

Empowering Intelligent Manufacturing and Business Efficiency

\* Design and specifications are subject to change without notice.

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# iRAYPLE

## AI ENABLED SMART CODE READER

R5000 Series



### Meets Complex Scenes Decoding

AI Enabled, High Performance, Flexible Deployment

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## HIGH DECODING RATE

Self-developed AI Algorithms Satisfy  
Complex Scenes Code Reading



## HIGH PERFORMANCE

High-speed & High-resolution Enhance the  
High Pace and Small Size Code Decoding

## FLEXIBLE DEPLOYMENT

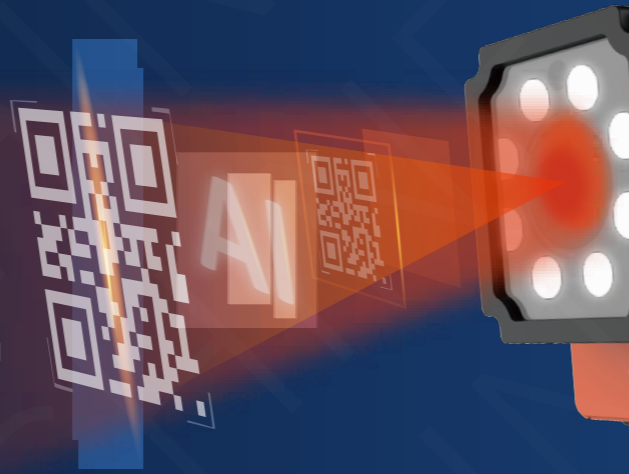
Extremely Easy Operational Functions Enhance  
the Flexible Deployment



## HIGH DECODING RATE

Self-developed AI Algorithms Satisfy Complex Scene Code Reading

- AI Enabledt Algorithm, accurate positioning, stable decoding time and accurate decoding
- Multi-configuration Polling
- Failed Images Saving while Reading Enhances the Decoding Rate

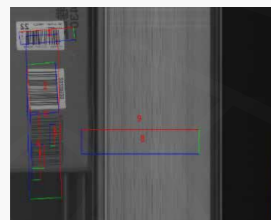


## AI Enhanced Algorithms Improve the Decoding Rate in Complex Applications

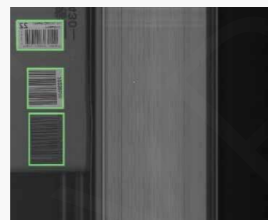
The production application environment is both complex and variable. Issues such as reflection, obstruction, distortions, and background interference can seriously affect the decoding rate. Deep learning based AI algorithms can achieve rapid iteration of algorithm models with a small number of on-site images. This approach effectively addresses difficulties in various complex applications.

### Accurate Positioning

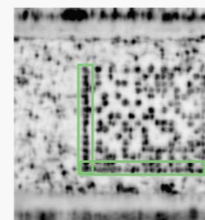
Positioning is a crucial step in code reading, as the accuracy of positioning determines the decoding efficiency and rate. Deep learning algorithms can accurately locate and identify 1D and 2D codes, which significantly reduces the number of proposal regions. Moreover, deep learning algorithms exhibit higher positioning accuracy even when code sections are missing.



TRADITIONAL



DEEP LEARNING



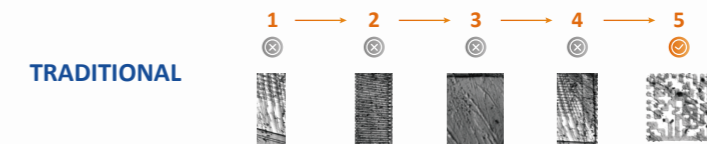
TRADITIONAL



DEEP LEARNING

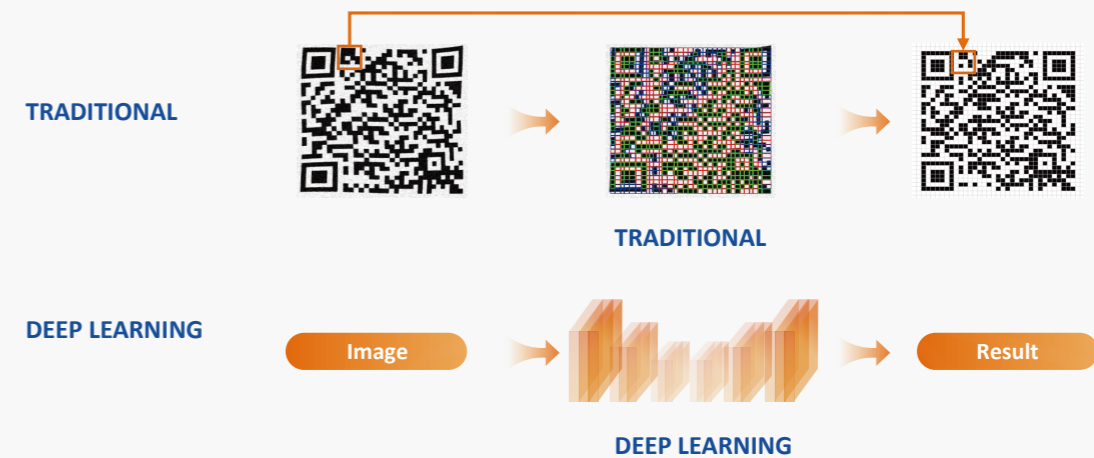
### Stable Decoding Time

The production pace in industrial application is often fixed, and traditional algorithms may require multiple decoding attempts due to the generation of proposal regions, resulting in increased time consumption when the application scene is complex. The deep learning algorithm uses End-to-End technology, based on a pre-trained model, to process all data at once. The same model is executed for each decoding, resulting in stable time consumption.



