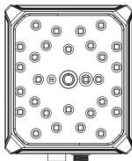


# Quick Reference Guide

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## **FV2X0(V1.1)Series Industrial Barcode Scanner**

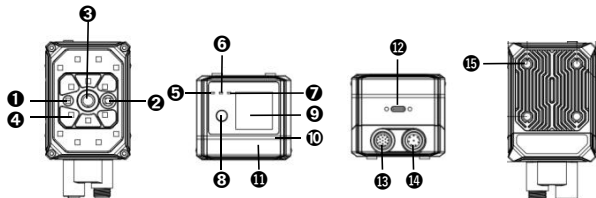


## Packing List

Content	Unit	QTY	Remark
FV2X0 Host	pc	1	
Fixed installation screws	pc	5	Material: Nylon
Fixed installation insulating gasket	pc	1	Material: Acrylic
L-shaped metal fixing piece	pc	1	Material: Stainless Steel
Quick Reference Guide	pc	1	

# Product Overview -1

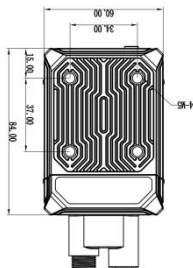
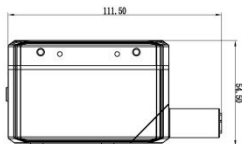
(The product shown below is FV220)



1	Reading indicator (reading success - blue; reading failure - red)
2	Laser aimer
3	Lens
4	Array LED light source
5	PWR (power indicator: red)
6	Ethernet connection indicator (yellow)
7	Ethernet data interaction indicator (green)
8	Button (trigger, display control)
9	Touch screen
10	Circular reading indicator (reading success - blue; reading failure - red)
11	Light source kit buckle
12	USB-TYPE-C interface (reserved, function to be determined)
13	17PIN Circular connector (Serial port communication, power supply, I/O)

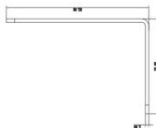
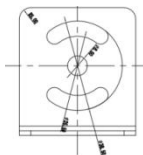
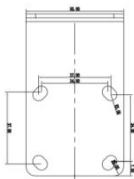
14	8PIN Circular connector (Ethernet communication)
15	M5 Mounting hole

## Product Dimensions -1 (The product shown below is FV220)



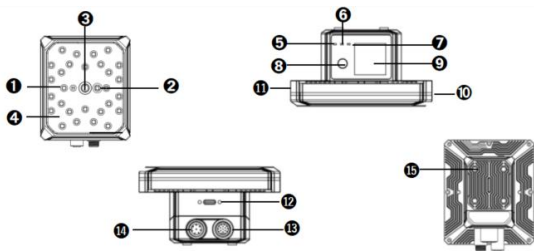
(unit: mm)

## L-shaped Fixing Piece Sizes (Compatible with FV220 and FV260 series)



(unit: mm)

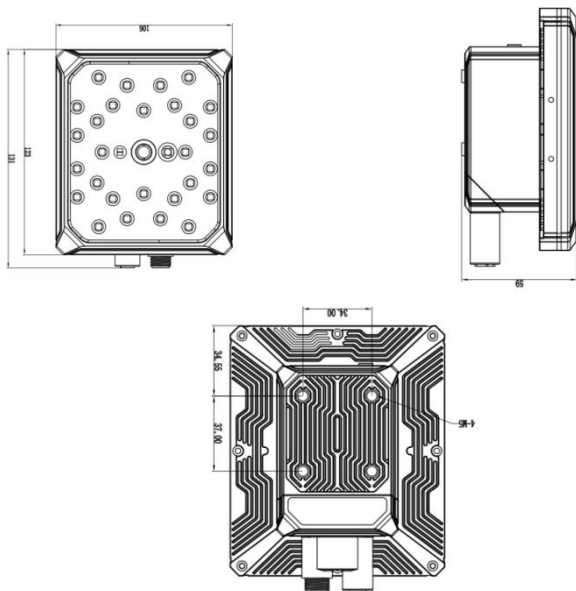
## Product Overview -2 (The product shown below is FV260)



