AKUSENSE

Intelligent code reader RCD-AI100-S Series User Manual



V2.0

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Chapter 1 Product Introduction

1.1 Product Description

This manual is applicable to Akusense Intelligent Code Reader RCD-Al100-S series, which can be applied to 3C, food and drug, electronic semiconductor, auto parts and other industries. The device uses sensors and optical components to obtain the image of the object to be measured, and achieves barcode resolution through the device's built-in code reading algorithm. The device can also output detection results through various communication methods.

1.2 Main Features

- Compact size for small space installation
- Uses a liquid lens with a built-in self-focusing algorithm for fast zooming
- The Tune button on the body allows automatic one-touch adjustment, saving time in the field
- Supports ultra-small code reading for different distances
- Provides red/white dual color light source and supports polarized light source for complex scenes
- Aviation plug design, single cable connection, easy to connect

1.3 Appearance

A. Appearance Description



No.	Name	Description
1	Screw holes	Smart reader mounting holes for securing devices
2	Connection Cable	M12-17PIN cable, including power cable, Ethernet cable, IO cable, serial communication cable
3	Light source	Built-in red / white light source for image acquisition to fill in the light to ensure the

		image effect
4	Aiming light	Indicates the center of the image for easy targeting
5	Image Sensor	For image acquisition
6	Power indicator	Green light for normal operation of equipment, no light for operation
7	LINK Network Indicator	Green light strobe when the network communication is normal
8	TRIG Button/TUNE Button	Trigger / One-touch reference button. Single click for trigger photo, long press for 5s for one-touch referencing
9	Code reading status indicator	Green light when OK, red light when NG
10	Buzzer	Vocalize when decoding succeeds or fails

B Status Indicator Description



No.	Name	Description
1	TRIG button	Trigger button
2	TUNE button	Auto-reference button
3	Power indicator	Green light for normal equipment

		operation
4	Network Indicator	Green light strobe when the
		network communication is normal
5	OK/NG Indicator	Green light for successful code
		reading, red light for failed code
		reading

1.4 Interface and Scatter Definition

The device connector is M12-17PIN connector, the specific pin signal definition is shown in the figure below.

When wiring the device, please connect according to the pin numbers in the table, combined with the color on the cable label.

M12-17PIN male connector	Pin	Color	Signal
	1	Red	DC_24V
	2	/	
	3	1	
	4	Red and Blue	RS232_TXD
	5	light green	RS232_RXD
	6	Orange and White	ENET_RX-
	7	Green	ENET _TX+
	8	Yellow	LINE_INO
	9	Brown	IN_COM
	10	White	LINE_IN1
	11	Black	GND
	12	Grey	LINE_OUT0
	13	1	
	14	Orange	ENET_RX+
	15	Green and	ENET_TX-
		White	
	16	Purple	LINE_OUT1
	17	Blue	LINE_OUT2

1.5 Accessories & Dimensions

A List

In order to use the equipment properly, please prepare the supporting items shown in the table below before installation

Accessory Name	Description	Picture
Cable	M12-17PIN cable to connect the device connector	G
Power	24V Power adapter	
L-shaped mounting bracket	L-shaped mounting bracket + screws	

B Size

Unit :mm











Chapter 2 Equipment installation and operation

2.1 Equipment Installation

1. Attach the equipment to the fixing bracket using screws, and then attach it to the other mechanism parts through the fixing bracket.



Demo diagram: Front mounting



Demo diagram: side mounting

2. Installation tilt 10-15 degrees to avoid light spots and reflections. Liquid zoom code reader working distance of 40mm-300mm

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Liquid zoom field of view diagram Manual zoom code reader working distance of 30mm-300mm



Schematic diagram of manual zoom field of view

2.2 Power connection

Power supply supports 24V DC, 3A max.

There are two types of power supply: support 24VDC direct connection or 220VAC with adapter connection.



2.3 Communication connection

A RS232 serial connection

The default baud rate is 9600, parity bit: NULL, data bit: 8, termination bit: 1. The actual parameters can be changed during debugging software.



B Ethernet connection

The default IP address is 169.254.153.0 and the default data port is 15000.



Chapter 3 IO electrical characteristics and wiring

The smart reader has 2 optically isolated inputs as well as 3 non-isolated outputs.

3.1 I/O Electrical Characteristics

LineIn 0/1 of the device I/O signals are optocoupler isolated inputs and LineOut0/1/2 are non-optocoupler isolated outputs.

3.1.1 Input Electrical Characteristics

Parameter Name	Parameter Symbols	Parameter Value
Input logic low level	VOL	8V
Input logic high level	VOH	12V
Input falling edge delay	TDF	10µs
Input rising edge delay	TDR	47µs

Description*: Input logic low or logic high is the threshold value of the voltage representing the input. The input rise or fall delay is the performance of the representative.

3.1.2 Output electrical characteristics

Parameter Name	Parameter Symbols	Parameter Value
Output logic low level	VOL	0.7V
Output logic high level	VOH	23.9V
Output falling edge delay	TDF	20.3µs

Output rising edge delay	TDR	550µs
Output drop time	TF	12µs
Output rise time	TR	3.5µs

3.1.3 Input internal wiring diagram

• Input signal

In 0/1 of the device I/O signal is an optocoupler isolated input with an input voltage range of 8~24VDC.



Device input circuit diagram

• The input logic level is :



Input Logic Level Diagram

3.1.4 Output internal wiring diagram

• Output signal

Lineout0/1/2 in the device I/O signal is the output. The output voltage range is 5 to 40 V and the output current does not exceed 50 mA.



