS232_RXD	Received Data
4	Black & White (Casing)	SIGNAL_GND	Serial Singal GND
5	Yellow	OPT_IN1	Opto-isolated Input 1 (LINE 1)
6	Purple & white	OPT_IN_GND	Opto-isolated Input GND
7	Red	POWER	Power
8	Black	POWER_GND	Power GND
9	Green	OPT_OUT_GND	Opto-isolated Output GND
10	Orange	OPT_IN0	Opto-isolated Input 0 (LINE 0)
11	Blue	OPT_OUT0	Opto-isolated Output 0 (LINE 2)
12	Brown	OPT_OUT1	Opto-isolated Output 1 (LINE 3)
--	White (Casing)	--	Shielding GND

5000 SERIES CODE READER

High Speed, High Resolution

5000 SERIES CODE READER

High Speed, High Resolution

- Integrated light design, red/white/blue color options, multiple channel controlled independently.
- Built-in motorized lens, a variety of focal options and one-click auto focus.
- Industrial grade GigE interface and IP65 protection level.
- Built-in IO ports, Ethernet port, RS-232 port and GPIO port, and multiple communication protocols.
- Supports various symbologies and quality evaluation.
- Adopts deep learning algorithms and performs multi-parameter polling making it highly suitable for complex scenes.

R5016 Series				
Model	R5016MG-06M-RGG01E	R5016MG-12M-RGG01E	R5016MG-16M-RGG01E	R5016MG-25M-RGG01E
Resolution	1440×1080			
FPS	60 fps			
Max. Decoding Speed	90 codes/s			
Max. Moving Speed	3m/s			
Focal	6mm	12mm	16mm	25mm
WD	80~1500mm	80~1500mm	80~1500mm	150~250mm
FOV	170×127mm@200mm	85×64mm@200mm	61×46mm@200mm	36×27mm@200mm
Min. Decoding Accuracy	1D: 0.06 mm/2D: 0.13 mm	1D: 0.04 mm/2D: 0.06 mm	1D: 0.04 mm/2D: 0.04 mm	1D: 0.04 mm/2D: 0.05 mm
Illumination	Integrated Light Design, Red, Multiple Channel Controlled Independently			
Result Indicator	Case Sides Red & Green Lights			
Aimer	2× Red Aimers			
Status Indicator	Power, Network and Status			
Focusing	Motorized Lens, One-click Focus			
Symbologies	1D: Code39, Code93, Code128, Codebar, EAN8, EAN13, UPCA, UPCE, ITF25, 2 of 5 (Industri-al2of5), Standard25, GS1-128 and more. 2D: QR/DM/DPM and more. Quality Evaluation: (ISO/IEC 29158 (AIM-DPM), ISO/IEC 15415, ISO/IEC 15416)			
Software	Easy ID			
Trigger Mode	Software Trigger, External Trigger and Free Run			
Connector	Industrial Grade M12 Ethernet and GPIO Connectors			
Network	GigE			
GPIO	RS-232, 2 Opto-isolated Input, 3 Opto-isolated Output			
Communication Ports	RS232, Ethernet			
Communication Protocols	SDK, TCP Client, TCP Server, FTP, RS232, Profinet, Modbus, EtherNet/IP, MC(SLMP), FINS/UDP, FINS/TCP			
Power Supply	9-26 VDC, 2A Input, Suitable for Industrial Voltage			
Power Consumption	<18W			
Protection	IP65			
Material	Aluminum Alloy (Excluding front Cover)			
Operating Temperature	-20°C~50°C			
Operating Humidity	20%-95%, Non-condensing			
Storage Temperature	-30°C~70°C			
Certification	CE, FCC, KC			
Weight	<350g			
Dimensions	82 mm×55mm×53mm (Excluding Connectors)			

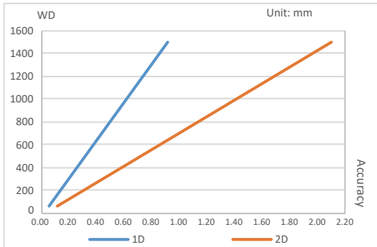
Appendix*:

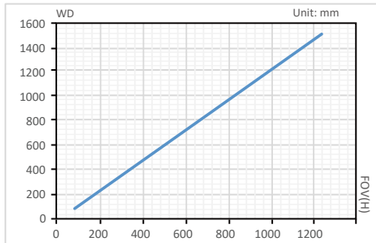
Model	R5016MG-06M-WGG01E	R5016MG-12M-WGG01E	R5016MG-16M-WGG01E	R5016MG-25M-WGG01E
Illumination	Integrated Light Design, White, Multiple Channel Controlled Independently			

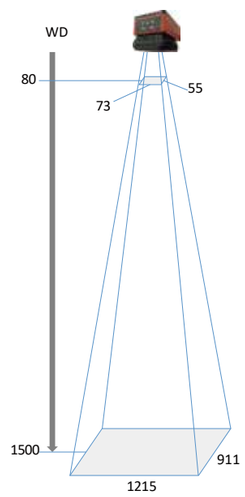
Model	R5016MG-06M-BGG01E	R5016MG-12M- BGG01E	R5016MG-16M-BGG01E	R5016MG-25M-BGG01E
Illumination	Integrated Light Design, Blue, Polarized/Unpolarized, Multiple Channel Controlled Independently			