1	Reading indicator (reading success - blue; reading failure - red)
2	Laser aimer
3	Lens
4	Array LED light source
5	PWR (Power indicator - red)
6	Ethernet Connection indicator - yellow
7	Ethernet Data interaction indicator (green)
8	Button (trigger, display control)
9	Touch screen
10	Circular reading indicator (reading success - blue; reading failure - red)
11	Mounting hole (reserved)
12	USB-TYPE-C interface (reserved, function to be determined)

13	17PIN Circular connector (Serial port communication, power supply, I/O)
14	8PIN Circular connector (Ethernet communication)
15	M5 Mounting hole

## Product Dimensions -2 (The product shown below is FV260)



## **Pre-installation Check**

### **Please note the following items for checking installation conditions**

#### **1. No influence of ambient light**

Please avoid ambient light such as sunlight, other lighting and photoelectric sensors, etc. entering the illuminated area of the bar code reader, as this may cause unstable reading or reading errors.

#### **2. Check if the light source of the bar code reader is obstructed**

If the light source is obstructed, the barcode may not be detected.

If there are other devices emitting strong light (direct and reflected light) on site, please use a light shield to avoid such strong light from damaging the barcode reader or causing unsuccessful code reading.

## Product Connection Diagram

### 1. Connection of Serial port communication

#### a. Connection between Host and Serial port communication cable



The arrow in the figure indicates the connection position of the Serial port cable.

#### b. Connecting the power supply

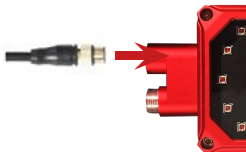


The arrow in the figure indicates the connection position of the power supply on the Serial port cable.



## **2. Ethernet communication connection**

### a. Connection of Host and Ethernet communication cable



The arrow in the figure indicates the Ethernet cable connection location.

### b. Connection of host and Serial port communication cable



The arrow in the figure indicates the connection position of the Serial port cable.

c. Connect power supply of the device (the Serial port cable is used to be connected with the power supply)



The arrow in the figure indicates the connection position of the power supply on the Serial port cable.

## I/O Signal

### 1. Signal terminals appearance

The I/O terminals are located on the Serial port cable. If the device is connected to external signals or drives external devices, the terminals need to be used for connection with external devices.



## 2. Definition of signal terminals

Terminal Color	Terminal Name	Description	Remark
Grey	GND	Power Ground	
White Red	GND	Power Ground	
Blue	GND	Power Ground	
Yellow	VCC	Power input (Output)	Power output: Can provide external equipment power supply (note ①) Power input: Can be connected to 20-30V for power supply
White Grey	VCC	Power input (Output)	Power output: Can provide external equipment power supply (note ①) Power input: Can be connected to 20-30V for power supply
White Green	IN-C	Input common	
Green	IN1	Input signal 1	Start reading
Brown Green	IN2	Input signal 2	
Dusty Pink	IN3	Input signal 3	
Red Blue	OUT-C	Output common	Forming voltage feedback with OUT1-OUT3, 5V\24V\External voltage (not exceeding 30VDC)

Pink	OUT1	Transistor output 1	Read successfully Optional internal pull-up, effective level selectable (Note ②)
Red	OUT2	Transistor output 2	Read unsuccessfully Optional internal pull-up, effective level selectable (Note ②)
Purple	OUT3	Transistor output 3	Optional internal pull-up, effective level selectable (Note ②)
Black	BP2	Low potential	NA
Black Tube Color	PG	Frame grounding	

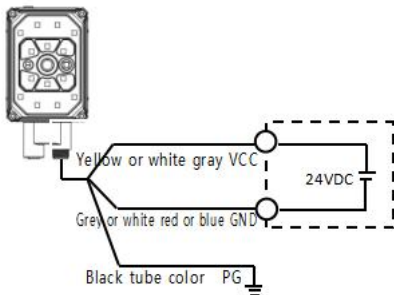
Note ①: It depends on the voltage of the power adapter connected to the Serial port cable.

Note ②: The effective level value can be set and defaults to 24VDC.

