CONTRASTECH

Industrial Code Reader User Manual DM-W

V2.4.6, Jun. 2024

Preface

Purpose

This Manual is a basic description of industrial code reader, which mainly includes the product description, quick installation guide and Simple introduction of SDK(DM-Datum). This manual may be updated due to product upgrades or other reasons. If you need, please contact the sales engineer for the latest version of this manual.

Disclaimer

The information and specifications described in this manual are subject to change without notice.

Latest Manual Version

For the latest version of this manual, see the Download Center on our web site at: https://www.contrastech.com/en/service/005001.html

Technical Support

For technical support, e-mail： support@contrastech.com.

Warranty

To ensure that your warranty remains in force, adhere to the following guidelines:

Do not remove the camera's serial number label
If the label is removed and the serial number can't be read from the camera's registers, the warranty is void.

Do not open the camera housing
Do not open the housing. Touching internal components may damage them.

Prevent ingress or insertion of foreign substances into the camera housing
Prevent liquid, flammable, or metallic substances from entering the camera housing. If operated with any foreign substances inside, the camera may fail or cause a fire.

Avoid electromagnetic fields
Do not operate the camera in the vicinity of strong electromagnetic fields. Avoid electrostatic charging.

Clean with care
Avoid cleaning the sensor if possible.

Handle this camera with care
Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handling.

Read the manual
Read the manual carefully before using the camera.

CHAPTER 1 PRODUCT DESCRIPTION

Product Introduction

The code reader mentioned in this manual integrates image acquisition, bar code recognition and output functions, can efficiently read 1D codes and 2D codes in a variety of code systems, and has a compact and compact structure, suitable for 3C, food and medicine, electronic semiconductors, new energy and other industries.

The device uses sensors and optical components to obtain images of the measured object, and realizes barcode analysis through the built-in deep learning code reading algorithm of the device. The device can also output inspection results through a variety of communication methods.

Product Features

- Ultra-compact size.
- Adopts LED-aiming light to help aim codes.
- Adopts buzzer and status indicator for prompting the device's operation status.
- Adopts built-in deep learning algorithm to read codes with good robustness.
- Adopts multiple IO interfaces and plug-in power interface.
- Adopts LED aiming light to help aim codes.
- Supports multiple communication protocols, including TCP, Serial, FTP,etc.

* For technical parameters, please refer to the technical specifications of the model..
* The camera functions may differ by camera models,please refer to actual functions.

Mechanical Dimensions

The dimensions is in millimeters:

The code reader are secured via M2/M3 size screw located on the top or side of the housing.

Camera Housing and Base Mounting Hole Size(mm):

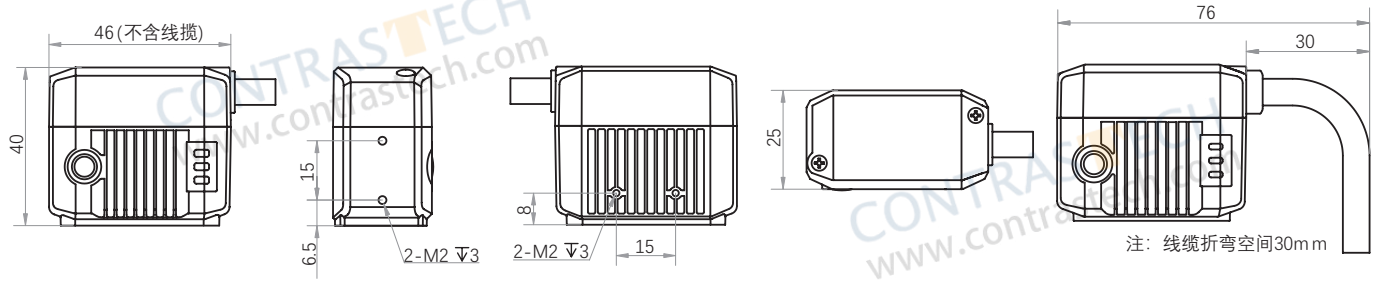


Fig. 1-1: Mechanical Dimensions (in mm) of the solid-state vari focal type code reader with 46 * 40 * 25 mm housing(There is no focus knob on the back of the device, and the focusing distance can be adjusted via vari focus lens).

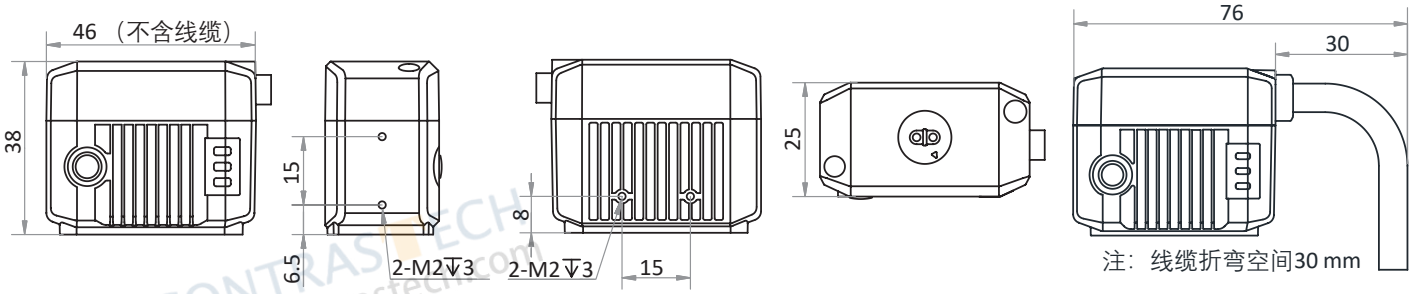


Fig. 1-2: Mechanical Dimensions (in mm) of the manual vari short focus type code reader with 46 * 38 * 25 mm housing(Supports adjusting focus manually via its focus knob on the back of the device).

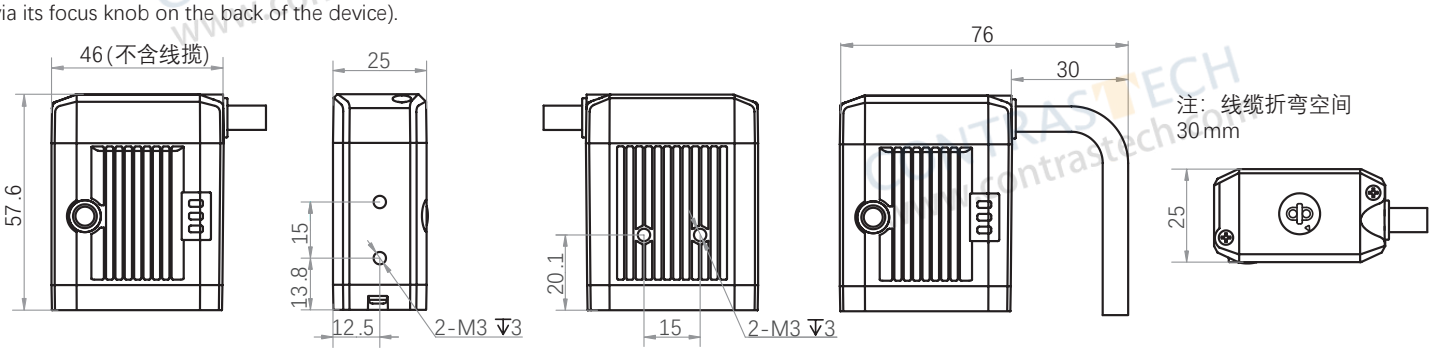


Fig. 1-3: Mechanical Dimensions (in mm) of the manual vari long focus type code reader with 46 * 25 * 57.6 mm housing(Supports adjusting focus manually via its focus knob on the back of the device).

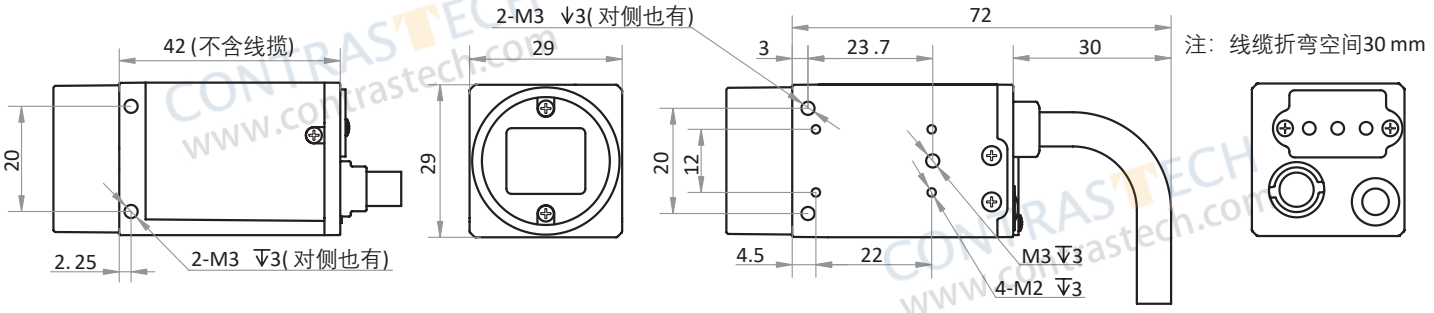


Fig. 1-4: Mechanical Dimensions (in mm) of the C-Mount code reader with 29 * 29 * 42 mmmm housing(Without Lens).

Mechanical Dimensions

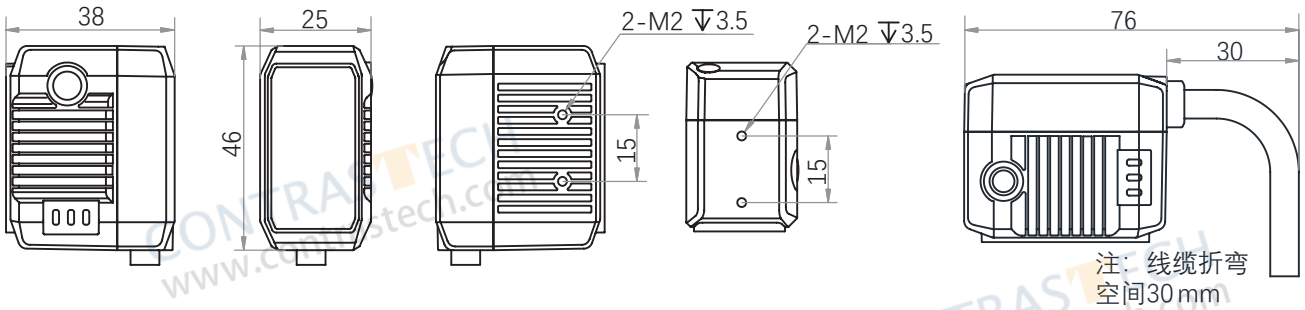


Fig. 1-5: Mechanical Dimensions (in mm) of the fixed focal type code reader with 46 * 38 * 25 mm,(Focus cannot be adjusted).

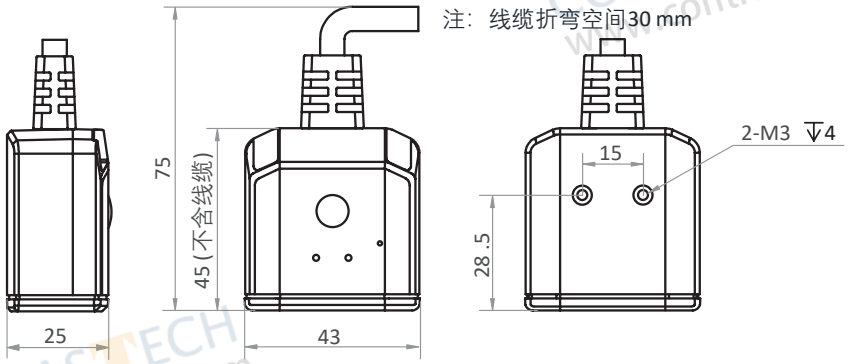


Fig. 1-6: Mechanical Dimensions (in mm) of the fixed focus buzzer-type code reader with 46 * 43 * 25 mm,(Focus cannot be adjusted,Only this device supports the buzzer function and requires Buzzer Enable to be enabled).

■ Button

_When the device is in continuous acquisition mode, press the button and the device enters trigger mode.

_When the device is in trigger mode, press the button and the device triggers once.

■ SR Cable

SR cable connector provides power, I/O, Ethernet, and serial port.

Figure	Model	Description
Fig.1-1	DM-W40S-M16GF-SRST ; DM-W160S-M16GF-SRST ; DM-W160S-M06GF-SRPZ ; DM-W160S-M10GF-SRPZ ;	The device does not have a focus knob, but it supports adjusting focus via its solid vari focal lens.
Fig.1-2	DM-W40S-M06SM-SxST ; DM-W40S-M06SM-SxST-U ; DM-W130S-M06SM-SxST/PZ ; DM-W160S-M06SM-SxST ; DM-W160S-M06SM-SxST-U ; DM-W160S-M06SM-SRPZ ;	The device is a vari focal device that supports adjusting focus manually via its focus knob. Its focal length is short.
Fig.1-3	DM-W130S-M16SM-SRST ; DM-W130S-M25SM-SRST ; DM-W160S-M16SM-SRST ; DM-W160S-M25SM-SRST ;	The device is a vari focal device that supports adjusting focus manually via its focus knob. Its focal length is long.
Fig.1-4	DM-W130S-M0CM-00ST ; DM-W160S-M0CM-00ST ;	The device has a c-mount lens mount.
Fig.1-5	DM-W100S-M05AF-Lx ; DM-W100S-M05AF-Lx-U ;	The device is a fixed focal device whose focus cannot be adjusted.
Fig.1-6	DM-W130LP-M05SM-xxxx ; DM-W130L-M03SM-xxxx ; DM-W130L-M05SM-xxxx ; DM-W130G-M05SM-xxxx ;	The device is a fixed focal buzzer-type device whose focus cannot be adjusted.

Status LED Description

Status LED	Description
LNK Indicator	It is a network status indicator. The indicator is flashing green when the network transmission is normal. Otherwise, it is unlit.
Status Indicator	● It is red when the device is powered on or operation error occurs; ● It is unlit when the device operates normally without reading codes; ● The indicator is green lasting 0.5 s when the device reads codes successfully, and is solid green when the device reads codes continuously.
PWR Indicator	It is a power indicator. The indicator is red during the device's power-on process. After the device is powered on, the indicator is green.

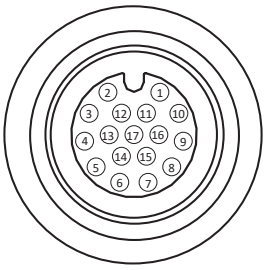
2

CHAPTER 2 POWER AND I/O IENTERFACE DEFINITION

I/O Connection Definition and Assignments

■ Fast Ethernet Interface

Vari focal type devices(Fig.1-1/2/3) and C-Mount type device(Fig.1-4) have a 17-pin M12 connector, but their corresponding connector pin definitions are different. Refer to the figure and table below for details.



17-pin M12 Connector:

Color	Pin	Signal	Signal Source	Designation	Cable
Red	1	DC_PWR	-	DC power supply positive	8-pin terminal
Brown	2	GND	Line 0/1/3/4-signal ground	Common port	8-pin terminal
Purple White	3	-	-	-	-
Green	4	RS-232 TX	-	RS-232 serial port output	DB9 female serial port
Green White	5	RS-232 RX	-	RS-232 serial port input	DB9 female serial port
Yellow	6	MDI0+	-	Fast Ethernet signal MDI0+	RJ45 Ethernet connector
Brown White	7	MDI1-	-	Fast Ethernet signal MDI1-	RJ45 Ethernet connector
Blue White	8	GPIO2	Line 2+	Non-isolated Input	8-pin terminal
Blue	9	GND	Line 0/1/2/3-signal ground	Common port	8-pin terminal
Brown White	10	GPIO3	Line 3+	Non-isolated Output	8-pin terminal
Black	11	GND	DC power supply negative	DC power supply negative	8-pin terminal
Pink	12	-	-	-	-
Purple	13	-	-	-	-
Yellow White	14	MDI0-	-	Fast Ethernet signal MDI0-	RJ45 Ethernet connector
Orange	15	MDI1+	-	Fast Ethernet signal MDI1+	RJ45 Ethernet connector
Gray	16	GPIO0	Line 0+	It can be configured as input or output, and is input by default.	8-pin terminal
White	17	GPIO1	Line 1+	It can be configured as input or output, and is input by default.	8-pin terminal

Table 2-1: 17-pin M12 Pin Definitions (Vari focal type type/C-Mount type device)

The wire color of this user manual is the color of Contrastech. If you use other manufacturers' cable color definitions may be different, random connection may cause the camera to burn out, please connect according to the I/O port type and pin definition or contact our technical staff for advise.

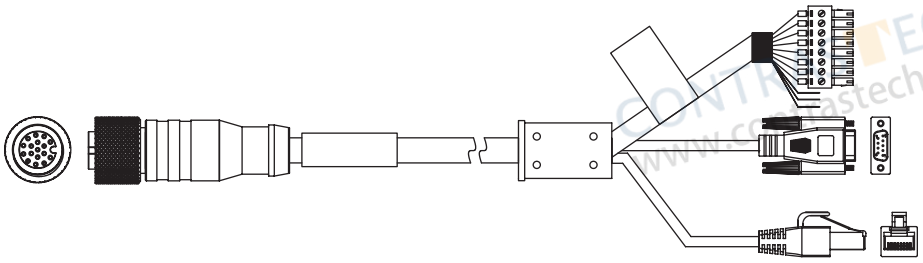
I/O Connection Definition and Assignments

Fixed focal type device(Fig.1-5) have a 17-pin M12 connector, but their corresponding connector pin definitions are different. Refer to the figure and table below for details.

Color	Pin	Signal	Signal Source	Designation	Cable
Red	1	DC_PWR	-	DC power supply positive	8-pin terminal
Brown	2	OUT_COM	LineOut 0/1 signal ground	Output common port	8-pin terminal
Purple White	3	-	-	-	-
Green	4	RS-232 TX	-	RS-232 serial port output	DB9 female serial port
Green White	5	RS-232 RX	-	RS-232 serial port input	DB9 female serial port
Yellow	6	MDI0+	-	Fast Ethernet signal MDI0+	RJ45 Ethernet connector
Brown White	7	MDI1-	-	Fast Ethernet signal MDI1-	RJ45 Ethernet connector
Blue White	8	OPTO_OUT0	LineOut 0 signal cable	Opto-isolated output 0	8-pin terminal
Blue	9	IN_COM	LineIn 0/1 signal ground	Input common port	8-pin terminal
Brown White	10	OPTO_OUT1	LineOut 1 signal cable	Opto-isolated output 1	8-pin terminal
Black	11	GND	DC power supply negative	DC power supply negative	8-pin terminal
Pink	12	-	-	-	-
Purple	13	-	-	-	-
Yellow White	14	MDI0-	-	Fast Ethernet signal MDI0-	RJ45 Ethernet connector
Orange	15	MDI1+	-	Fast Ethernet signal MDI1+	RJ45 Ethernet connector
Gray	16	OPTO_IN0	LineIn 0 signal cable	Opto-isolated input 0	8-pin terminal
White	17	OPTO_IN1	LineIn 1 signal cable	Opto-isolated input 1	8-pin terminal

Table 2-2: 17-pin M12 Pin Definitions (Fixed focal type device)

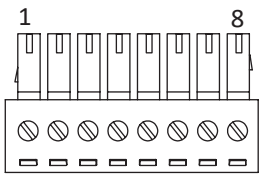
17-pin M12 Cable with Fast Ethernet Interface(For vari focus type、C-Mount type、fixed focal type device) Order Model: VT-M1217P2RJ45-3M(DM)



* The network transmission part of the 17-pin cable corresponding to 6th, 7th, 14th, and 15th pins has been made into an RJ45 interface, and there is no need to wire it yourself.
* The RS-232 serial port part of the 17-pin cable corresponding to pin 4 and 5 has been made into a DB9 female serial port, and there is no need to wire it yourself.