Device Output Circuit Diagram

• The output logic level is :



Output logic level diagram

3.2 IO External Wiring

The device can receive signals from external inputs or output signals to external devices through the I/O interface. This section mainly introduces how to wire the I/O section, the signal input in the wiring diagram is LineIn 0 for example, and the signal output is LineOut 0 for example. Other interfaces can be defined according to the cable in the wiring diagram, combined with the introduction of the interface for analogy.

3.2.1 Input external wiring diagram

The device input wiring varies depending on the type of device.

Input signal is NPN





Input signal is PNP



3.2.2 Output external wiring diagram

The device output wiring varies depending on the type of device.

• External devices are NPN type devices



Note*.

 The voltage value of VCC of the device shall not be higher than the voltage value of PWR of the code reader 24V, otherwise the output signal of the device will be abnormal.
 The load current of output terminal should meet the requirement of product specification (if necessary, string current limiting resistor is required).

3.3 RS-232 Port

The device supports RS-232 serial output.

3.3.1 RS-232 Port

The common 9-pin male 232 serial port connector serial port is defined as shown below.



9-pin Male connectors

Pin number	meaning	function
2	RX	Receive data
3	ТХ	Send data
5	GND	Signal ground

9-pin male 232 serial port definition

10-Note*: The voltage value of VCC must not be higher than the voltage value of PWR, otherwise the device output signal will be abnormal.

Chapter 4 Client Operations

4.1 Software Connection

- Double-click the icon to open the software.
- The intelligent reader and the PC configuring the software need to be on the same network segment in order to be connected.
- Default IP address: 169.254.153.0; gateway 255.255.0.0.
- DHCP can be used with the use of static IP address form to make the connection successful.

O Use DHCP	L	Use static II	Р	
Static IP configurat	ion	_		
		C	ne-click mat	ching
Configuration Copy th	ne network co	nfiguration fro	m the compu	iter 🔻
IP address	3		563	
Subnet mask		21	(d) / (
Default gateway		53		
DNS Server		*:	2.1.1.	

Modify ip

4.2 PC Network Configuration

4.2.1 Change the IP address of the PC

The operation steps are as follows:

1) Take Windows10 as an example, open "Start Menu" > "Settings" > "Network and Internet" > "Ethernet" > "Change Adapter Options" > "Ethernet 3" > Right-click "Properties" > "Network" > "Internet Protocol Version 4 (TCP/IPv4)", correspondingly modify the IP address of the PC of the corresponding network card to 169.254.153.16; subnet mask: 255.255.0.0.

2) Open the configuration software, select the corresponding product and click connect to complete.

6.3	111 10	241)								
1	MJ_AIScanne	r								0 – в ×
0	Device man	agement								
	Name	Туре	Address	Status	Firmware version	Interface	Mac address	Serial number	Networking status	Connect
	Scanner	192.168.1.103	• Idle	v1.2.2.4	Network	8A:82:2C:79:25:18		-	Connect	IP setting Firmware Upgrade Configuration

4.2.2 Change the reader IP address

The operation steps are as follows: Open the configuration software, select the corresponding PC network card, after it is displayed on the barcode reader, click IP setting > Use static IP > One-key matching > Confirm, and change the IP address to the same network segment IP as the PC.

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Name	Туре	Address	Status	Firmware version	Interface	Mac address	Serial number	Networking status	Connect
Scanner	192.168.1.103	• Idle	v1.2.2.4	Network	8A:B2:2C:79:25:18			Connect	setting Firmware Ustworking upgrade configuration
					Stati Us Stati IP add Subni Defau DNS S	ng mode e DHCP c IP configuratio guration Copy the dress et mask tit gateway it gateway	n network.configur	e static IP One-click matchi ation from the computer 	ng v

4.3 Firmware upgrade

The operation steps are as follows: Device Management > Device Operation > Firmware Upgrade, select the firmware file, and then click OK to update the firmware. Wait for the reboot to complete.

**	MJ_AiScanne	er									C) – @ ×
	Device man	agement										
	Name	Туре	Address	Status	Firmware version	Interface	Mac address	Serial number	Networking status		Connect	
	Scanner	192.168.1.103	• Idle	v1.2.2.4	Network	8A:82:2C:79:25:18		-	Connect	IP setting	Firmware uograde	Networking onfiguration
				\frown								
				(?) Not	ce: please donot po	oweroff in the upgradati	on! Please confirm	n to upgrade 192.16	8.1.103			
							Cance	Confirm				

Chapter 5 Function Introduction

5.1 Interface introduction

The device can perform related operations through the client, as follows:

1) In the case of confirming that the device is reachable, select and click on the "connection" of the client to successfully connect the device.

2) After connecting the device, the main interface of the client is shown in the figure below, and the introduction of each function module is shown in the table.



No.	Name	Function brief
1	Menu bar	Set up the basic functions of the client.
2	Code reader configuration	Menu bar secondary menu, do parameter setting for the corresponding module, including template selection, parameter setting, algorithm setting, etc.
3	Toolbar	You can start/stop image acquisition on the device and also perform quick operations such as capture and save, cancel ROI, zoom in/out preview image, and software trigger.
4	Preview Window	Real-time preview of the device's currently captured images, algorithm readings, and the effect of drawing ROI windows.
5	History	Real-time display of the barcode information currently read by the client.
6	Basic settings	You can change the device name, buzzer settings, key settings, and also count the read code information of the device, upgrade the firmware, and view the device log information.

5.2 Read code configuration

5.2.1 Template Selection

The template type supports 5 templates from "Template 1" to "Template 5", as shown in the figure below.

The "template selection" of the device is carried out by pulling down the upper left corner of the "reader configuration" area, and the operation mode can be saved as "template" after the configuration of the relevant parameters of the reader is completed.