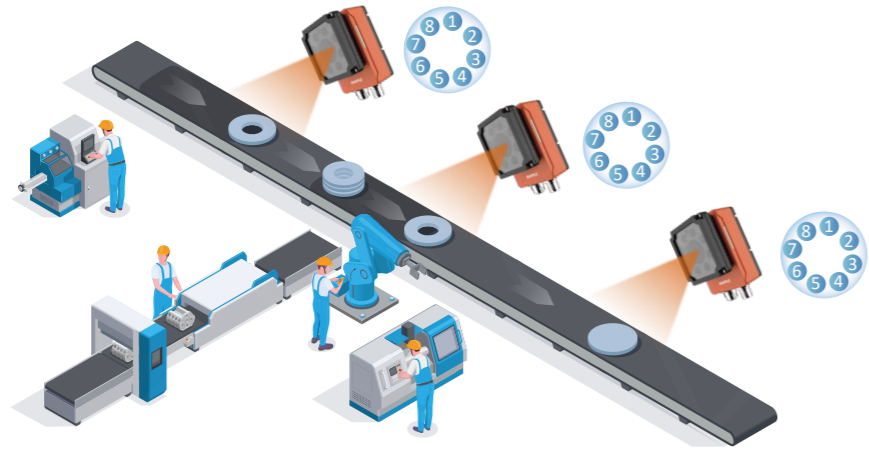
### Accurate Decoding

The decoding rate is the most critical indicator of code reading. Deep learning End-to-End Technology uses global features of 1D and 2D codes to accurately locate them. The algorithm accurately determines the module boundary and combines decoding with peripheral module information and global character information of the code. This improves accuracy and reduces interference, distortion, and soiling.



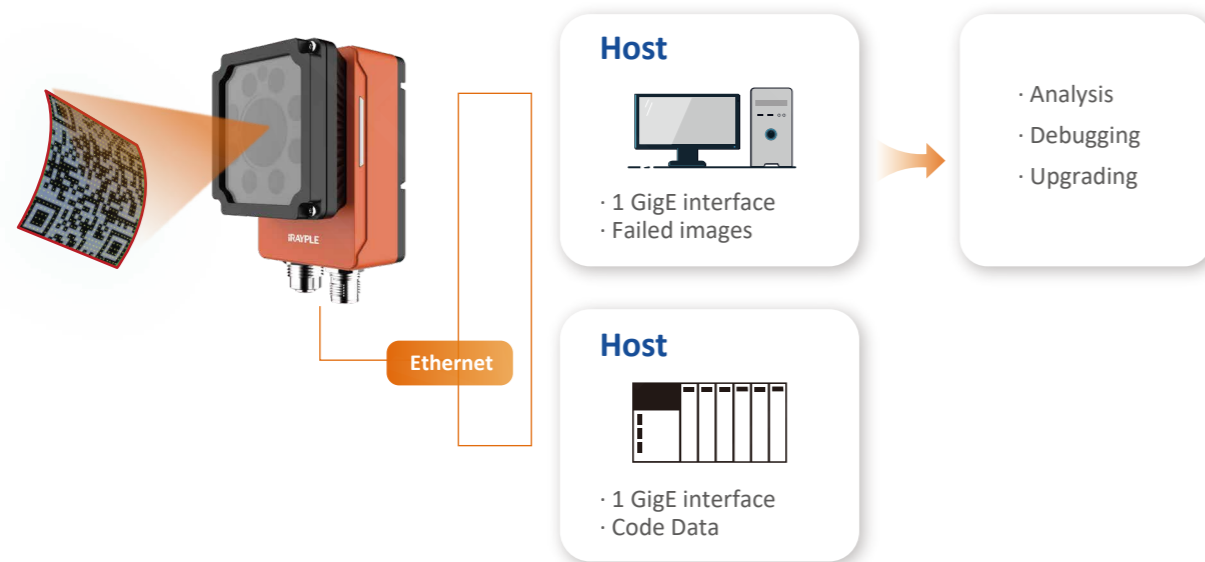
## Multi-configuration Polling Ensure the Satisfied Decoding Rate in Variable Applications

In the complex and ever-changing environment of industrial production, Multi-configuration polling function can tailor multiple sets of code reading parameters for customers to adapt to on-site dynamic scenarios and achieve satisfactory code reading rate.



## Failed Images Saving while Reading Enhances the Decoding Rate

According to the development trend in code reading application, challenges include high-speed reading, smaller code size, higher density code content, and complex application scenarios. The failed images saving function enhances the decoding rate because code reader can save failed images while reading barcodes. A 1-gigabit transmission speed ensures the stability of data transfer even at a high pace.



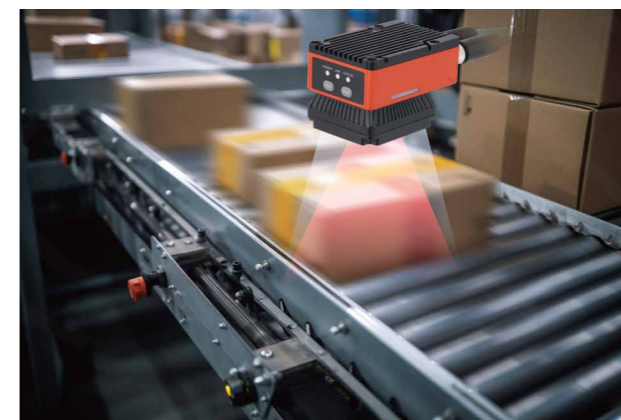
## HIGH PERFORMANCE

High-speed & High-resolution Enhance the High Pace Application and Small Size Code Decoding

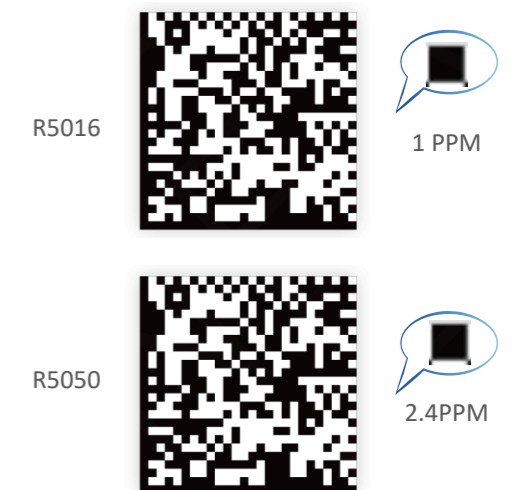
- 1.6MP & 5MP resolution
- Maximum 60 fps, up to 90 code/s decoding ability

## High-speed & High-resolution Enhance the High Pace Application and Small Size Code Decoding

The R5000 series code readers include 1.6MP and 5MP resolution. The 1.6MP models perform as 60 fps capture speed, lens focal range from 6mm to 25mm. It's suitable for high-speed scenes. The 5MP models meet small size codes decoding demands. Moreover, both of them are designed with red, white and blue light options.