You cannot use the 12V power plug open line and DB9 female serial port connector at the same time. Otherwise, damaging to power supply may occur.

* Other lines of the 17-pin cable have been made into an 8-pin terminal. can be wired according to the actual use needs.



Color	Pin	Vari Focus Type Signal	Vari Focus Type Description	Fixed Focus Type Signal	Fixed Focus Type Description
Brown	1	DO_5	-	OUT_COM	Output Common Port
Blue	2	DO_4	-	IN_COM	Input Common Port
Brown White	3	DO_3	Non-isolated Output	GPIO3	Opto-isolated Output 1
Blue White	4	DI_2	Non-isolated Input	GPIO2	Opto-isolated Output 0
White	5	DI_1	It can be configured as input or output, and is input by default.	GPIO1	Opto-isolated Input 1
Gray	6	DI_0	It can be configured as input or output, and is input by default.	GPIO0	Opto-isolated Input 0
Black	7	GND	DC Power Supply Negative	GND	DC Power Supply Negative
Red	8	POWER_IN	DC Power Supply Positive	POWER_IN	DC Power Supply Positive

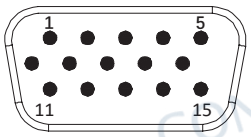
You cannot use DB9 female serial port and VCC to power the device at the same time. Otherwise, damaging to power supply may occur.

The wire color of this user manual is the color of Contrastech. If you use other manufacturers' cable color definitions may be different, random connection may cause the camera to burn out, please connect according to the I/O port type and pin definition or contact our technical staff for advise.

I/O Connection Definition and Assignments

Fast Ethernet Interface

Fixed focus buzzer-type device(Fig.1-6) with fast Ethernet interface has a DB15 connector. Refer to the figure and table below for connector pin definitions.

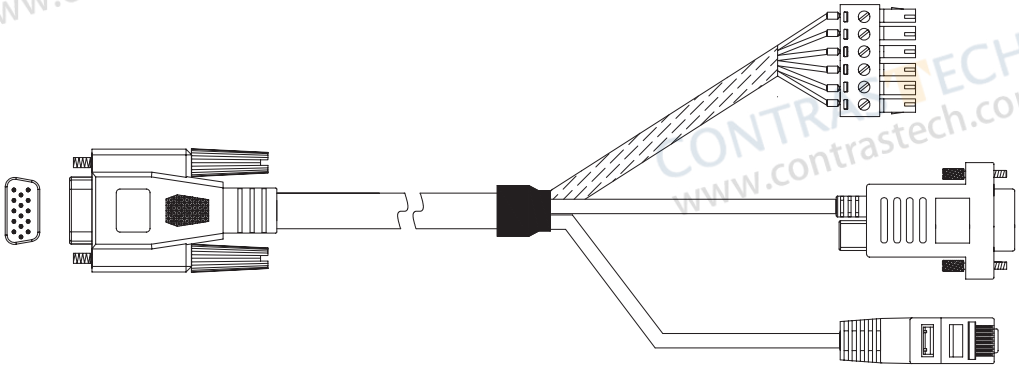


DB15 Connector

Pin	Signal	Signal Source	Designation	Cable
1	POWER_IN	-	Direct current power supply positive	DB9 male serial port
2	RS-232 TX	-	RS-232 serial port output	DB9 male serial port
3	RS-232 RX	-	RS-232 serial port input	DB9 male serial port
4	GND	Line 0/1/2/3-	Direct current power supply negative	6-pin terminal
5	OPTO_IN0	LineIN 0+	Non-isolated input 0	6-pin terminal
6	TX+	-	Fast Ethernet signal TX+	RJ45 Ethernet connector
7	RX-	-	Fast Ethernet signal RX-	RJ45 Ethernet connector
8	OPTO_OUT	LineOUT 2+	Non-isolated output 2	6-pin terminal
9	-	-	-	-
10	IO_2	LineOUT 3+	Non-isolated output 3	6-pin terminal
11	-	-	-	-
12	-	-	-	-
13	IO_1	Line IN1+	Non-isolated input 1	6-pin terminal
14	TX-	-	Fast Ethernet signal TX-	RJ45 Ethernet connector
15	RX+	-	Fast Ethernet signal RX+	RJ45 Ethernet connector

Table 2-4: DB15 Pin Definitions (Fixed focus buzzer-type device)

DB15 Cable with Fast Ethernet Interface (Fixed focus buzzer-type device) Order Model: VT-DB15P2RJ45-3M(DM)

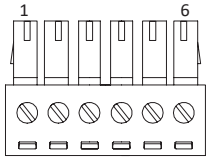


＊ The network transmission part of the DB15 cable corresponding to 6th, 7th, 14th, and 15th pins has been made into an RJ45 interface, and there is no need to wire it yourself.

＊ The RS-232 serial port part of the DB15 cable corresponding to pin 1、2 and 3 has been made into a DB9 female serial port, and there is no need to wire it yourself.

You cannot use the 12V power plug open line and DB9 female serial port connector at the same time. Otherwise, damaging to power supply may occur.

＊ The IO part of the DB15 cable corresponding to pin 4、5、8、10 and 13 pins has been made into a 6-pin terminal, as shown below: Refer to the table below for the pin definitions of the 6-pin terminal.



Color	Pin	Signal	Designation
Blue	1	Line IN 0	Non-isolated input 0
Gray	2	LineOUT 2	Non-isolated output 2
Brown	3	LineOUT 3	Non-isolated output 3
Purple	4	Line IN 1	Non-isolated input 1
Black	5	GND	Direct current power supply negative
Red	6	VCC	Direct current power supply positive

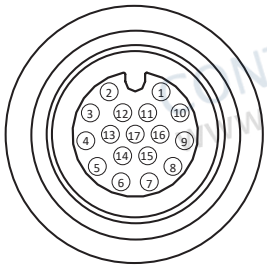
You cannot use DB9 female serial port and VCC to power the device at the same time. Otherwise, damaging to power supply may occur.

The wire color of this user manual is the color of Contrastech. If you use other manufacturers' cable color definitions may be different, random connection may cause the camera to burn out, please connect according to the I/O port type and pin definition or contact our technical staff for advise.

I/O Connection Definition and Assignments

USB Interface

Vari focal type devices(Fig.1-1/2/3) 、C-Mount type device(Fig.1-4) and Fixed focal type device(Fig.1-5) have a 17-pin M12 connector, but their corresponding connector pin definitions are different. Refer to the figure and table below for details.



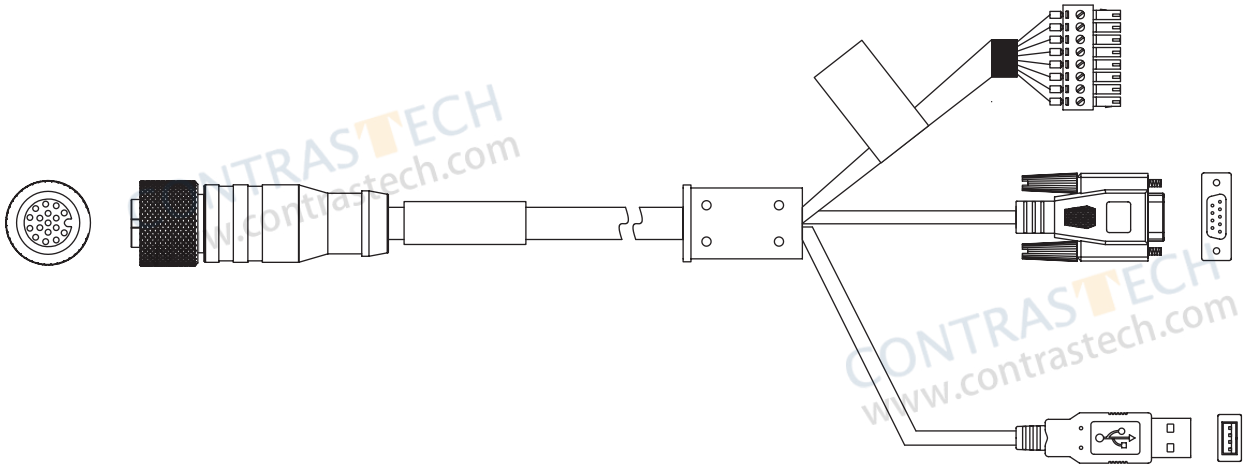
17-pin M12 Connector

Pin	Signal	Signal Source	Designation	Cable
1	DC_PWR	-	DC power supply positive	8-pin terminal
2	OUT_COM	LineOut 0/1 signal ground	Output common port	8-pin terminal
3	USB_DM	-	USB DM signal	USB interface
4	RS232TX	-	RS-232 serial port output	DB9 female serial port
5	RS232RX	-	RS-232 serial port input	DB9 female serial port
6	-	-	-	-
7	-	-	-	-
8	OPTO_OUT0	LineOut 0 signal line	Opto-isolated output 0	8-pin terminal
9	IN_COM	LineIn 0/1 signal ground	Input common port	8-pin terminal
10	OPTO_OUT1	LineOut 1 signal line	Opto-isolated output 1	8-pin terminal
11	GND	-	DC power supply negative	8-pin terminal
12	USB_DP	-	USB DP signal	USB interface
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	OPTO_IN0	LineIn 0 signal line	Opto-isolated input 0	8-pin terminal
17	OPTO_IN1	LineIn 1 signal line	Opto-isolated input 1	8-pin terminal

Table2-4: 17-pin M12 Pin Definitions (Vari focus type、Fixed focal type and C-Mount type device)

17-pin M12 Cable with USB Interface(Vari focus type、Fixed focal type and C-Mount type device) Order Model：VT-M1217P2USB-2M(DM)

17-pin M12 Cable with USB Interface(Vari focus type、Fixed focal type and C-Mount type device) Order Model：VT-M1217P2USBDB9-3M(DM)



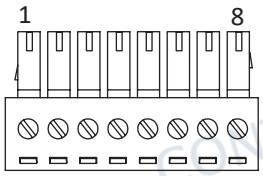
＊ The network transmission part of the 17-pin cable corresponding to 4th and 5th pins has been made into a DB9 female serial port connector, and there is no need to wire it yourself.

＊ The network transmission part of the 17-pin cable corresponding to 3th and 12th has been made into a USB interface, and there is no need to wire it yourself.

The cable's power supply supports 12V~24V. The USB port supports communication only, not power supply.

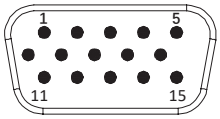
＊ Other lines of the 17-pin cable have been made into an 8-pin terminal. can be wired according to the actual use needs.

I/O Connection Definition and Assignments



Color	Pin	Signal	Designation
Brown	1	DO_5	-
Blue	2	DO_4	-
Brown White	3	DO_3	Non-isolated Output
Blue White	4	DI_2	Non-isolated Input
White	5	DI_1	It can be configured as input or output, and is input by default.
Gray	6	DI_0	It can be configured as input or output, and is input by default.
Black	7	GND	DC Power Supply Negative
Red	8	POWER_IN	DC Power Supply Positive

Fixed focus buzzer-type device with USB interface also has a DB15 connector. Refer to the figure and table below for connector pin definitions.

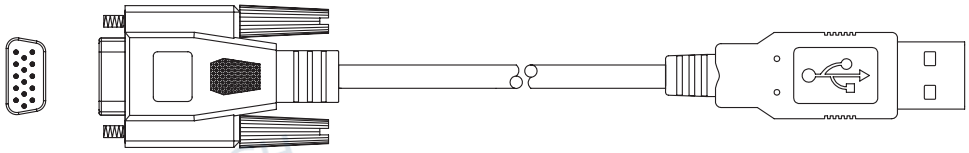


DB15 Connector

Pin	Signal	Signal Source	Designation
1-3	-	-	-
4	GND	-	Direct current power supply negative
5-8	-	-	-
9	POWER_5IVN	-	USB power interface
10	-	-	-
11	USB_DM	-	USB2.0 signal negative
12	USB_DP	-	USB2.0 signal positive
13-15	-	-	-

Table2-5: DB15 Pin Definitions (Fixed focus buzzer-type device)

The cable has a 15-pin connector for connecting with the device, and a USB interface for connecting with the PC. Order Model: VT-DB15P2USB-2M(DM)

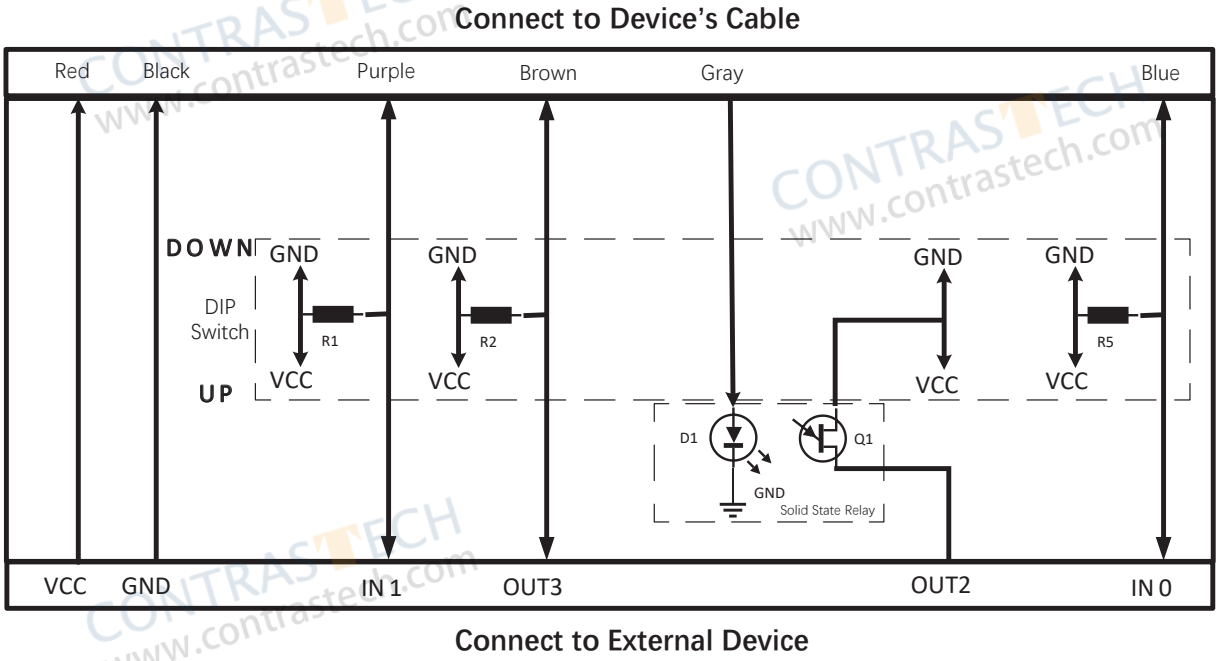


IO Box

You can use IO box to connect NPN/PNP devices to access to pull-up and pull-down resistors.

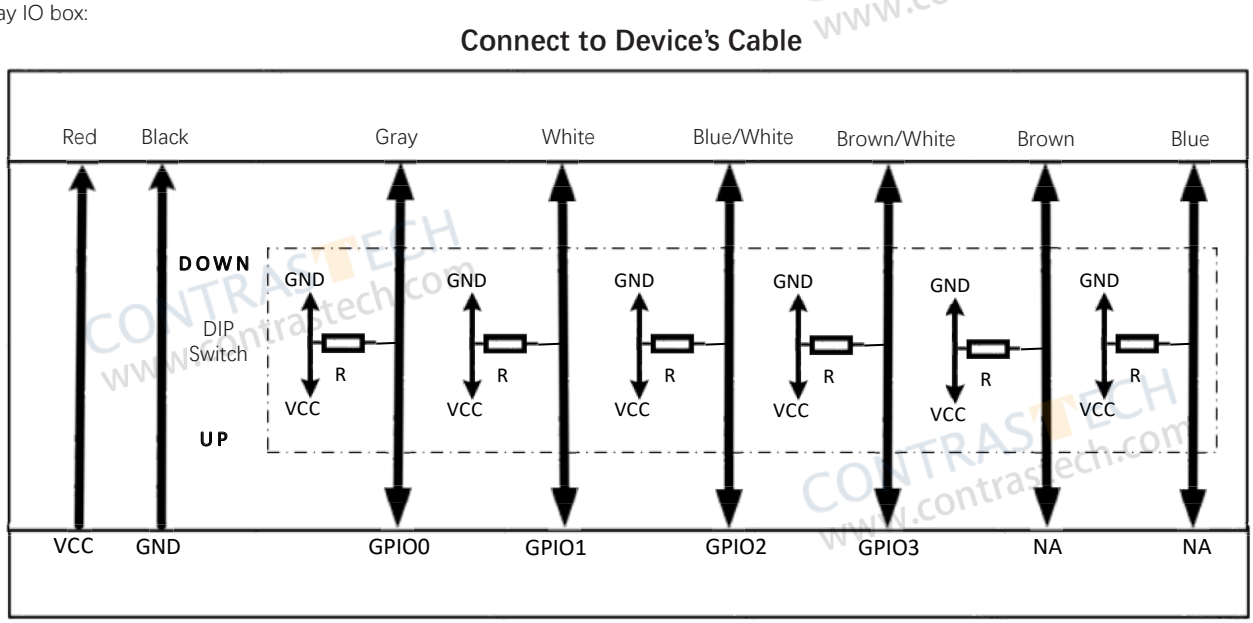
- Industrial code reader: You should use the Contrastech cable to connect the code reader to the top terminal of the IO box.
- External devices: You should connect external devices to the bottom terminal of the IO box.
- Pull-up and pull-down resistors: if the DIP switch is switched to DOWN, pull-down resistor is connected. If the DIP switch is switched to UP, pull-up resistor is connected.