Decoding Capability LUT (Typical)

R5016MG-06M-RGG01E







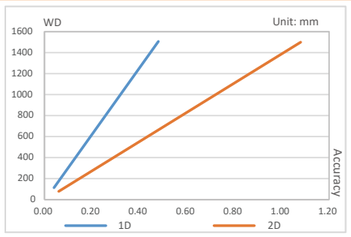
WD & Decoding Accuracy (Unit mm)

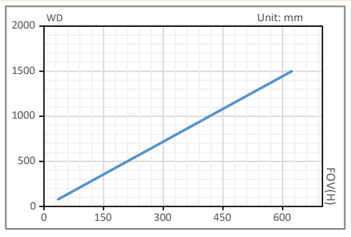
	WD	1D	2D
Decoding Accuracy	80	0.06	0.13
	150	0.10	0.23
	230	0.15	0.34
	300	0.19	0.43
	400	0.25	0.57
	600	0.38	0.85
	1000	0.62	1.41
	1500	0.93	2.11

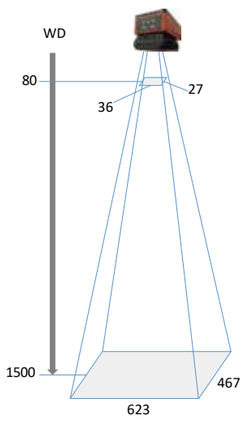
WD & FOV (Unit mm)

	WD	Horizontal	Vertical
Field of View	80	73	55
	150	130	97
	230	194	145
	300	250	248
	400	331	288
	600	491	368
	1000	813	610
	1500	1215	911

R5016MG-12M-RGG01E







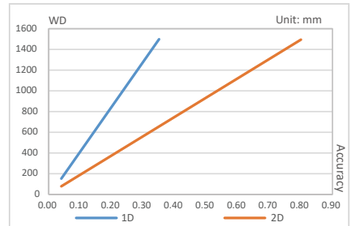
WD & Decoding Accuracy (Unit mm)

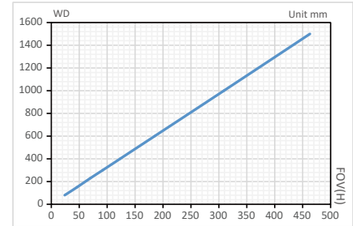
	WD	1D	2D
Decoding Accuracy	80	0.04	0.06
	150	0.05	0.11
	230	0.07	0.17
	300	0.10	0.22
	400	0.13	0.29
	600	0.19	0.44
	1000	0.32	0.72
	1500	0.48	1.08

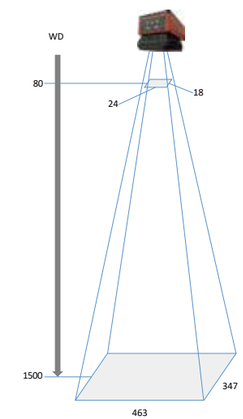
WD & FOV (Unit mm)

	WD	Horizontal	Vertical
Field of View	80	36	27
	150	65	48
	230	98	73
	300	127	95
	400	168	126
	600	251	188
	1000	416	312
	1500	623	467

R5016MG-12M-RGG01E







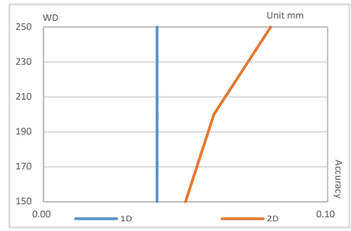
WD & Decoding Accuracy (Unit mm)

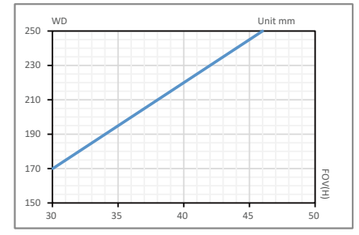
	WD	1D	2D
Decoding Accuracy	80	0.04	0.04
	150	0.04	0.08
	230	0.05	0.12
	300	0.07	0.16
	400	0.09	0.21
	600	0.14	0.32
	1000	0.24	0.54
	1500	0.35	0.80

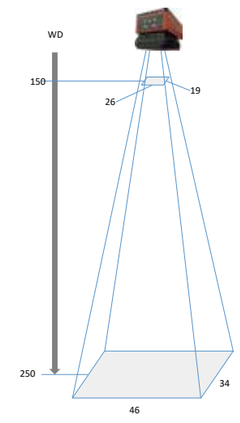
WD & FOV (Unit mm)

	WD	Horizontal	Vertical
Field of View	80	24	18
	150	46	34
	230	70	53
	300	92	69
	400	123	92
	600	185	139
	1000	309	231
	1500	463	347

R5016MG-25M-RGG01E







WD & Decoding Accuracy (Unit mm)

	WD	1D	2D
Decoding Accuracy	150	0.04	0.05
	200	0.04	0.06
	250	0.04	0.08

WD & FOV (Unit mm)

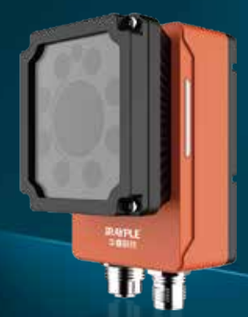
	WD	Horizontal	Vertical
Field of View	150	26	19
	200	36	27
	250	46	34

Note : Default WD is 150~250mm, 200~1500mm WD needs to custmize.

