

产品使用说明

DESCRIPTION



上海知津信息科技有限公司

Shanghai Zhijin Information Technology Co.,Ltd.

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上海知津信息科技有限公司

Shanghai Zhijin Information Technology Co.,Ltd.

Address : Room 302-3, Building 6, No. 1158, Central Road,
Songjiang District, Shanghai

TEL : 021-60292392

Fax : 021-60292396

Emai : info@zhijintech.com

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首先感谢您购买或使用上海知津信息科技有限公司（以下简称知津科技）研发的智能相机系统。本手册主要介绍智能相机系统所搭载的软件功能特性及使用方法，在使用前请务必仔细阅读本说明书。

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第一章 概述 Summary

1.1 研发背景 Research and development background

上海知津信息科技有限公司是国内一家拥有首个智能相机自主知识产权的供应商。公司致力于嵌入式机器视觉系统、智能传感器等领域的相关软件、硬件开发，为客户提供开放的机器视觉系统解决方案。

Shanghai Zhijin Information Technology Co., Ltd. is a domestic supplier with the first intellectual property rights of smart cameras. The company is committed to the development of software and hardware related to embedded machine vision systems, smart sensors and other fields, providing customers with open machine vision system solutions.

1.2 产品定位 Product orientation

智能相机系统是上海知津信息科技有限公司推出的最新款智能传感器。该系列应用最先进的 ARM SOC 架构，大幅提升了视觉传感器的处理速度，具有快速有无检测、匹配定位、条码扫描、二维码扫描，OCR 字符识别等不同功能全系列产品。本系列搭载经过优化后的人机交互界面，以 HTML5 网页做前端，不仅操作更加简便，而且用户不用额外安装任何软件，就可以方便友好的嵌入到使用浏览器的系统中

（Windows/Linux/Mac/IOS/Android），方便客户查看传感器的实时运行状态与配置传感器的各项参数。知津科技始终致力于提升产品质量，优化用户的总体拥有成本，保护用户的既往投资，不断提升用户体验。

The smart camera system is the latest smart sensor launched by Shanghai Zhijin Information Technology Co., Ltd. This series applies the most advanced ARM SOC architecture, which greatly improves the processing speed of visual sensors. It has a full range of products with different functions such as fast detection, matching positioning, barcode scanning, QR code scanning and OCR character recognition. This series is equipped with an optimized human-computer interaction interface. It is a front-end with HTML5 webpage. It is not only easy to operate, but also users can easily and friendlyly embed it into a browser-based system without installing any additional software (Windows/Linux/Mac). /IOS/Android), which allows customers to view the real-time

operating status of the sensor and configure the parameters of the sensor. Zhijin Technology always strives to improve product quality, optimize users' total cost of ownership, protect users' previous investments, and continuously improve user experience.

1.3 产品说明 Product description

知津智能相机系统具有小尺寸、低功耗和丰富的 IO 接口。这些突出的特点使其在工业自动化领域实现了高集成度的机器视觉系统。其内嵌开放的 Linux 操作系统，用户可以凭借在 Linux 平台上的开发经验在智能相机系统开发视觉处理算法和应用程序。

The Zhijin smart camera system has a small size, low power consumption and a rich IO interface. These outstanding features enable a highly integrated machine vision system in industrial automation. Embedded in the open Linux operating system, users can develop visual processing algorithms and applications in smart camera systems with the development experience on the Linux platform.

知津智能相机内嵌图像分析软件，不需用户额外编程即可实现高质量的条码/二维码扫描，定位，有无，OCR，颜色分类等基础功能。优化后的人机交互界面，以 HTML5 网页做前端，不仅操作更加简便，而且用户不用额外安装任何软件，就可以方便友好的嵌入到使用浏览器的系统中（Windows/Linux/Mac/IOS/Android），方便客户实时在线查看传感器的实时运行状态与配置传感器的各项参数。

Zhijin intelligent camera embedded image analysis software, without the need for additional programming, can achieve high-quality bar code / QR code scanning, positioning, presence or absence, OCR, color classification and other basic functions. Optimized human-computer interface, with HTML5 web page as the front end, not only is the operation easier, but users can easily and friendlyly embed into the browser system without installing any additional software (Windows/Linux/Mac/IOS/Android).), it is convenient for customers to view the real-time running status of the sensor and configure the parameters of the sensor in real time.

本软件说明书专门针对搭载了二维码读取软件的知津智能相机。如果需要其他的功能，请联系知津科技询问相关信息。

This software manual is dedicated to the Zhijin smart camera equipped with robot positioning software. If you need other features, please contact Zhijin Technology to inquire about the relevant information.

1.4 适用范围 Scope of application

本软件说明书适用于以下知津科技出品的智能相机所搭载的二维码读取软件。请查看知津科技官方网站（www.zhijintech.com）获取最新的适用范围列表。

This software manual is applicable to the QR code reading software installed on the smart camera produced by the following Zhijin Technology. Please check the Zhijin Technology official website (www.zhijintech.com) for the latest list of applicable areas.

- MV1MP034
- MV1CP034
- MV1MP124
- MV1CP124
- MV1MP504
- MV1CP504
- NanoMVMP124
- NanoMVCP124

第二章 产品安装 install

2.1 安装前 Before installation

- (1) 搬运时请轻拿轻放，避免对设备造成不必要的损坏；

Please handle gently when handling to avoid unnecessary damage to the equipment;

- (2) 装箱单与实物名称不符时，请勿安装；

Do not install the packing list when it does not match the physical name;

- (3) 相机及其连接线有破损时，请勿安装。

Do not install the camera and its cable if it is damaged.

2.2 安装时 When installing

- (1) 请务必安装在金属等阻燃的物体上，并且远离可燃物；

Be sure to install it on a flame-retardant object such as metal and keep it away from combustibles;

- (2) 请务必确保安装环境不存在强腐蚀性气体，以免对设备造成损坏；

Please ensure that there is no corrosive gas in the installation environment to avoid damage to the equipment;

- (3) 请确保安装位置不受较大震动和阳光直射的干扰，以免影响图像的采集与处理；

Please ensure that the installation position is not disturbed by large vibration and direct sunlight, so as not to affect the image collection and processing;

(4) 请勿拆卸相机，这样有对元器件造成损坏的危险。

Do not disassemble the camera, as there is a risk of damage to components.

2.3 上电前 Before powering up

(1) 请务必确认电源电压为 12V-24V；确认电源的正极与正极、负极与负极相连；

Be sure to confirm that the power supply voltage is 12V-24V; confirm that the positive and negative poles of the power supply are connected to the positive pole and the negative pole;

(2) 请务必确认在相机及其连接线完好无损的情况下上电。

Be sure to power on the camera and its cable in good condition.

2.4 上电后 After power on

(1) 请勿拆卸相机端子模块，以免对相机造成损坏；

Do not disassemble the camera terminal module to avoid damage to the camera;