5.2.2 Image Acquisition

If the recognition effect is not good, you can adjust the parameters of "image acquisition" in "code reading configuration", including manual adjustment of camera settings and light source settings, such as exposure time, gain, focus, light source parameters, etc.; or adaptive adjustment, through the device itself intelligent adjustment of camera settings and light source settings

	Choose the template	Template 1	Ŧ	
Code reading Configuration	Image acquisition		Algorithm configuration	
Trigger Configuration	Adaptive parameters Camera setting Light source setting	adjustment		> > > >
Format Configuration				
Output Configuration				
Communication Configuration				
Manage Configuration	Restore		Save current	
 Setting 	default setting	r	configuration	

5.2.2.1 Adaptive parameter adjustment

Adaptive parameter adjustment includes: image algorithm ROI, image adjustment, light source adaptive, auto-focus, auto-code system search. Users select the required adjustment parameters (image quality adaptive, light source, auto-focus, auto-code search) and click to execute automatic adjustment of exposure, gain, light source, code system and other parameters to achieve the best decoding effect, and set the adjustment parameters automatically for each parameter item.

	Choose the template	Template 1	•	
Code reading Configuration	Image acquisition		Algorithm configuration	
Am	Adaptive parameters	adjustment		^
Trigger Configuration	Image Algorithm ROI Image adjustment Autofocus Automatic code search	 Tu Tu Tu 	Draw rn on rn on rn on	
Format		Execute		
Configuration	Camera setting			\sim
Configuration	Light source setting			\checkmark
© Communication Configuration				
Manage Configuration	Restore		Save current	
Setting	default setting	r.	configuration	

5.2.2.2 Camera settings

- Exposure time: control the opening time of the shutter of the code reader to control the brightness of the image, the longer the exposure time, the brighter the captured image. Can be adjusted by sliding or filling in the numbers.
- Gain index: control the size of the image gain and control the brightness of the image, which can be adjusted by sliding or filling in the numbers.
- Hint: the larger the exposure time, the smaller the speed of motion supported for reading; the larger the gain index, the more noise in the image.



5.2.2.3 Light source settings

	Choose the template	Template 1	¥	
Code reading Configuration	Image acquisition		Algorithm configuration	
Trigger	Adaptive parameters Camera setting	adjustment		× ×
Configuration	Light source setting			>
Format	۲		2	
Configuration				
Cutput	9		•	
Configuration	Lighting Source			
Communication Configuration	Camera Light Time		2000	_0
Manage Configuration	Restore		Save current	
 Setting 	default setting	7	configuration	

Control the opening and closing of all fill lights.

5.3 Algorithm configuration

The device can set the parameters related to the code reading algorithm through the "algorithm configuration" module.

5.3.1 Read code type

The current code reading device supports two types of 1D code and 2D code, check the code system that the device needs to read barcode, and you can select more.

As shown in the figure below, the algorithm configuration interface shows the selected code system. The more code systems you select, the more time the algorithm will take to process each image. It is recommended to select the corresponding code system according to the actual demand to achieve the best effect.

	Choose the template	Template 1	•	
Code reading Configuration	Image acquisition		Algorithm configuration	
Trigger	Type of code reading	le		^
Configuration	CODE128 CODE39 CODE93 Interleaved 2 of 5			
C/P Output	EAN13 EAN8 QR code			
©	QR Z DM			
Communication Configuration	Algorithm parameters	5		^
	Algorithm time limit	2000		ms
Manage	Image Preprocess	NA		•
Configuration	Restore		Save current	
Setting	default setting	r -	configuration	

5.3.2 Algorithm parameters

The setting of the parameters for decoding the 1D 2D code.

- Polarity: used to indicate the barcode and background color, and the parameters can be set as black code on white background and white code on black background with compatible mode.
- Edge type: the parameters can be set as continuous code, discrete code and compatible mode.

Note: Continuous or discrete depends on whether the smallest cells of the code are connected together, connected together is the continuous code, separated is the discrete code.

- Mirror mode: used to distinguish whether the code is a mirror state, can set parameters for mirror, non-mirror and compatible mode.
- QR distortion: used to determine whether the QR code has distortion phenomenon, can set parameters for distortion, non-distortion and compatibility mode.
- DM code type: It is used to distinguish the type of DM code, and the parameters can be set as square, rectangle and compatible mode.
- Operation mode: Select the mode used for decoding, different modes correspond to different time consumption and results of the algorithm, and the parameters can be set as extreme mode, normal mode and expert mode.
- Number of 1D codes: the maximum number of 1D codes to be output.
- Number of 2D codes: the maximum number of 2D codes to be output.

Choose the template Template 1 Choose the template Template 1 w w Eð Eð Algorithm Image Algorithm Image Code reading Code reading configuration configuration acquisition Configuration acquisition Configuration Type of code reading Type of code reading The Im Algorithm parameters Algorithm parameters Trigger Trigger Configuration Algorithm time limit Configuration 2000 ms Algorithm time limit 2000 m Image Preprocess NA Image Preprocess NA \bigotimes \otimes 1D/2D Barcode Configuration One-dimensional code Format 1D/2D Barcode Configuration QR code Format Configuration Configuration Polarity Compatibility Mode Polarity Black Code On White </> Application Mode Normal Mode Mirror Mode </> Non-Mirrored Output Configuration Output Configuration Code39 check Off Application Mode Normal Mode 1D Code Number 10 QR Distortion Compatibility Mode Q R Edge Type Compatibility Mode icatio Comm cation Configuration DM Type Compatibility Mode Configuration 2D Code Number 1 POL catting under the decoding algorithm Manage POL cotting under the decoding algorithm Manage Configuration Restore Save current Configuration Restore Save current configuration default setting ⊘ Setting configu default setting Setting

5.3.3 Decoding algorithm ROI setting

Algorithm ROI can carry out algorithm recognition only for the selected area of interest of the device, and other areas are not processed by algorithm to improve the reading efficiency. The device can set multiple algorithm ROI areas and output barcode results in order from smallest to largest according to the number of the algorithm ROI area where the barcode is located. The output rules are as follows: 1, barcode 2, barcode 3, barcode 4, barcode, if the barcode is not recognized in a certain algorithm ROI area, the barcode information in the corresponding area will be changed to the set noread character. At present, it supports 2 kinds of algorithm ROI drawing methods: manual and batch adding, and it supports clearing all ROI.