5000 SERIES CODE READER

High Speed, High Resolution

- Integrated light design, red/white/blue color options, multiple channel controlled independently.
- Built-in motorized lens, a variety of focal options and one-click auto focus.
- Industrial grade GigE interface and IP65 protection level.
- Built-in IO ports, Ethernet port, RS-232 port and GPIO port, and multiple communication protocols.
- Supports various symbologies and quality evaluation.
- Adopts deep learning algorithms and performs multi-parameter polling making it highly suitable for complex scenes.



R5050 Series				
Model	R5050MG-08M-RGG01E	R5050MG-12M-RGG01E	R5050MG-16M-RGG01E	R5050MG-25M-RGG01E
Resolution	2368×1792			
FPS	45 fps			
Max. Decoding Speed	90 codes/s			
Max. Moving Speed	3m/s			
Focal	8mm	12mm	16mm	25mm
WD	80-1500mm	80-1500mm	80-1500mm	150-250mm
FOV	196×148mm@200mm	131×99mm@200mm	94×71mm@200 mm	55×42mm@200 mm
Min. Decoding Accuracy	1D: 0.04mm/2D: 0.09mm	1D: 0.04mm/2D: 0.06mm	1D: 0.04mm/2D: 0.04mm	1D: 0.04mm/2D: 0.04mm
Illumination	Integrated Light Design, Red, Multiple Channel Controlled Independently			
Result Indicator	Case Sides Red and Green Lights			
Aimer	2 × Red Aimers			
Status Indicator	Power, Network and Status			
Focusing	Motorized Lens and One-click Focus			
Symbologies	1D: Code39, Code93, Code128, Codebar, EAN8, EAN13, UPCA, UPCE, ITF25, 2 of 5 (Industrial 2of 5), Standard25, GS1-128, and more. 2D: QR, DM, DPM, and more. Quality Evaluation: (ISO/IEC 29158 (AIM-DPM), ISO/IEC 15415, ISO/IEC 15416)			
Software	Easy ID			
Trigger Mode	Software Trigger, External Trigger and Free Run			
Connector	Industrial Grade M12 Ethernet and GPIO Connectors			
Network	GigE			
GPIO	RS232, 2 Opto-isolated Input and 3 Opto-isolated Output			
Communication Ports	RS-232 and Ethernet			
Communication Protocols	SDK, TCP Client, TCP Server, FTP, RS232, Profinet, Modbus, EtherNet/IP, MC (SLMP), FINS/UDP, FINS/TCP			
Power Supply	9~26VDC, 2A Input and Suitable for Industrial Voltage			
Power Consumption	<18W			
Protection	IP65			
Material	Aluminum Alloy (Excluding front Cover)			
Operating Temperature	-20°C~50°C			
Operating Humidity	20%~95%, Non-condesing			
Storage Temperature	-30°C~70°C			
Certification	CE, FCC, KC			
Weight	<350g			
Dimensions	82mm×55mm×53mm (Excluding Connectors)			

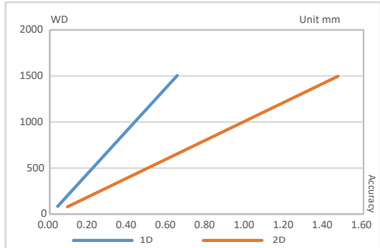
Appendix*:

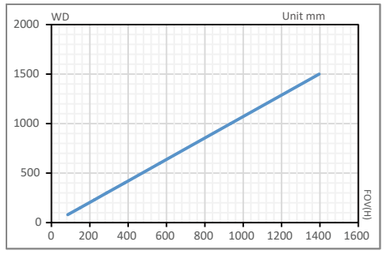
Model	R5050MG-08M-WGG01E	R5050MG-12M-WGG01E	R5050MG-16M-WGG01E	R5050MG-25M-WGG01E
Illumination	Integrated Light Design, White, Multiple Channel Controlled Independently			

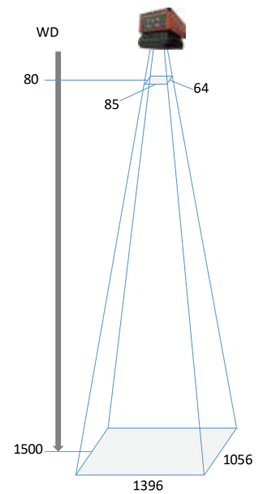
Model	R5050MG-08M-BGG01E	R5050MG-12M- BGG01E	R5050MG-16M-BGG01E	R5050MG-25M-BGG01E
Illumination	Integrated Light Design, Blue, Polarized/Unpolarized, Multiple Channel Controlled Independently			

Decoding Capability LUT (Typical)