Short decoding time, Support object moving speed up to 3m/s



Same FOV with higher PPM, decoding smaller codes

## FLEXIBLE DEPLOYMENT

Extremely Easy Operational Functions  
Enhance the Flexible Deployment

- One-click Training, easy for deployment
- Multi-camera networking, single camera summary output, easy to operate
- EasyID Setup & Configuration Tool, minimal operation

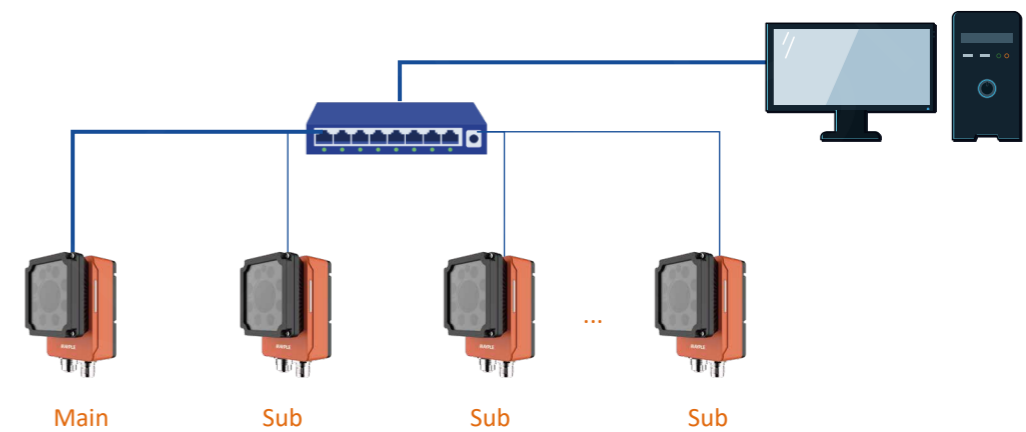
## One-click Training, Easy for Deployment

The one-click training function adapts to the environmental conditions of the application scene and automatically adjusts the lighting, lens focus, image quality, and code reading algorithm. This significantly reduces the user's tuning time and makes the tuning process more convenient.



## Multi-camera Networking, Single Camera Summary Output, Easy to Operate

The cascade working mode allows multiple code readers to work together effectively. Slave code readers send their results to the master, which aggregates them and outputs the final result. This simplifies the customer's application and makes the multiple code readers management easier.



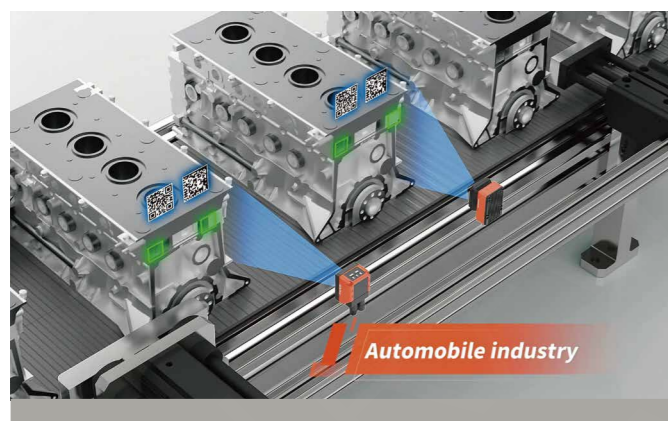
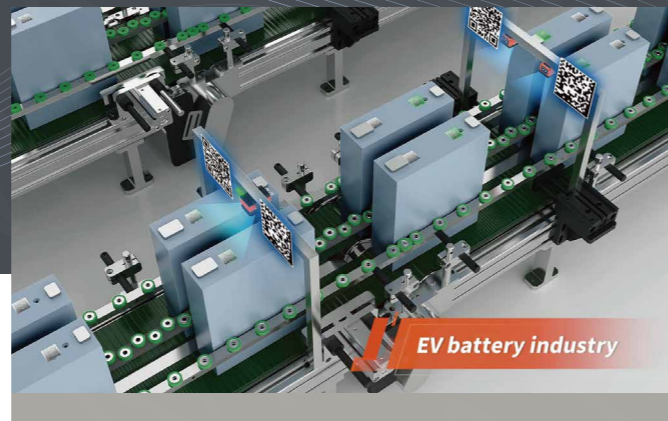
## EasyID Setup & Configuration Tool

The EasyID configuration software provides an efficient way to set and configure code reading parameters. With step-by-step guided operations, key parameters are displayed in a categorized format, and shortcut tools can be executed with just one click. Configuration results can be previewed directly, which greatly enhances the tuning efficiency for customers.



## APPLICATIONS

With the rapid development of intelligent manufacturing and the needs of efficiency improvement and quality control, information traceability is being widely applied, such as raw materials management, production and finished product circulation, after-sales and more. The 1D code and 2D code are the most widely used way of material tracing. The intelligent code reader of iRAYPLE is the perfect solution to solve traceability problem. It can be applied to different industries.