第三章 操作指南 Guide

注意：以下文档中所展示的软件界面可能会因为软件版本差异而有不同，请以实际安装软件版本为准。

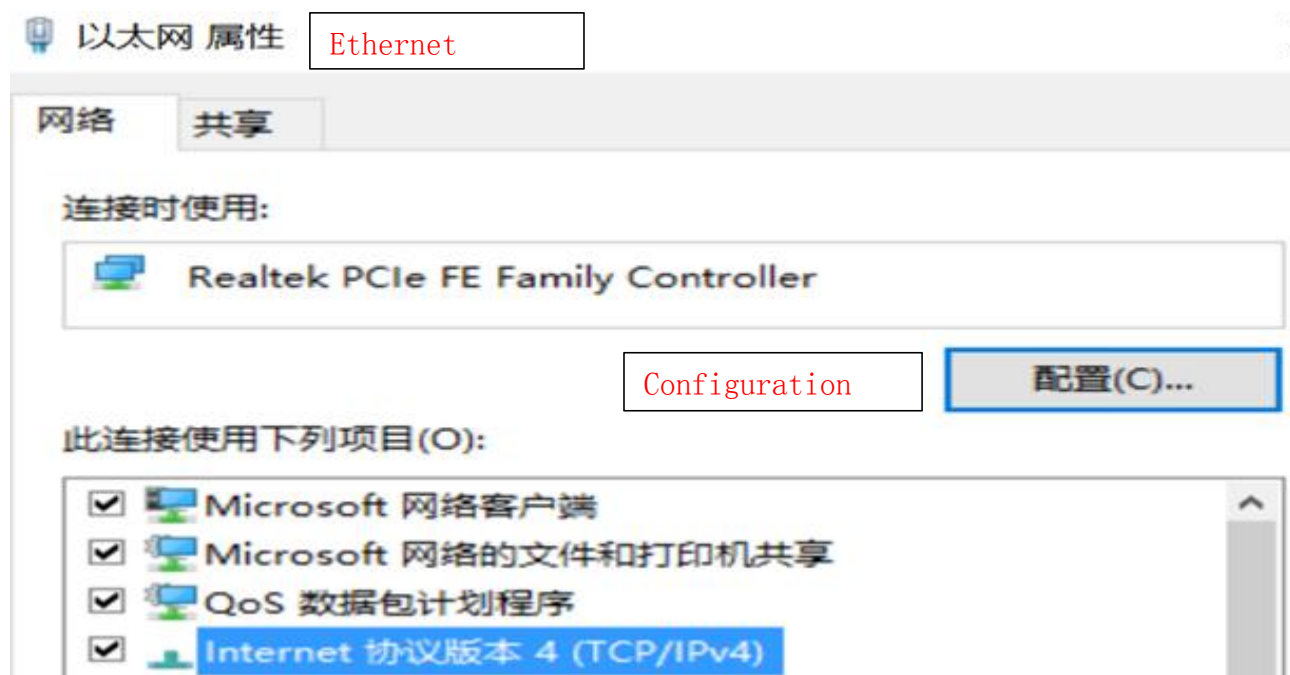
Note: The software interface shown in the following documents may vary depending on the software version. Please refer to the actual installed software version.

3.1 连接相机 Connecting the camera

- 1、检查网线是否插好 Check if the network cable is plugged in.

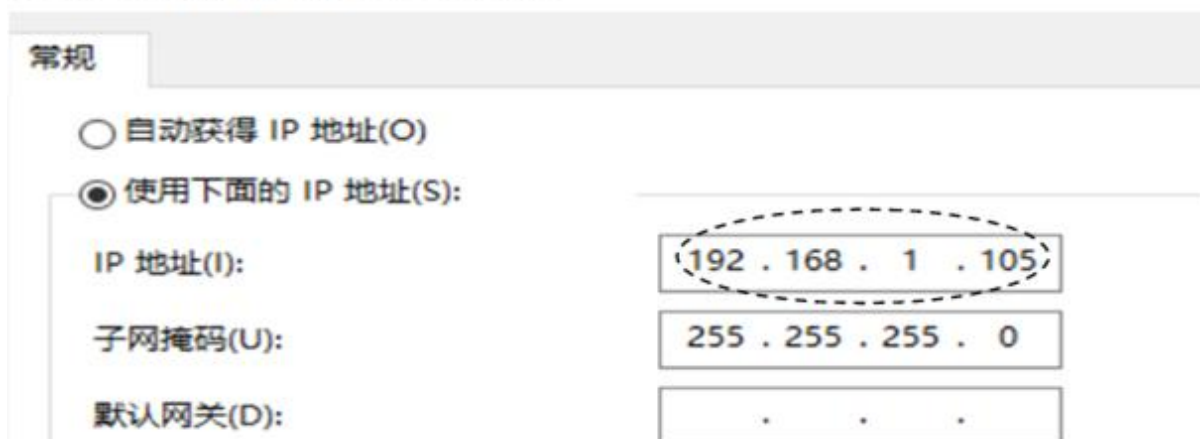


- 2、右击以太网，选择以太网属性，左键点击 Internet 协议版本 4
Right click on Ethernet, select Ethernet Properties, left click on Internet Protocol Version 4



- 3、修改以太网网段，使之与相机（相机 IP192.168.1.10）默认网段一致
Modify the Ethernet network segment to match the default network segment of the camera (camera IP192.168.1.10)

Internet 协议版本 4 (TCP/IPv4) 属性



常规

☐ 自动获得 IP 地址(O)

☒ 使用下面的 IP 地址(S):


IP 地址(I): 192 . 168 . 1 . 105

子网掩码(U): 255 . 255 . 255 . 0

默认网关(D): . . .

4、检查是否能 PING 通相机：在电脑运行输入框中输入 PING 192.168.1.10

Check if you can PING the camera: Enter PING 192.168.1.10 in the computer operation input box.

 运行



Windows 将根据你所输入的名称，为你打开相应的程序、文件夹、文档或 Internet 资源。

打开(O): ping 192.168.1.10

confirm

确定

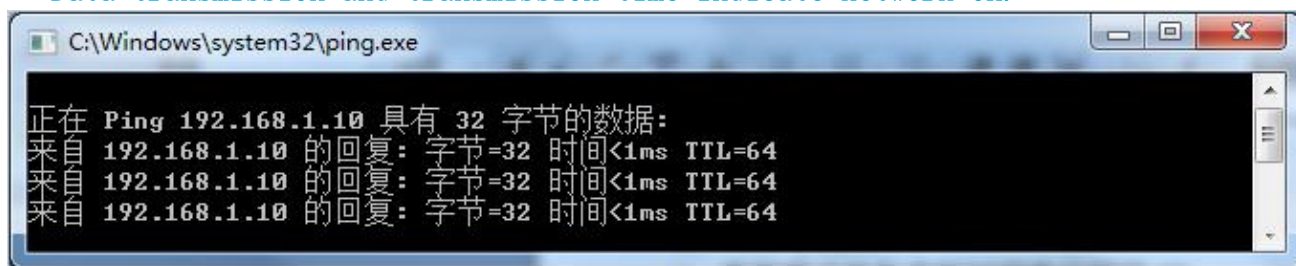
取消

浏览(B)...

5、PING 状态如下 PING status is as follows:

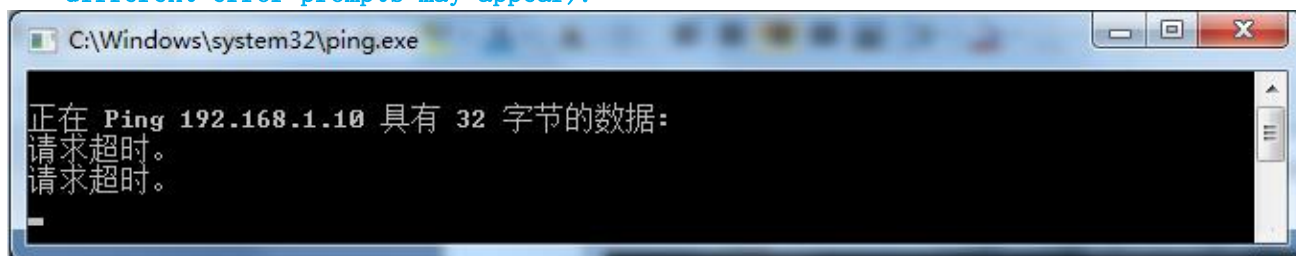
A、有数据传输和传输时间表示网络 OK。

Data transmission and transmission time indicate network OK.



B、请求超时，没有数据表示网络不通（有可能出现其他不同的错误提示）。

The request timed out. No data indicates that the network is unreachable (other different error prompts may appear).



如果 PING 不通 If PING does not work:

- 1、请检查网线是否插好。Please check if the network cable is plugged in.
- 2、相机线是否连接好。Is the camera cable connected?
- 3、网段是否设置正确。Is the network segment set correctly?

注意：以上说明以 Windows10 版本为参考，如果对于其他操作系统的配置有疑问，请联系 IT 管理员获得相关帮助。

Note: The above instructions are based on the Windows 10 version. If you have questions about the configuration of other operating systems, please contact your IT administrator for help.