R5050MG-08M-RGG01E







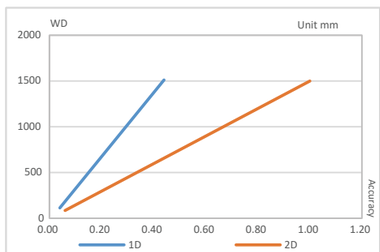
WD & Decoding Accuracy Unit mm

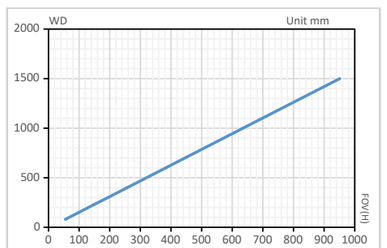
	WD	1D	2D
Decoding Accuracy	80	0.04	0.09
	150	0.07	0.16
	230	0.10	0.24
	300	0.13	0.30
	400	0.18	0.40
	600	0.26	0.60
	1000	0.43	0.99
	1500	0.65	1.47

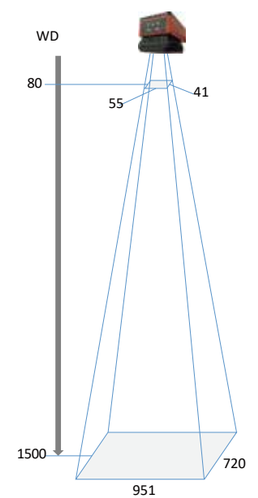
WD & FOV Unit mm

	WD	Horizontal	Vertical
Field of View	80	85	64
	150	150	113
	230	224	169
	300	288	218
	400	381	288
	600	565	428
	1000	934	707
	1500	1396	1056

R5050MG-12M-RGG01E







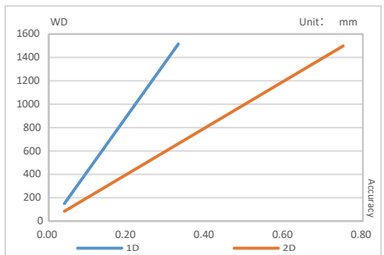
WD & Decoding Accuracy Unit mm

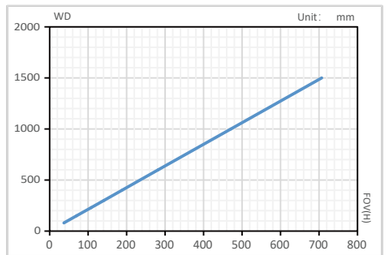
	WD	1D	2D
Decoding Accuracy	80	0.04	0.06
	150	0.05	0.10
	230	0.07	0.16
	300	0.09	0.20
	400	0.12	0.27
	600	0.18	0.40
	1000	0.29	0.67
	1500	0.44	1.00

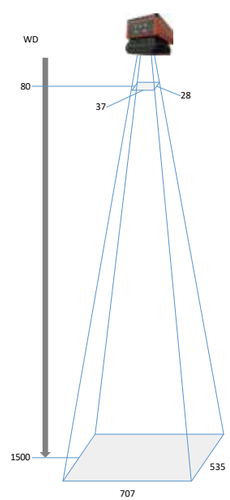
WD & FOV Unit mm

	WD	Horizontal	Vertical
Field of View	80	55	41
	150	99	75
	230	149	113
	300	194	146
	400	257	194
	600	383	290
	1000	635	481
	1500	951	720

R5050MG-16M-RGG01E







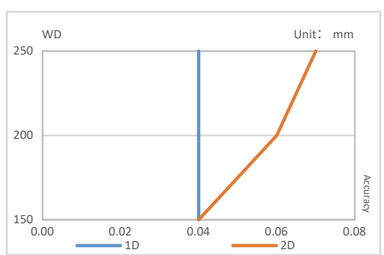
WD & Decoding Accuracy Unit mm

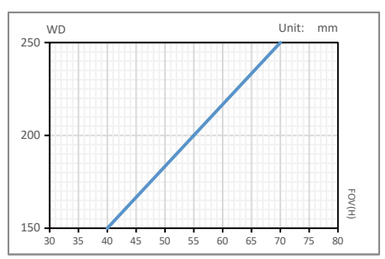
	WD	1D	2D
Decoding Accuracy	80	0.04	0.04
	150	0.04	0.07
	230	0.05	0.11
	300	0.07	0.15
	400	0.09	0.20
	600	0.13	0.30
	1000	0.22	0.50
	1500	0.33	0.75

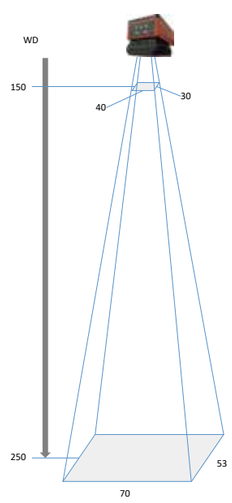
WD & FOV Unit mm

	WD	Horizontal	Vertical
Field of View	80	37	28
	150	70	53
	230	108	81
	300	141	106
	400	188	142
	600	282	214
	1000	471	356
	1500	707	535