## Specifications

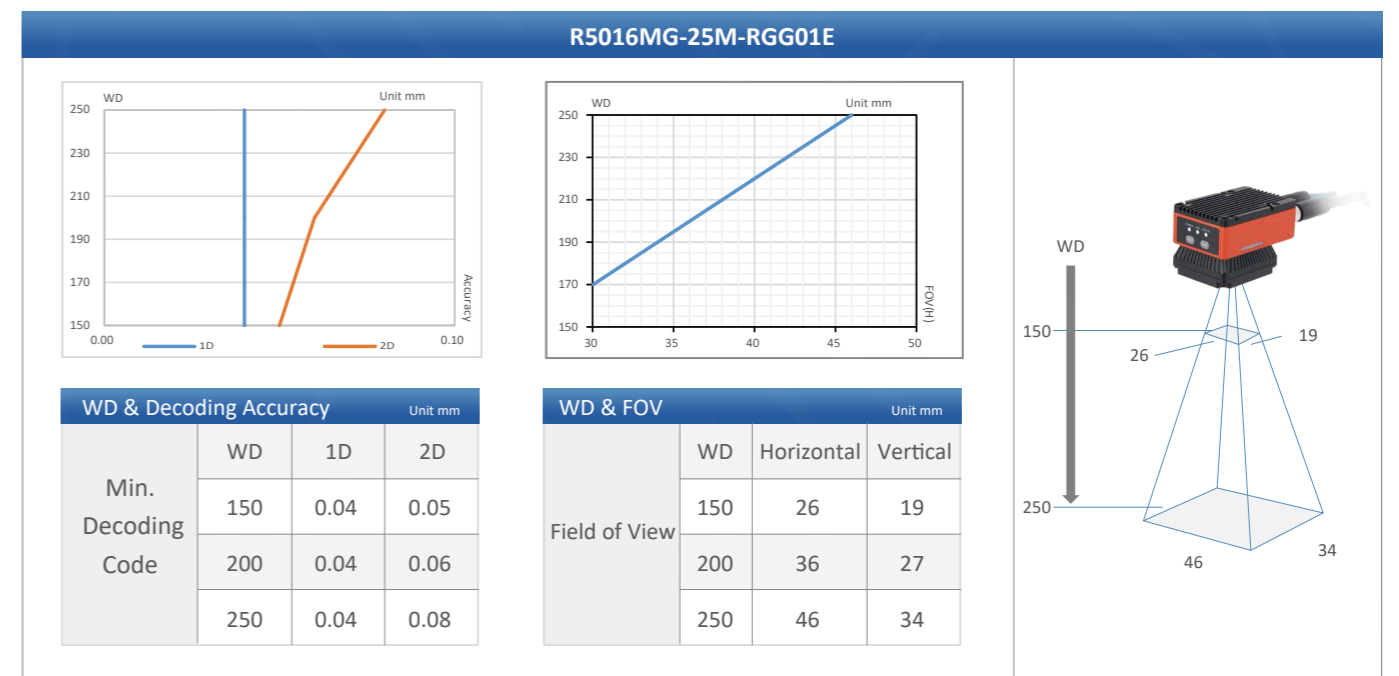
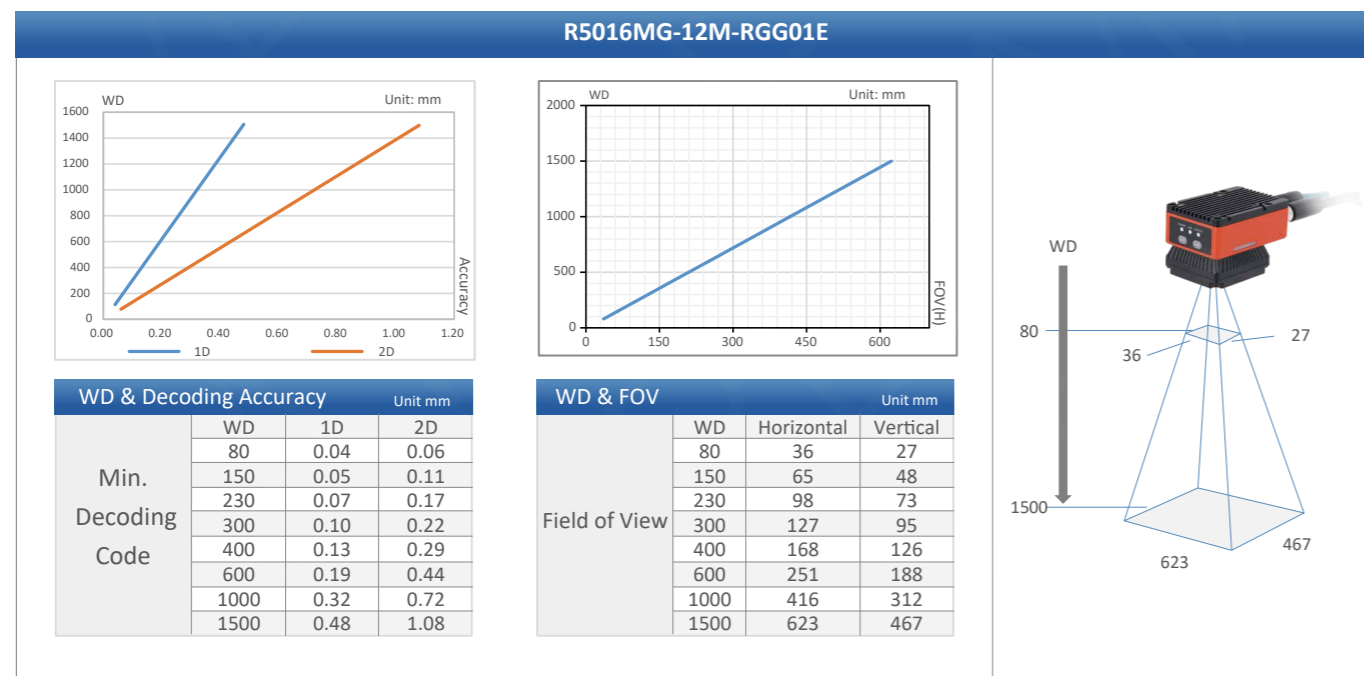
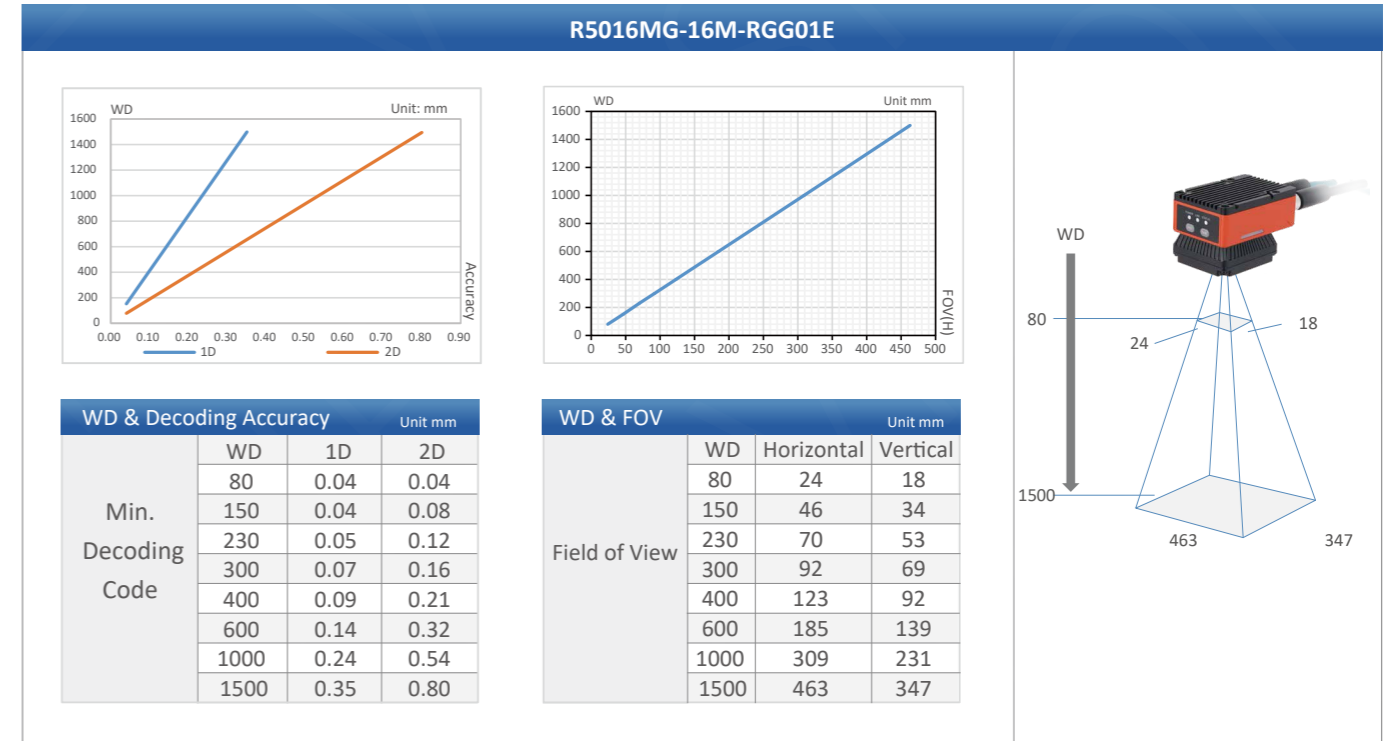
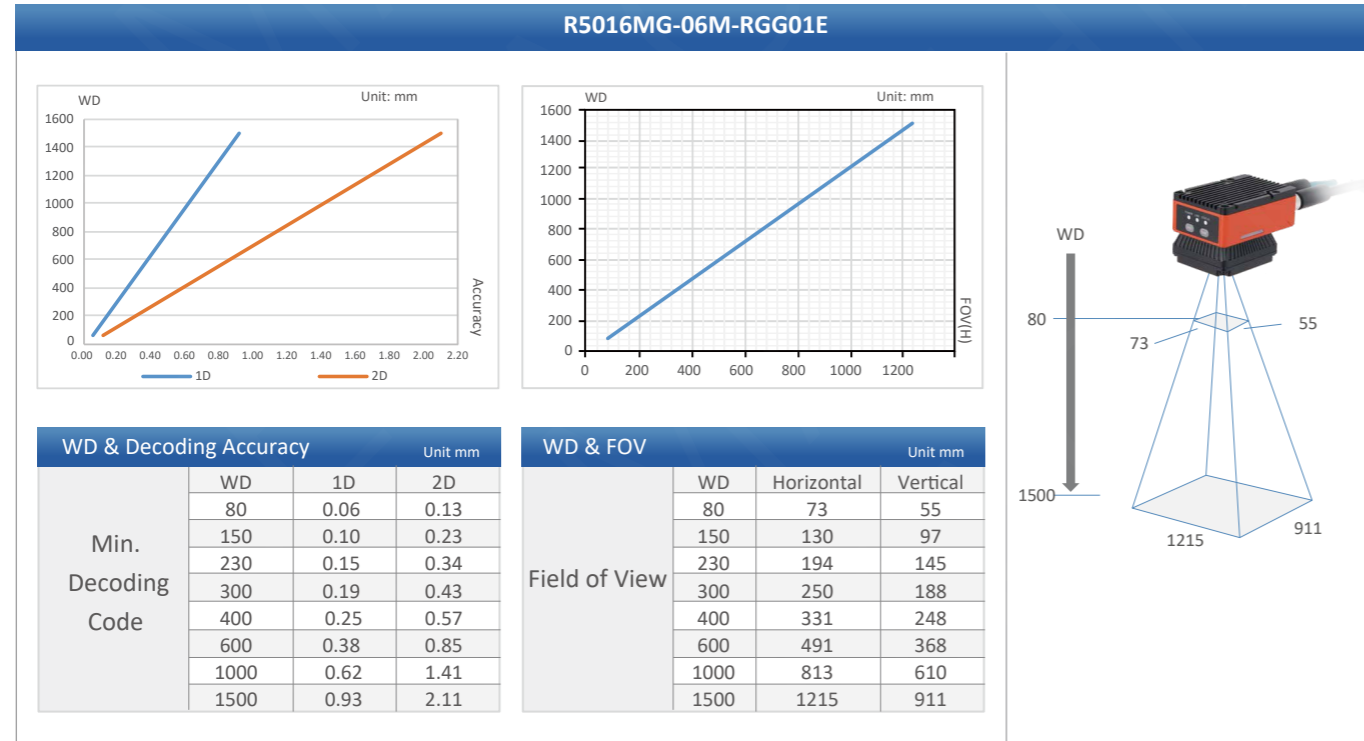
R5016 Series				
Model	R5016MG-06M-RGG01E	R5016MG-12M-RGG01E	R5016MG-16M-RGG01E	R5016MG-25M-RGG01E
Resolution	1440×1080			
FPS	60 fps			
Max. Decoding Speed	90 codes/s			
Max. Moving Speed	3m/s			
Focal Length	6mm	12mm	16mm	25mm
WD	80~1500mm	80~1500mm	80~1500mm	150~250mm
FOV	170×127mm@200mm	85×64mm@200mm	61×46mm@200mm	36×27mm@200mm
Min. Decoding Code	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 LED Bars			
Aimer	1× Red Aimer			
Status Indicator	Power, Network and Status			
Focusing	Motorized Lens, One-click Focus			
Symbologies	1D: Code 39/Code 93/Code128/CodaBar/EAN8/EAN13/UPCA/UPCE/ITF25/2of5(Industrial2of5)/standard25/GS1-128 and more; 2D: Data Matrix/MQR/GS1 DM/GS1QR 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 Level	IP65			
Anti-Vibration	3M7			
Housing 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, BIS			
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)