	Choose the template	Template 1	•	
Code reading Configuration	Image acquisition	cc	Algorithm onfiguration	
Trigger	Type of code reading Algorithm parameters	5		× >
Configuration	ROI setting under the Draw ROI manually Add multiple ROI in a bate	decoding algorith	וווו 🔍 Turr נ	on ^ Draw Draw
Configuration	Clear all ROI		(Clear
Communication Configuration				
Manage Configuration	Restore	Sa	ve current	
Setting	default setting	r cor	ofiguration	

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5.3.4 Manual plotting of ROI

Click Settings to enter the manual setting ROI mode, you can drag to set the ROI size according to your needs (you can finely set the ROI size by center point X/Y, width and height), the box selection area is the area of interest of the algorithm.

①Center X: X coordinate of the center point of ROI box.

②Center Y: Y coordinate of the center point of the ROI box.

③Width: the number of pixels in the horizontal direction of ROI.

Height: the number of pixels in vertical direction of ROI.

MJ_AiScanner													0 – б х
Device manag	gement Scanner/192.168.1.103 ×												
	Choose the template Template 1	v			6	960	Ð 40%	• • •	X [₽	ок		Debug n	node
Code reading Configuration	Image acquisition	Algorithm configuration											
Trigger	Type of code reading Algorithm parameters		~				新 车 专 開 開						
Configuration	ROI setting under the decoding als	gorithm 🔍 Tu	rn on ^				SA	# 275.494					×
Format	Add multiple ROI in a batch		Draw					Draw	area ter point X	557	Ce	nter point	Y 315
Configuration	Clear all ROI		Clear					Wid	th	415	Не	ight .	382
رک Output				Succes Hist	s rate of r	eading2/14 (1	4.29%) F	Resolution: 128	0*80 <mark>5</mark> /	Real-time Em	frame ra	ate: 8.5 fra	ime/s RGB:- Pause recording
Configuration				Ima	ge ID	Image n	iame 1	Type of barcoo	de adir co	de length	PPM	Task tim	e Decoding tin (ms)
0					14	20211109093	8029399	QR		50	F	6.6	70
ommunication					13	20211109093	8027344	UnKown		0	F	0.0	164
Configuration					12	20211109093	8019878	QR		50	F	6.3	109
~					11	20211109093	3003364	UnKown		0	F	0.0	332
Ē					10	20211109092	2958738	UnKown		0	F	0.0	88
Manage					9	20211109092	2957019	UnKown		0	F	0.0	95
Configuration	Restore	Save current			8	20211109092	2955953	UnKown		0	F	0.0	140
Setting	default setting	configuration			7	20211109092	954488	UnKown		0	F	0.0	115

5.3.5 Batch add ROI (checkerboard grid)

Used to draw ROI in batch.

①Drawing area: Center X: batch set the X coordinate of the center point of the area, Center Y: batch set the Y coordinate of the center point of the area, Height: batch set the number of pixels in the vertical direction of the area, Width: batch set the number of pixels in the horizontal direction of the area (default is the maximum number of pixels).

⁽²⁾Pitch setting: spacing between ROI rows and rows; column spacing: spacing between ROU columns and columns.

③ROI quantity (row*column): batch set the number of rows and columns of ROI (the maximum value is dynamically adjusted according to the drawing local area size and row/column spacing size).

④Generation: determine the above settings.

🛃 MJ_AiScanner															0 – Ф ×
Device manag	ement Scanner/192.168.	1.103 ×													
	Choose the template	Template 1	•			a	0] Q	40%	€	© [,	ок 🤉		Debug	mode
Code reading Configuration	Image acquisition) co	Algorithm nfiguration		-				Draw are Center Width	ea point X	196	Center p	oint Y 4	10	
F	Type of code reading Algorithm parameters			~ ~					Spacing Row sp	setting acing 0	200	Column se	acing)	
Configuration	ROI setting under the Draw ROI manually	decoding algorith	m 🔹 Turn or Dra	n ^ w					*Range Row and	e: 0 · I column	~ 146 setting	*Range:	0		
Format	Add multiple ROI in a batc	h	Dra	w					Numbe *Range	er of rows	5 1 1~3	Number of *Range :	column	s 1 1~1	
Configuration	Clear all ROI		Cle	ar	Succe	ss rate o	ofreading	2/14 (14 29	96) Res	olution	1280 *800	Gener	ate frame	Confirm	ame/s_l_RGB:0
Output					His	story)	Image cache]	<i>io</i> / 103		1200 000	Em	pty the	record	Pause recording
Configuration					Im	age ID	Ir	mage name	е Тур	be of bar	rcode adi	r code lengti	n PPM	Task tin (ms)	ne Decoding tin (ms)
Q						14	2021	1109093029	399	QR		50	F	6.6	70
Communication						13	2021	1109093027	344	UnKow	n	0	F	0.0	164
Configuration						12	2021	11090930198	878	QR		50	F	6.3	109
						11	2021	1109093003.	364	UnKow	n	0	F	0.0	332
						10	2021	1109092958	738	UnKow	n	0	F	0.0	88
Manage						9	2021	1109092957	019	UnKow	n	0	F	0.0	95
Configuration	Restore	Sav	e current			8	2021	1109092955	953	UnKow	n	0	F	0.0	140
Setting	default setting	con	figuration			7	2021	1109092954	488	UnKow	n	0	F	0.0	115

5.3.6 Clear all ROI

Used to clear all current ROIs.