R5050MG-25M-RGG01E







WD & Decoding Accuracy Unit mm

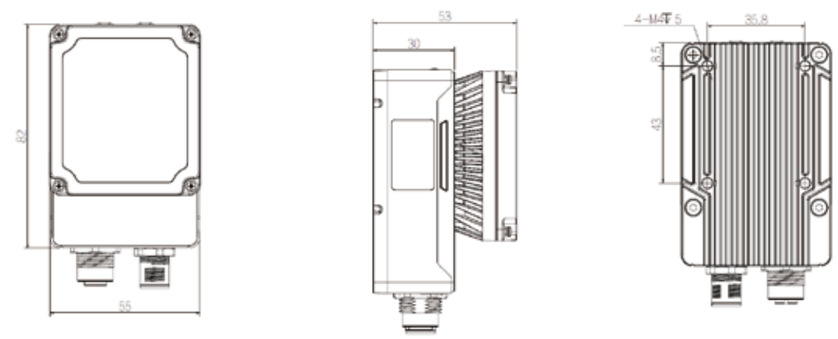
	WD	1D	2D
Decoding Accuracy	150	0.04	0.04
	200	0.04	0.06
	250	0.04	0.07

WD & FOV Unit mm

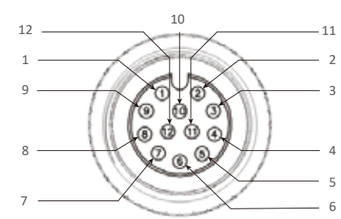
	WD	Horizontal	Vertical
Field of View	150	40	30
	200	55	42
	250	70	53

Note : Default WD is 150~250mm, 200~1500mm WD needs to custmize.

Dimenions (Unit: mm)