For 6-way IO box:



The OUT2 connector uses a solid state relay output with a maximum output current of 100 mA, be careful to use current limiting.

For 8-way IO box:



CHAPTER 3 INSTALLATION AND SETUP

You should perform the software installation procedure first and the hardware installation procedure second.

Software Installation

DM-Datum Installation

If you use a firewall on your computer, disable the firewall for the network adapter to which your camera is connected.

Close the Firewall

In order to ensure the camera software keep running and image transmission stability, please close the firewall before using the software.

System Requirements

Code Reader Software Suite for Windows requirements that one of the following operating systems is installed on your computer:

- Windows XP (32 bit)
- Windows 7 (32 bit or 64 bit)
- Windows 10 (32 bit or 64 bit)

Installation Steps

1.You can download the software from:

http://www.contrastech.com/en/service/005001.html

2.Double click DM-Datum installation package to install the client.

3.Follow the instructions on the screen. The installer will guide you through the installation process.

Network Settings

Before using the camera, you need to configure IP is in the same network segment with the computer. You can modify it in “Local Connection” to ensure network communication is normal.

Local Network Configuration :

- Click “Control Panel”> “Network and Internet”> “Network and Sharing Center”> “Change Adapter Configuration. “Then select corresponding network card to configure it automatically obtain IP address or manually assign it as same network segment address with the camera. Shown as below:

Hardware Installation

1. Install the equipment to the fixed bracket with M4 screws, and then install it on other mechanical parts through the fixing bracket, and the installation method can be selected according to the actual application scenario.

2. Refer to the interface definition in the POWER AND I/O IENTERFACE DEFINITION section for wiring, and connect it to the appropriate power adapter or switching power supply to power the device.

3. Use the network cable to connect the device to the switch or network card normally for image debugging or data communication.

1. Use supplied screws to fix the device to the installation position.

2. Use the supplied cable to wire the device.

If you use a 17pin cable to connect a fast Ethernet device:

■ Connect the 17-pin M12 connector of the cable to the device, insert RJ45 connector of the cable into a switch or a PC for debugging images or transmitting data, and connect the device to a power adapter or a switch power supply for power supply.

i	You cannot use the 12 V power plug of the DB9 female serial port connector and power supply open line at the same time. Otherwise, damaging to power supply may occur.

If you use a DB15 cable to connect a fast Ethernet device:

■ Connect the device to the supplied cable via the DB15 connector, insert RJ45 connector of the cable into a switch or a PC for debugging images or transmitting data, and connect the device to a power adapter or a switch power supply for power supply.

i	You cannot use the 12 V power plug of the DB9 female serial port connector and power supply open line at the same time. Otherwise, damaging to power supply may occur.

If you use a 17pin cable to connect a USB device:

■ Connect the 17-pin M12 connector of the cable to the device, and connect the USB interface of the cable to the PC.

If you use a DB15 cable to connect a USB device:

■ Connect the device to the supplied cable via the DB15 connector, and connect the USB interface of the cable to the PC.

Checking the USB drive on the PC is required before using the USB device. After connecting the USB device to the PC, the Windows system will automatically detect a new hardware device and install its corresponding drive.

Go to Device Manager by either pressing Win+X or right-clicking on the Windows menu button, and locate and expand the Network adapters to check the drive.

You can use the drive management tool to reinstall the USB drive if the installation is failed.

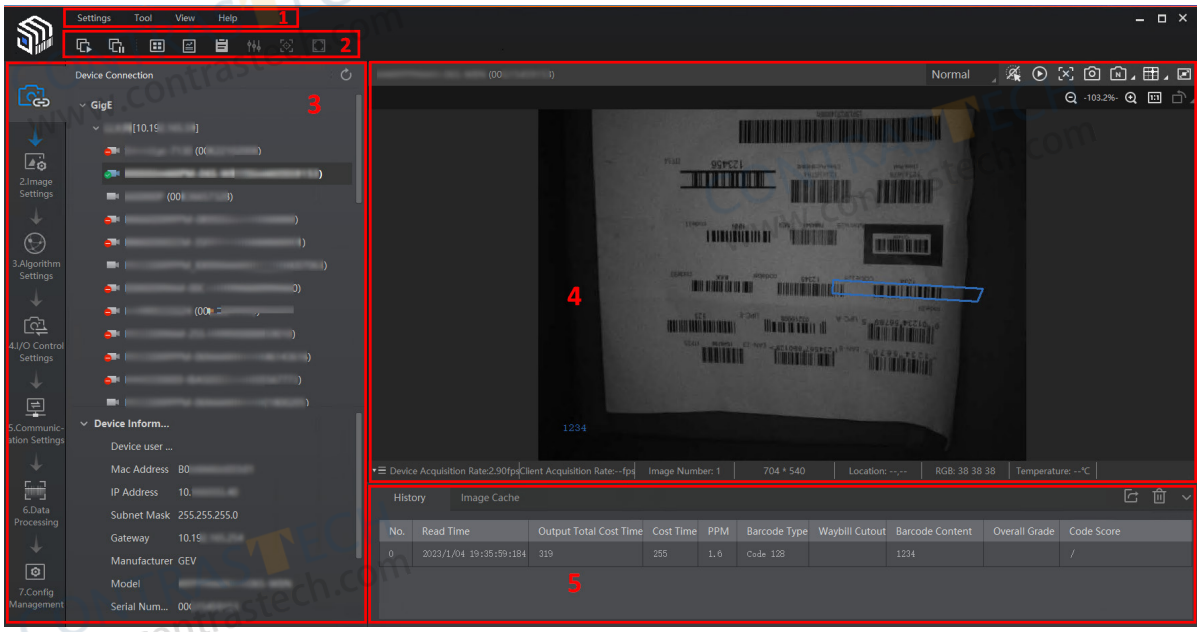
i	The device needs to be powered separately, when it needs to be powered together with other devices, non-plastic code reader devices must be installed with isolation brackets.

Software Operation

DM-Datum Operation

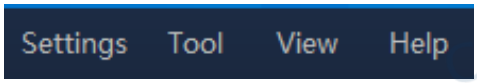
Double-click the DM-Datum shortcut on the desktop to open up the client software, the client software can read the device information and display it.

Main interface



Menu Bar

The menu bar displays function modules, including Settings, Tool, View, and Help.



Control Toolbar

The control toolbar provides quick operations for the device. You can click different icons to start or stop batch acquisition, change window layout, view statistics information, and device log.

Device Configuration Area

You can connect or disconnect device, set parameters, and modify device IP address in this area.

Live View Window

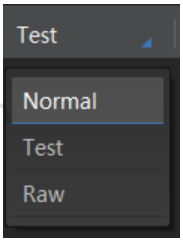
This area displays the acquisition images and algorithm reading result in real-time. You can click different icons to capture and save image, record, etc.

History Record and Image Cache

This area displays different barcode information read by the device in real-time, including read time, cost time, code type, content, code score, etc. You can also set image cache here.

Software Operation

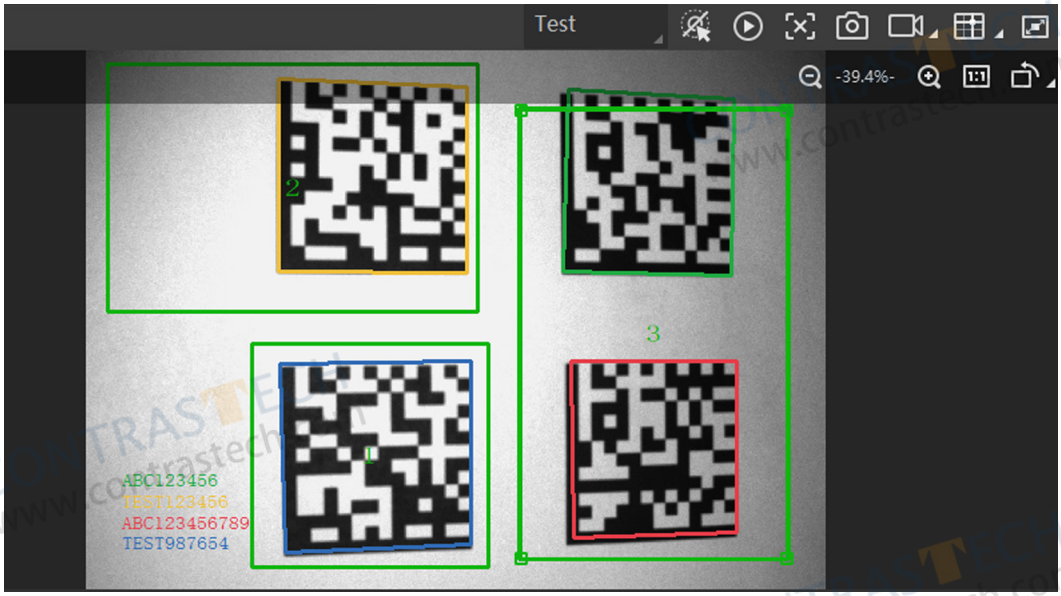
The device supports 3 types of operating modes, including Test, Normal, and Raw. You can select different modes in live view window according to actual demands.



You can set device parameters in device configuration area.

No.	Module Name	Description
1	Device Connection	You can connect or disconnect device, modify device IP address, view device information, etc.
2	Image Settings	You can set image parameters, light parameters, etc.
3	Algorithm Settings	You can add different barcodes, set barcode number, etc.
4	I/O Control Settings	You can set parameters related with input and output.
5	Data Processing	You can set filter rule for output result.
6	Communication Settings	You can select different communication protocols, and set related parameters for output result.
7	Configuration Management	You can save and load user parameters, and restart the device.

You can click ▶ in the live view window to view images and the code reading effect. For the code read in real time, the client will frame the code in the real-time screen and display the specific code information on the left side, as shown in the following figure.



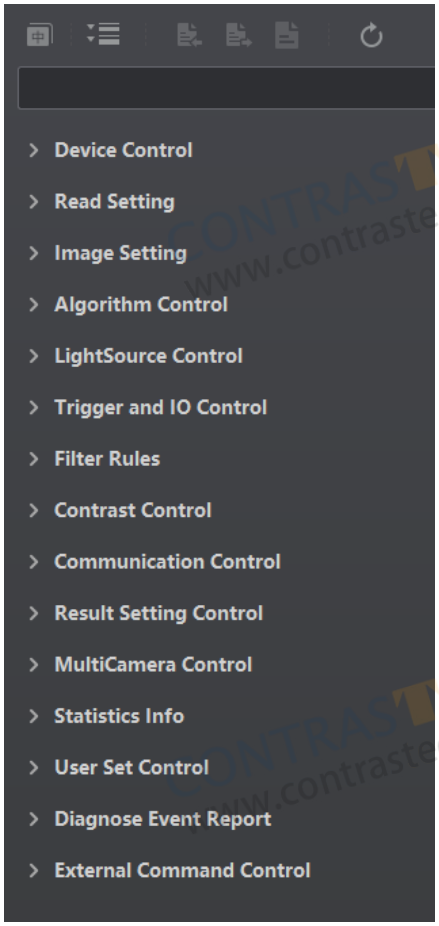
If the effect is not very good, you can adjust the focus knob (the manual focus device only) or related parameters in Image Settings area.Includes exposure time, gain, gamma, and light source parameters. At the same time, for manual focusing equipment, the focus knob on the side of the device can be manually adjusted; For devices with mechanical focus lenses, the image effect can be adjusted through the autofocus function.

CHAPTER 4 DEVICE SETTINGS

Feature Tree Introduction

After the device is connected to the client software, and you can right click the device in Device Connection, and click Feature Tree.

i	The parameters of the feature tree may differ by device models and firmware versions.



Name	Description
Device Control	It allows you to view the device's information, edit its name, etc.
Read Setting	It allows you to set the device's operation mode and select code types.
Image Setting	It allows you to set frame rate, exposure, gain, Gamma, etc.
Algorithm Control	It allows you to algorithm parameters.
Focus Control	It allows you to set the device's focus mode and related parameters.
Self Adapt Control	It allows the device to automatically adjust exposure, gain, Gamma and other parameters to have a better code reading effect.
Light Source Control	It allows you to set the light source's parameters.
Line Mode Control	It allow you to customize the specific line as input or output according to actual demands.
Trigger and IO Control	It allows you to set parameters of input and output.
Stop Trigger Control	It allows you to stop device trigger via TCP, UDP, I/O, serial port and USB. You can also set code reading timeout duration or max. code amount to be read to stop trigger.
Filter Rules	It allows you to set the filter rule of codes.
Communication Control	It allows you to set parameters related to different communication protocols.
Muiti Camera Control	It allows you to set parameters of multi-camera to let them operate in a collaborative way.
Result Setting Control	It allows you to set parameters of outputted contents.
Statistics Info.	It allows you to count data related with code reading.
User Set Control	It allows you to save and load configured user set.
Diagnose Event Report	It allows you to monitor memory and CPU usage rate, and let you know when there is a crash, higher CPU usage rate, insufficient memory, etc.

Image Quality Settings

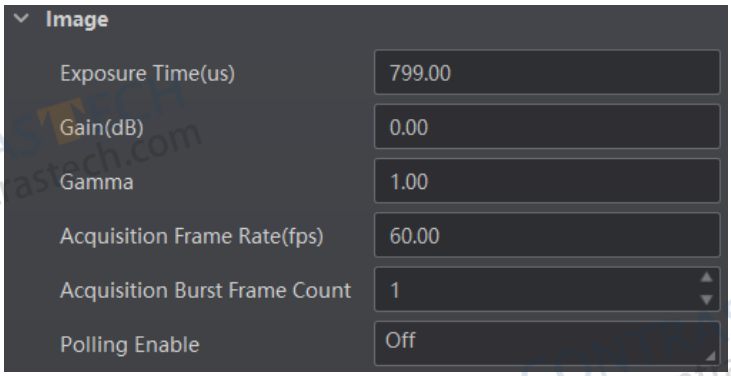
This section introduces how to set image related parameters of the device via client software.

> For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.

Set Image

You can set different image parameters like exposure time, gain, Gamma, acquisition frame rate, acquisition burst frame count in Image Settings area.

- Exposure Time： You can increase exposure time to improve image brightness. To some extent, increasing exposure time will reduce acquisition frame rate, and impact image quality.
- Gain： You can increase gain to improve image brightness. To some extent, increasing gain will create more image noises, and impact image quality.
- Gamma： Gamma allows you to adjust the image contrast. It is recommended to reduce Gamma to increase brightness in dark background.
- Acquisition Frame Rate： Acquisition frame rate refers to the image number that is acquired by the device per second.
- Acquisition Burst Frame Count： Acquisition burst frame count refers to the outputted image number when the device is triggered once.
- Polling Enable： It enables the polling function, you can select off, single or multiple mode. The parameter of polling enable will be displayed only when the trigger mode is on.



Set Polling

The polling function allows the device to acquire images based on the parameters you set, including exposure time, gain, Gamma, and light source. Currently, 2 types of polling modes are available, including single mode and multiple mode.

> - Stopping the real-time acquisition is required before setting the polling function.
> - After the polling enabled, the device acquires images with its max. frame rate. Once the polling disabled, the frame rate you set in Acquisition Frame Rate takes effect.
> - The polling function, specific parameters as well as parameter values may differ by device models.
> - It is recommended to use the polling function under the normal device mode, and test/raw modes are used for debugging only.
> - The specific parameters of polling may differ by device models.

Single Mode

Steps

1.Go to Image Settings → Image → Polling Enable, and select Single as Polling Enable.

2.Select one parameter (e.g. Param1) from Polling Param.

> Up to 8 sets of parameter can be selected from Polling Param.

4. Set parameters participating the polling like Polling Exposure Time, Polling Gain, Polling Gamma, etc. according to actual demands.

Image Quality Settings

Parameter	Description
Polling Exposure Time	It sets the exposure time of polling.
Polling Gain	It set the polling gain.
Polling Gamma	It sets the polling Gamma value. ● If the value is between 0 and 1, when the image brightness increases, dark area becomes brighter. ● If the value is between 1 and 4, when the image brightness decreases, dark area becomes darker.
Polling Focus Enable	After enabling this parameter, you can set polling focus position.
Polling Focus Position	It sets the polling focus position.
Polling Lighting Selector	It selects lamps on different directions, including up/down and mid.
Polling Lighting Enable	After enabling this parameter, the light source will turn on.

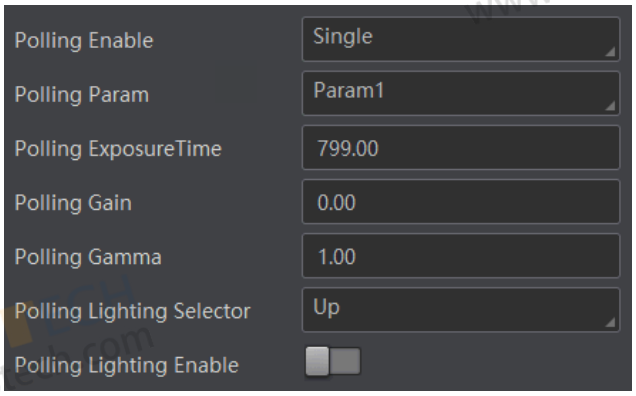


Image Quality Settings

Multiple Mode

- In multiple mode, the device supports trigger parameters like software trigger, external trigger, TCP, etc., does not support stopping polling via the external trigger.
- The rule for multiple-mode polling is that the polling is started from the polling parameter with Best Polling Group Idx, and then execute other polling parameters you selected in turn. For example, if the Param3 is the Best Polling Group Idx and Param1, Param2, Param4 and Param5 are enabled, the polling order is Param3 > Param1 > Param2 > Param4 > Param5.

Steps

1.Go to Image Settings → Image → Polling Enable, and select Multiple as Polling Enable.

2.Set Polling Time and Polling Period according to actual demands.

- Polling Time is used to determine whether the polling is finished or not, and it ranges from 100 to 2147482.
- Polling Period is whole period from Param1 to Param8, and it ranges from 1 to 5000.

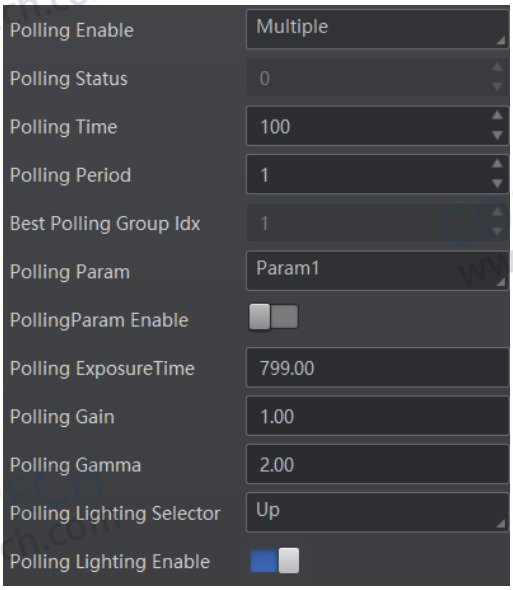
3.Select 2 to 8 sets of parameters (e.g. Param1 and Param2) from Polling Param, and enable Polling Param Enable to let them take effect.