	Choose the template	Template 1	•	
Code reading Configuration	Image acquisition		Algorithm configuration	
Trigger Configuration	Type of code reading Algorithm parameters ROI setting under the	; decoding algori	thm 🔹 Turr	n on
Format Configuration	Draw ROI manually Add multiple ROI in a bate	h		Draw Draw Clear
Output Configuration Ommunication Configuration Manage Configuration	Restore	5	Save current	

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5.4 Trigger configuration

The trigger types include "continuous trigger", "IO trigger", "software trigger", "network trigger" and "serial trigger".

^	Trigger type 🔟	trigger	•
E	C	ontinuous trigger	
Code reading	I() trigger I(trigger	
Configuration Frigger	Task timeout I I Multiple Ba Image collect Maximum pur	oftware trigger etwork trigger erial port trigger	
Configuration	get image treque	ncv	en Di est 🛛 🔍
Format	Trigger starts		
Configuration	Delay trigger	200	00 ms
	Trigger signal	Line0	v
Output	Trigger form	Rising edge	٣
Communication	Trigger ends Delay trigger	200	0 ms
Configuration	Trigger signal	Line1	v
Manage Configuration	Trigger form	Falling edge	¥
Setting	defau	store t setting	configuration

The trigger types are as follows

5.4.1 Continuous Trigger

Continuous trigger means that the reader continuously triggers to take pictures.

5.4.2 IO Trigger

IO trigger means that the reader receives a signal and then triggers to take a picture. This

trigger mode needs to select "single (external)" mode before this function can be set. Task timeout: Set the maximum task time for single trigger. When the trigger is turned on, it will be forcibly turned off when the timeout period is reached and not turned off. Default 9999, the setting range is 10-9999.

5.4.2.1 Start Trigger

The selection page for turning on and off start triggering.

_	Trigger type 10	trigger		•
Code reading	I() trigger			
Configuration	Task timeout		9999	ms
0	Multiple Barco	de termination Fnable	1	Codes
2hing	Image collection	mode	(гэгна мина	•
Trigger	Maximum numbe	er of images	с п	
Configuration	get image freque	incv	(1.2001-201-1	•
\bigotimes	Trigger starts	;		1
Format	Delay trigger		2000	ms
Configuration	5 cita) 1188 ci		2000.	
	Trigger signal	Line0		•
Configuration	Trigger form	Rising edge		
	Trigger ends			
Communication	Delay trigger		2000	ms
Configuration	Trigger signal	Line1		۳
Ē	Trigger form	Falling edge		•
Manage				
Configuration	Restore		Save current	
Setting	default setting configuration		configuration	

5.4.2.2 End Trigger

Turn on and off the selection page of the termination trigger.

- Delay trigger: The trigger delay under the start trigger page means that the code reading will start only after the delay time set by the trigger signal. The trigger delay under the end trigger page means that the code reading will be stopped only after the set time is delayed when the end trigger signal is received. The default is 0ms, and the setting range is 0ms-9999ms.
- Trigger signal: The trigger signal under the start trigger page is divided into "Line0" and "Line1", which correspond to the hardware trigger input IN0 and IN1 respectively; the trigger signal under the stop trigger page is divided into "Lin0" and "Lin1". Line0" and

"Line1", corresponding to the hardware trigger input INO and IN1 respectively.

	Trigger type 10	trigger		•
Code reading Configuration Trigger Configuration	IO trigger Task timeout I Multiple Barco Image collection Maximum numbe get image tredue	ode termination Fnable mode er of images ncv	 (тагла мола 	Codes
Format Configuration	Trigger starts		2000	ms
	Trigger signal	Line0		*
Output Configuration	Trigger form	Rising edge		▼
0	Trigger ends			
Communication	Delay trigger		2000	ms
Configuration	Trigger signal	Line1		v
Manage	Trigger form	Falling edge		¥
Configuration	Re	store It setting	Save current	

• Trigger form: The trigger form under the start trigger page is divided into "rising edge" and "falling edge". "Rising edge" means that the code reader receives the rising edge signal and starts reading; "falling edge" means that the code reader receives the falling edge signal and starts reading. The trigger form under the termination trigger page is divided into "rising edge" and "falling edge". "Rising edge" means the reader receives the rising edge signal and starts reading. The trigger form under the termination trigger page is divided into "rising edge" and "falling edge". "Rising edge" means the reader receives the rising edge signal and stops reading; "falling edge" means the reader receives the falling edge signal and stops reading.

	Trigger type	IO trigger		•
Code reading Configuration	I() trigger Task timeout		9999	
Trigger	I I Multiple Ba Image collecti	ercode termination Enable ion mode		Codes
Configuration	get image free	nner of Images quency	0.000.001	•
\bigotimes	Trigger sta	rts		
Format Configuration	Delay trigger		2000	ms
	Trigger signal	Line0		¥
Output Configuration	Trigger form	Rising edge		•
0	Trigger end	ts Falling edge		
Communication	Delay trigger		2000	ms
Configuration	Trigger signal	Line1		¥
Manage Configuration	Trigger form	Falling edge		¥
Setting	def	fault setting	configuration	

5.4.3 Software trigger

Through the mouse click on the "software trigger" content, you can realize the code reader trigger to take pictures.

5.4.4 Network trigger

Set the longest task time for single trigger.

When the trigger is opened, it will be forced to close when the timeout is not closed. The setting range is 10-9999; the maximum number of pictures ranges from: 1 to 100.

5.5 Format Configuration

The format configuration includes two sections, "Data Filtering" and "Data Processing", which can set the filtering rules and output data of the device.