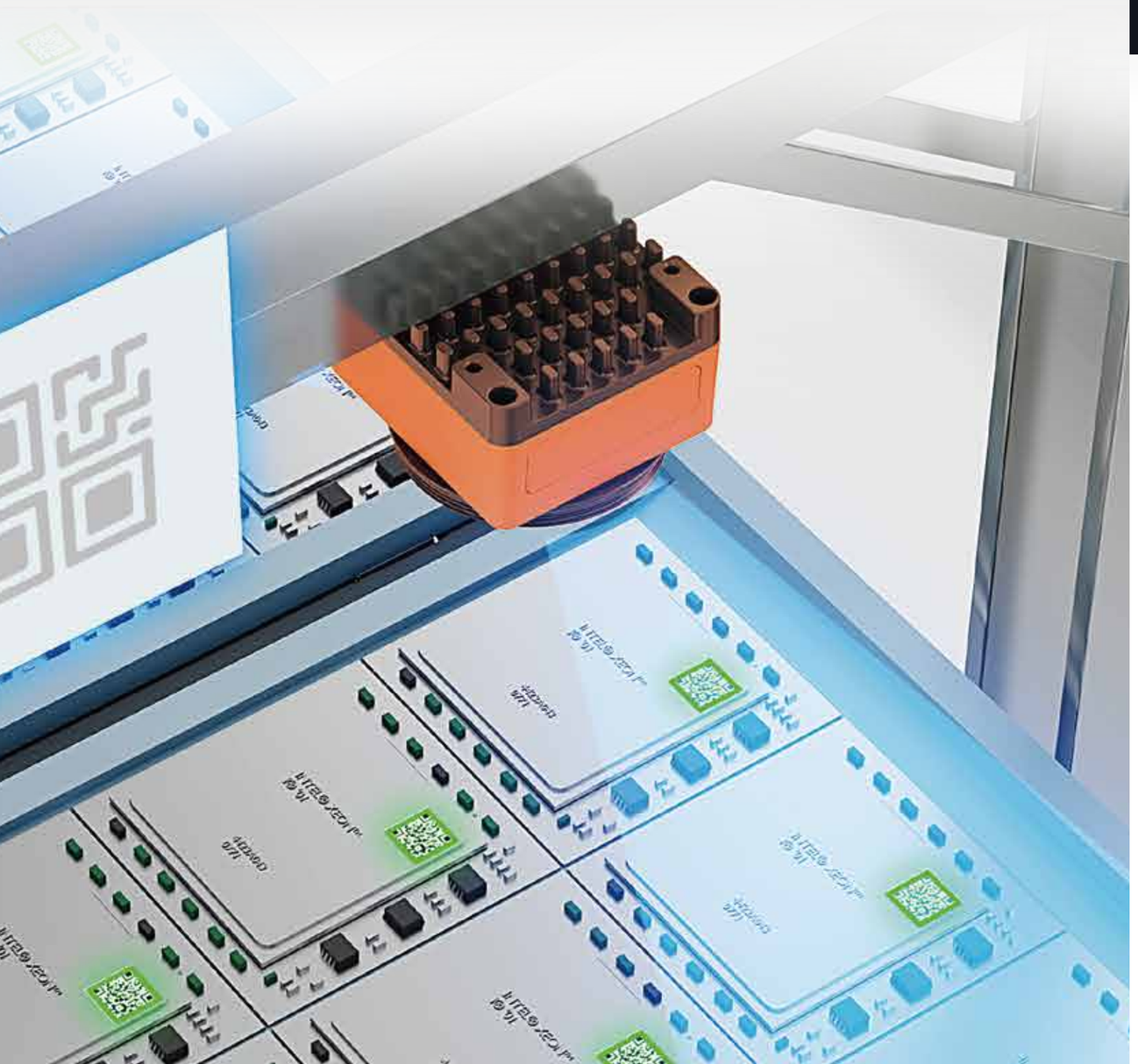
Connector Pin-out



Pin	Cable Color	Signal	Description
1	Brown & White	OPT_OUT2	Opto-isolated Output 2 (LINE 4)
2	Grey	RS232_TXD	Transmit Data
3	Purple	RS232_RXD	Received Data
4	Black & White (Casing)	SIGNAL_GND	Serial Singal GND
5	Yellow	OPT_IN1	Opto-isolated Input 1 (LINE 1)
6	Purple & white	OPT_IN_GND	Opto-isolated Input GND
7	Red	POWER	Power
8	Black	POWER_GND	Power GND
9	Green	OPT_OUT_GND	Opto-isolated Output GND
10	Orange	OPT_IN0	Opto-isolated Input 0 (LINE 0)
11	Blue	OPT_OUT0	Opto-isolated Output 0 (LINE 2)
12	Brown	OPT_OUT1	Opto-isolated Output 1 (LINE 3)
--	White (Casing)	--	Shielding GND

7000 SERIES CODE READER

Ultra High Resolution, Large FOV & DOV



7000 SERIES CODE READER

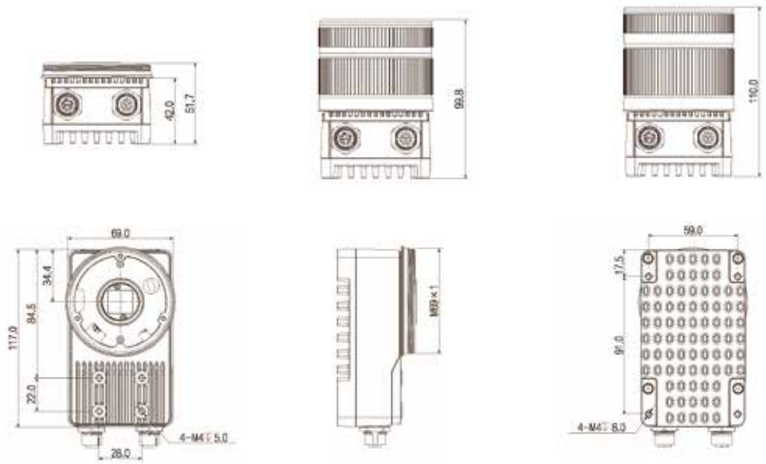
Ultra High Resolution, Large FOV & DOV

- Built-in deep learning algorithms that make the device efficient and powerful.
- Software trigger, external trigger and free run.
- GigE port with 1 Gbps bandwidth.
- Built-in IO ports, RS-232 port, 3 opto-isolated input and 3 opto-isolated output.
- Industrial grade M12 connector, and IP67 rated (with lens cover).
- Flexible design that supports a variety of external lenses and light sources.

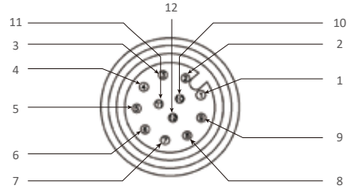
R7000 Series			
Model	R7200MG-00C-NGG01E	R7201MG-00C-NGG01E	R7250MG-00C-NGG01E
Resolution	5440×3648	5120×3840	5120×5104
FPS	15 fps	15 fps	12 fps
Max. Decoding Speed	90 codes/s	90 codes/s	90 codes/s
Pixel Size	2.4×2.4μm	2.5×2.5μm	2.5×2.5μm
Sensor Size	1''	1''	1.1"
Shutter	Rolling	Global	Global
Mount	C-mount		
Status Indicator	Power, Network and Trigger		
Symbologies	1D: Code 39, Code 93, Code128, Codebar, EAN8, EAN13, UPCA, UPCE, ITF25, 2 of 5 Industrial 2 of 5), standard 25, GS1-128, and more. 2D: QR/Data Matrix/Micro QR/GS1 DM/GS1 QR/Vericode*, and more. Quality Evaluation: ISO/IEC 29158 (AIM-DPM), ISO/IEC 15415, ISO/IEC 15416）v		
Software	Easy ID		
Trigger Mode	Software Trigger, External Trigger and Free Run		
Connector	Industrial Grade M12 Ethernet and GPIO Connectors		
Network	GigE (Code-A)		
GPIO	12pin IO, RS232, 3 Opto-isolated Input and 3 Opto-isolated Output		
Communication Ports	RS-232 and Ethernet		
Communication Protocols	SDK, TCP Client, TCP Server, FTP, RS232, Profinet, Modbus, EtherNet/IP, MC(SLMP), FINS/UDP, FINS/TCP		
Power Supply	DC24V Input, Suitable for Industrial Voltage		
Power Consumption	<8.0 W (Excluding External Devices)		
Protection	IP67 (with Lens Cover)		
Material	Aluminum Alloy		
Operating Temperature	-20°C~50°C		
Operating Humidity	20%~95%, Non-condensing		
Storage Temperature	-30°C~70°C		
Certification	CE, FCC, KC		
Weight	<550 g		
Dimensions	117mm×69mm×43mm (Excluding Connector)		

Note: *Vericode function additional license is needed.