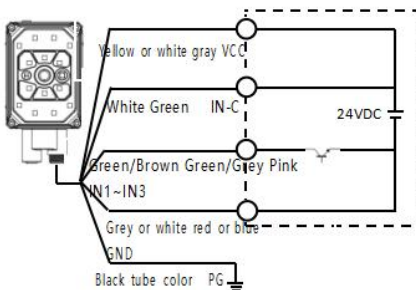
Please strictly follow the instructions when using I/O terminals. If external equipment is connected not according to the usage specifications or if the external equipment connected exceeds the specified load, this may cause damage to the product itself and may not be eligible for warranty and repair services.

### 3. Wiring according to purpose

#### 3-1 Using I/O terminals wiring for power supply



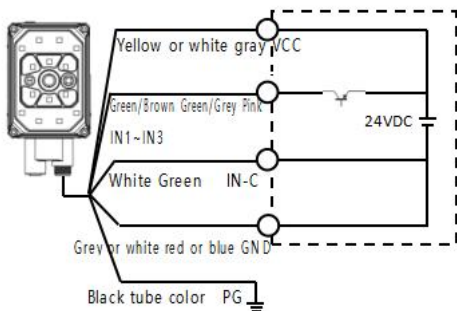
#### 3-2 NPN Photoelectric sensor triggering wiring



Select NPN type, connect the IN-C terminal to the VCC firstly, then connect the photoelectric sensor to the relevant scattered wire terminals. The corresponding wire sequence is shown as the table:

Photoelectric Sensor	Signal Terminal
Brown (+)	VCC
Blue (-)	GND
Black (OUTPUT)	IN1

### 3-3 PNP Photoelectric sensor triggering wiring



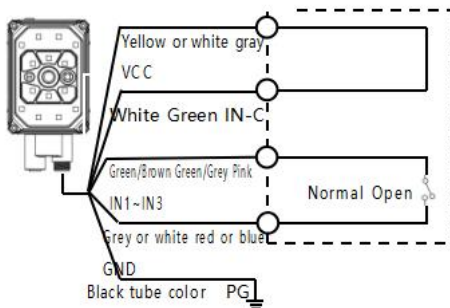
## Quick Reference Guide FV2X0

Select PNP type, connect the IN-C terminal to GND firstly, then connect the photoelectric sensor to the relevant scattered wire terminals. The corresponding wire sequence is shown as the table:

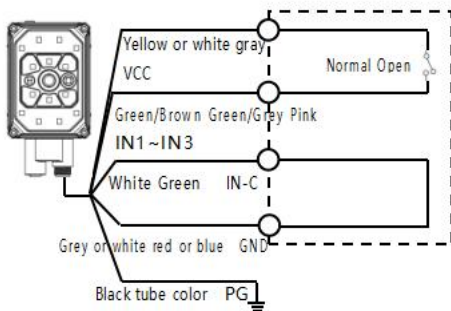
Photoelectric Sensor	Signal Terminal
Brown (+)	VCC
Blue (-)	GND
Black or other colors (OUTPUT)	IN1

### 3-4 Switch and relay triggering wiring

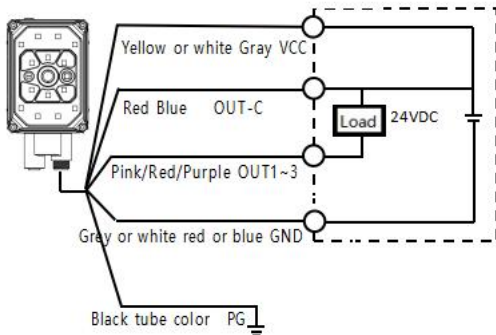
#### 3-4-1 Way 1



## 3-4-2 Way 2



## 3-5 External load wiring





### 3-5-1 Taking NPN type alarm light as an example for wiring

Logic needs to be set for external load wiring. Logic setting method: Setting interface -> Input/Output Settings -> Open 24V internal pull-up, connect scattered wire terminal VCC to OUT-C terminal, meanwhile, load (taking NPN type alarm light as an example) with positive pole connected to OUT-C terminal and negative pole connected to OUT 1 and OUT2 output terminals. Green light is on when reading successfully, when reading fails, the red light lights up and the alarm will sound. The corresponding wire sequence is shown as the table:

External Load (alarm light as an example)	Signal Terminal
+ (Power input line)	OUT_C
- (Green light control line)	OUT1
- (Red light control line)	OUT2
- (Buzzer control line)	OUT2

### 3-5-2 Using relays as an example for wiring

Setting interface -> Input/Output Settings -> Open 24V internal pull-up, connect scattered wire terminal VCC to OUT-C terminal, meanwhile, relay coil terminal 1 is connected to OUT-C terminal, coil terminal 2 is connected to OUT 2 output terminal, relay operates when reading fails. The corresponding wire sequence is shown as the table:

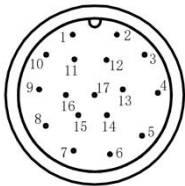
Relay	Signal Terminal
Coil terminal 1	OUT-C
Coil terminal 2	OUT2

Note: The total maximum working current of the output terminal load is 200mA, for other currents, please ask to our technical support.

If external equipment is not connected according to usage specifications or if the connection exceeds the specified load, it may cause damage to the product itself and may not be eligible for warranty and repair services.

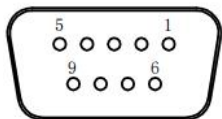
## 4. Cable Pin definition

### 4-1 17 PIN definitions of Serial cable



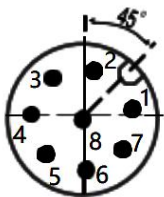
17-Pin Circular Connectors (Pin)	17-Pin Cable
1	GND
2	VCC
3	VCC
4	IN-C
5	OUT-C
6	TX
7	RX
8	GND
9	BP2
10	GND
11	OUT1
12	IN1
13	IN2
14	IN3
15	OUT3
16	OUT2
17	N/A

## 4-2 DP9 Female adaptor (hole)



2	TX
3	RX
5	GND

## 4-3 8 PIN definitions of Ethernet cable



1	TX-
2	RX+
3	RX-
4	
5	
6	
7	TX+
8	

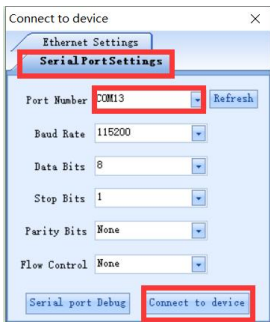
## Setting Tool

### **“infostepper” Configuration Settings (recommended setting methods)**

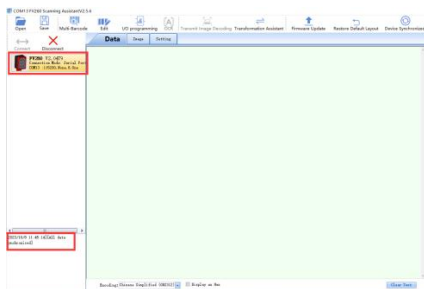
#### **1. Connection interface**

##### 1-1 RS232 Serial port connection method

After the device is directly connected to the computer, check "Device Manager -> "Port" firstly, click 'Connect' when connecting to the software "infostepper", the "Connect to device" window pops up, select "Serial Port Settings", select the corresponding COM number under "Port Number", if the COM number is not displayed, you can click "Refresh" button to search.

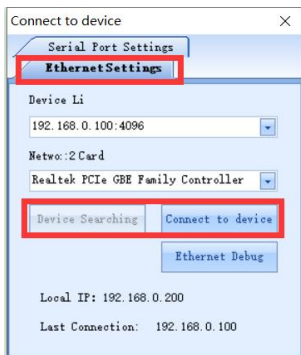


Click on "Connect to device", the interface is shown as follows after successful Serial port connection :

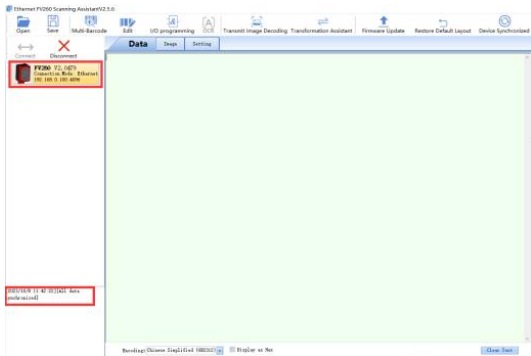


## 1-2 Ethernet connection method:

After the device is directly connected to the computer, first, modify the IP address parameters of the computer in "Control Panel" → "Network and Internet" → "Network Connections" → "Ethernet Properties" → "TCPv4 Properties" → "Use the following IP address", to make the IP of the computer and the device (default 192.168.0.100) in the same network segment. When connecting to the software, click "Connect" to open "Connect to device" window, select "Ethernet Settings" and automatically search for the current device.