3.2 界面介绍 Introduction

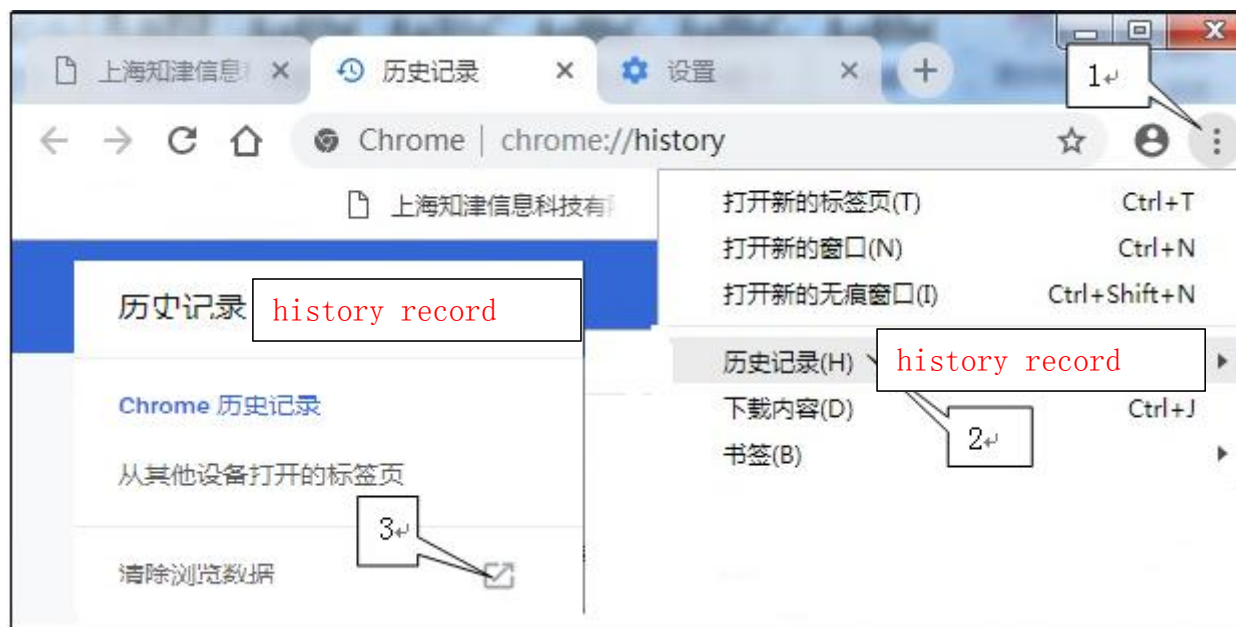
智能相机系统以 HTML5 网页做前端，需要通过网页来访问相机内部程序，下面介绍初次使用的技巧。

The smart camera system uses the HTML5 web page as the front end, and needs to access the camera internal program through the web page. The following describes the first-time use technique.

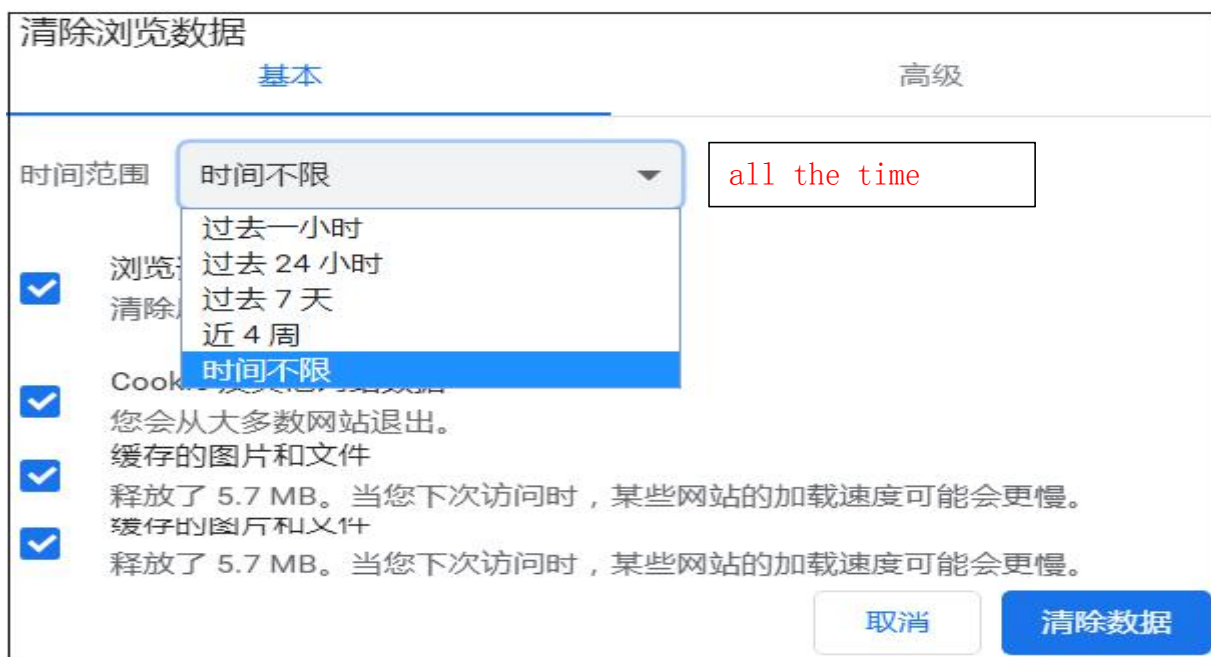
- 1、推荐使用 Google Chrome 浏览器来访问，例如 Google Chrome 68.0.3440.17。以下的浏览器均可，以 Google Chrome 作为示例，如果使用其他浏览器，请操作相对应功能。

It is recommended to use Google Chrome to access, such as Google Chrome 68.0.3440.17. The following browsers are available, with Google Chrome as an example. If you use a different browser, please operate the corresponding function.

- 2、左键依次点击 1、2、3
Left click, click 1, 2, 3



- 3、清除浏览数据（基本和高级都需要清理，所有选型全选时间范围设定为不限）
Clear browsing data (basic and advanced need to be cleaned, all selection time range is set to unlimited)



Clear data

4、打开网页输入相机默认 IP: 192.168.1.10

Open web page input camera default IP: 192.168.1.10



如上图所示展示了智能相机系统的开机用户操作界面。界面主要分为三个区域，一是顶部的状态区，二是左边的显示区，三是右边的操作区。

The boot user interface of the smart camera system is shown in the figure above. The interface is mainly divided into three areas, one is the top status area, the second is the left display area, and the third is the right operation area.

状态区可以查看目前相机所处的触发源、当前执行的方案、缩放比例、OK/NOK 结果数目、算法处理时间/单次总体运行时间、鼠标位置及像素灰度值，软件版本信息，公司 LOGO 等信息。

The status area can view the current trigger source of the camera, the currently executed scheme, the scaling, the number of OK/NOK results, the algorithm processing time/single total running time, mouse position and pixel gray value, software version information, company LOGO And other information.

显示区域主要显示当前相机的拍摄情况，在此区域底部有几个快捷操作按键，分别是单拍、连拍、截图、图像放大、图像缩小。

The display area mainly shows the current camera shooting situation. There are several shortcut buttons at the bottom of the area, which are single shot, continuous shooting, screenshot, image enlargement and image reduction.

操作区域包括相机执行的结果数据、统计数据、相机状态，以及基本功能的设置。具体操作参考 3.3 章节。

The operation area includes result data, statistical data, camera status, and basic function settings performed by the camera. Refer to Section 3.3 for specific operations.

3.3 设置算子（点击图片左上角设定进入算子界面）

Set the operator (click on the upper left corner of the image to enter the operator interface)