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

## Specifications

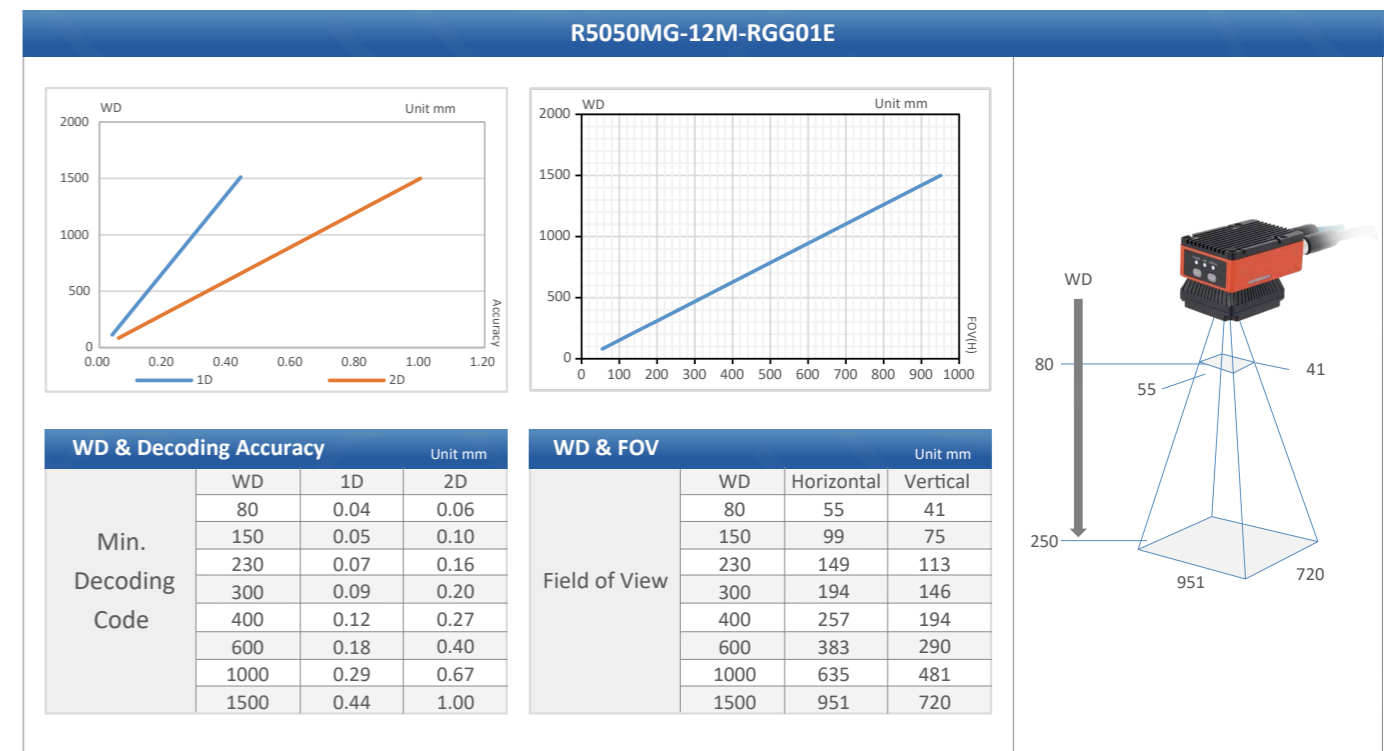
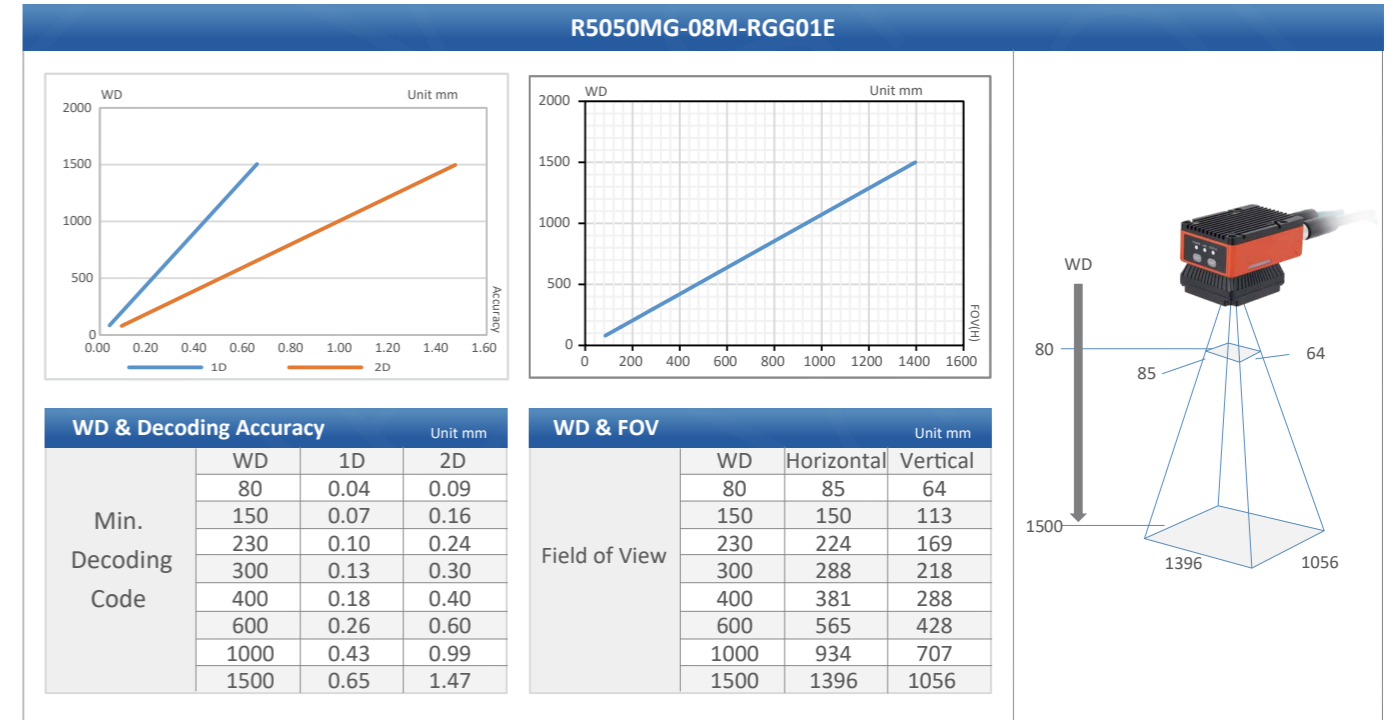
R5050 Series				
Model	R5050MG-08M-RGG01E	R5050MG-12M-RGG01E	R5050MG-16M-RGG01E	R5050MG-25M-RGG01E
Resolution	2368x1792			
FPS	45 fps			
Max. Decoding Speed	90 codes/s			
Max. Moving Speed	3m/s			
Focal Length	8mm	12mm	16mm	25mm
WD	80-1500mm	80-1500mm	80-1500mm	150-250mm
FOV	196x148mm@200mm	131x99mm@200mm	94x71mm@200 mm	55x42mm@200 mm
Min. Decoding Code	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 LED Bars			
Aimer	1 x Red Aimer			
Status Indicator	Power, Network and Status			
Focusing	Motorized Lens and One-click Focus			
Symbologies	1D: Code 39/Code 93/Code128/CodaBar/EAN8/EAN13/UPCA/UPCE/ITF25/2of5(Industrial2of5)/standard25/GS1-128 and more; 2D: Data Matrix/MQR/GS1 DM/GS1QR 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 Level	IP65			
Anti-Vibration	3M7			
Housing 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, BIS			
Weight	<350g			
Dimensions	82mmx55mmx53mm (Excluding Connectors)			