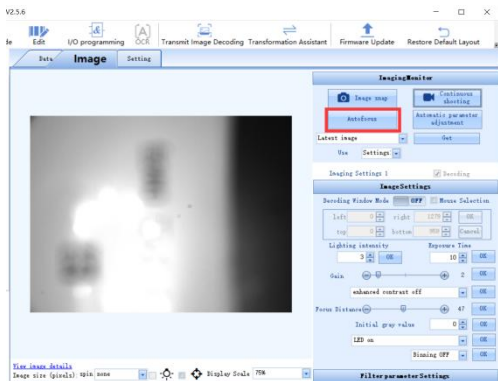
Click on "Connect to device" and the Ethernet Connection interface is as follows:



## 2. Image configuring

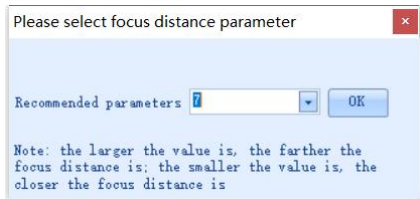
### 2-1 Focusing method

#### 2-1-1 Auto-focus



The device is fixed at a certain height, click on "Autofocus" , the device will perform autofocus. If autofocus is successful, the buzzer will prompt for success (the prompt for failure is different) and automatically switch to continuous shooting, in order for easy viewing of the focusing effect. If the effect is not ideal after successful focusing, you can select the value in the "Recommended Parameters" in the pop-up window and select the parameter value that can meet the relatively better focusing effect. Click OK to close the pop-up window. If the autofocus fails, the buzzer prompts for failure.

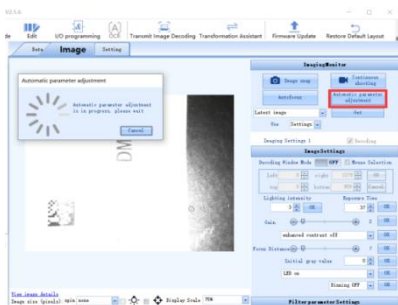




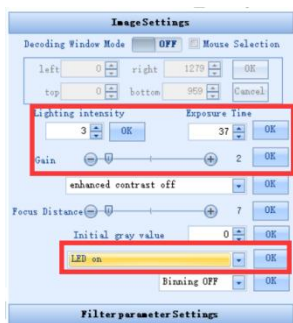
## 2-2 Adjustment method of image parameter

### 2-2-1 Automatic parameter adjustment

Firstly, ensure that there are readable barcode samples in the field of view; After automatic focusing is completed (focusing successfully), click on "automatic parameter adjustment " to automatically adjust parameters, including exposure time, gain and lighting mode. If the automatic parameter adjustment is successful, the buzzer will sound a successful prompt and automatically jump to continuous shooting for easy viewing of the parameter adjustment effect. If automatic parameter adjustment fails, the buzzer will sound a failure prompt. Before automatic parameter adjustment, the imaging settings can be changed as shown in the following picture to ensure efficient automatic parameter adjustment. The automatic parameter adjustment process interface is shown as the following picture:

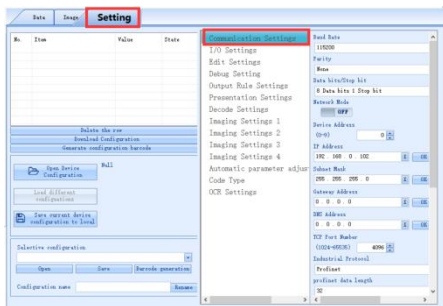


## 2-2-2 Manual parameter adjustment



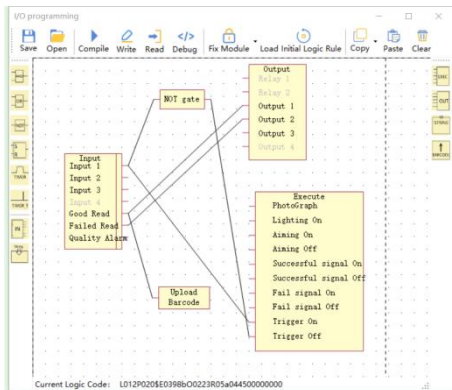
Fix the device at a certain height, click on Continuous Shooting, view the real-time image in the Image interface. Adjusting the data of "Lighting intensity", "Exposure time" and "Gain" while viewing the image. Keep adjusting until a green border appears around the barcode.

### 3. Communication settings interface



You can modify the communication related items on the Communication Settings page.

### 4. I/O Logic setting interface



You can modify I/O logic through “I/O programming” interface.

## Offline Setting of Display Screen

### 1.Initial interface



After the device is powered on and the screen is turned on, this interface will be displayed. Click the “启动设置” button to enter the Menu interface.

Remark: If the display screen is not operated within 10 seconds, the screen will go out; If you need to operate the screen again, just briefly press the button on the top of the host (around 0.5 second) to wake up the display screen.

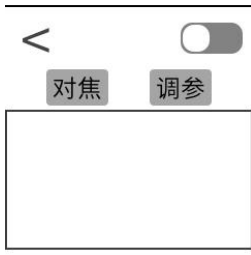
### 2.Menu interface




Click the icon on the menu interface to enter the corresponding settings interface.

Remark: If the display screen is not operated in 2 minutes, the screen will go out; If you need to operate the screen again, just briefly press the button to wake up the display screen; If no operation is performed on this interface, it is recommended to briefly press the button to turn off the screen.

### 2-1 Viewing images in real time




Step 1. Upper right corner switch: 

Start continuous shooting after opening the switch (the screen will not go off during continuous shooting), you can view the current image clarity. Continuous shooting will be suspended after shutting off the switch;

Step 2. If the image is blurred, click the focus button and the device will perform automatic focus. The display screen shows that autofocus is in progress. After successful autofocus, a success prompt will sound and a window for optional focusing distance

pops up. Select an appropriate focusing distance and click OK to complete the autofocus. If there are multiple sets of parameters recommended, select a rearward set to ensure clear image viewing;


Step 3. Click the parameter adjustment button and the device will perform automatic parameter adjustment. The display screen shows that automatic parameter adjustment is in progress. After the automatic parameter adjustment is successful, a success prompt will sound, exit; If automatic parameter adjustment fails, a failure prompt will sound, parameter adjustment is terminated;

Step 4. Click Return button: , return to Menu interface.

**Remark:** In the real-time viewing interface, the switch is set to shutdown, the screen will go out after 2 minutes; If you need to operate screen again, just briefly press the button to wake up the display screen and return to Menu interface; If no any operation will be performed on this interface, it is recommended to briefly press the button to turn off the screen.

## 2-2 Barcode reading verification




Step 1. Upper right corner switch:  , default is off, open it; Device performs decoding information statistics (the screen will not go out during the decoding information statistics process);

Step 2. Read barcode through key triggering. For every successful reading, "OK" corresponds to a change in count; Every failed reading, "NR" corresponds to a change in count, "Rate" will automatically calculate and generate the decoding success rate. "OK", "ERR", "Rate" represent the number of decoding successes, decoding failures and decoding success rate respectively;

Step 3. "清空" button: Click this button to clear the decoding information statistics to "0" ;

Step 4. If there are significant cumulative changes in NR count, it indicates that it is in a non-optimal state of image focusing or

parameter adjustment; Suggest readjusting image related parameters;

Step 5. Turn off the barcode reading information statistics switch and click Return button  , return to the real-time image viewing to configure image related parameters;

Remark: In the real-time viewing interface, if the switch setting is off, the screen will go out after 2 minutes; If you need to operate the screen again, just briefly press the button to wake up the display screen and return to Menu interface; If no operation is performed on this interface, it is recommended to briefly press the button to turn off the screen.