4.Set parameters participating the polling like Polling Exposure Time, Polling Gain, Polling Gamma, etc. according to actual demands.

5.Repeat step 4 and step 5 to set other parameters from Polling Param.

6.(Optional) View Polling Status and Best Polling Group Idx.

- Polling Status: It displays the current polling status. 0 stands for polling ended, and 1 stands for polling started.
- Best Polling Group Idx: It is used to display the polling parameter number when the device recognizes codes after enabling polling. If the polling is disabled or polling parameters are edited, it displays 1 by default.



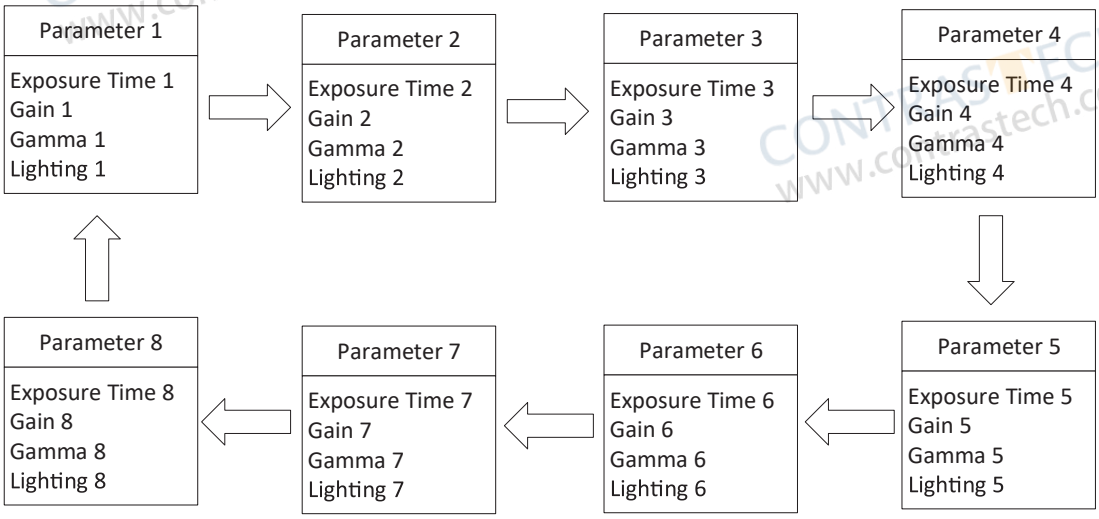


Image Quality Settings

Set Light Source

Light source control allows you to enable the device's aiming system and light source, and set related parameters according to actual demands.

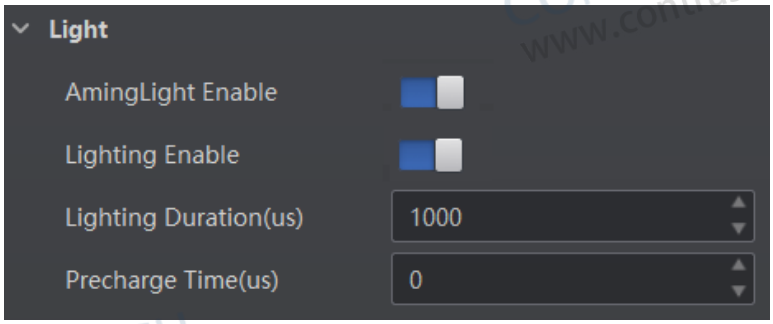
- Light source parameters may differ by device models.
- Make sure you have selected the device to be set in Device Connection before setting light source parameters.

Steps

1.Go to Image Settings → Light, and enable Aiming Light Enable according to actual demands.

2.Enable Lighting Enable to enable the light source according to actual demands.

3.(Optional) Set Lighting Duration and Precharge Time if Lighting Enable is enabled.



Set Smart Tune

The smart tune function allows you to adjust the device's focus position, exposure, gain, etc. by one-key operation, and supports self-adaptive adjustment.

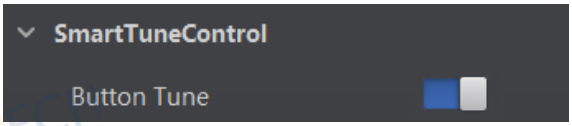
The smart tune function has two methods to be realized, including smart tune by pressing tune button and smart tune via the client software.

- The parameters of the smart tune may differ by device models and firmware versions.
- During the process of smart tune, the focus parameters and self-adaptive parameters will be adjusted in turn.

Steps

1.Go to Image Settings, click All Features on the right corner, and find Smart Tune Control.

2.Enable Button Tune, and disconnect the device from the client software.



Smart tune by pressing the tune button is not supported if the device is connected via the client software.

3. Hold the tune button for 3 sec and the device starts smart tune.

- During smart tune process, the status indicator flashes in green and red colors alternatively.
- If smart tune succeeds, the status indicator is solid green lasting 3 sec and then restores.
- If smart tune fails, the status indicator is solid red lasting 3 sec and then restores.

4. (Optional) Hold the button for 3 sec again during smart tune process, and the smart tune will be cancelled.

Image Quality Settings

Smart Tune via Client Software

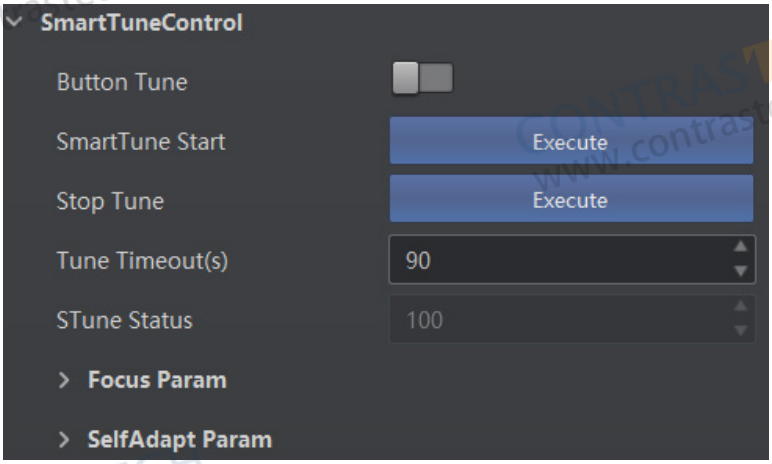
Apart from pressing tune button to realize smart tune, you can also configure parameters via the client software to realize it.

Before You Start

Make sure that the device is not in trigger mode, and its operation mode is test.

Steps

1. Go to Image Settings, click All Features on the right corner, and find Smart Tune Control.



2.(Optional) Set Tune Timeout. If the self-adaptive adjustment exceeds configured value, and it will stop automatically.

3.Click Execute in Smart Tune Start to let the device start smart tune, and a window of smart tune will be displayed for you to view the effect.

4.(Optional) View smart tune process via Smart Tune Status.

5.Click Execute in Stop Tune to stop smart tune process.

Image Quality Settings

Set Focus

The device supports the focus function according to the code position in the field of view. Currently, three types of focus are supported, including global auto focus, global manual focus, and ROI focus.

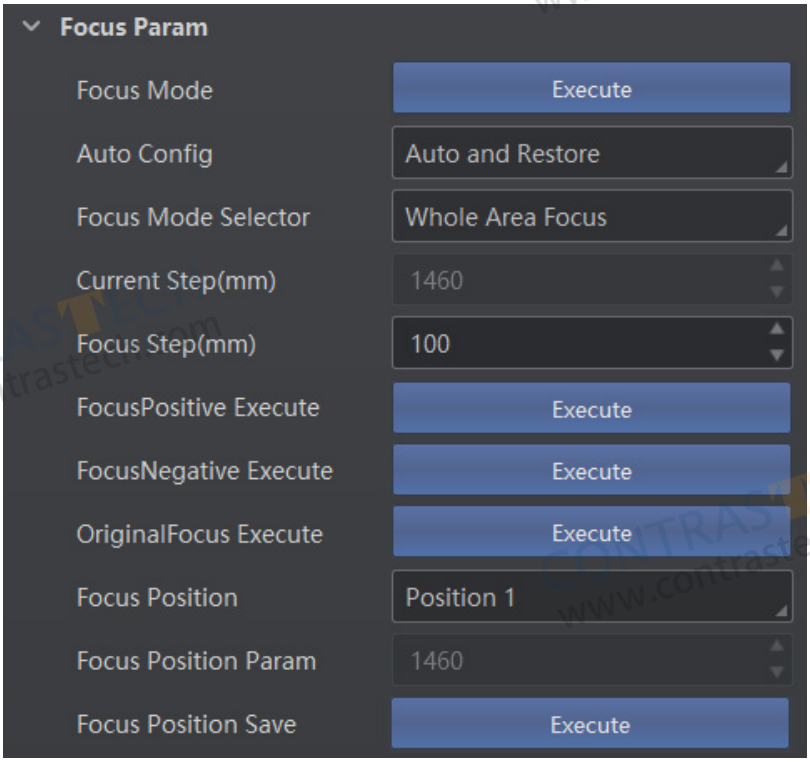
i	● Make sure that the device's operation mode is test before performing focus, and switch to the normal operation mode after the focus is completed. ● The focus function may differ by device models.

Global Auto Focus

The global auto focus allows you to adjust lens focus in a global field of view just by once.

Steps

1. Go to Image Settings → Smart Tune Control → Focus Param → Focus Mode Selector, and select Whole Area Focus as Focus Mode Selector.



2. Click  in the live view window, and click it again to stop acquisition and make sure there is an image in the window.

3. Select the focus mode in Auto Config:

● Full Auto: In this mode, the device will automatically change parameters like focus position, exposure, gain, Gamma and light source when adjusting focus.

● Motor Only: In this mode, the device will change focus position only when adjusting focus.

● Auto and Restore: In this mode, the device will automatically change parameters like focus position, exposure, gain, Gamma and light source when adjusting focus, and keep focus position and restore other parameters after completing focus adjustment.

4. Click Execute in Focus Mode, and the device starts to adjust focus automatically.

i	Focus related parameters cannot be configured during auto focus process, and after the process, parameters can be configured again.

5. (Optional) Select the position parameter from Focus Position, and click Execute in Focus Position Save to save the focus position after adjusting focus.

Image Quality Settings

Global Manual Focus

The global manual focus requires manual focus according to the images displayed in the live view window.

Steps

1. Go to Image Settings → Smart Tune Control → Focus Param → Focus Mode Selector,and select Whole Area Focus as Focus Mode Selector.
2. Click  in the live view window, and click it again to stop acquisition and make sure there is an image in the window.
3. Select Focus Position according to actual demands and Focus Position Param.
4. Set Focus Step according to actual demands.
5. Click Execute in Focus Positive Execute and Focus Negative Execute to adjust focus position.
6. (Optional) View Focus Score to know the score of the focus adjustment.
7. (Optional) Select the position parameter from Focus Position, and click Execute in Focus Position Save to save the focus position after adjusting focus.
8. (Optional) Click Execute in Original Focus Execute to let the focus back to its original position.

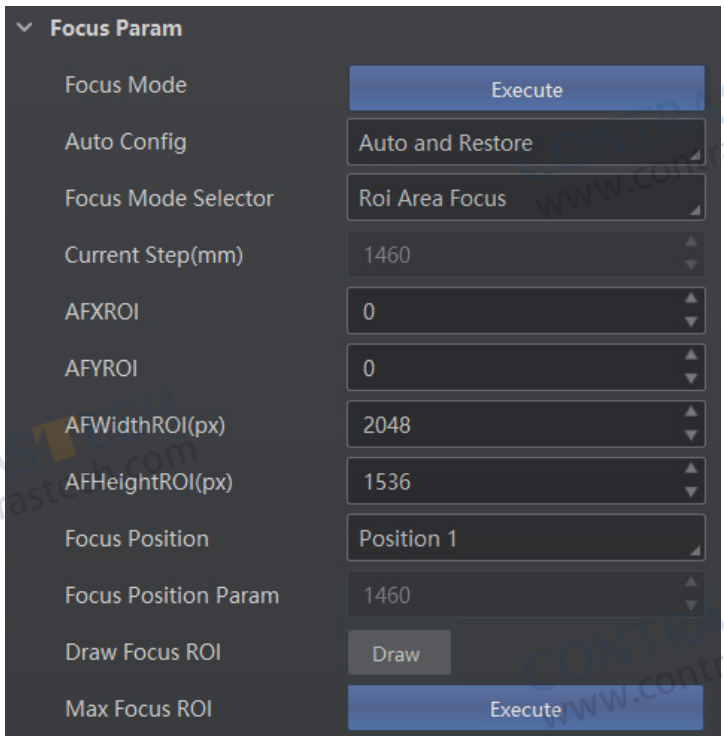
ROI Focus

The ROI focus allows you to adjust lens focus regarding the ROI area by drawing specific area.

	The ROI focus is applicable to the scenario where multiple codes with different depth of fields are existed.

Steps

1. Go to Image Settings → Smart Tune Control → Focus Param → Focus Mode Selector,and select ROI Area Focus as Focus Mode Selector.



2. Click  in the live view window, and click it again to stop acquisition and make sure there is image in the window.
3. Click Draw in Draw Focus ROI, and draw ROI by dragging the mouse in live view window.
4. (Optional) Set following parameters to adjust ROI size and position.
   - AF Offsex X: It is X coordinate of the upper left corner in ROI where executes auto focus.
   - AF Offsex Y: It is Y coordinate of the upper left corner in ROI where executes auto focus.
   - AF Width ROI: It refers to the width in ROI where executes auto focus.
   - AF Height ROI: It refers to the height in ROI where executes auto focus.
5. (Optional) Click Execute in Max. Focus ROI to have a global focus.
6. (Optional) Repeat step 3 if you want to set multiple ROIs.

Image Quality Settings

Set Self-Adaptive Adjustment

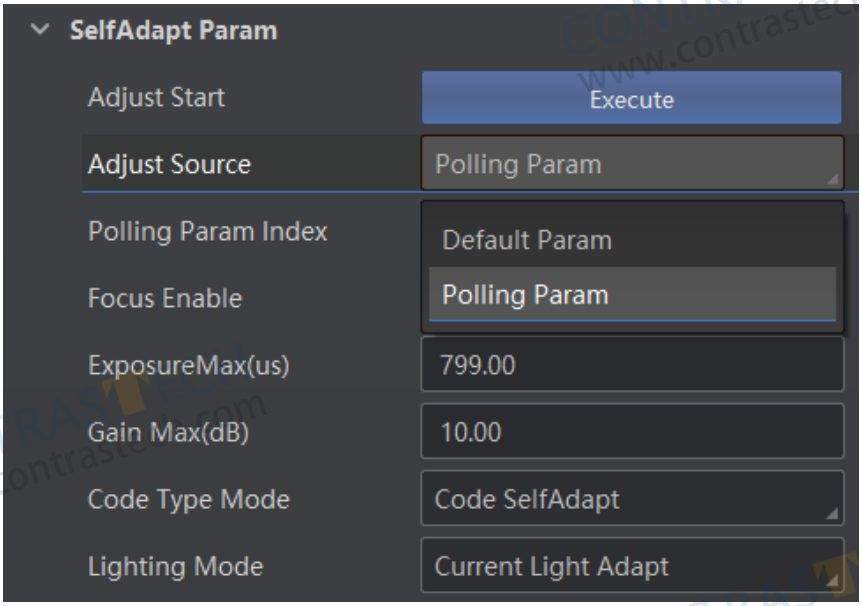
i	This function may differ by device models.

The function of self-adaptive adjustment can automatically adjust exposure, gain, Gamma and other parameters to have a better code reading effect.

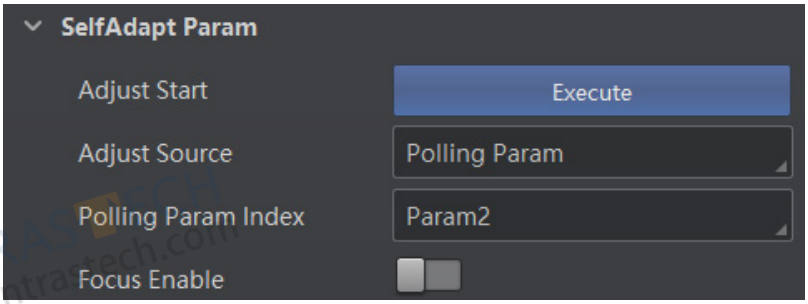
Steps

1.Go to Image Settings → Smart Tune Control → Self Adapt Adjust, and unfold Self Adapt Adjust.

2.Select Adjust Source according to actual demands.



- Default Param: It adjusts the default parameters.
- Polling Param: It adjusts parameters configured in polling. After Polling Param is selected as Adjust Source, you should select a polling parameter group from Polling Param and enable or disable Focus Enable.



3. Set Exposure Max or Gain Max according to actual demands.
- Exposure Max: It sets the max. exposure during the self-adaptive adjustment.
- Gain Max: It sets the max. gain during the self-adaptive adjustment.

4. (Optional) Set self-adaptive code type in Code Type Mode.
- Code Self-Adaptive: All code types added in field of view will be self-adaptive.
- 1D Code: 1D code types added in field of view will be self-adaptive.
- 2D Code: 2D code types added in field of view will be self-adaptive.

5. (Optional) Set light source parameters in Lighting Mode.
- Light Adapt: The client software will select the best one from all lighting options during the self-adaptive adjustment.
- Current Light Adapt: The client software will use the current configured light source.
- All Light Disable: All light sources will be turned off during self-adaptive adjustment process.

6. Click Execute in Adjust Start. The device will automatically acquire images and perform self-adaptive adjustment, and stop acquisition after adjustment is completed.

i	If the adjustment completed, the client software displays the spent time and prompts adjustment succeeded. If the adjustment failed or is timeout, the client software prompts adjustment failure or timeout.

Image Quality Settings

Set Test Pattern

Test pattern helps troubleshooting image problems and images in the test pattern are only for test. When exceptions occur in images acquired by the device in real time, you can check if images in the test pattern have similar problems to determine the cause of an exception.

- The test pattern is available in the test or raw device mode.
- Specific parameters of this function may differ by device models.

Go to Image Settings, click All Features, find Test Pattern in Other Features, and set Test Pattern according to actual demands.

Code Algorithm Settings

The code reader supports reading multiple types of 1D code and 2D code, and you can add and set code parameters via the client software.

Add Code

Adding code before you set code parameters via the client software. In Algorithm Settings, you can add different types of codes according to actual demands.
In Algorithm Settings, click Add Barcode, select the types of codes to be read, and set the 1D Code Number and 2D Code Number according to actual demands.