	Configuration of format	
Code reading	Data filtering	~
Configuration	Data processing	~
0		
-lim		
Trigger		
Configuration		
\sim		
\otimes		
Format		
Configuration		
Output		
Configuration		
0		
Communication		
Configuration		
(Ê)		
Eo		
Manage		
Configuration	Restore	Save current
Setting	default setting	configuration

5.5.1 Data Filtering

Data filtering can do certain filtering to the barcode read by the device according to the set rules.

• Repeat time filtering: When this function is enabled, the repeat code will not be output within the set time; (30-30000)

ex: when set to within 500ms, the code content will be 123452, and the result value will be output 1 time if it is run many times within 500ms.

• Reread quantity filter: when this function is enabled, read the same content more than a set number of times, it will not be output; (1-100)

ex: when set to 3, when the code content is 123452, the number of times 123452 is output cannot exceed 3 times.

- barcode length limit: when this function is enabled, only codes within the limit are output.
- specified beginning: when this function is enabled, only codes with specified beginnings are output (there can be more than one beginning)
- specified end: when this function is enabled, only codes with the specified end are output (multiple endings are possible).
- must contain: when this function is enabled, the code that satisfies the containment setting is output (there can be more than one containment).
- Cannot contain: when the function is enabled, output codes that satisfy the non-contained set content (there can be multiple non-contained).
- Character bit offset: output from after the set bit (ex, code: 1232334, set to 3, code output information for 2334).
- output character requirements: all-numeric: only the output of numbers, letters: only the output of letters, numbers or letters.
- Barcode verification: input the target character information to verify whether the above filtering conditions are met, no input is not displayed, OK/NG is displayed, OK is displayed when the filtering conditions are met, NG is displayed when they are not met.

	Configuration of format	
	Data filtering	^
Configuration	Filtering of Close	~
E	Filtering of Close	~
Configuration	Barcode Filtered by Number 💿 Close	\sim
	Character numeric offset	~
Format Configuration	Barcode length Close	~
	Specify Close	~
Output Configuration	Specify Close	~
0	Must contain 💿 Close	\sim
Communication	Cannot contain 💿 Close	\sim
Configuration	Character requirement Close	~
Manage	Barcode verification	
Configuration	Restore Save current	
Setting	default setting configuration	

5.5.2 Data Processing

The data processing section allows you to set the barcode results output by the device. The specific parameter content differs with different communication protocols selected.

• Sorting mode: The sorting mode of the output result of the code system supports a variety of sorting rules.

①Barcode length ascending order: sorting from smallest to largest according to the length of barcode content.

⁽²⁾Barcode length descending order: sort from big to small according to the length of barcode content.

③Barcode type ascending order: 1D code: code39,93,128,ITF25,EAN; 2D code: QR/DM.
④Barcode type descending order: 2D code: DM/QR,1D code: EAN,ITF2/5,code128,93,39.
Note:The subsequent new code system is arranged in order according to the above combination.

③ ROI ascending order: sorted according to the set ROI number from smallest to largest.⑥ROI descending order: Sort from big to small according to the set ROI number.

⑦Barcode center X ascending/descending order: sorting according to the code center X position from small to large (descending order is vice versa).

Barcode center Y ascending/descending order: sorting according to the code center Y position from smallest to largest (descending order and vice versa).

 Barcode position ascending/descending order: sorting according to X from small to large and Y from small to large (descending order and vice versa).



Bar code separator, semicolon (;), comma (,), slash (/), backslash (\), underscore (_), midline (-).

	Configuration of format	
Code reading Configuration	Data filtering Data processing	~
- Arrow	Sorting order	Barcode length ascending order 🔹 🔻
Trigger	Barcode separator	Semicolon (;)
Configuration	Data template	Semicolon (;)
XX	Output starts	Comma (,)
Format		Slash (/)
Configuration	Output ends	Backslash (\)
	Barcode	Underscore (_)
	content	Underline (-)
Output	coordinates	None
Conngulation	{code_content}	\r
Q		\r\n
Communication		
Configuration		
1		
Manage		Qualified
Configuration	Restore	Save current
O Setting	default setting	configuration

- Data Templates
- Used to process data for editing.

• Output Start

Contains barcode content, barcode type, barcode angle, vertex coordinates, quality level, ROI serial number, PPM, time, carriage return line feed.

	Configuration of form	nat	
	Data filtering		×
Configuration	Data processing		2
Q	Sorting order	Barcode length	ascending order
Trigger Configuration	Barcode separator	Semicolon (;)	
X	Output starts		
Format Configuration	Output ends		
	Barcode content	Type of barcode	Barcode angle
Output	Vertex coordinates	Text input	ROI No.
Configuration	РРМ	Time	Barcode Quality
R	New line	Collapse 🔺	
Communication Configuration	{code_content}	<u> </u>	
Manage			
Configuration	Restore		Save current
Setting	default settin	σ	configuration

• End of Output

Contains text input, output start, and output end.

- ① Text input: Used for custom character input.
- ② Output start/end: Used for custom settings of start and end.
- ③ Preview content: Used for preview of editing content.

• ROI No Read Complement

There is no recognized code in the ROI area, and the read failure associated character is output.

• Output failure character

Used to define the read code failure character.

5.6 Output Configuration

Continuous output time is 0~9999ms, divided into 3 outputs.

5.6.1 OUT setting

OUT setting can control three different groups of output control, divided into "OUTLINE1", "OUTLINE2" and "OUTLINE3", which correspond to The hardware trigger output "OUT0", "OUT1" and "OUT2" respectively.

①OUTLINE1: You can select three states: "OK", "reading code failure" and "abnormal". "OK" indicates the output signal of successful code reading; "code reading failure" indicates the output signal of code reading failure; "abnormal" indicates the output signal of abnormal condition of device self-test.