## Technical Parameters

Model	FV220 series	FV260 series
Sensor	1/3 inch CMOS sensor, global shutter	
Image Resolution	1920*1080	
Collection Speed	Up to 100 FPS	
Lens Type	Liquid lens	
Lens Focal Length	FV2X0N: 6mm FV2X0S: 12mm FV2X0L: 16mm	
Viewing Angle	FV2X0N: 45° (horizontal) 26° (vertical) ,FV2X0S: 21° (horizontal) 13.5° (vertical) ,	
Roll/ Pitch/ Yaw	360° (roll) 65° (pitch) 65° (yaw)	
Triggering Mode	Command triggering; I/O triggering; inductive triggering; continuous triggering; key triggering	
LED Indicator	Top position: 3 LED indicators (power supply, Ethernet connection and sending/receiving status indication); Around the body: blue (reading success), red (reading failure)	
Reading Area Indicator	Blue (reading success) Red (reading failure)	
Lighting Source Type	16 LEDs / Grouping control of high-brightness light source is doable	28 LEDs / High-brightness or polarized light source
Lighting Source Color	Red	
Light Source Kits	Polarized/Atomized/Polarized+Atomized, etc.	NA
Aiming Mode	Laser cross aiming	
Laser Safety Level	Class2	
Host Screen	1.3 inch, 240x240 pixels, Capacitive touch screen	
Communication Interface	Ethernet, Serial port	
Communication Protocols	Ethernet: TCP/IP, FTP, Profinet, Modbus TCP, EtherNet/IP Serial: RS232	

## Quick Reference Guide FV2X0

<b>Operating Voltage</b>	20-30 VDC	
<b>Power Consumption</b>	Standby: 3.4W, Peak: 19.2W	Standby: 3.4W, Peak: 30W
<b>Number of Input Signals</b>	3	
<b>Type of Input Signals</b>	NPN or PNP	
<b>Effective Voltage of Input Signal</b>	NPN: $\leq 16V$ , PNP: $\geq 5V$ (Max: 24V)	
<b>Number of Output Signals</b>	3	
<b>Type of Output Signal</b>	Voltage signal	
<b>Output Load Capacity</b>	Maximum 350mA@24VDC	
<b>Housing Material</b>	Aluminium alloy	
<b>Weight</b>	330g	500g
<b>Dimensions (L*W*H)</b>	112mm*60mm*53mm	131.0mmx106.0mmx59.0mm
<b>Operating Temperature</b>	$\sim 55^{\circ}\text{C}$	
<b>Storage Temperature</b>	$-20 \sim 70^{\circ}\text{C}$	
<b>Relative Humidity</b>	$0^{\circ}\text{C} \sim 95\%$ non-condensing	
<b>Vibration Resistance</b>	10 to 55 Hz, Dual amplitude 0.3mm, 1 hour in X, Y or Z direction	
<b>IP Rating</b>	IP65	
<b>ESD Protection</b>	Air discharge: $\pm 18\text{KV}$ , Contact discharge: $\pm 8\text{KV}$	
<b>Certification</b>	CE, RoHS, etc.	
<b>Readable Code Symbolologies</b>	1D, 2D and Stacked barcodes meet national and international standards	
<b>Maximum Reading Accuracy</b>	FV2X0N / FV2X0S 1D code: 1.3mil, 2D code: 2mil, FV2X0L 1D code: 0.67mil, 2D code: 1 mil	

## Reading Distance and Field of Vision

Barcode Specifications	FV220N/FV260N 6mm focal length lens		FV220S/FV260S 12mm focal length lens		FV220L/FV260L 16mm focal length lens	
	Nearest	Farthest	Nearest	Farthest	Nearest	Farthest
5mil Code 128	40	245	65	522	70	772
6.67mil Code 128	40	327	65	697	70	1030
10mil Code 128	40	491	65	1045	70	1543
15mil Code 128	40	736	65	1568	80	2315
5mil DataMatrix	40	134	65	285	70	421
6.67mil DataMatrix	40	178	65	380	70	562
10mil DataMatrix	40	268	65	570	70	842
15mil DataMatrix	40	401	65	855	70	1163