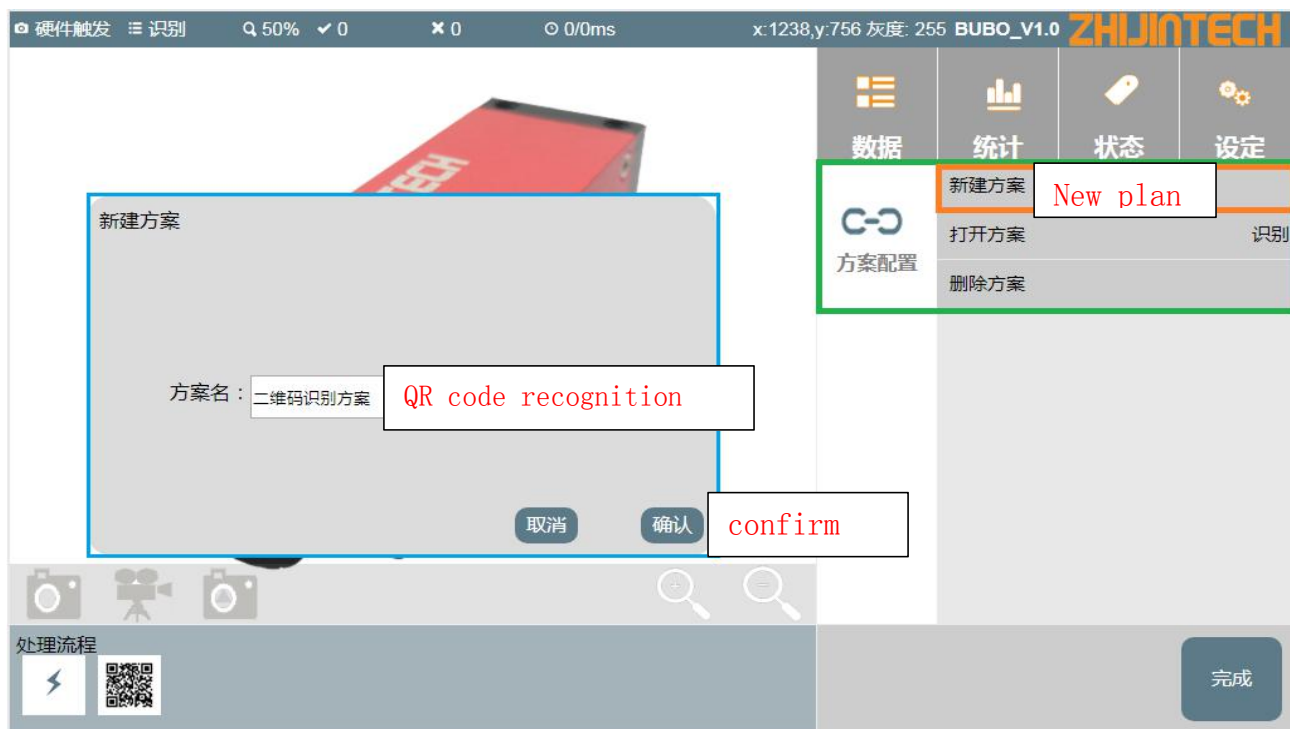
设定页面包含了所有供用户配置的相关算子，例如：实现多方案配置的“方案配置”算子，触发条件设定的“触发配置”算子，以及通信配置、传输控制、曝光配置、二维码识别，点击相应图标即可对其进行设置。可以在确定需求的情况下依次选取所需的算子进行设置然后在点击对话框中的完成选项即可保存到处理流程的区域。如果算子数量超过一页可显示的 9 个，用户可以通过将鼠标移至以上所示红框区域中->按住鼠标左键上下拖动查看更多算子。

The setup page contains all relevant operators for user configuration, such as the "scheme configuration" operator that implements multi-scheme configuration, the "trigger configuration" operator for trigger condition settings, and communication configuration, transmission control, exposure configuration, QR code recognition, click on the icon to set it. You can select the desired operator in turn to determine the requirements, and then click the completion option in the dialog box to save to the area of the process flow. If the number of operators exceeds 9 items that can be displayed on one page, the user can move the mouse to the red frame area shown above -> hold down the left mouse button and drag up and down to see more operators.

3.4 二维码读取方案 QR code reading scheme

第 1 步： 点击方案配置进入方案命名后点击确认，完成。

Click on the scheme to configure the scheme name and click OK to complete.



方案配置：用于满足客户实现多种操作方案的切换。打开某一方案，处理流程就是对应方案的相关算子。方案配置可以增加新方案、删除已有方案，但是系统的缺省方案 default 不能被删除。

Solution configuration: used to meet the customer's switch to achieve multiple operating scenarios. Open a scheme, the processing flow is the relevant operator of the corresponding scheme. The scheme configuration can add new schemes and delete existing schemes, but the default scheme default of the system cannot be deleted.

增加新方案、删除方案只能在界面操作，不同方案之间的切换使用可在界面“方案配置”中操作也可以通过第三方通信实现。例如新增加了方案 task1 和 task2，要切换到 task1 方案可向相机发送字符串“PJ_OPEN_task1”指令，如果要切换到 task2 方案可向相机发送字符串“PJ_OPEN_task2”指令。

Adding new schemes and deleting schemes can only be performed on the interface. Switching between different schemes can be performed in the interface "schema configuration" or through third-party communication. For example, the new schemes task1 and task2 are added. To switch to the task1 scheme, the string "PJ_OPEN_task1" can be sent to the camera. If you want to switch to the task2 scheme, the string "PJ_OPEN_task2" can be sent to the camera.

注意：需要在相机处于非运行状态下切换方案。

Note: You need to switch the scheme while the camera is not running.

第2步：设置拍照算子 Set photo operator

先左键点击进入连续拍照模式

Left click to enter continuous shooting mode

然后左键点击设置曝光大小、图像增益、光照强度（如不需要前置光照设置到50以下熄灭）

Then left click to set the exposure size, image gain, and light intensity (if the front light setting is not required to go below 50)

曝光配置	设置值
曝光时间(ms)	27.03
增益	5.6
光照强度	53

注意 note:

曝光时间会影响相机拍照速度，曝光越大拍照速度越慢。

The exposure time will affect the speed of the camera. The higher the exposure, the slower the camera.

曝光也会对镜头景深造成影响，曝光越大景深越小。

Exposure will also affect the depth of field of the lens. The exposure will be smaller and the depth of field will be smaller.

第3步：设置相关检测的算子，例如：读码

Set the operator for the relevant detection, for example: reading the code



最大识别个数：可以设定读取多个二维码。

Maximum number of recognition: You can set to read multiple QR codes.

区域：可以设置全屏和局部，自动目标和指定目标。

Area: You can set full screen and local, automatic target and specified target.

二维码类型：可以读取二维码类型包含 DMC、QR、MicroQR、PDF417、Aztec。

QR code type: You can read the QR code type including DMC, QR, MicroQR, PDF417, Aztec.

识别方式：可以选择基础、增强、高级，设定好之后可以点击“训练”进行对采集到的二维码训练识别，从而提高以后识别的速度和准确度。

Recognition method: You can select basic, enhanced, advanced. After setting, you can click “training” to train and identify the collected QR code, thus improving the speed and accuracy of future recognition.

发送格式设置：可以设置当算子未识别到有效二维码时，软件发送怎样的数据，例如以下指定发送“NULL”；同时，也可设置发送的内容格式，即前缀、分隔符、后缀，例如以下指定发送格式为[,]; 还可以指定在指定了目标（二维码算子中的“区域”参数设定为“指定目标”）并且启动硬件连拍模式后发送的结果是首帧结果还是多帧结果合并（启动硬件连拍需要在“触发配置”算子中，将“触发源”参数选择为“硬件触发”，同时在配置“硬件触发模式”参数中的“IN1 拍照帧数”为>1的帧数），如果是设为多帧结果合并，软件会自动查看连拍多帧，只要有一帧的二维码识别出来，则记录该结果并输出，如果所有帧中对某一个指定目标都没有识别到二维码，才会输出未识别的字符串。

Transfer Format Settings: You can set what data the software sends when the operator does not recognize a valid two-dimensional code, such as specifying "NULL". At the same time, you can also set the content format to send, i.e. prefix, separator, suffix, such as: [,].

You can also specify whether the result to send is the first frame result or the merging of multiple frames results. To set the software to send merging results, you need to first select a targeted area (set the "area" parameter in the two-dimensional code operator to "designated target") and then ensure the hardware continuous shooting mode is started (set the "trigger source" parameter as "hardware trigger" in the trigger configuration operator, and the "IN1" frame number in the parameter of "hardware trigger mode" is set to greater than 1.) . After making above settings, the software automatically checks the continuous shot multiple frames. as long as software recognizes one frame's two-dimensional code, the result is recorded and sent. If no two-dimensional code is recognized for a specified target in all frames, the unrecognized string will be sent.

小尺寸鲁棒性: 大码设置为“low”，这样在保证读码率的状态下读码的速度会比较快，而当二维码在整个视野中占比较小时可设置为“high”，提高读码正确率，但此时读码的速度会降低。

Small size robustness: The large code is set to “low”, so that the reading speed will be faster in the state of ensuring the reading rate, and can be set to “high” when the two-dimensional code is relatively small in the entire field of view. Improve the correct rate of reading, but the speed of reading will be reduced.

超时时间: 指定识别算法在多少时间内强制退出。一般在特殊环境中当二维码难以读取时，增长“超时时间”可以提高读出率。该参数设为 0 表示识别算法不会强制退出，直到算法已经处理完所有的像素，此时算法有可能会花费很长时间识别二维码。

Timeout: Specifies how long the recognition algorithm is forced to exit. Generally, in a special environment, when the two-dimensional code is difficult to read, increasing the "timeout time" can increase the read rate. Setting this parameter to 0 means that the recognition algorithm will not force the exit until the algorithm has processed all the pixels, and the algorithm may take a long time to recognize the two-dimensional code.