- For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.
- Selected symbology amount and added code amount may affect the code recognition time. Note that selecting more symbologies or adding more codes may consume more time to recognize codes in the image.
- No matter 1D code or 2D code, up to 20 codes can be added at a time. Note that adding more codes may consume more time to recognize codes in the image. Therefore, the code number is recommended to be set according to the actual demands.
- The code reader may output actual code number when the mismatch between the actual code number and the code number set in the client software occurs.

Set Code Reading ROI

Algorithm ROI (Region of Interest) allows the device to execute algorithms and read codes on the specific area you selected, and thus improving code reading efficiency.
Currently, up to 4 ROIs can be configured, and the device outputs codes according to the number of ROI (e.g. Region 1, Region 2, and Region 3) in turn. The client software supports drawing single group of ROI, drawing ROI in batch, and drawing ROI via chessboard.

- If no code is recognized in the algorithm ROI, and the device will output “noread”.
- Before drawing ROIs, make sure that there are images in the live view window after stopping preview.
- If no algorithm ROI is enabled, and the full screen is the algorithm ROI by default.
- This function may differ by device models.

Draw Single Group of ROI

Steps

1.Go to Algorithm Settings, click All Features, and find Algorithm ROI.

2.Click Draw to draw ROI in the live view window.

3.(Optional) Repeat the above step to draw multiple ROIs according to actual demands.

The client software only parse codes in the ROI you drawn.

4. (Optional) Set other ROI parameters according to actual demands.

- ROI Index: It indicates different ROIs and ranges from 0 to 149 corresponds 1 to 150 ROIs.
- Algo Region Left X: It refers to the X coordinate of the upper left corner in algorithm ROI.
- Algo Region Left Y: It refers to the Y coordinate of the upper left corner in algorithm ROI.
- Algo Region Width: It refers to the width in algorithm ROI.
- Algo Region Height: It refers to the height in algorithm ROI.

5.(Optional) Click Execute in Restore Max. Algorithm ROI to restore the ROI to the full screen.

6.(Optional) Click Execute in Clear All ROI to delete all ROIs.

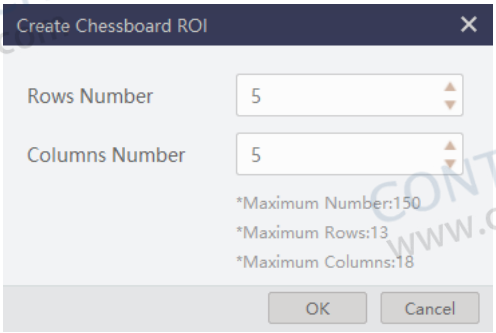
Code Algorithm Settings

Draw ROI via Chessboard

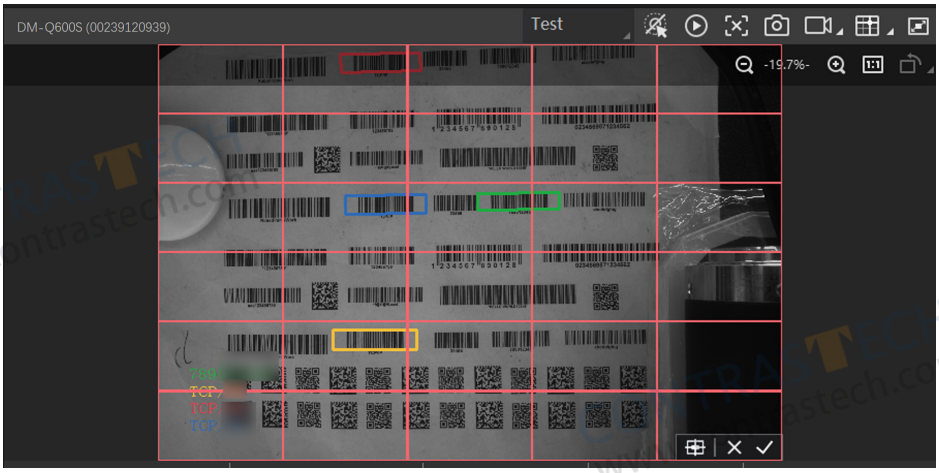
Steps

1.Go to Algorithm Settings, click All Features, and find Algorithm ROI.

2.Click Execute in Chessboard ROI, set parameters according to actual demands, and click OK after setting.



3. Click ✓ after creating ROI, and the red frame becomes green as shown below.



4. (Optional) Click ⊞ to restore the ROI to the full screen, and click ✕ to clean all configured ROIs.

5. Repeat other optional steps mentioned in drawing single group of ROI.

ⓘ	The figures above are for reference only, and refer to the actual conditions.

Code Algorithm Settings

Set Algorithm Parameter

In Algorithm Parameter, select 1DCode, 2DCode or Stacked Code as Arithmetic Type, and then you can set its corresponding parameters.

i	● You should have selected at least one type of 1D code, 2D code or stacked code. ● For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.

Set 1D Code

Timeout Value

Timeout value refers to the maximum running time of algorithm, and its unit is ms. The code reader will stop parsing the images and return results if the time is exceeded the waiting time configured.

Code Color

It defines the readable code color. White Code On Black Wall means that the client software can recognize the white code with black background. Black Code On White Wall means that the client software can recognize the black code with white background.

Code 39 Check

Enable this parameter if Code 39 uses the parity bit.

i	You need to select Code 39 in Add Barcode.

ITF 25 Check

Enable this parameter if ITF 25 uses the parity bit.

i	You need to select ITF 25 in Add Barcode.

1D Code Quality Enable

If it is enabled, the client software will judge the quality of 1D code and output overall grade. Currently, this parameter is only applicable to Code 39 and Code 128.

Code Score Enable

If it is enabled, the client software will evaluate the code reading environment for 1D code and output code score.

Set 2D Code

Timeout Value

Timeout value refers to the maximum running time of algorithm, and its unit is ms. The code reader will stop parsing the images and return results if the time is exceeded the waiting time configured.

Algorithm Running Mode

It is used to be set the algorithm operating mode. It includes High Speed, High Performance, and Balance. High Speed focuses on recognition speed, and the algorithm can recognize the code rapidly, while High Performance refers to the algorithm can recognize the code that has distortion, spot or white gap, but its recognition speed is slow. Balance refers to the algorithm makes a balance between speed and performance.

2D Code Max. Size

It refers to the max. recognizable code width. The 2D code will not be recognized if its width exceeds the configured value.

Mirror Mode

It is useful when the recognized image is a mirror one, mirroring in X coordinate. 3 modes are available: Adaptive, Mirror, and Non Mirror.

Downsampling Level

It refers to the pixel sample size that the code reader takes. Increasing this parameter will improve the code reading efficiency at the expense of code recognition rate.

i	Increasing this parameter value will improve the code reading efficiency at the cost of code recognition rate.

Code Algorithm Settings

Code Color

It defines the readable code color. Adaptive means that the client software can recognize both the black code with white background, and the white code with black background. White Code On Black Wall means that the client software can recognize the white code with black background. Black Code On White Wall means that the client software can recognize the black code with white background.

For QR code, the code color is determined by the color of the concentric square on it. indicates that the code color is white, and indicates that the code color is black.

For DM code, the code color is determined by the color of its "L" shaped sides. White "L" shaped sides indicate that the code color is white, and black "L" shaped sides indicate that the code color is black.

Discrete Flag

Continuous stands for the minimum units in the "L" shaped sides of the DM code are continuous, or the minimum units in the concentric square like or in the QR code are continuous. Usually the continuous code uses squares as the minimum units. Discrete stands for the minimum units in the "L" shaped sides of the DM code are discrete, or the minimum units in the concentric square like or in the QR code are discrete. Usually the discrete code uses dots as the minimum units. Adaptive stands for the device can recognize both continuous code and the discrete code.

QR Distortion Correction

If the QR code or DM code is distorted, you can enable this parameter to improve code recognition rate.

If you enable this parameter, the more time will be consumed to recognize the codes in the image.

DM Code Shape

It defines the recognizable code shape. Square stands for square mode: If the 2D code is square shaped, it can be recognized by the device. Rectangle stands for rectangle mode: If the 2D code is rectangle shaped, it can be recognized by the device. Adaptive stands for compatible mode: The device can recognize 2D codes of both the above-mentioned two shapes.

DM Code Type

It includes All, ECC140, and ECC200.

2D Code Quality Enable

Refer to section Set 2D Code Quality Evaluation for details.

Code Score Enable

If it is enabled, the device will evaluate code quality and display overall grade and code score in history record area of the client software. The higher the score, and the better the code quality.

Accurate Timeout Enable

If it is enabled, the accuracy of algorithm timeout will improve.

Set Stacked Code

Code Score Enable

If it is enabled, the client software will evaluate the code reading environment for stacked code and output code score.

Code Algorithm Settings

Set Code Quality Evaluation

The code quality evaluation function judges the quality of codes and outputs overall grade.

Currently, only 1D code and 2D code support code quality evaluation.

- The function of code quality evaluation may differ by device models.
- In test operation mode, this function is enabled by default. In normal mode, you need to enable it manually.

Set 1D Code Quality Evaluation

The 1D quality evaluation function uses the ISO15416 standard to judges the quality of codes and outputs overall grade. Currently, this function is only applicable to Code 39 and Code 128.

Steps

1. Go to Algorithm Control → Algorithm Parameter, and select 1D Code as Arithmetic Type.
2. Enable 1D Code Quality Evaluation.
3. Enable different quality evaluation standards according to actual demands.

Parameter	Description
Decodability	It evaluates whether the code has enough basic information to be decoded.
Symbol Contrast	It evaluates the difference between the max. brightness value and the min. brightness value of the code area.
Modulation	It evaluates the degree of change in terms of brightness.
Edge Determination	It evaluates how well the number of edges read by the code matches the configured number of edges.
Minimum Reflectance	It evaluates the ratio of the min. brightness value to the max. brightness value.
Minimum Edge Contrast	It evaluates the min. value of the reflectivity difference of the strip connecting the spaces.
Decode Enable	It evaluates whether the code recognition is successful or not.
Defects	It evaluates codes or spaces for defects or dirts.
Quiet Zone	It evaluates the quite zone width of the code meets the specification.

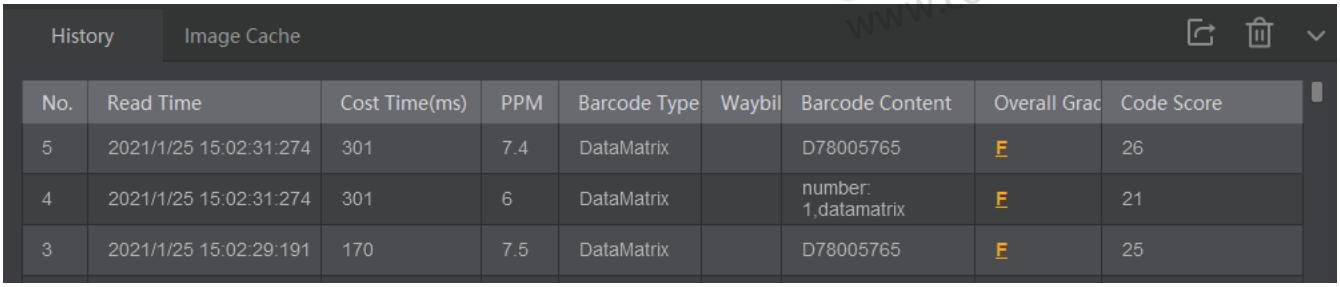
4. Set the evaluation value for A/B/C/D grade according to actual demands.

- If the actual code reading value of the device is greater than the grade A evaluation value,and then the evaluation standard is grade A. If the actual code reading value is between grade A and grade B, and then the evaluation standard is grade B. If the actual code reading value is between grade B and grade C, and then the evaluation standard is grade C. If the actual code reading value is between grade C and grade D, and then the evaluation standard is grade D. If the actual code reading value is lower than the D grade, and then the evaluation standard is F grade.
- The client software selects the worst grade among all the evaluation standards as the grade judgment result of the code. The A grade means that the code quality is best, and F grade means that code quality is worst.

5. Enable Aperture Enable and enter Aperture according to the smallest size of codes.
6. (Optional) Set Quality 1D Max Num to configure the amount of code to be evaluated. If the actual amount of code exceeds the configured, the later codes will not be evaluated.
7. (Optional) Go to Algorithm Control → Rating Standard 1D Enable, set enable Rating Standard 1D Enable, and select 1D Rating Standard.

For example, if 1D Rating Standard is C, and then the client software will output codes with A/B/C grade and codes with D/F will be filtered.

7. Click  to start acquisition, and the client software will display the overall code quality in the history record area.



Code Algorithm Settings

Set 2D Code Quality Evaluation

The 2D quality evaluation function uses the ISO15415 standard to judges the quality of codes and outputs overall grade.

- The specific parameters may differ by device models and firmware versions.
- Make sure that the device's operation mode is normal and 2D codes added.

Steps

1. Go to Algorithm Control → Algorithm Parameter, and select 2D Code as Arithmetic Type.
2. Enable 2D Code Quality Evaluation.
3. Set Iso Edition, including Iso15415 and Iso29158
   - Iso15415 is applicable to the quality evaluation for label 2-dimensional codes.
   - Iso29158 is applicable to the quality evaluation for DPM format 2-dimensional codes.
4. Refer to step 5 to step 7 in Set 1D Code Quality Evaluation to set other parameters.

Code Algorithm Settings

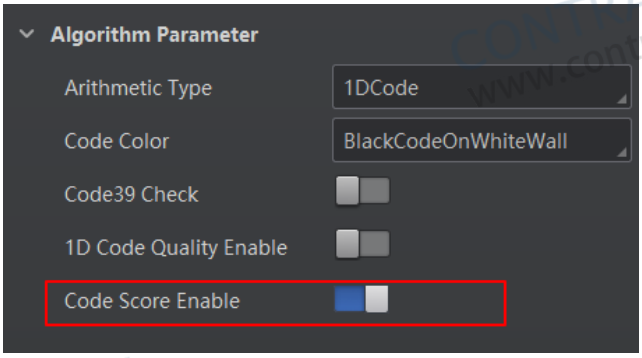
Set Code Score

The code score function evaluates the code-reading environment for codes and outputs code score.

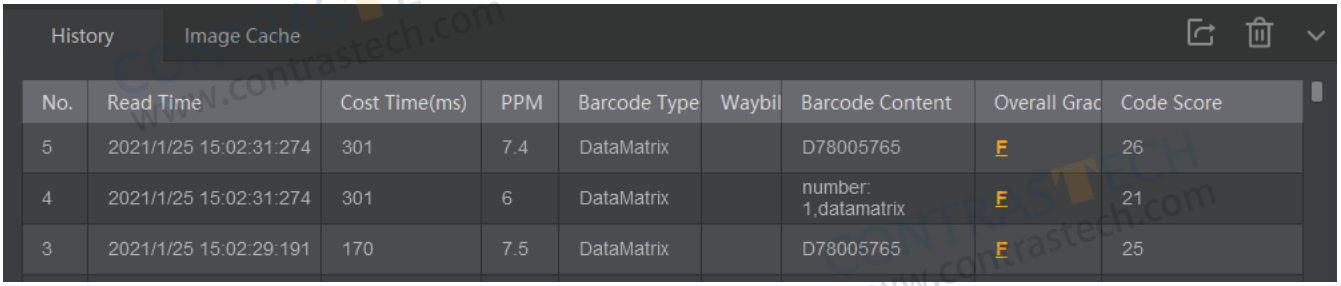
i	● The function of code score may differ by device models. ● In test mode, this function is enabled by default. In normal mode, you need to enable it manually. ● The code score is determined by two factors including image quality and print quality of codes. The range of code score is between 0 and 100, and the higher the score, and easier the code can be read.

Steps

1. Go to Algorithm Settings, and enable Code Score Enable.



2. Click to start acquisition, and the client software will display specific code score in the history record area.



No.	Read Time	Cost Time(ms)	PPM	Barcode Type	Waybil	Barcode Content	Overall Grac	Code Score
5	2021/1/25 15:02:31:274	301	7.4	DataMatrix		D78005765	F	26
4	2021/1/25 15:02:31:274	301	6	DataMatrix		number: 1,datamatrix	F	21
3	2021/1/25 15:02:29:191	170	7.5	DataMatrix		D78005765	F	25

3. (Optional) Go to Image Settings, and adjust parameters like exposure time, gain, Gamma, light source, etc. if the code score is low.

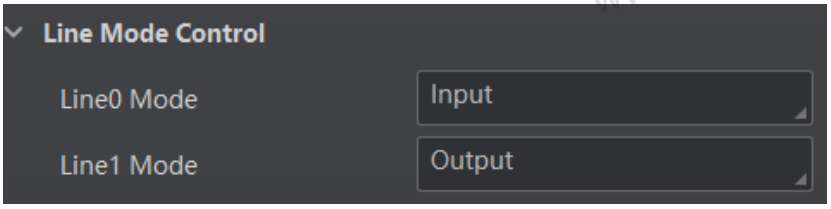
i	If the code score is still low after adjusting, and the code may have poor printing quality.

Line Mode Settings

Line mode settings allow you to customize the specific line as input or output according to actual demands.

Go to I/O Control Settings → Line Mode Control, and set Input or Output according to actual demands.

i	● Only the vari focal device supports this function. ● If the device has 4 bi-directional I/Os, and Line 0 and Line 1 are input, and Line 2 and Line 3 are output by default. ● Line 0 should be same with Line 1 as input or output, and Line 2 should be same with Line 3 as input or output.



Signal Input Settings

In the signal input module, you can set the trigger related parameters. You can enable trigger mode to let the acquisition of image data occur only when the trigger source is generated.

Set Trigger Mode

The device has 2 types of trigger mode: Internal trigger mode and external trigger mode.

Internal Trigger Mode

In this mode, the device acquires images via its internal signals.

External Trigger Mode

In this mode, the device acquires images via external signals like software signal and hardware signal. The trigger source of external trigger mode includes software, physical lines, counter, TCP, UDP, and serial.

	● The USB device supports two trigger sources (USB stat and software) only, and the network device supports all trigger sources apart from USB stat. ● For specific trigger sources, refer to the actual device you got. ● The device trigger via pressing trigger button is supported by default. You can go to Feature Tree → Trigger and IO Control → TRIG Button Enable to disable it.

Enable Internal Trigger Mode

In the internal trigger mode, the device acquires images via its internal signals. You have 2 methods to enable the internal trigger mode:

- Click I/O Control Settings → Input → Trigger Mode, and select Off as Trigger Mode.
- In the live view page, click  to enable the internal trigger mode.

Enable External Trigger Mode

In the external trigger mode, the device acquires images via external signals like software signal and hardware signal. You have 2 methods to enable the external trigger mode:

- Click I/O Control Settings → Input → Trigger Mode, and select On as Trigger Mode.
- In the live view page, click  to enable the external trigger mode.