Appendix\*:

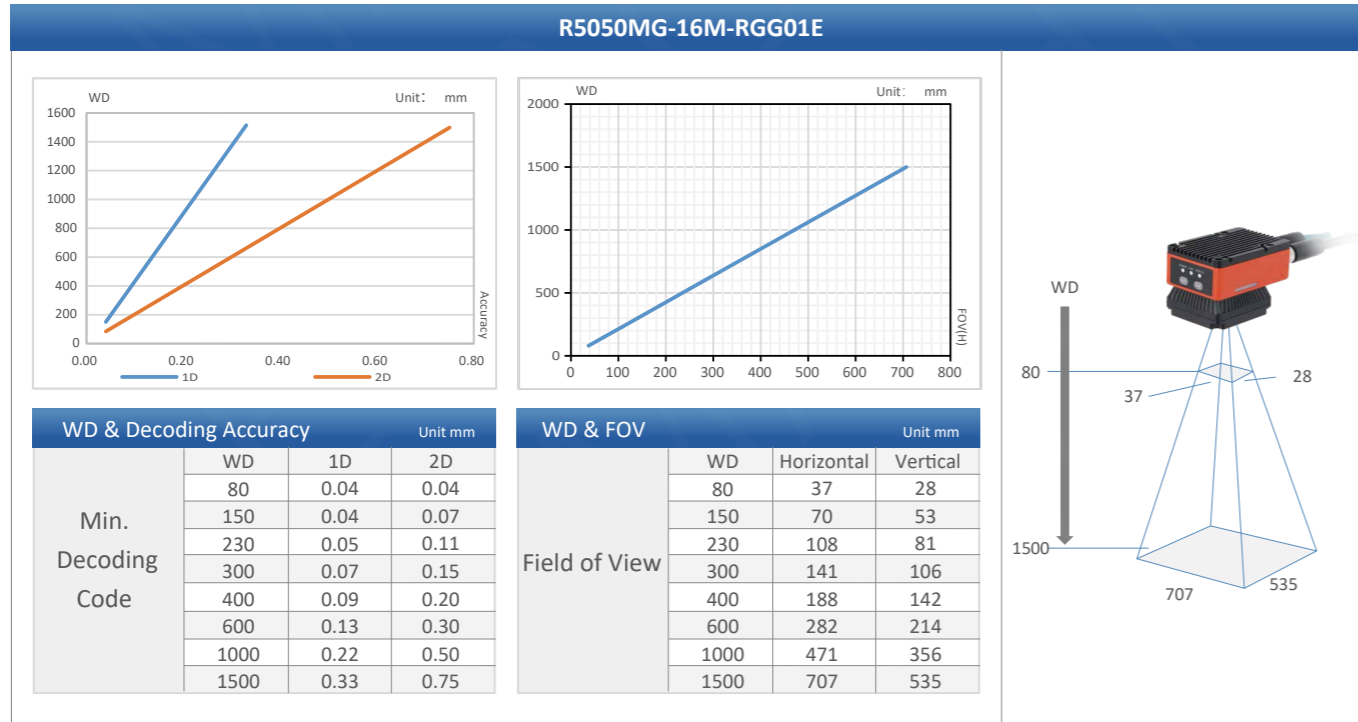
Model	R5050MG-08M-WGG01E	R5050MG-12M-WGG01E	R5050MG-16M-WGG01E	R5050MG-25M-WGG01E
Illumination	Integrated Light Design, White, Multiple Channel Controlled Independently			

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)

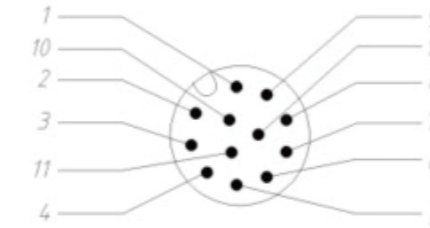






Note : Default WD is 150~250mm, 200~1500mm WD needs to customize.