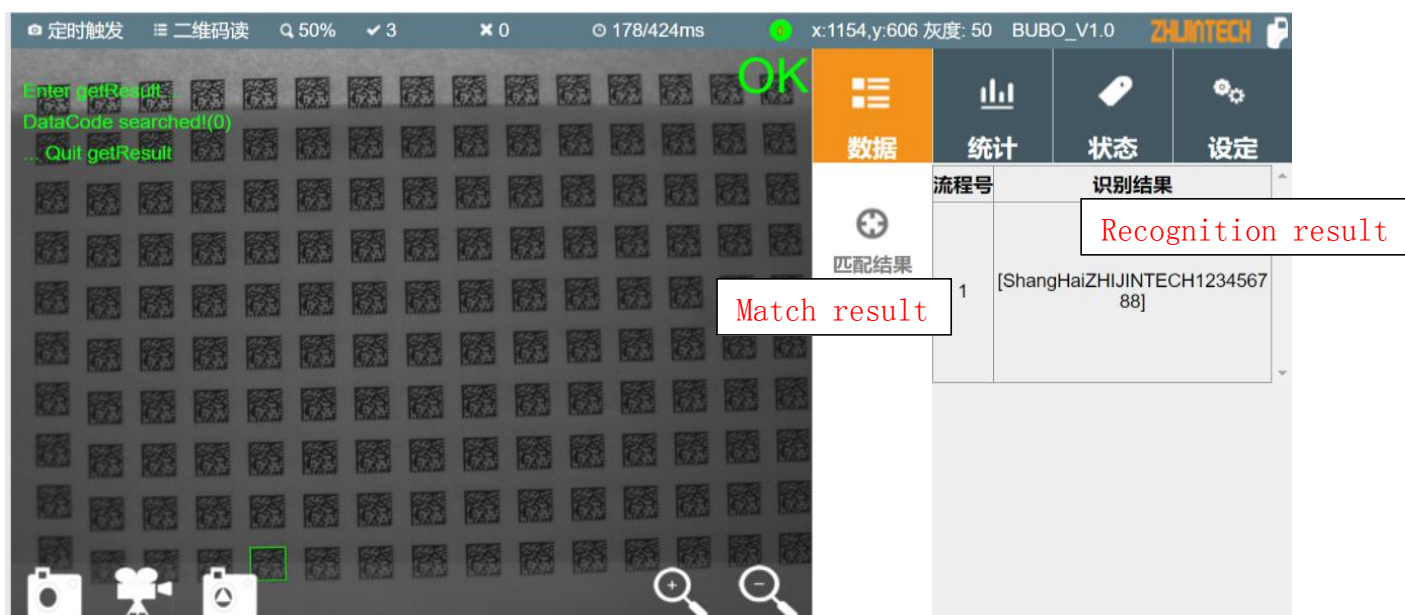
格式校验: 设置校验格式为二维码内容的正确信息中需要校验的部分，例如：二维码内容为 ZHIJINTECH2007，设置校验内容为 ZHIJINTECH，这种情况下 ZHIJINTECH2007、ZHIJINTEH2008 都可以通过，但是如果设置成 ZHIJINTECH2007，这种情况下只有 ZHIJINTECH2007 可以通过，ZHIJINTECH2008 不能通过，软件将输出表示无效二维码的字符串，例如 NULL。

Format Check: Set the check portion of a two-dimensional code content. For example, the two-dimensional code content is ZHIJINTECH2007, and the content to check is ZHIJINTECH. In this

case, ZHIJINTECH2007 and ZHIJINTEH2008 both can pass, but if check content is set to ZHIJINTECH2007, only ZHIJINTECH2007 can pass in this case, while ZHIJINTECH2008 can not pass, the software will then output a string representing invalid two-dimensional code, such as NULL.

头部文本:可以在所有的二维码结果前增加设定的内容。例如下图格式：二维码内容为 ZHIJINTECH123456788，头部文本为：ShangHai。

Header text: You can add header string to final result. For example, as show below, the two-dimensional code result is ZHIJINTECH123456788, and the header text is set as: ShangHai. Then the final result to send is ShangHaiZHIJINTECH123456788.



输出位置: 输出二维码中心 X、Y 坐标位置和角度。

Output position: Output the X, Y coordinate position and angle of the QR code center.

以上设置完成后点击右下角完成，先到主界面点击识别，看是否能识别二维码。

After the above settings are completed, click on the bottom right corner to complete, first click on the main interface to identify whether you can recognize the QR code.

如果可以正常识别二维码，请按照如下顺序执行相关算子（拍照→二维码）。点击处理流程中的算子实例，这时候可以对算子进行修改或者删除操作。如下图所示：

If the QR code can be recognized normally, perform the relevant operator (photograph → QR code) in the following order. Click on the operator instance in the process flow, at this time you can modify or delete the operator. As shown below:



第 4 步：触发配置 Trigger configuration

相机与设备用 TCP/IP 通信的情况下触发配置算子可供用户选择相机工作方式的触发源，包括：软件自由触发、定时触发、硬件外部触发、读 IO 触发。输出 IO 口可在“OUT1 配置”和“OUT2 配置”配置。

When the camera and device communicate with TCP/IP, the trigger configuration operator can be selected by the user to select the trigger source of the camera working mode, including: software free trigger, timing trigger, hardware external trigger, and read IO trigger. The output IO port can be configured in "OUT1 Configuration" and "OUT2 Configuration".



1、软件触发：相机根据软件设定的指令工作运行。

Software Trigger: The camera operates according to the instructions set by the software.

OUT1 OUT2 配置：输出设置项。根据实际情况选择设置，可以选择 1 通道，也可以选择 2 通道，也可以同时启用。同时启用时 1 通道和 2 通道的设置可以相同也可以不同。

OUT1 OUT2 configuration: Output setting items. According to the actual situation, you can select 1 channel or 2 channels, or you can enable it at the same time. The settings for 1 channel and 2 channels can be the same or different when enabled at the same time.

输出开关：用来控制是否输出数据。关闭时无法输出数据，打开时可以输出数据。

Output switch: used to control whether to output data. Data cannot be output when it is closed, and data can be output when it is turned on.

绑定模式：针对输出结果的显示而言。如绑定 OK 时，测试结果只输出测试 OK 的数据，绑定 NG 时，结果只输出测试 NG 的数据。

Binding mode: for the display of the output results. If the binding is OK, the test result only outputs the data of the test OK. When binding NG, the result only outputs the data of the test NG.

输出模式：输出结果的模式设置。如果是低电平模式输出需选择低电平模式，如果是高电平模式输出则需要选择高电平模式。

Output mode: Mode setting of the output result. If it is a low mode output, you need to select the low mode. If it is a high mode output, you need to select the high mode.

持续时间：设置输出测试结果的时间长短。如项目输出结果的时间比较久那么输出结果的时间可以设置长一些，反之则短一些。

Duration: Set the length of time to output test results. If the time of the project output is longer, the time of the output can be set longer, and vice versa.



2、定时触发：根据设定的时间要求进行触发设置。

Timing trigger: Trigger setting according to the set time requirement.

此触发方式可以分为两种情况 This trigger mode can be divided into two situations:

1、当 IN2 启动定时开关关闭时，相机会根据软件设定的时间去运行，当时间间隔项里面的时间用完将会进行下一次运行，此时和 IN2 启动定时、IN2 触发方式、IN2 触发次数选项没有关系。

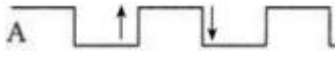


When the IN2 start timing switch is turned off, the camera will run according to the time set by the software. When the time in the time interval item is used up, the next run will be performed. The IN2 start timing, IN2 trigger mode, and IN2 trigger count options are irrelevant.




2、当 IN2 启动定时开关打开时，设备需先获得 IN2 的一个外部硬件触发信号然后相机才会根据信号设定来运行，当时间间隔项里面的时间用完后将会根据 IN2 的外部信号进行下一次运行，直到 IN2 的触发次数用完。

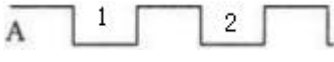
When the IN2 start timing switch is turned on, the device needs to obtain an external hardware trigger signal of IN2 and then the camera will run according to the signal setting. When the time in the time interval item is used up, it will be based on the external signal of IN2. The next run, until the number of triggers for IN2 is used up.