Set and Execute Software Trigger Mode

In software trigger, the software sends trigger signal to the device via I/O interface to acquire images.

Steps

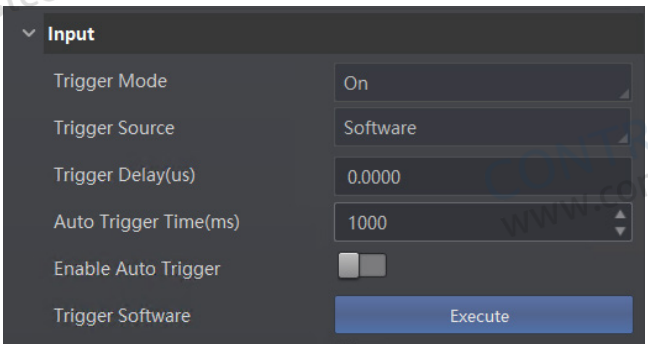
1.Click I/O Control Settings → Input → Trigger Mode.

2.Select On as Trigger Mode.

3.Select Software as Trigger Source.

4.Click Execute in Trigger Source to send trigger commands.

You can also enter Auto Trigger Time, and then enable Enable Auto Trigger to let the client software automatically send trigger signal to device according to the interval you set.



Signal Input Settings

Set and Execute Hardware Trigger Mode

Steps

1.Click I/O Control Settings → Input → Trigger Mode.

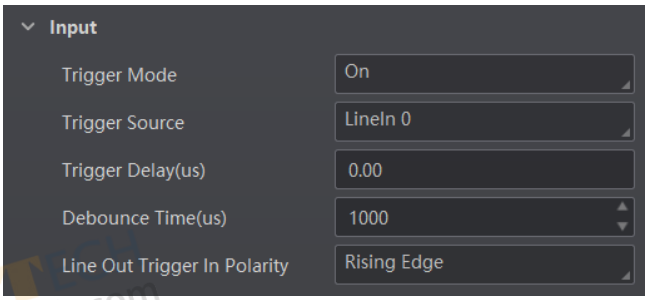
2.Select On as Trigger Mode.

3.Select the specific line as Trigger Source according to actual demands.

i	For the vari focal device, you can select customized lines as Trigger Source. Refer to section Line Mode Settings for specific settings.

4.Set Debounce Time and Line Out Trigger In Polarity according to actual demands.

i	● When selecting Rising Edge or Falling Edge as Line Out Trigger In Polarity, you can set Trigger Delay. ● When selecting Level High or Level Low as Line Out Trigger In Polarity, you can set Start Delay Time and End Delay Time according to actual demands.



Set and Execute Counter Trigger Mode

Counter specifies that the trigger source will be generated after the set number of valid signals appears. For example, if you set the Count Number to 3, the trigger source will be generated after 3 signals appear.

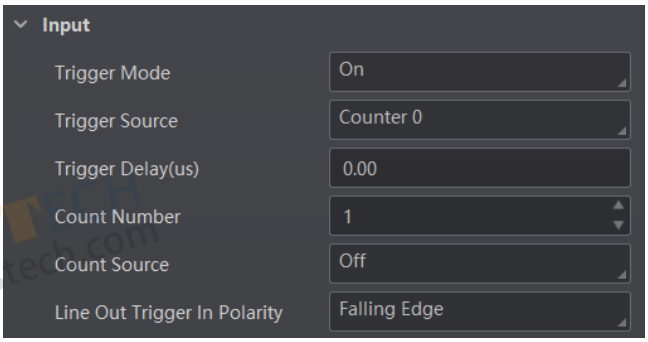
Steps

1.Click I/O Control Settings → Input → Trigger Mode.

2.Select On as Trigger Mode.

3.Select Counter 0 as Trigger Source.

4.Set Trigger Delay, Count Number, Count Source and Line Out Trigger In Polarity according to actual demands.

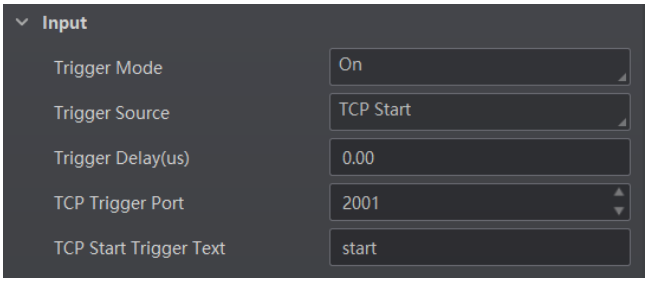


Set and Execute TCP Trigger Mode

TCP start specifies the TCP server as the source for the trigger signal. When the server receives the specified string text, the trigger signal will be outputted.

Click I/O Control Settings → Input → Trigger Mode, select On as Trigger Mode and select TCP Start as Trigger Source.

Set Trigger Delay, Tcp Trigger Port, and Tcp Start Trigger Text according to actual demands.



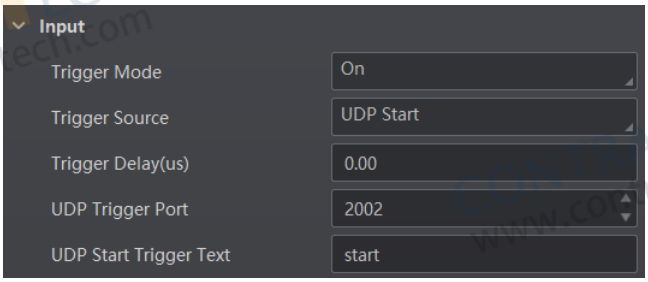
Signal Input Settings

Set and Execute UDP Trigger Mode

UDP start specifies the UDP server as the source for the trigger signal. When the server receives the specified string text, the trigger signal will be outputted.

Click I/O Control Settings → Input → Trigger Mode, select On as Trigger Mode and select UDP Start as Trigger Source.

Set Trigger Delay, Udp Trigger Port, and Udp Start Trigger Text according to actual demands.

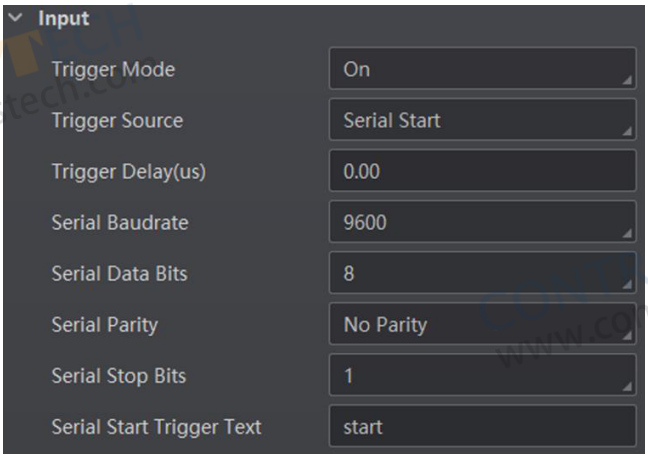


Set and Execute Serial Port Trigger Mode

Serial start specifies the serial port as the source for the trigger signal. When the serial port receives the specified string text, the trigger signal will be outputted.

Click I/O Control Settings → Input → Trigger Mode, select On as Trigger Mode and select Serial Start as Trigger Source.

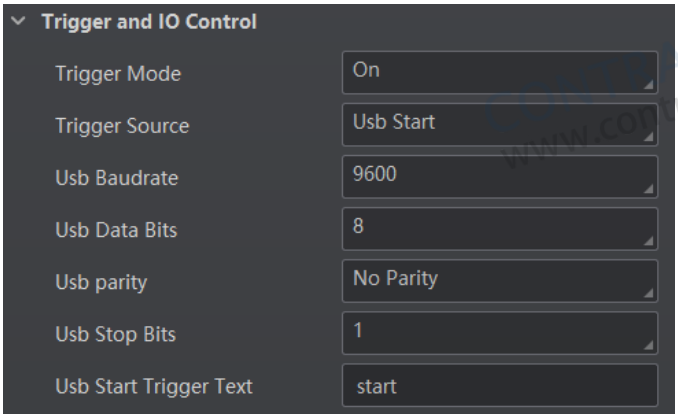
Set Trigger Delay, Serial Baudrate, Serial Data Bits, Serial Parity, Serial Stop Bits, and Serial Start Trigger Text according to actual demands.



Set and Execute USB Trigger Mode

If USB Start is selected as Trigger Source, you need to set USB Baudrate, USB Data Bits, USB Parity, USB Stop Bits, and USB Start Trigger Text according to actual demands.

i	You need to go to Feature Tree, find Trigger IO Control, and set USB Start as Trigger Source.



Signal Input Settings

Set and Execute Self Trigger Mode

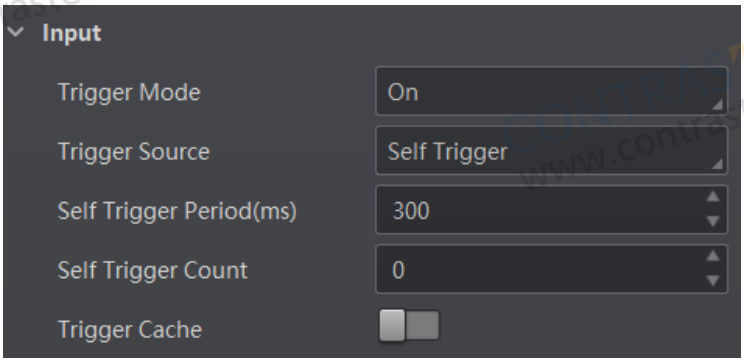
Self trigger mode allows you to trigger the device according to the trigger period you configured.

Steps

1.Click I/O Control Settings → Input → Trigger Mode.

2.Select On as Trigger Mode.

3.Select Self Trigger as Trigger Source, and set Self Trigger Period and Self Trigger Count.



i	● If the self-trigger count is set to 0, and it means that it can be triggered indefinitely until the execution of self-trigger stops. ● The self-trigger time shall be set to be greater than the reciprocal of the actual frame rate.

Set and Execute Response Tigger

Steps

1.Click I/O Control Settings → Input → Trigger Mode.

2.Select On as Trigger Mode.

3.Select Response Trigger as Trigger Source, and set Trigger Sensitivity accordingly.

Signal Input Settings

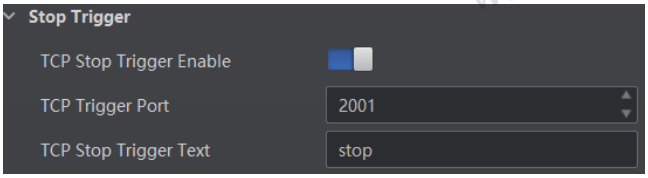
Stop Trigger

The device supports stopping trigger via TCP, UDP, I/O, and serial port. You can also set code reading timeout duration or max. barcode amount to be read to stop trigger. After stopping trigger is completed, the device cannot make response to trigger again.

> ● The USB device supports stopping trigger via USB only, and the network device supports all stop trigger methods apart from USB method.
> ● For specific stop trigger methods, refer to the actual device you got.

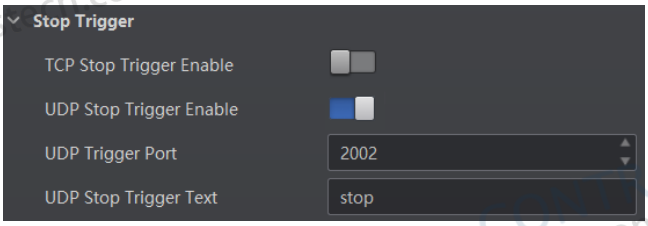
Stop Trigger via TCP

When the TCP server receives the specified string text, the trigger will be stopped. The client software sends stop trigger command to the device after Tcp Stop Trigger Enable is enabled. You should enter Tcp Trigger Port and Tcp Stop Trigger Text according to actual demands. The range of Tcp Trigger Port is from 1025 to 65535, and the default port is 2001.



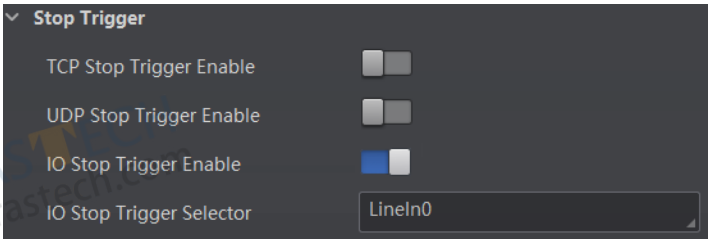
Stop Trigger via UDP

When the UDP server receives the specified string text, the trigger will be stopped. The client software sends stop trigger command to the device after Udp Stop Trigger Enable is enabled. You should enter Udp Trigger Port and Udp Stop Trigger Text according to actual demands. The range of Udp Trigger Port is from 1025 to 65535, and the default port is 2002.

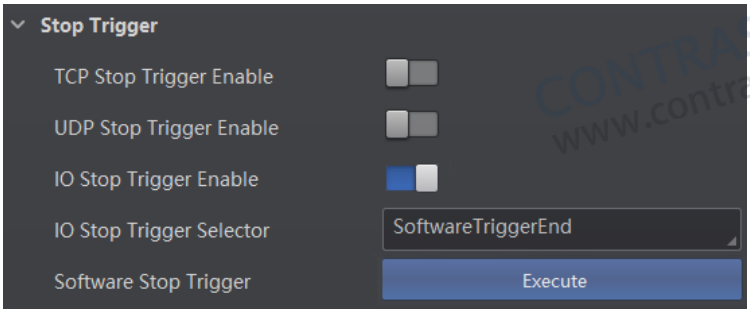


Stop Trigger via IO

You can stop a trigger via IO: Enabling IO Stop Trigger Enable first, select specific sources from IO Stop Trigger Selector, and then set the trigger polarity as the condition to stop trigger.



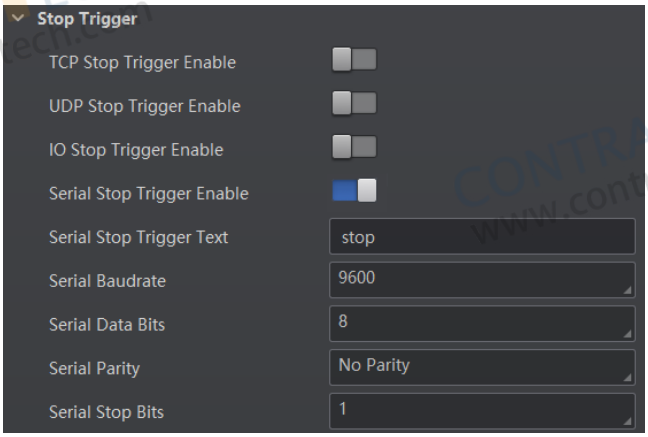
When selecting SoftwareTriggerEnd as IO Stop Trigger Selector, you can click Execute in Software Stop Trigger to stop current trigger.



Signal Input Settings

Stop Trigger via Serial

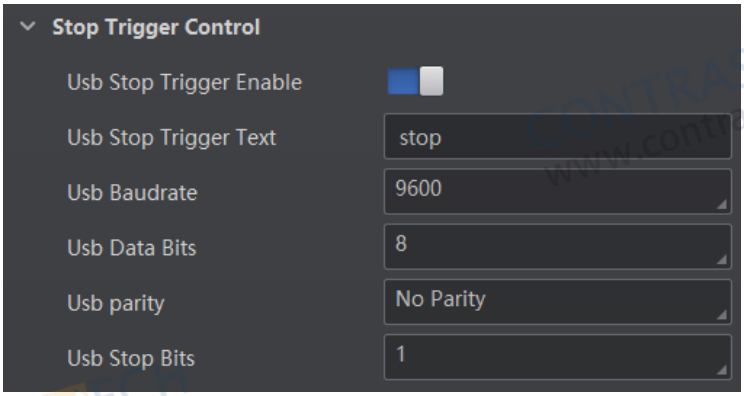
When the specified serial port receives the specified string text, the trigger will be stopped. The client software sends stop trigger command to the device after Serial Stop Trigger Enable is enabled.
You should enter Serial Stop Trigger Text, Serial Baudrate, Serial Data Bits, Serial parity, and Serial Stop Bits according to actual demands. The Serial Baudrate includes 4800, 9600, 19200, 38400, 57600 and 115200, and Serial Data Bits is 8.



Stop Trigger via USB

The USB stop trigger function means that the device receives USB commands from the external device to stop image acquisition. At this time, the device acts as a USB server to receive commands, and the external device communicating with it acts as a USB client to send commands.

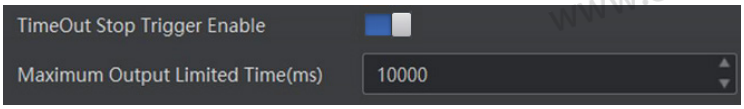
Go to Feature Tree, find Stop Trigger Control, enable USB Stop Trigger Enable, set USB Stop Trigger Text, USB Baudrate, USB Data Bits, USB Parity, and USB Stop Bits according to actual demands.



Stop Trigger via Timeout Duration

i	The range of Maximum Output Limited Time is 0 to 10000 ms.

When the trigger time reaches the specified maximum value (in ms), the trigger will be stopped. You can enable TimeOut Stop Trigger Enable, and set Maximum Output Limited Time according to actual demands.

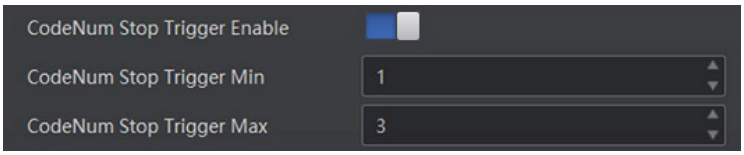


Signal Input Settings

Stop Trigger via Code Number

This function means that the code quantity outputted by the device is restricted to the settings you configured here. You can enable CodeNum Stop Trigger Enable, and set CodeNum Stop Trigger Min and CodeNum Stop Trigger Max according to actual demands.

- If the outputted code quantity is smaller than configured CodeNum Stop Trigger Min, and the device will output codes continuously.
- If the outputted code quantity is smaller than configured CodeNum Stop Trigger Max, and the device will stop outputting codes.
- If the outputted code quantity is between configured CodeNum Stop Trigger Min and CodeNum Stop Trigger Max, and the device will read and output codes according to trigger signals.
- If CodeNum Stop Trigger Min is same with CodeNum Stop Trigger Max, and the device will stop outputting codes when the number of outputted codes reaches the configured number.