②OUTLINE2: You can select "OK", "code reading failure", "abnormal" three states. "OK" means the output signal of successful code reading; "code reading failure" means the output signal of code reading failure; "abnormal" means the output signal of abnormal condition of equipment self-test.

③OUTLINE3: You can select "OK", "reading code failure", "abnormal" three states. "OK" means the output signal of successful code reading; "code reading failure" means the output signal of code reading failure; "abnormal" means the output signal of abnormal condition of equipment self-test.

④ Output duration: the duration of the output signal, the default is 9ms, range 0-9999ms.

	Configuration of output				
Code reading Configuration	Output duration	100	ms		
Trigger	Output reverse OUTLINE1		Turn on		
Format	Code reading succeeded	☐ Code reading failed	Exception		
Configuration	Code reading succeeded	Code reading failed	Exception		
Output Configuration	Code reading succeeded	Code reading failed	Z Exception		
Communication Configuration					
Manage Configuration	Restore	e	Save current		
 Setting 	default set	ting c	configuration		

5.7 Communication configuration

The "Communication Configuration" panel contains TCP and serial ports, which are used to set up the communication protocols required for data transmission, which are related to the device operation mode.

5.7.1 Using the TCPServer protocol

Generally for the common TCP protocol communication, the sweeper as the Server side.



5.7.2 Using the ModbusTcp protocol

In addition to TCPServer, you can also choose ModbusTcp protocol, which requires configuration of Modbus service IP, Modbus service port, etc. respectively.

- Service IP: IP address of the corresponding device to be connected.
- Service Port: The port number of the corresponding device is connected.

Device station number: The station number of the corresponding device is connected.

- Transmission address: The address of the corresponding PLC transmission data.
- Transmit data bit length: the length of the data byte.
- Trigger address: the address required for the PLC to trigger the camera.
- Trigger Data Bit Length: the length of the data bits required for triggering.

	Configuration of	communica	tion TCP	¥
Code reading	Use the TCPServer protocol			^
Configuration	IP address	192,168,1.10	3	
Am	Subnet mask	255.255.255.		
Trigger	Default gateway	192.168.1.1		
Configuration	TCP port	15000		
\bigotimes	🗆 Use the Modbu	ISTCP proto	col	^
Format Configuration	Modbus service IP			
	Modbus service port		502	
	Device station No.		1	
Configuration	Transmission addre	SS	10	
0	Length of transmiss	sion data bit	10	
Communication	Trigger address			
Configuration	Length of trigger data bit		10	
Manage	Use the MC pro	otocol		~
Configuration	Rest	ore	Save current	
 Setting 	defaults	setting	configuration	

5.7.3 Using the MC protocol

MC protocol needs to be configured separately for MC service IP, MC service port, etc.

- Service IP: IP address of the corresponding device to be connected.
- Service Port: The port number of the corresponding device is connected.
- Device station number: The station number of the corresponding device.
- Device network number: The network number of the corresponding device is connected.
- Transmission address: the address of the corresponding PLC transmission data.

• Transfer Data Bit Length: The length of the data byte.

	Configuration of communica	tion TCP •
Code reading Configuration	✓ Use the TCPServer protoc □ Use the ModbusTCP proto	ol 💊
Trigger Configuration	Use the MC protocol MC service IP MC service port	502
Format Configuration	Device station No. Device network No. Transmission address	0 0 10
Configuration	Length of transmission data bit Trigger address Length of trigger data bit	10 0 10
Communication Configuration Manage Configuration © Setting	Restore default setting	Save current configuration

5.7.4 Serial port

When Serial is selected as the communication protocol, the following parameters can be set.

- Serial port baud rate: Set the serial port baud rate of the receiver.
- Serial Parity: Set the serial parity bit of the receiver.
- Serial data bits: Set the serial data bits of the receiver.
- Serial port end bit: Set the serial port stop bit of the receiver.



	Configuration o	of communication	Serial port	٣
Code reading	Serial port			^
Configuration	Baud rate	9600		v
Am	Parity check	None		¥
Trigger	Data bit	8		w
Configuration	Stop bit	1		v
Format Configuration	□ Use the Mod	BusRTU protocol		~
Manage Configuration	Re	store	Save current	
 Setting 	defaul	It setting	configuration	

5.7.5 Using the ModBusRTU protocol

- Device station number: The station number of the corresponding device is connected.
- Transfer Address: The address of the corresponding PLC transfer data.
- Transmit data bit length: the length of the data byte.
- Trigger address: the address required for the PLC to trigger the camera.
- Trigger Data Bit Length: the length of the data bits required for triggering.

5.8 Configuration Management

Configuration management includes "Restore all default configurations" and "Save all configurations".

	Manage configuratio	n		_
	Save Configuration			
Configuration	Configuration 1		Confirm	
(Rr.	Load Configuration			
Trigger	Configuration 1	T	Confirm	
Configuration	Default Settings			
\otimes	Configuration 1	¥	Confirm	
Format Configuration	Restore all de configuratio	fault ons	Save all configurations	
Communication Configuration				
Configuration				
 Setting 				

5.9 Settings

5.9.1 Device Settings

• Device Name

You can modify the device name of the code reader. Support Chinese, English, letters, characters, numbers, etc.

• Buzzer setting

Can be turned on after decoding success/failure, sound can be set to 40ms, 80ms, 120ms.

• Key setting

Trigger button, open/close. Function button, open/close. Positioning light, open/close.



Setting				×
Device setting	Name of device	Scanner		
Backup and	Buzzer setting			
recovery	Decoding sound	Close	•	
Log view	Sound duration	Medium (80ms)	•	
Storage	Button setting	(
comparation	Trigger button	Open		
	Positioning lamp	Open	¥	
	Image Type	PNG origial image	•	
			Destan default cetting	Concentration
			Restore default setting	Save current setting

5.9.2 Firmware Updates

After clicking Browse to select the firmware file, click Upgrade to complete the code reader firmware upgrade process.