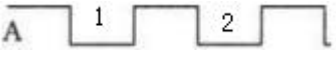
IN2 启动定时：IN2 是一个外部硬件触发信号当，IN2 启动定时开关打开时，设备需获得外部硬件触发后才运行。

IN2 start timing: IN2 is an external hardware trigger signal. When the IN2 start timing switch is turned on, the device needs to be triggered by external hardware before it runs.

IN2 触发方式：  如前面信号，可选上升沿时触发 ，和下降沿触发 。

IN2 trigger mode:  such as the previous signal, optional rising edge trigger , and falling edge trigger .

IN2 触发次数：  上升沿触发时 1 个上升沿可代表 1 次，下降沿同上。


IN2 trigger times:  1 rising edge can represent 1 time when the rising edge is triggered, the falling edge is the same as above.

OUT1 OUT2 配置：输出设置项。根据实际情况选择设置，可以选择 1 通道，也可以选择 2 通道，也可以同时启用。同时启用时 1 通道和 2 通道的设置可以相同也可以不同。

OUT1 OUT2 configuration: Output setting items. According to the actual situation, you can select 1 channel or 2 channels, or you can enable it at the same time. The settings for 1 channel and 2 channels can be the same or different when enabled at the same time.

3、**硬件触发**：适用于相机通过 IO 口触发的模式。此模式的触发 IO 口可以在“外部触发模式”中配置。

Hardware Trigger: Applicable to the mode that the camera triggers through the IO port. The trigger IO port of this mode can be configured in "External Trigger Mode".

硬件触发模式：IN1 拍照方式： 如图 IN1 是一个外部硬件触发信号，拍照方式可设置上升沿、下降沿触发。

Hardware trigger mode: IN1 camera mode: As shown in Figure IN1 is an external hardware trigger signal, the camera mode can set the rising edge, falling edge trigger.

IN1 延迟拍照：触发后根据需求可以延时拍照。根据需求设置相应的时间来延迟。

IN1 delays the photo: After the trigger, you can delay the photo according to your needs. Set the appropriate time to delay according to your needs.

IN1 拍照帧数：拍摄照片的数量。一次拍照片的张数最多可拍 15 张。

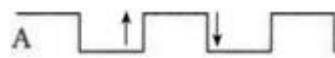
IN1 number of frames: The number of photos taken. You can take up to 15 shots at a time.


IN1 多帧间隔：拍摄张数之间的间隔时间。如拍摄 3 张每次拍摄的间隔时间。

IN1 Multiframe Interval: The interval between the number of shots taken. For example, take 3 shots at intervals.

IN2 启动传输：选择关闭按钮时 IN2 触发一次结果全部输出。选择开启按钮时，IN2 外部硬件触发信号启动时开启 1 次输出一次。

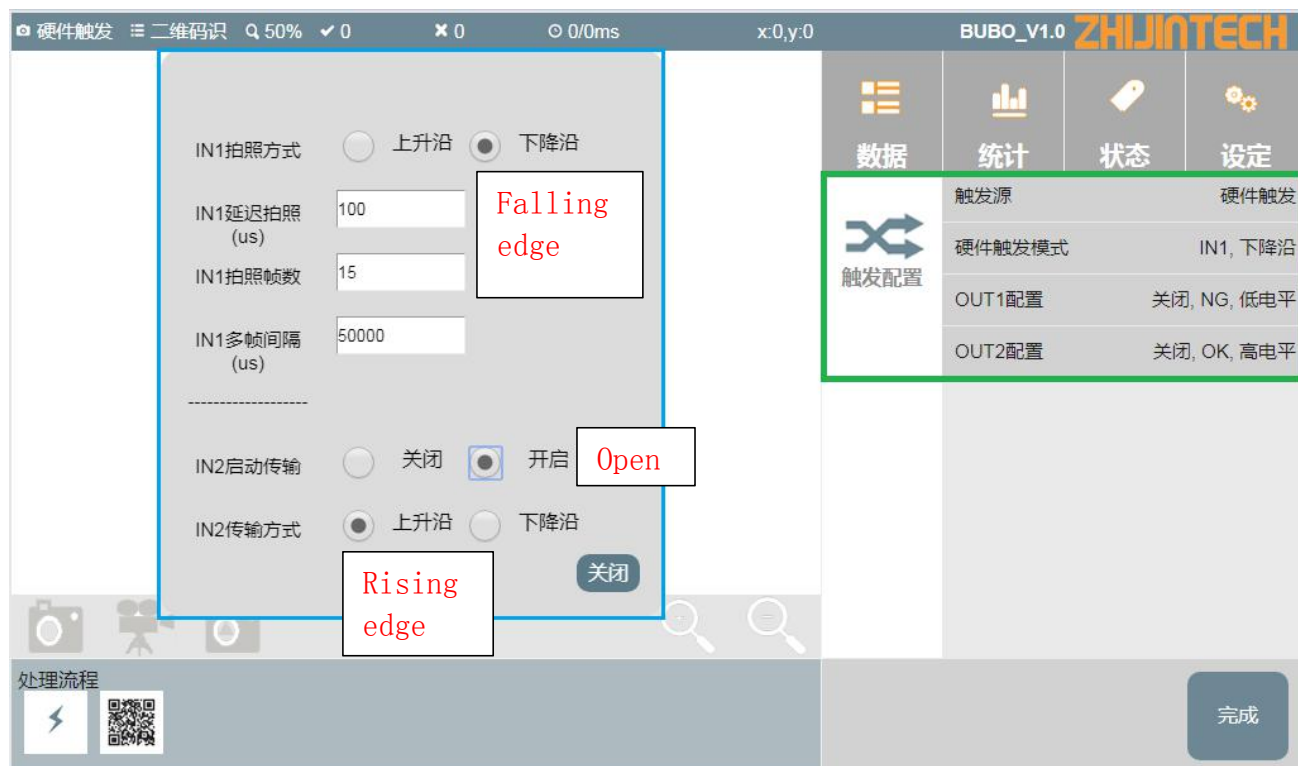
IN2 initiates transmission: When the close button is selected, IN2 triggers the result and all outputs. When the On button is selected, the IN2 external hardware trigger signal is turned on once for one output.

IN2 传输方式： 如图，传输的方式可以设置成上升沿状态，也可以设置成下降沿传输状态。

IN2 transmission mode: As shown in the figure, the transmission mode can be set to the rising edge state or the falling edge transmission state.

OUT1 OUT2 配置：输出设置项。根据实际情况选择设置，可以选择 1 通道，也可以选择 2 通道，也可以同时启用。同时启用时 1 通道和 2 通道的设置可以相同也可以不同。

OUT1 OUT2 configuration: Output setting items. According to the actual situation, you can select 1 channel or 2 channels, or you can enable it at the same time. The settings for 1 channel and 2 channels can be the same or different when enabled at the same time.



读 IO 触发：读取 IO 口状态进行触发的模式属于特殊模式（需要额外激活才能使用）。

Read IO Trigger: The mode in which the IO port status is read for triggering is a special mode (additional activation is required).

第 5 步：通讯配置 Communication configuration



通过配置通信方式，算子处理结果会通过对应的方式传递给外部设备。目前支持的通信方式包括 socket、uart、modbusTCP、modbusRTU。传输的数据格式请参照具体算子。

By configuring the communication method, the operator processing result is transmitted to the external device in a corresponding manner. Currently supported communication methods include socket, uart, modbusTCP, and modbusRTU. Please refer to the specific operator for the data format of the transmission.

第 6 步：输出配置算子中的去重功能

Deduplication function in the output configuration operator

输出可配置为全部结果输出或去除重复项再输出。例如，当“输出”选项设为“去重”时，设置一组为 5 个数值，则算子每执行 5 次才会输出结果。并且检测到 5 个数值的识别中如果全部一致的情况下则只输出一个这个数值，否则输出不同的数值。如下图设置为 5 个去重，结果假如有 4 个相同，1 个不同，则算法输出 2 个结果。

The output can be configured to output all results or to remove duplicates before outputting. For example, when the "Output" option is set to "De-weight", set a group to 5 values, and the result will be output every 5 times. And if it is detected that all of the five values are identical, only one of the values is output, otherwise a different value is output. The following figure is set to 5 deduplication. If there are 4 identical and 1 different, the algorithm outputs 2 results.