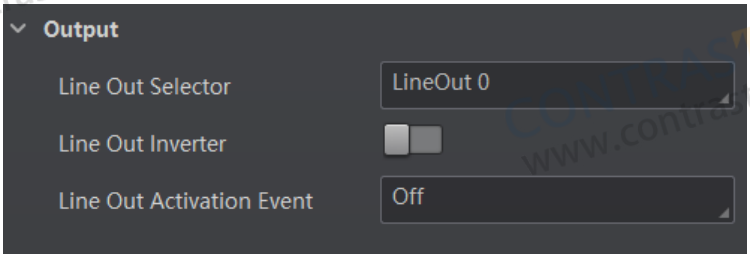


Signal Output Settings

Select Output Signal

The device's output signal can control external devices like PLC, flashing light, etc. Click I/O Control Settings → Output → Line Out Selector to select output signal.

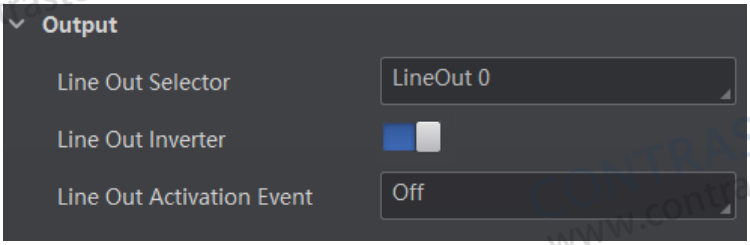
	● For the vari focal device, you can select customized lines as output signals. Refer to section Line Mode Settings for details. ● The specific output signals may differ by device models.



Enable Line Inverter

The level inverter function allows the device to invert the electrical signal level of an I/O line, and meets requirements of different devices for high or low electrical signal level. You can go to I/O Control Settings → Output → Line Out Inverter to enable it.

	The Line Out Inverter function is disabled by default.



Set Event Source

The device supports outputting different trigger signals according to the event source you select. Click I/O Control Settings → Output → Line Out Activation Event to select event source.
The device supports following event sources, including Off, NoCodeRead, ReadSuccess, Compare Success, and Compare Fail.

	● Off refers to no event source. ● The event source parameters may differ by device model.

No Code Read

If no code read by the device, the output signal will be triggered.

Read Success

If the code is read by the device, the output signal will be triggered.

Compare Success

If data comparison is successful, the output signal will be triggered.

Compare Fail

If data comparison is failed, the output signal will be triggered.

	You need to set different parameters when selecting these event sources.

Signal Output Settings

Select No Code Read

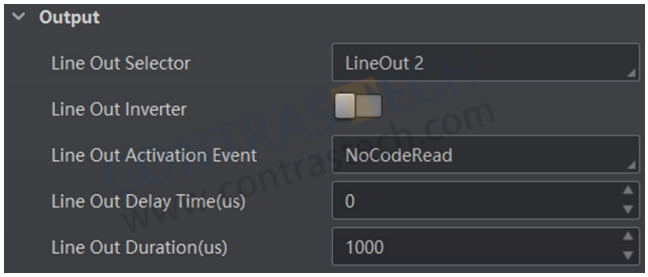
If you select No Code Read as Line Out Activation Event, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.



Select Read Success

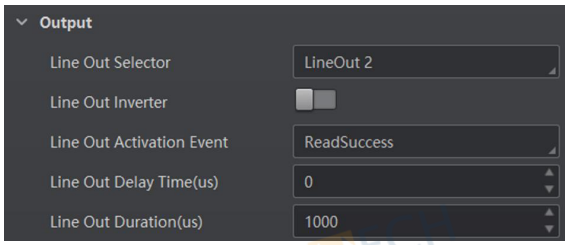
If you select Read Success as Line Out Activation Event, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the duration for outputting the signal.



Select Compare Success

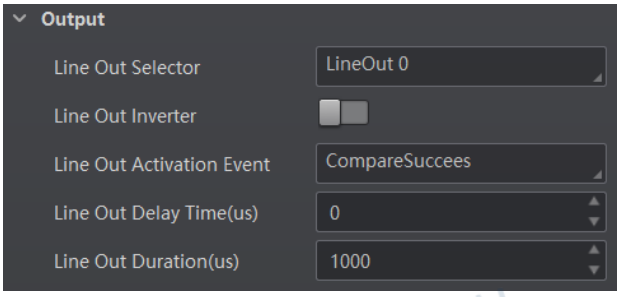
If you select Compare Success as Line Out Activation Event, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the duration for outputting the signal.



Select Compare Fail

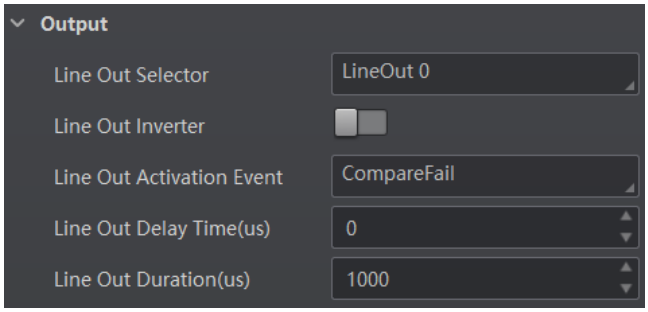
If you select Compare Fail as Line Out Activation Event, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.



Signal Output Settings

Select Command Control IO

If you select Command Control IO as Line Out Activation Event, and you do not need to set any parameters.

Control Start Str

It sets the start string of command control.

Control Stop Str

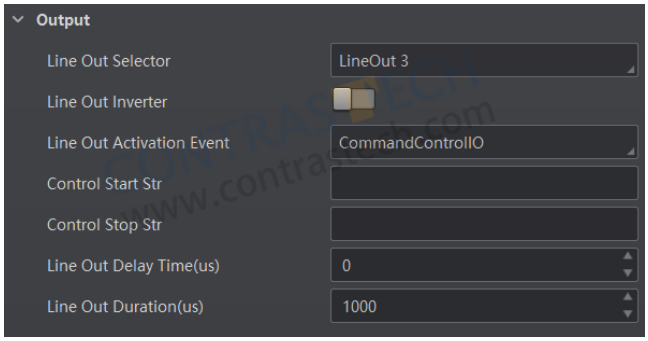
It sets the stop string of command control.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.



Set Buzzer

- Only fixed focus buzzer-type device supports buzzer function.
- Make sure that the device is the Normal mode before using the buzzer function.

The buzzer is used to indicate the device's operation status, and you can set the buzzer function according to actual demands.

Steps

1.Right click the device in Device Connection, and click Feature Tree.

2.Go to Trigger and IO Control → Buzzer Enable, and enable Buzzer Enable.

After enabling Buzzer Enable, the buzzer beeps three times continuously when the device is powered on, and beeps one time when the device reads codes successfully.

3. Set Buzzer Duration (ms) and Buzzer Frequency (hz) according to actual demands.

Communication Settings

The communication protocol is used to transmit and output code reading result and image. The communication protocol is related to the device modes. With various device modes, the device supports different communication protocols and corresponding parameters. When the camera mode is Test or Raw, the device only supports SmartSDK protocol and no parameter settings are required. While in Normal mode, the device supports SmartSDK, TCP Client, Serial, FTP, TCP Server, MELSEC/SLMP, ModBus, UDP, Fins, and USB communication protocols, and you need to set corresponding parameters.

i	● The USB device supports two communication protocols (USB and SmartSDK) only, and the network device supports all communication protocols apart from USB communication protocol. ● The supported communication protocols may differ by device models. ● The specific parameters of communication protocols may differ by device models.

Smart SDK

If Smart SDK is selected as the Communication Protocols, you can enable SmartSdk Protocol to let the device output data via Smart SDK.

SmartSDK Protocol

If enabled, the device will output data via SmarkSDK.

Encode JPG Flag

If enabled, the device will compress the image data.

Quantity of Jpg

You can enter a number (range: 50 to 99) to determine the compression quality

TCP Client

If select TCP Client as the Communication Protocols, you need to set following parameters.

TCP Protocol

If enabled, the device will output data via the TCP server.

TCP Dst Addr

Enter the IP address of the server that receives data outputted by the code reader.

TCP Dst Port

Enter the port No. of the server that receives data outputted by the code reader.

Serial

If you select Serial as the communication protocol, you can configure the following parameters:

Serial Protocol

If enabled, the code reader will output data via serial port.

Serial Baudrate

The baud rate of the serial port of the PC that receives data.

Serial Data Bits

Data bits of the serial port of the PC that receives data.

i	The hexadecimal trigger is supported only when Serial Data Bits is 8.

Serial Parity

Parity bits of the serial port of the PC that receives data.

Serial Stop Bits

Stop bits of the serial port of the PC that receives data.

Communication Settings

FTP

If you select FTP as the communication protocol, you can configure the following parameters.

FTP Protocol

If enabled, the code reader will output data via FTP server.

FTP Host Addr

IP address of the FTP host.

FTP Host Port

Port No. of the FTP host.

FTP User Name

User name of the FTP.

FTP User PWD

Password of the FTP.

TCP Server

If you select TCP Server as the communication protocol, you can configure the following parameters:

TCP Server Enable

If enabled, the code reader will output data via TCP server.

TCP Server Port

The port No. of the TCP server that receives data outputted by code reader.

MELSEC or SLMP

If you select Melsec/SLMP as the communication protocol, you can configure the following parameters:

MELSEC Protocol Enable

If enabled, the code reader will output data via MELSEC protocol.

MELSEC Server IP

IP address of the Programmable Logic Controller (PLC) connected to the code reader.

MELSEC Server Port

Port number of the Programmable Logic Controller (PLC) connected to the code reader.

MELSEC Frame Type

It sets frame type of MELSEC.

MELSEC Network Number

It sets the network number of MELSEC.

MELSEC Node Number

It sets the node number of MELSEC.

MELSEC Processor Number

It sets processor number.

MELSEC Control Poll Interval

Requested time between successive polls of the control block from the PLC.

MELSEC Control Space

It sets storage space of the control area.

MELSEC Control Offset

It sets the start offset address of the control area.

MELSEC Control Size (Word)

It sets the size of the control area.

MELSEC Status Space

It sets storage space of the control area.

MELSEC Control Offset

It sets the start offset address of the control area.

Communication Settings

MELSEC Result Size (World)

It sets the size of the result area.

MELSEC Result Byte Swap

If it is enabled, the client software will swap MELSEC results.

MELSEC Result Timeout

It sets the MELSEC result timeout, and the unit is s.

■ ModBus

If you select Modbus as the communication protocol, you can configure the following parameters:

ModBus Enable

If enabled, the code reader will output data via ModBus protocol.

ModBus Mode

It includes server and client, and is server by default.

ModBus Control Address Space

It is holding_register by default.

ModBus Control Offset

It refers to the address offset, and is 0 by default.

ModBus Control Size

It is 1 by default.

ModBus Status Space

It is holding_register by default.

ModBus Status Offset

It is 1 by default.

ModBus Status Size

It is 1 by default.

ModBus Result Space

It is holding_register by default.

ModBus Result Offset

It is 2 by default.

ModBus Result Size

It sets max. length of ModBus result. It is 100 by default.

ModBus Result Byte Swap

If it is enabled, the client software will swap ModBus results.

ModBus Result Timeout (s)

It sets the ModBus result timeout, and the unit is s.

■ UDP

If you select UDP as the communication protocol, you can configure the following parameters:

UDP Protocol Enable

If enabled, the code reader will output data via User Datagram Protocol (UDP).

UDP Dst IP

The IP address of the PC receiving the output data.

UDP Dst Port

The port of the PC receiving the output data.

Communication Settings

Fins

If you select Fins as the communication protocol, you can configure the following parameters:

Fins Enable

If enabled, the code reader will output data via TCP/UDP FIN.

Fins Server IP

It sets the server IP of Fins.

Fins Server Port

It is 9600 by default.

Fins Control Poll Interval (ms)

It is 9600 by default.

Fins Control Space

It is 9600 by default.

Fins Control Offset

It is 9600 by default.

Fins Control Size (Word)

It is 9600 by default.

Fins Status Space

It is 9600 by default.

Fins Status Offset

It is 9600 by default.

Fins Status Size (Word)

It sets the size of the status area.

Fins Result Space

It sets storage space of the result area.

Fins Result Offset

It sets the start offset address of the result area.

Fins Result Size (Word)

It sets the size of the result area.

Fins Result Byte Swap

If it is enabled, the client software will swap Fins results.

Fins Result Timeout (s)

It sets the Fins result timeout, and the unit is s.

USB

If you select USB as the communication protocol, you can configure the following parameters:

USB Enable

If enabled, the code reader will output data via USB.

USB Output

It sets the USB output mode, including CDC and HID.

USB Baudrate

It is 9600 by default.

USB Data Bits

It is 8 by default.

USB Parity

It is No Parity by default.

USB Stop Bits

It is 1 by default.

Data Processing Settings

In Data Processing, you can set filter rules for reading codes and other data processing related parameters.

i	The specific parameters may differ by device models and firmware versions.

Set Filter Rule

You can set rules via Filter Rule to filter unwanted codes to improve the reading efficiency.

Normal Filter Mode

If the device's operation mode is normal, trigger mode is on, filter mode is normal, and you can set following parameters according to actual demands:

Instant Output Mode Enable

If enabled, the device will output barcode data immediately once a code is read. If not enabled, the barcode data will be outputted after the device trigger process ends.

i	The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.

Min. Output Time(ms)

Define the minimum time duration (unit: ms) for data output. The duration starts from trigger time. Note: The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.

i	The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.

Min. Code Length

If the length of a barcode is shorter (in terms of the number of characters) than the configured value, the device will NOT parse the barcode.
For example, if you set the value to 6, the device will not parse the barcodes which contain fewer than 6 characters.

i	The valid value of the parameter is from 1 to 256.

Max. Code Length

If the length of a barcode is longer (in terms of the number of characters) than the configured value, the device will NOT parse the barcode.
For example, if you set the value to 9, the device will not parse the barcodes which contain more than 9 characters.

i	The valid value of the parameter is from 1 to 256.

Numeral Filter

If enabled, the device will only parse and read the numeral contents of the barcodes, and the non-numeral contents will be filtered out.

Begin with Specific Character for Result

enabled, the device will only read the barcodes which begin with a specific character string.

Begins with

Enter the character string.

Include Specific Character in Barcode

If enabled, the device will only read the barcodes which include a specific character string.

Character

Enter the character string.

Exclude Specific Character in Barcode

If enabled, the device will only read the barcodes without a specific character string.

Remove Duplicate By ROI

If it is enabled, the device will filter information based on drawn ROIs.

Read Times Threshold

If the reading results of a barcode is same for the configured times, the barcode will be regarded as valid and its data will be outputted. Or the barcode will be regarded as invalid and its data will not be outputted.

De-duplication Enable By Trigger

If it is enabled, the repeated code information will be filtered within specific trigger times. You can set trigger times in De-duplication Windows Size, and its default value is 1.

Data Processing Settings

De-duplication By ROI

If it is enabled, the device will filter information based on drawn ROIs.

Code Start Offset Num

It cuts the specific length of code contents from starting, and the remaining part will be outputted.

Code End Offset Num

It cuts the specific length of code contents from ending, and the remaining part will be outputted.

Regular Expression Filter Mode

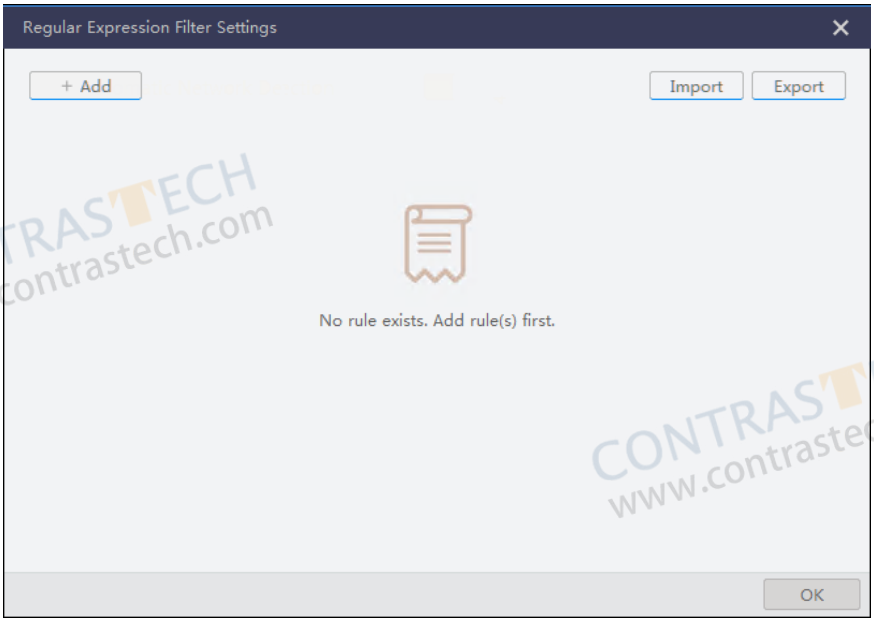
The device supports filtering codes via the regular expression.

Steps

1.Select Regular Expression as the Filter Mode, and click Set in Regular Expression Filter to enter regular expression filter settings window.

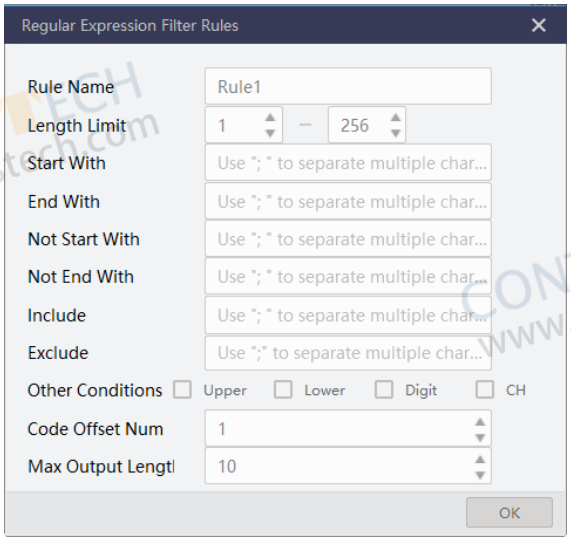
2.Import local files or add customized filter rules to set the regular expression.

- Import local files: Click Import to import local .xml files, and click OK to finish.



Data Processing Settings

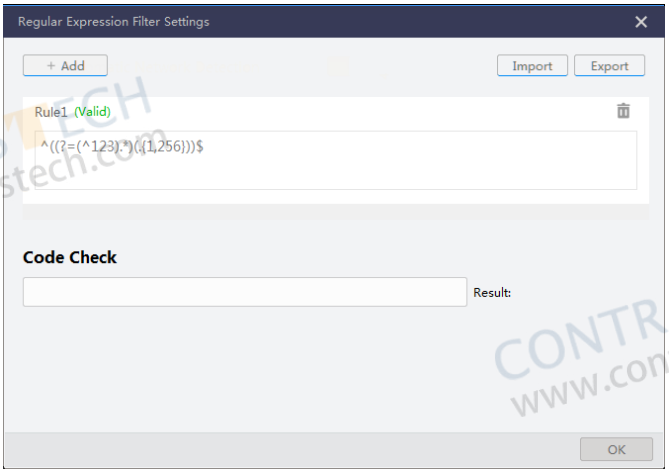
● Add customized filter rule: Click Add and set related parameters in the popped-up window, and click OK after configuring parameters.