**	MJ_AiScann	er								0 – d ×
::0	Device mar	agement								
	Name	Туре	Address	Status	Firmware version	Interface	Mac address	Serial number	Networking status	Connect
	Scanner	192.168.1.103	• Occupied	v1.2.2.4	Network	22:DA:F9:3E:46:0D		-	Connect	IP setting Firmware Upgrade Setworking

5.9.3 Backup Restore

The code reader can back up settings and other information to the PC, as well as restore settings and restore factory settings.

Setting				×	
Device setting	Backup		Reset		
	Path	Backup	Path	Reset	
Backup and recovery				Restore factory settings	
Logviow	Configuration		Parameters		
Storage configuration	 Equipment con Name Product mo Hardware V Serial numb Program ve Application Algorithm v UDP proces Network cal 	figuration del ersion rsion identification ersion rs version rd rate of scanner	Scanner v1.2.2.4 20221025-Sys:-sMem:1G-987388 v0.24.0_rc2h-AT:v3.2.1-rc1-Sys:v1.1.1 VS800_202210171114_1-RTT:0-Hv:S		
	Operation n Buzzer Trigger butt Function bu Configuration of code reading Choose the Template 1	node on tton g template	Debug mod Close Open Open Template 1	le	

5.9.4 Log view

You can view the log level "ERROR", "WARN", "INFO", "DEBUG ", etc. You can "refresh log", "clear log", "export log".

5.9.5 Storage Configuration

- Readers save configuration. You can turn on/off "Data Logging", "Decoded Image", "Undecoded Image", and "Original Image".
- PC save configuration. You can freely choose the path to save.
- Capture configuration. You can save the capture path.
- Capture time: 1s~60min.
- Number of captures: 2~10000 pictures.

Setting		×
Device setting Backup and recovery	Code reader saves the configuration Data record Decode image Undecoded image Raw image Save	
Log view	Save configuration on PC Data record	
Storage configuration	Path C:/Users/Ocean/Desktop Browse File name	
	Decode image Path C:/Users/Ocean/Desktop Browse Prefix	
	Undecoded image Path C:/Users/Ocean/Desktop Browse	
	Prefix Configuration for capturing images	
	Path C:/Users/Ocean/Desktop Browse	

Chapter 6 List of Frequently Asked Questions

6.1 The client software has recognized the device, but it says

"unreachable"

• Possible causes. :

1) The IP of the device and the NIC to which the device is connected are not in the same network segment.

2) The NIC has obtained IPs from two different segments.

• Solution :

 Make the computer and the device in the same network segment by modifying the device IP.
 Click on the computer "Start" - search box, type "cmd" - right click administrator privileges to run - enter: netsh winsock reset, reset the network card information, then restart the computer.

*	MJ_AiScann	er								0 – D X	ĸ
0	Device mar	nagement									
	Name	Туре	Address	Status	Firmware version	Interface	Mac address	Serial number	Networking status	Connect	
	Scanner	192.168.1.103	• Unreachab	v1.2.2.4	Network	22:DA:F9:3E:46:0D			Connect	IP setting Firmware Upgrade Instworking	

6.2 After setting debug mode on the client, it was found that the debug

mode was not saved

- Possible reason: The system has temporarily stored the setting parameters, and you need to save all the settings manually after the settings are completed.
- Solution: Click "Configuration Management" "Save All Configuration".
- The specific operation is as follows.

	Manage configurat	ion							
	Save Configuration								
Configuration	Configuration 1	v	Confirm						
(Arrows)	Load Configuration	1							
Trigger	Configuration 1	•	Confirm						
Configuration	Default Settings								
\otimes	Configuration 1	•	Confirm						
Format Configuration Output Configuration	Restore all configura	default tions	Save all configurations						
Communication Configuration Manage Configuration									
Setting									

6.3 The barcode material is metal/PCB, the focus is clear but cannot be

identified

• Possible causes.

1) The identified material is black background, reading code area brightness is too low.

2) The identified material is reflecting seriously.



• Solution.

1) Increase the value of "light source" or "gain" to increase the brightness of the code reading area.

(2) adjust the angle of the code reader / material angle, avoid direct light source, adjust the exposure and gain.

6.4 Unable to recognize smaller barcode sizes

• **Possible reasons:** The barcode occupies less weight in the field of view, and the barcode is not accurate enough, resulting in unrecognition. (Stable reading of one-dimensional code needs more than PPM2, and stable reading of two-dimensional code needs more than PPM3.)

*PPM: is the number of pixels occupied by the smallest module of the barcode.

• Solution :

1) Zoom: Reduce the object distance.

6.5 How to use the various trigger modes of the client software

• Solution.

(1) network trigger: need to use the third-party software to verify first, the software set the reader for the network trigger, set the same port, the same trigger command, the same network ip segment (some routes may open IP isolation, need to close).

(2) IO trigger: need to connect IO trigger signal line, software set the reader for IO trigger, wiring to set the same LINE0/1, the same trigger command [which will have NPN, PNP two kinds of connection. General connection: IN0/IN1 contact the hair device OUT line, IN_COM line connected to positive (npn) or negative (pnp)].

(3) serial port trigger: need to connect DB9 terminal, software set the correct COM port, the same baud rate, data bits, stop bits, parity bits. The same trigger command.

(4) Software trigger: need client software and code reader to connect the same network segment.

6.6 Network trigger unsuccessful

- **Possible reasons :** Only client mode is currently supported on the device side.
- **Solution :** Adjusts the PLC device network trigger mode.