注意：如果使用 TCP/IP 或者 modbusTCP 通信配置的端口号要大于等于 2000，因为其他的端口号有可能已被系统使用，如果再次使用会造成通信失败。

Note: If the port number configured using TCP/IP or modbusTCP communication is greater than or equal to 2000, because other port numbers may have been used by the system, if used again, communication will fail.

以上设置完成后，点击运行，相机就可以正常工作。

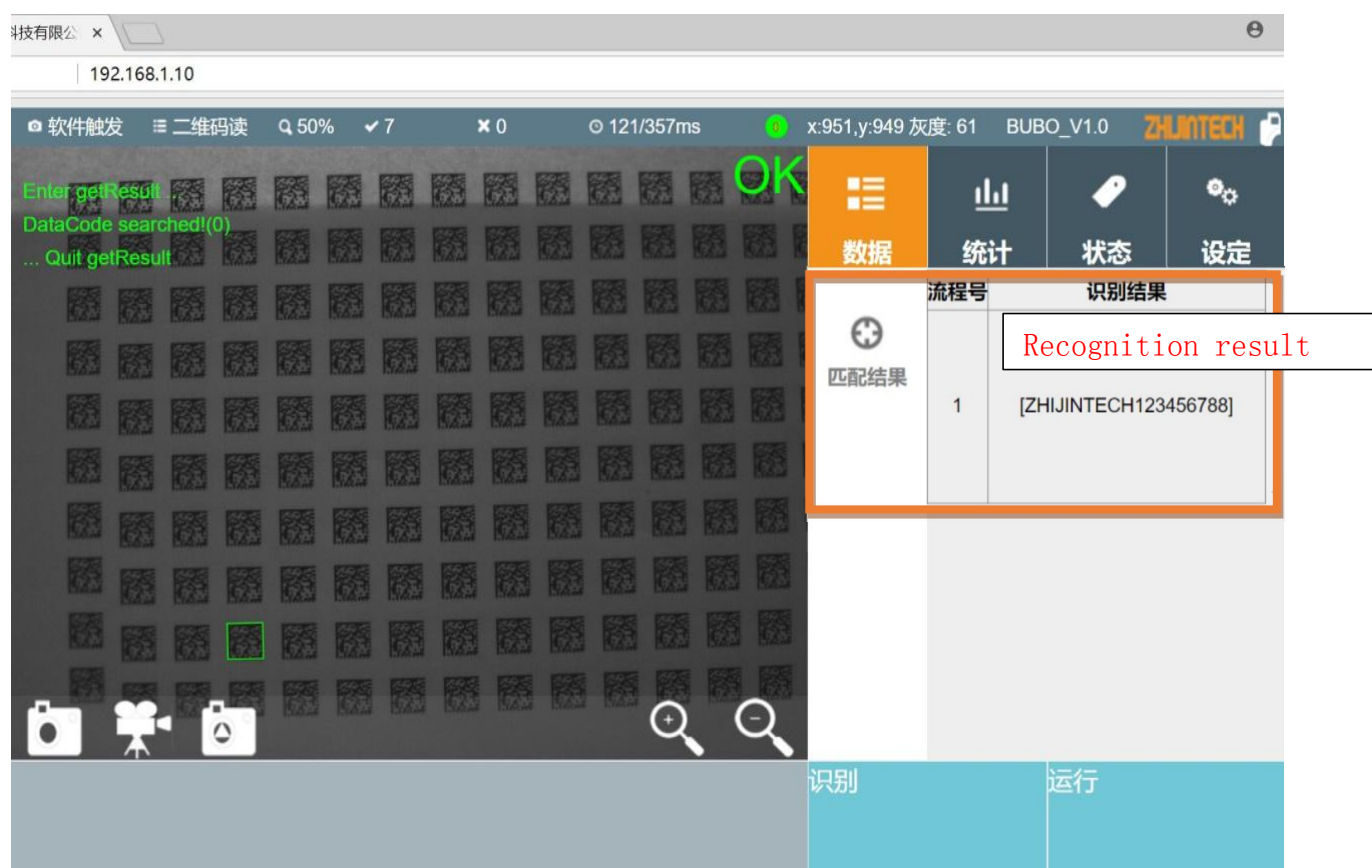
After the above settings are completed, click on the camera and the camera will work normally.

第四章 运作状态介绍 Operational status

4.1 数据显示 Data Display

数据页面显示了每次处理结束，对应算子的处理结果数据。结果数据与对应的算子在流程中的位置（位置从零开始算起）一致。如下图，处理结果的流程号是 1，对应处理流程中的从零算起的第一个算子的处理结果。

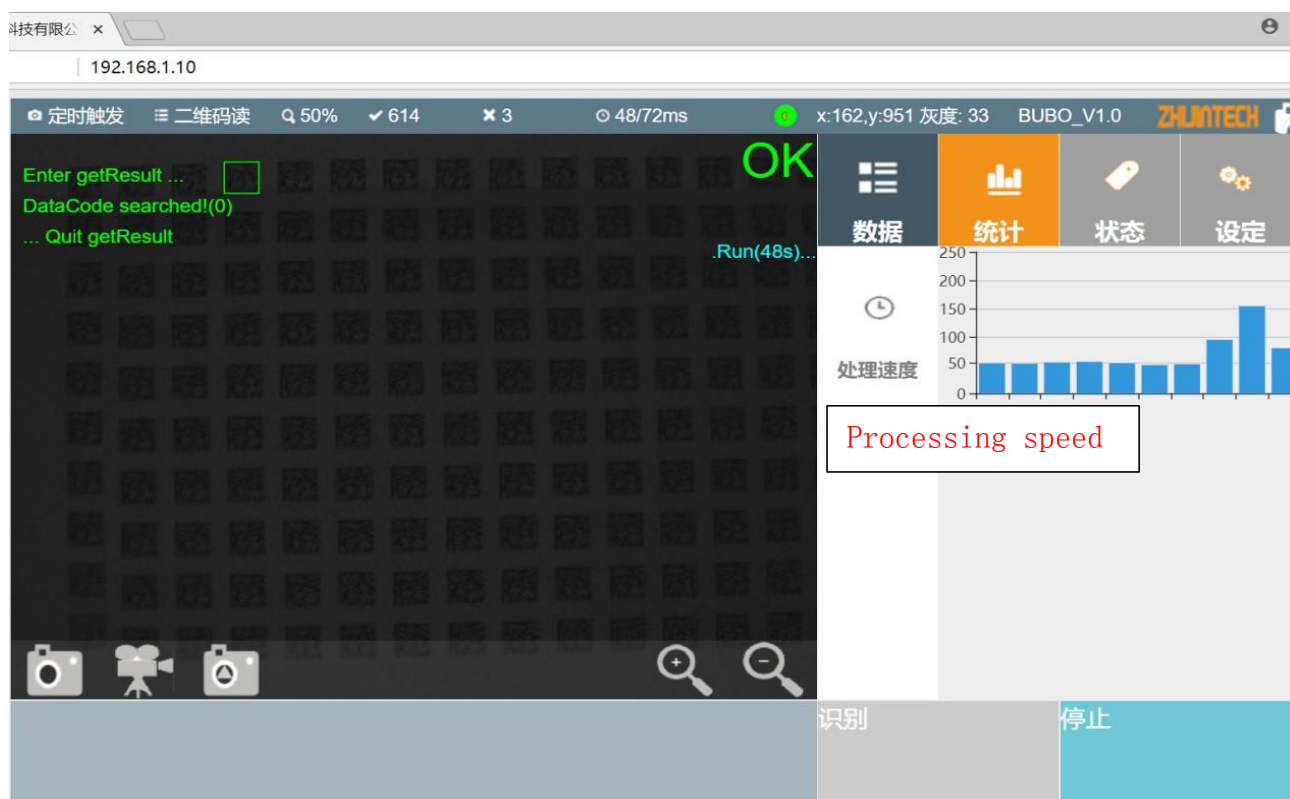
The data page shows the processing result data of the corresponding operator at the end of each processing. The result data is consistent with the position of the corresponding operator in the process (the position starts from zero). As shown in the figure below, the process number of the processing result is 1, corresponding to the processing result of the first operator from zero in the processing flow.