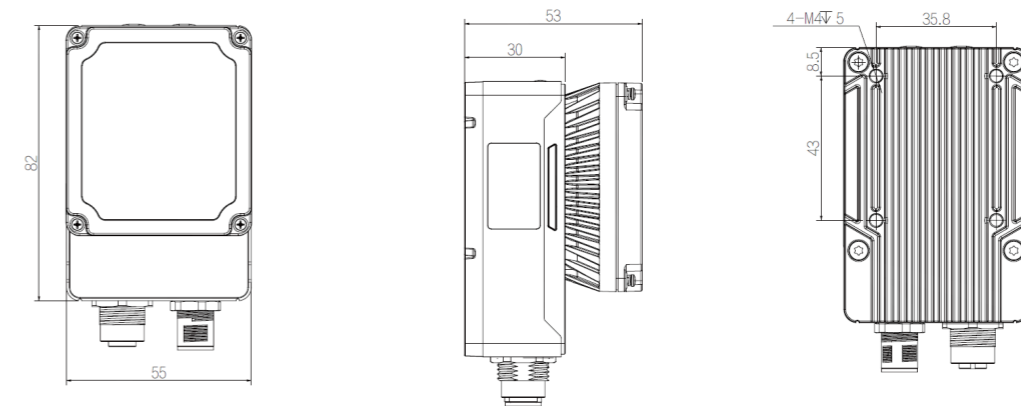
## Connector Pin-out



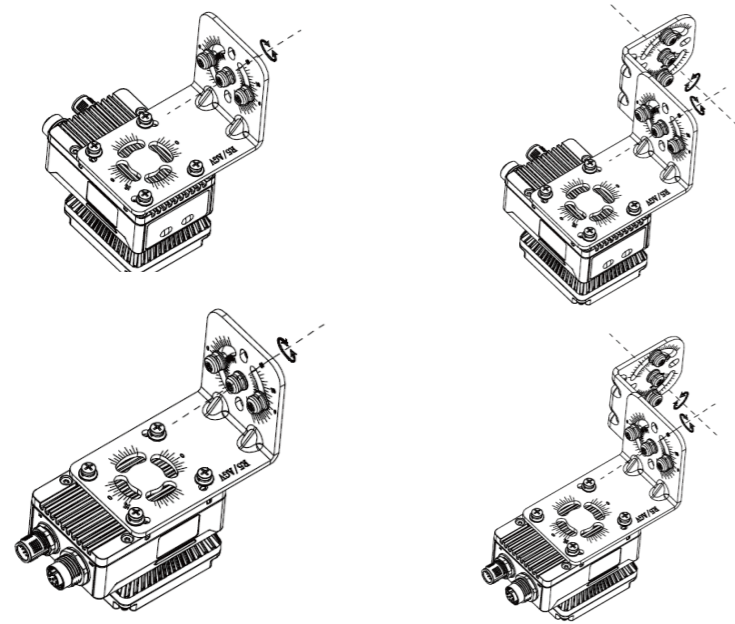
12-pin Assignment on Camera

Pin	Cable Color	Signal	Description
1	Brown & White	OPT_OUT2	Opto-isolated Output 2
2	Grey	RS232_TXD	RS232 Serial Send
3	Purple	RS232_RXD	RS232 Serial Receive
4	Black & White	SIGNAL_GND	RS232 Serial GND
5	Yellow	OPT_IN1	Opto-isolated Input 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
11	Blue	OPT_OUT0	Opto-isolated Output 0
12	Brown	OPT_OUT1	Opto-isolated Output 1
--	White (Casing)	--	Shielding GND

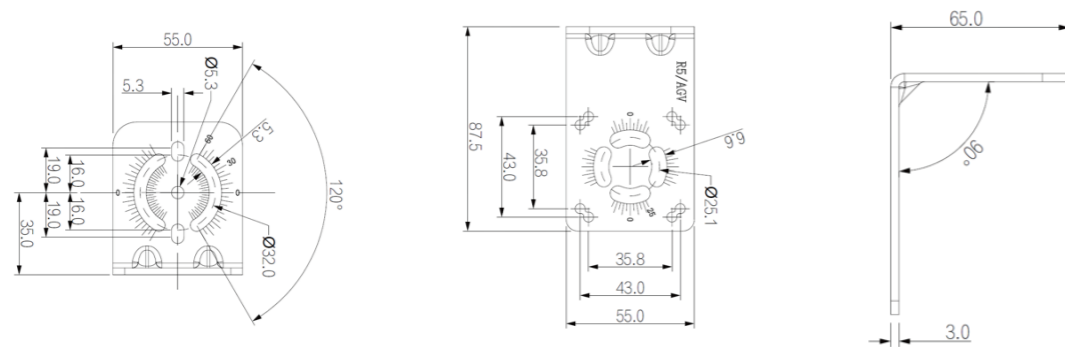
## Dimensions



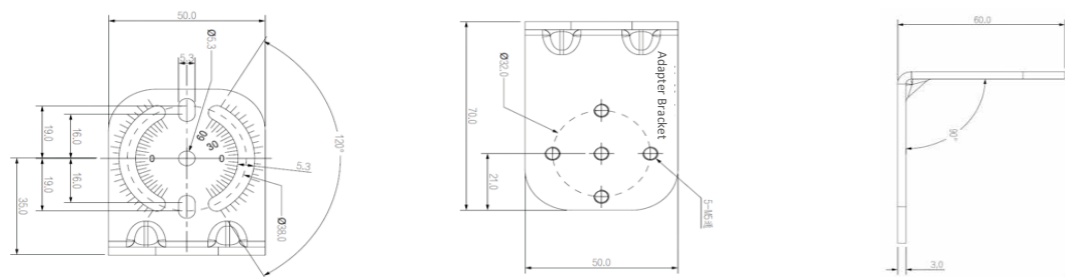
## Installation with Brackets



## Installation Bracket



## Adapter Bracket



## System Components



## Cables

	Power & GPIO Cable		Ethernet Cable	
	Static	Flexible	Static	Flexible
5m	CABIO-M12A12F-XX-05	CABIO-M12A12F-XX-05D	CABNET-M12A8-RJ45-05	CABNET-M12A8-RJ45-05D
10m	CABIO-M12A12F-DCXX-10	CABIO-M12A12F-DCXX-10D	CABNET-M12A8-RJ45-10	CABNET-M12A8-RJ45-10D