## Quick Reference Guide FV2X0

Reading Distance	FV220N/FV260N 6mm focal length lens		FV220S/FV260S 12mm focal length lens		FV220L/FV260L 16mm focal length lens	
	X-axis Visual Field	Y-axis Visual Field	X-axis Visual Field	Y-axis Visual Field	X-axis Visual Field	Y-axis Visual Field
50	45	25	28	15	17	10
100	90	50	45	27	30	17
300	250	140	132	73	82	45
500	415	230	208	115	135	75
800	680	370	338	187	230	120
1000	830	463	410	232	260	150

## Command Triggering

Default Triggering Command: TON

Default Canceling Trigger Command: TOFF

## Restore Factory Setting Barcodes

Scan the barcode below to restore to the default factory settings.



---

**Factory Settings Description**

Serial port communication parameters	115200, N,8,1
Default IP Address	192.168.0.100
Default Subnet Mask	255.255.255.0
OUT1-OUT3 Output	Low Level Effective
Triggering Mode	Normal Mode

## Sample Barcodes



1 2 3 A B C  
Code 39



0 12345 67890 5  
UPC A



A 1 2 3 4 5 6 7 8 B  
Codabar



ABCD1234  
Code 128



9 783456 789019  
EAN-13



5 5 6 7 8 9 0 1 2 3

Interleaved 2/5



PDF 417



Data Matrix



MicroPDF



QR code



AZte

## Legal Notice

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## **Declaration of Conformity**

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Ethernet and data port connections can be connected to industrial sites or buildings with routing and no routing outside the industrial site or building.

This product is only for qualified personnel to install.

## **Power Supply**

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This product can only be used with the original infoscan DC power adapter, or DC power supplies and other power devices verified and authorized by Bilin Intelligence's personnel.

## **EMC Compliance**

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In order to meet EMC requirements:

- It is recommended to connect the base of the barcode reader to factory ground (with a ground resistance of less than 100  $\Omega$ ) through a wire with a length of less than 100mm.

## **Instructions For Using LED**

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- Please follow the steps specified in the manual for control and adjustment, otherwise, it may cause dangerous LED radiation.
- Please be sure to follow the below precautions, otherwise it may cause harm to human body (eyes or skin).
- Do not directly gaze at LED light and specular reflection light.

- Do not disassemble, repair or modify this product on your own.
- Do not view directly with optical instruments. Viewing the LED output with certain optical instruments (for example, eye loupes, magnifiers and microscopes) within a distance of 100 mm may pose an eye hazard.

## Laser Safety

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- This product may include an aiming laser source for positioning the barcode reader.
- Do not disassemble, repair or modify this product.
- The product meets the requirements of IEC 60825-1.
- Please control and adjust according to the steps specified in the manual, otherwise, it may cause harm to the human body (eyes or skin).

## Product Safety Precautions

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- Non explosion-proof models should not be used in explosion-proof areas.
- Be sure to turn DC power off before attempting to connect or disconnect the control cable.
- Please strictly follow the instructions when using I/O terminals. If external equipment is not connected according to the usage specifications or if the connection exceeds the specified load, this may cause damage to the product itself and prevent it from enjoying warranty and repair services.
- Insert the connector straight so that it is not tilted and then tighten it securely. Under-tightening can lead to a loose

connector due to vibrations, resulting in poor contact.

- Please standardize the use of insulation sheets and screws to avoid on-site static electricity and other abnormal conditions affecting the barcode reader.
- Do not disassemble or modify this product, as this may cause damage to the product and unable to receive warranty service.
- Keep equipment and cables as far away from high-voltage lines and power cables as possible. Otherwise, it may lead to product failure or cable failure.
- Do not allow water, oil, corrosive objects or other foreign objects to stick to the product, as this may cause reading errors or damage to the product. Please use a soft dry cloth or a soft cloth soaked with alcohol to wipe any substances on the product.
- Before using this product, please ensure that it operates normally in terms of functionality and performance.

南京比邻智能识别技术有限公司

NANJING BILIN INTELLIGENT IDENTIFICATION TECHNOLOGY CO., LTD.