4.2 统计显示 Statistical display

统计页面显示了每次处理结果的时间（单位毫秒）统计信息，如下图所示：

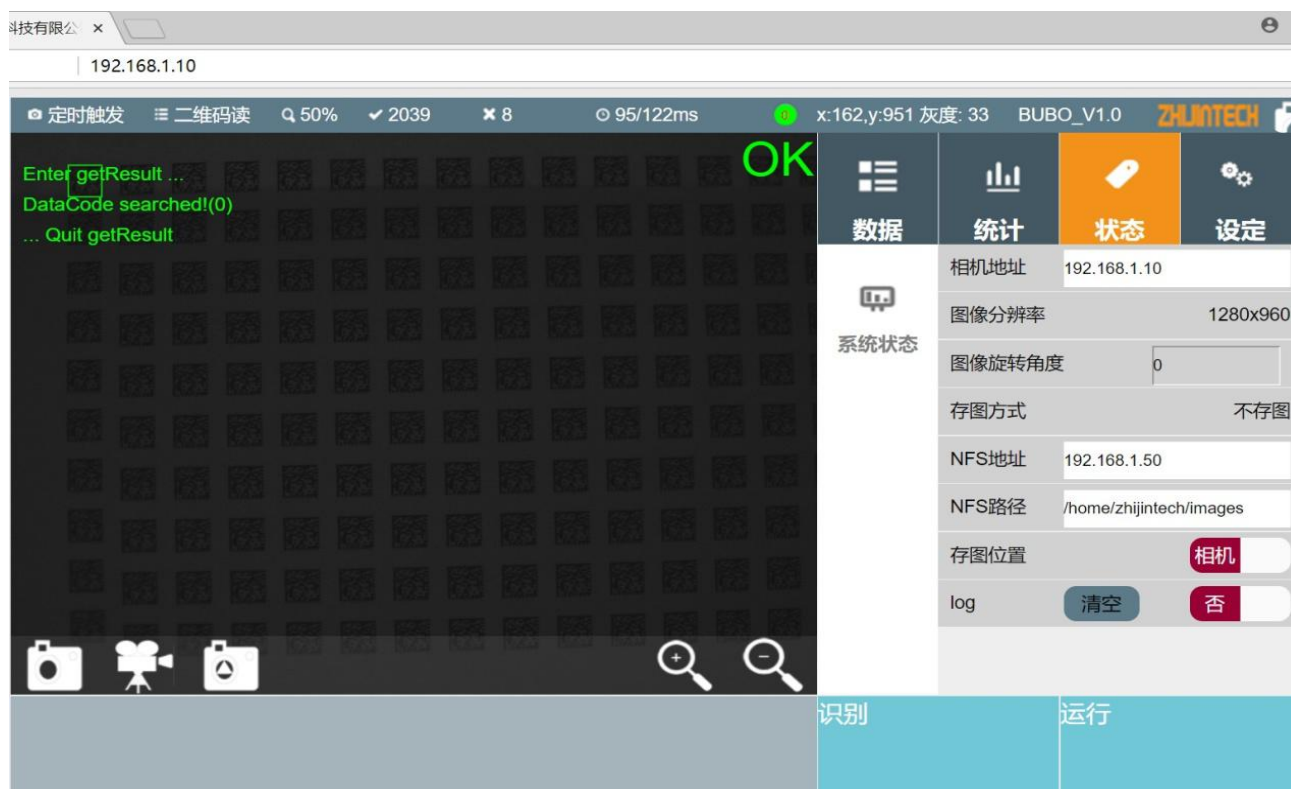
The statistics page shows the statistics (in milliseconds) for each processing result, as shown in the following figure:



4.3 状态显示 Status Display

状态页面显示相机实时工作的系统状态，比如：显示相机的 IP 地址、图像分辨率、图片的存储状态、位置，相机工作时存储图片的方式，存储位置。如下图：

The status page displays the system status of the camera in real time, such as: display camera's IP address, image resolution, picture storage status, location, how images are stored when the camera is working, and storage location. As shown below:



相机地址：即相机的 IP 地址。

Camera address: The IP address of the camera.

图像分辨率：分辨率从有 752*480、1280*960、2592*1944

Image resolution: resolution from 752*480, 1280*960, 2592*1944

图像旋转角度：调节显示器内图像的角度。

Image rotation angle: Adjust the angle of the image inside the monitor.

存图方式：有不存图、OK 存图、NG 存图、始终存图四种方式可供选择。

Deposit mode: There are four ways to save the map, OK save map, NG save map, and always save map.

NFS 地址：网络硬盘存储地址。

NFS address: The storage address of the network hard disk.

NFS 路径：网络硬盘存储地址的进入路径。

NFS path: The entry path of the network hard disk storage address.

存图位置：可设置为相机内部存储和外部存储。

Location: Can be set to camera internal storage and external storage.

log: log 文件保存与否。

Log: The log file is saved or not.

注意：相机的 IP 地址可在此处修改，修改 IP 后需要断电重启相机以使修改配置实际生效。

Note: The camera's IP address can be modified here. After modifying the IP, you need to power off and restart the camera to make the modified configuration take effect.

注意：如果“存图位置”参数设为“外部”，则需要配置网络文件系统（NFS）此时 NFS 地址和 NFS 路径参数才会生效。如果需要激活安装 NFS 外部存图功能，请联系知津科技。

Note: If the "Save Map Location" parameter is set to "External", you need to configure the Network File System (NFS) for the NFS address and NFS path parameters to take effect. If you need to activate the NFS external save function, please contact Zhijin Technology.

第五章 相机保养 Maintain

5.1 镜头保理 Lens maintain

镜头是非常精密的部件，其表面已做了防反射的涂层处理。为了保护涂层，保证拍照质量所以要避免涂层上沾染指纹或者其它污渍。在安装使用过程中也要确保不能用手或其它非规定物品接触。

The lens is a very delicate part whose surface has been treated with an anti-reflective coating. In order to protect the coating and ensure the quality of the photograph, it is necessary to avoid fingerprints or other stains on the coating. Also ensure that you cannot touch your hands or other non-specified items during installation and use.

相机使用后，镜头多多少少也会沾上灰尘，最好的方法是用吹气球吹掉，或者是用软毛刷轻轻刷掉。如果吹不去也刷不掉，那就要使用专用的镜头布或者镜头纸轻轻擦拭，但要记住一个原则，那就是不到万不得已不要擦拭镜头。千万不要用纸巾等看似柔软的纸张来清洁镜头，这些纸张都包含有比较容易刮伤涂层的木质纸浆，一不小心会严重损害相机镜头上的易损涂层。在擦拭之前，要确保表面无可见的灰尘颗粒，以避免灰尘颗粒磨花镜头。擦拭时轻轻地沿着同一个方向擦拭，不要来回反复擦，以避免磨伤镜片。如果这样还是不行，市面上也有相机专用清洗液，但要注意，使用清洗液时，应该将清洗液沾在镜头纸上擦拭镜头，而不能够将清洗液直接滴在镜头上。另外，绝对不能随便使用其他化学物质擦拭镜头，而且只有在非常必要时才使用清洗液，平时注意盖上镜头盖以减少清洗的次数。

After the camera is used, the lens will be dusted more or less. The best way is to blow it off with a blower, or use a soft brush to gently brush it off. If you can't blow it, you can use a special lens cloth or lens paper to wipe it gently, but remember one principle, that is, don't wipe the lens. Never use a paper towel or other seemingly soft paper to clean the lens. These papers contain wood pulp that is more likely to scratch the coating, which can seriously damage the delicate coating on the camera lens. Before wiping, make sure that there are no visible dust particles on the surface to prevent dust particles from grinding the lens. Gently wipe in the same direction when wiping, do not rub back and forth repeatedly to avoid grinding the lens. If this is not the case, there are camera-specific cleaning solutions on the market. However, when using the cleaning solution, the cleaning solution should be applied to the lens paper to wipe the lens, and the cleaning solution should not be dripped directly onto the lens. In addition, you should never use other chemicals to wipe the lens, and only use the cleaning solution when it is necessary. Pay attention to the lens cover to reduce the number of cleanings.

5.2 滤光片保养 Filter maintain

滤光片是拧下相机镜头，隔在相机芯片与外界之间的玻璃片，它起到过滤红外光的作用。滤光片是易碎的部件，要注意不要使用硬物碰触，也不要用手触摸，以防止留下油渍及指纹影响拍照。如果滤光片上有灰尘，其清理注意事项可参考镜头清理。

The filter is a glass piece that is unscrewed from the camera lens and separated between the camera chip and the outside world. It acts to filter infrared light. Filters are fragile parts. Be careful not to touch hard objects or touch them with your hands to prevent oil stains and fingerprints from affecting the picture. If there is dust on the filter, please refer to the lens cleaning for cleaning precautions.