Dimensions (Unit: mm)



Connector Pin-out



Pin	Cable Color	Signal	Description
1	Yellow	OPT_IN1	Opto-isolated Input 1
2	Yellow & White	OPT_IN2	Opto-isolated Input 2
3	Brown	OPT_OUT1	Opto-isolated Output 1
4	Brown & White	OPT_OUT2	Opto-isolated Output 2
5	Purple	COM_RXD	Received Data
6	Purple & White	OPT_IN_GND	Opto-isolated Input GND
7	Red	POWER	Power
8	Black	POWER_GND	Power GND
9	Green	OPT_OUT_GND	Opto-isolated Output GND
10	Orange	OPT_IN0	Opto-isolated Input 0
11	Blue	OPT_OUT0	Opto-isolated Output 0
12	Grey	COM_TXD	Transmit Data
Casing	White	--	Shielding GND

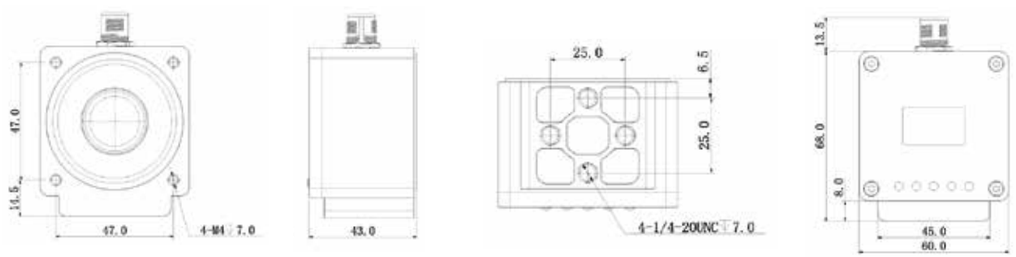
AGV CODE READER

High Speed, Accurate Positioning

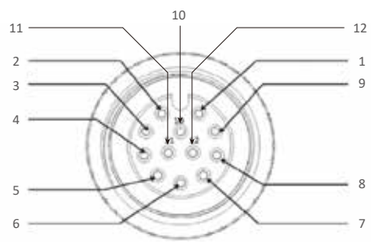
- Advanced algorithms that effectively decode dirty, defective and low contrast codes.
- Advanced code reading algorithms that have a high recognition rate and work at high speeds.
- Effectively reads DM-12 and DM-14 codes.
- Built-in aviation plug and rich IO interface.
- 5 lights that indicate the status of debugging and function.
- Adopt M12 fixed-focus lens and performs large FOV code reading and positioning.
- Efficiently manages light source to ensure the uniformity of supplementary light.

AGV Series			
Model		R3138MG010E	R3138MG011E
Basic	FPS	100 fps	
	Mount	M12	
	Trigger Mode	Software Trigger, External Trigger, Free Run	
	Software	SV Studio	
	Certification	CE, KC	
	Symbologies	DM-12&DM-14, DM4×4 Array	
Performance	Focal	3.37mm	3mm
	WD	100mm	100mm
	FOV	104×85mm	132×110mm
	Decoding Speed	125 codes/S	
	Max. Moving Speed	3m/s	
	Focusing	Fixed	
	Illumination	White LED	
Ports	Connector	1 Industrial Grade M12 Ethernet and GPIO Connector	
	Network	100 Mbps Ethernet	
	GPIO	1 opto-isolated Input, 1 Opto-isolated Output and 1 RS485	
	Communication Ports	RS-485 and Ethernet	
	Communication Protocols	SDK, Serial, TCP Server, TCP Client	
	Indicator	Power, Network, Trigger, Running Status and Error	
Power	Power Supply	DC24V±10%	
	Power Consumption	＜8.4W	
Structure	Dimensions	60mm×60mm×43mm (Excluding Connector)	
	Weight	<225g	
	Protection	IP64	
	Material	Aluminum Alloy	
Operating	Operating Temperature	-20°C~50°C	
	Operating Humidity	20%~95%, Non-condensing	
	Storage Temperature	-30°C~80°C	

Dimenions (Unit: mm)



Connector Pin-out

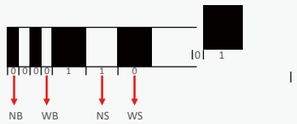


Pin	Cable Color	Signal	Description
1	Red	DC24V	Power
2	Black	GND	Power GND
3	Green	OPTO_OUT	Opto-isolated Output
4	White	OUT_COM	Opto-isolated Output GND
5	Grey	OPTO_IN	Opto-isolated Input
6	--	IN_COM	Opto-isolated Input GND
7	--	MDI1+	100M Network Signal MDI 1+
8	--	MDI1-	100M Network Signal MDI 1-
9	--	MDI0+	100M Network Signal MDI 0+
10	--	MDI0-	100M Network Signal MDI 0-
11	Yellow	RS485+/CAN+ (Optional)	RS-485 Signal +/CAN Signal +
12	Orange	RS485-/CAN+ (Optional)	RS-485 Signal -/CAN Signal -

Appendix 1

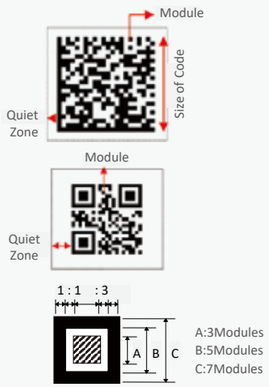
Barcode Introduction

Barcode is a kind of graphic identifier, which arranges multiple black and white bars of varying widths according to certain coding rules, to express information. The barcode can express numbers, letters and characters. The space of its blank area should be 10 times bigger than the thin bar.



Wide Bar is usually 2-3 times wider than the Narrow Bar;
For example: the ratio of the bar width and space width between Narrow Bar (NB), Wide Bar (WB), Narrow Space (NS), Wide Space (WS) is NB: WB=NS: WS=1 : 2-1 : 3

2D Code Introduction



Data Matrix: DM code

- **Module Resolution:** Size of a single module
- **Quiet Zone:** Blank area of the four sides.
  The width of DM quiet zone should be the size of 1 module at least.
- **Finder Pattern:** L pattern

QR Code

- **Module Resolution:** Size of a single module
- **Quiet Zone:** Blank area of the four sides. The width of QM quiet zone should be the size of 4 modules at least. The width of MicroQR quiet zone should be the size of 2 modules at least.
- **Finder Pattern:** 3 patterns for QR and 1 pattern for MicroQR.

Barcode Grade Evaluation Criteria

- **ISO/IEC 15416**

  Made by the International Organization for Standardization, it is mainly used for the evaluation of one dimensional codes printed on labels.

- **ISO/IEC 15415**

  Made by the International Organization for Standardization, it is mainly used for the evaluation of two dimensional codes printed on labels.

- **ISO/IEC TR 29158 (AIM DPM-1-2006)**

  2D code quality evaluation standard for direct metal parts marking technology, made by Automatic Identification Manufacturers, it is based on ISO/IEC 15415. The International Organization for Standardization completed the standardization in 2011.

Appendix 2

Step for Selecting Code Reader

Step 1

01

Confirm the Barcode Accuracy:
The most important thing is to confirm the "resolution" of the barcode, also known as: barcode accuracy and barcode module accuracy, etc. If it is a 2D code, confirm the size of the smallest unit module.

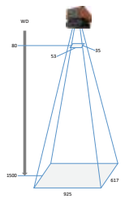
Step 2

02

Confirm the WD and FOV:
Combined with the barcode accuracy mentioned in step 1, select the most suitable barcode reader according to the decoding capability lookup table of each barcode reader.
Note: The larger the WD and FOV, the lower the decoding accuracy, and the larger the required minimum module size.

WD & Decoding Accuracy			Unit mm
	WD	1D	2D
Decoding Accuracy	80	0.04	0.04
	150	0.04	0.08
	230	0.05	0.12
	300	0.07	0.15
	400	0.09	0.20
	600	0.13	0.30
	1000	0.22	0.50
	1500	0.33	0.75

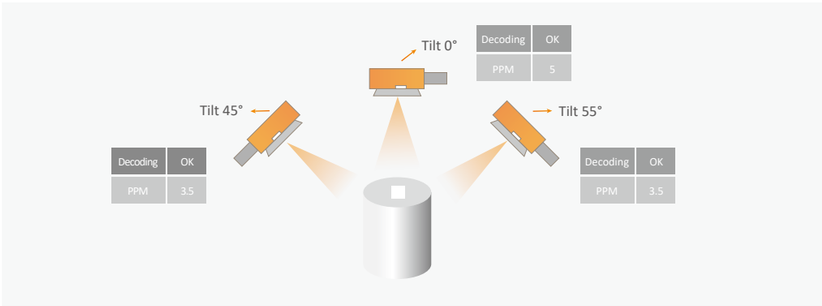
WD & FOV			Unit mm
	WD	Horizontal	Vertical
Field of View	80	53	35
	150	96	64
	230	145	97
	300	188	125
	400	250	166
	600	373	248
	1000	618	412
	1500	925	617



Step 3

03

Verification:
Based on the data from step 2, perform a read test under actual operating conditions.
The barcode quality evaluation function can be turned on during the test, and the margin of the barcode reading can be clarified through PPM. The larger the PPM, the higher the barcode level will be and the better the effect.



Consultant Sheet

· Code Basic Information

Type		□ 1D (□ Code 128 □ Code 39 □ Others)
		□ 2D (□ DM □ QR □ MQR □Others)
Resolution (mm)		
Size (mm)		
Production Process		□ Laser Marking □ Ink Jet Printing □ Printing / Label □ Others

· Installation

	DOV (mm)				
	WD (mm)				
	FOV (mm)	Horizontal		Vertical	

· Multiple Codes Decoding

	Multiple Codes Decoding	
	Number of Decoding Sides	

· Dynamic Decoding

	Moving Speed	
	Object Dimension	
	Welt or Not	□ Yes □ No
	Spacing of Objects (mm)	
	Width of Belt (mm)	
	Color of Code & Object	

Common Codes

Type	Code 128	Code 39
Code		
Content	code 128	Test 123
Type	EAN	UPC-A
Code		
Content	(01)01234567890128(15)051128	123456789012

Type	DM	QR	GS1DM	pdf417
Code				
Content	test123	test123	t(01)00012345678905	Test123\92800000\000\922