Parameter Name	Description
Rule Name	The default rule name is Rule 1, and you can edit it according to actual demands.
Length Limit	It sets the length range of the code, and its upper limit is 256.
Start With	It sets the specific start with code. You can use semicolon to separate if there are multiple characters.
End With	It sets the specific end with code. You can use semicolon to separate if there are multiple characters.
Not Start With	It excludes the specific start with code. You can use semicolon to separate if there are multiple characters.
Not End With	It excludes the specific end with code. You can use semicolon to separate if there are multiple characters.
Included	It sets the code with specific content. You can use semicolon to separate if there are multiple characters.
Excluded	It sets the code without specific content. You can use semicolon to separate if there are multiple characters.
Other Conditions	You can select letter and digit.

If multiple characters are used, code meeting one of these characters is valid.

3. After setting filter rule, enter the code in Code Check to check if the filter rule is successful.



If the filter rule you configured is correct, the result is valid. Otherwise, it is invalid.

4. (Optional) Click to delete unwanted filter rules.

5. (Optional) Click Export to export configured filter rules to local PC.

The filter rule parameters of the regular expression may differ by device models and firmware versions.

Data Processing Settings

Data Processing Settings

You can configure the contents contained in the output barcode information.

i	● The actual parameters displayed may vary with different communication protocols. For details about communication settings, refer to Communication Settings. ● The device with USB data interface supports SmartSDK and USB only, and device with fast Ethernet supports all communication protocols apart from USB. ● The specific parameters and parameter order may differ by the device's operation mode, trigger mode, device models and firmware versions.

Smart SDK

NoRead Image Index

It sets the specific image that is outputted when no code information is read. For example, if you set this parameter as 5, and the 5th image will be output.

One By One Enable

If it is enabled, the device will send one piece of code information each time in accordance with the specified interval. You can set the interval via One By One Interval and the default value 100 ms.

FTP

When the communication protocol is FTP, set the following parameters of data processing:

NoRead Image Index

It sets the specific image that is outputted when no code information is read. For example, if you set this parameter as 5, and the 5th image will be output.

One By One Enable

If it is enabled, the device will send one piece of code information each time in accordance with the specified interval. You can set the interval via One By One Interval and the default value 100 ms.

Local Save Picture Mode

It includes Off, NoRead, and Insufficient Code. You can select NoRead to let the device save images when no code is read.

Local Picture Type

Specify the type of pictures saved locally. You can select JPEG or BMP.

Output Retrans Enable

If this parameter is enabled, the data is allowed to retransmit to FTP server, and should set specific value in Output Retrans Number.

FTP Picture Name Format

Click  to select one or multiple items to be contained in the picture name. The selected items will be displayed in the frame.

You can also enter more contents directly in the frame.

FTP Transmission Conditions

Set the condition to upload the data outputted by the device to FTP server.

○ All: Always upload the data.

○ ReadBarcode: Upload the data only when the barcode is read by the device.

○ NoReadBarcode: Upload the data only when no barcode is read by the device.

FTP Transmission Result Contain

Select contents to upload to the FTP server.

○ JustResult: Only upload the content of the barcode.

○ JustPicture: Only upload the barcode image.

○ ResultAndPicture: Upload both the content of the barcode and the barcode image.

FTP Image Format

Select a format type from the drop-down list for the time stamp contained in the file name.

i	Take YYYYMMDD_HHMMSSFFF as an example, (from the left to the right) YYYY represents year, MM month, DD date, HH hour, MM minute, SS second, FFF millisecond.

Data Processing Settings

Result Output via Other Communication Protocols

When the communication protocol is TCP Client / Serial / TCP Server / MELSEC / Modbus / UDP / FINS/ USB, set the following parameters of data processing.

i	Here we use "***" to represent the specific protocol name.

NoRead Image Index

It sets the specific image that is outputted when no code information is read. For example, if you set this parameter as 5, and the 5th image will be output.

One By One Enable

If it is enabled, the device will send one piece of code information each time in accordance with the specified interval. You can set the interval via One By One Interval and the default value 100 ms.

Local Save Picture Mode

It includes Off, NoRead, and Insufficient Code. You can select NoRead to let the device save images when no code is read.

***** Output Format**

Click to select one or multiple items to be contained in the picture name. The selected items will be displayed in the frame. You can also enter more contents directly in the frame.

***** Output Noread Enable**

Enable this to set the default output content if no barcode is read during transmission. Edit the output text in Output NoRead Text.

***** Output Start Text**

The contents of the start part of the data outputted. You can set the contents as desired.

***** Output Stop Text**

The contents of the end part of the data outputted. You can set the contents as desired.

***** Output Barcode Enter Character Enable**

Whether to show input character in the data.

***** Output Barcode Newline Character Enable**

Whether to show new-line character in the data.

Set Multicast

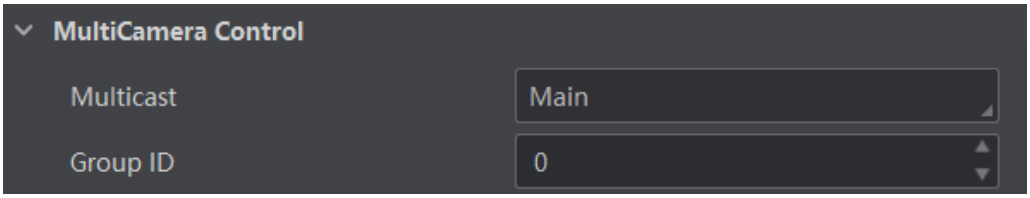
The multicast function is used to let multiple devices have the same trigger number when they are acquiring images and analyzing codes at the same time. When each device sends the trigger number and outputted images to the code reading platform, the platform will integrate the images with the same trigger number as the information of the same package. The main principle of the multicast function is to set one main device among multiple devices, and remaining devices are called sub devices. As the first triggered device, the main device sends trigger numbers to sub devices each time, and sub devices replace their trigger numbers with received ones so that all devices have the same trigger numbers.
Follow the steps below to set multicast function according to actual demands.

Steps

1.Right click the device in Device Connection, and click Feature Tree.

2.Go to Multi Camera Control, set one device as Main in Multi Camera Mode according to actual demands.

i	You can set 32 sub devices at most.



3. Set GroupID.

i	You should set the same GroupID for devices in the same multicast system.

Main-Sub Networking

When multiple devices acquire images and parse codes at the same time, the main-sub networking function enables multiple devices to work together.

The main principle of main-sub networking is to set one of the multiple devices as the main device (main station), and the other devices as sub devices (sub station). The sub devices send the code results to the main device that integrates or forwards, and sends the code results to the connected PC or client software to realize the collaborative work function of multiple devices.

Before You Start

Make sure that the device mode is Normal and Tigger Mode is On before using this function.

i	The function of main-sub networking may differ by device models.

Steps

1. Go to Multi Camera Control, and select Multi Station Work Mode according to actual demands.

- Off: This function is disabled.
- Independent: The main device and the sub devices are triggered respectively, and the sub devices send the code reading result to the main device. The main device directly formats and outputs the sub devices' data according to the formatting rules without data processing. It is mainly used for the scenario of multiple assembly lines.
- Cooperation: The main device and the sub devices use the same trigger, the sub devices send the code reading result to the main device for data processing, and then format and output the data after the fusion of the main and sub devices according to the formatting rules. It is mainly used to the scenario where the field of view is insufficient, and multiple codes are read together to integrate the output. In most cases, this mode is used.

2. Set role for different devices in Station Role. Main is the main device, and Sub is the sub device.

i	There is one main device only in the same main-sub networking (same group ID).

3.Set Station Port to configure the main station's port number and communicate with the sub station.

4.(Optional) Enable Client Display Sub Enable to let the main device display the code reading images from the sub station.

i	The client software of the main device can acquire images after enabling Client Display Sub Enable.

5. Set MS Group ID ranging from 100 to 200 to configure the main-sub networking group ID.

i	Two-way visiting is not allowing among different network groups.

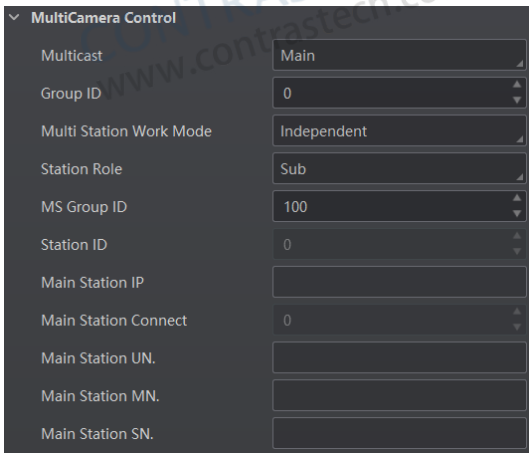
6.(Optional) View enumerated sub station quantity via Sub Station Total as a main station role.

7.(Optional) View sub station information after entering Query Sub Station ID as a main station role.

- Sub Station IP: The IP information of the sub station.
- Sub Station Connect: The connection status of the sub station. 1 stands for normal data transmission. Otherwise, it is disconnected.
- Sub Station UN: The user name information of the sub station.
- Sub Station MN: The product model information of the sub station.
- Sub Station SN: The serial number of the sub station.

8. (Optional) View main station information when the Station Role is Sub.

- Main Station IP: The IP information of the main station.
- Main Station Connect: The connection status of the main station. 1 stands for normal data transmission. Otherwise, it is disconnected.
- Main Station UN: The user name information of the main station.
- Main Station MN: The product model information of the main station.
- Main Station SN: The serial number of the main station.



Contrast Control Settings

i	You need to set device mode as Normal before using this function.

The contrast control function compares the data that the device reads with preset data and outputs contrast result. The result can be used as the event source of trigger signal, including Contrast Success and Contrast Fail. This function has two ways to contrast, including regular contrast and consecutive number contrast.

Regular Contrast

The regular contrast requires you to set code contents in advance, and the client software will contrast the data that the device reads with preset contents and outputs comparison result.

Steps

1.Right click the device in Device Connection, and click Feature Tree.

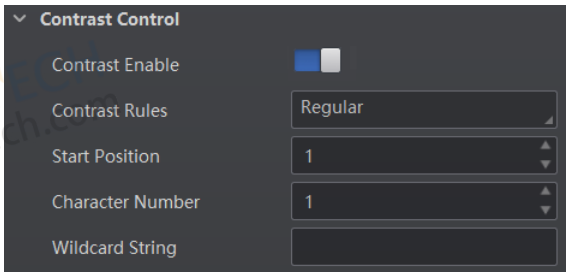
2.Go to Contrast Control, enable Contrast Enable, and select Regular as Contrast Rules.

3.Set Start Position that means the stating position of the comparison.

4.Set Character Number that means the comparison quantity.

5.Set code contents in Wildcard String.

i	You can use wildcard * and ?. * stands for multiple strings you can use, and ? stands for one string you can use. * can be used once only and ? can be used many times.



Consecutive Number Contrast

The consecutive number contrast requires you to set consecutive code rules, and the client software will contrast the data that the device reads with preset rules and outputs contrast result.

Steps

1.Right click the device in Device Connection, and click Feature Tree.

2.Go to Contrast Control, enable Contrast Enable, and select Consecutive Number as Compare Rules.

3.Set Start Position that means the stating position of the comparison.

4.Set Digital Number that means the comparison quantity.

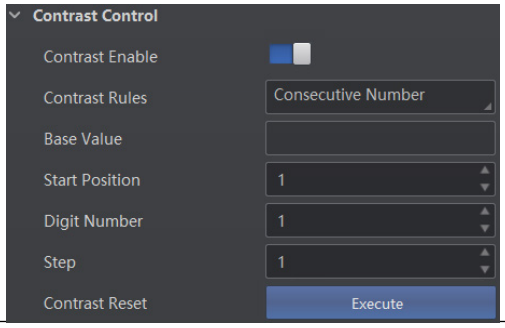
5.Set Step that means the client software will increase or decrease the preset value after each comparison according the step you set.

i	● If the preset value after increase or decrease exceeds the digital number you set, and then the preset value will become 0. ● The base value displays the preset value.

6. (Optional) Click Execute in Contrast Reset to reset comparison. After that, the client software will use the first code it reads as the preset value.

Here we take start position (3), digital number (2) and step (2) as an example to explain the consecutive number comparison:

- If the first code that the device reads is ur96k, and then the preset value is 96. The preset value increases to 98 (96+2).
- If the second code is yr98kjkfd, and comparison succeeds. The preset value increases to 100 (98+2).
- If the third code is kl99fjkd, and comparison fails. The preset value does not increase.
- If the fourth code is kl00djf, and comparison succeeds. The preset value increases to 02 (00+2).



Statistics Information

The statistics information in the feature tree helps you to count data related with code reading.

i	You need to set device mode as Normal before using this function.

Steps

1.Right click the device in Device Connection, and click Feature Tree.

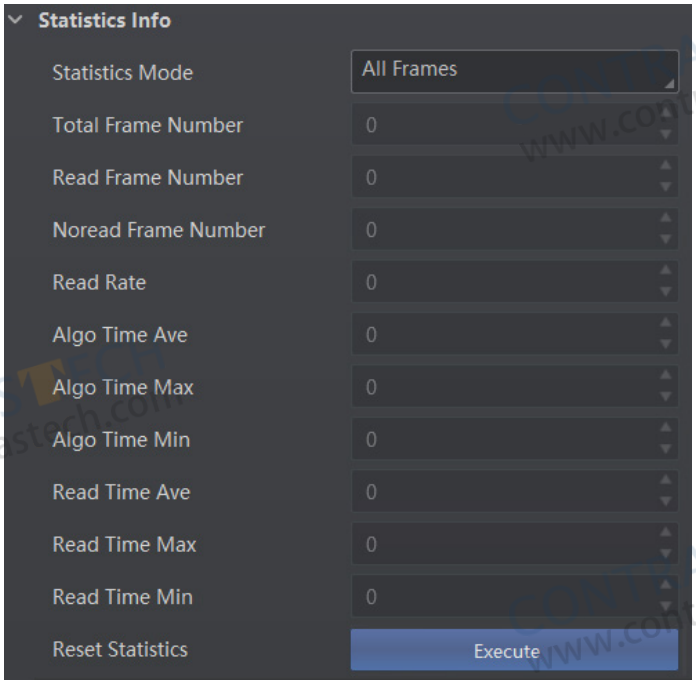
2.Go to feature tree, find Statistics Info., and select Statistics Mode:

- All Frames means the client software will display all data since the device is powered on.
- Latest Frames means the client software will display data of the last 10 frames.

3.View related parameters.

4.(Optional) Click Execute in Reset Statistics to reset statistics information.

Parameter Name	Description
Total Frame Number	The total frame quantity.
Read Frame Number	The quantity of frames that have been read codes.
Noread Frame Number	The quantity of frames that have not been read codes.
Read Rate	It refers to the code reading ratio.
Algo Time Ave.	The average time of algorithm, and the unit is ms.
Algo Time Max.	The max. time of algorithm, and the unit is ms.
Algo Time Min.	The min. time of algorithm, and the unit is ms.
Read Time Ave.	The average time of code reading, and the unit is ms.
Read Time Max.	The max. time of code reading, and the unit is ms.
Read Time Min.	The min. time of code reading, and the unit is ms.
Reset Statistics	Click Execute to reset statistics information.

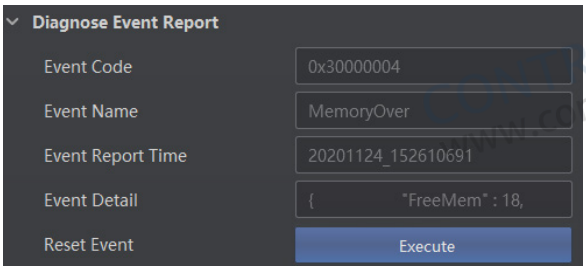


Diagnose Event Report

The diagnose event report function monitors memory and CPU usage rate, and let you know when there is a crash, higher CPU usage rate, insufficient memory, and other events.

Steps

1. Right click the device in Device Connection, and click Feature Tree.
2.Go to feature tree, find Diagnose Event Report.
3.View relation information.
4.(Optional) Click Execute in Reset Event to clear all information.



User Set Customization

The Configuration Management module allows you to set and manage the user set. A user set is a group of parameter values with all the settings needed to control the device, and you can save, load and switch different user sets.

Save Settings

If you have set the device parameters as desired, you can save them into the user set. Go to Config Management → Save Settings, and click UserSet1, UserSet2, or UserSet3 to save the current device settings.

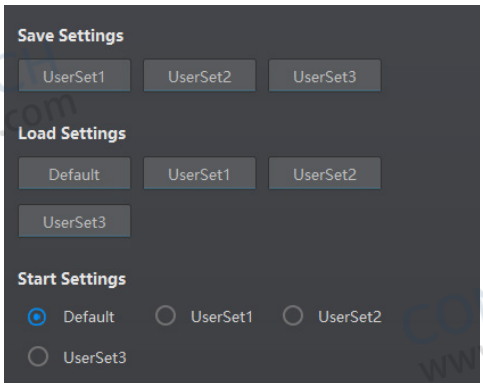
Load Settings

You can load the user set to restore the device to the saved group of parameter values again if required. Go to Config Management → Load Settings, and click Default, UserSet1, UserSet2, or UserSet3 to load settings.

i	The Default refers to restore the device parameter settings to the factory ones.

Start Settings

The selected user set will be automatically loaded after the device being powered on. For example, if you select Default, the device parameter settings will be restored to the factory settings.



CHAPTER 5 DEVICE OPERATION

Setting Codes

The device supports configuring parameters via reading special codes that are called setting codes. Here we introduce common setting codes.

- Fixed focus buzzer-type devices support the function of setting codes.
- Before using other setting codes, you need to scan Enable Setting Codes first to activate the function of setting codes.

No.	Description
1	It is the code part of the setting code. After reading this part, the device can finish the corresponding parameter settings.
2	**stands for the default settings.
3	It is the content of setting codes.

Via reading setting codes, the device can set enable/disable settings, set code type, set quantity of code reading, set data processing, set aiming system, set light source, set serial port, etc.

Enable/Disable Setting Codes

Before using other setting codes, you need to scan Enable Setting Codes first to activate the function of setting codes. Scan Disable Setting Codes to exit setting codes function.

Enable Setting Codes	Disable Setting Codes
启动设置码设置	退出设置码设置

Set Setting Codes of Code Type

The device can be set what code type to be read via reading specific setting codes. Currently, the device supports Code 39, Code 93, Code 128, CodeBar, ITF 25, ITF 14, EAN 8, EAN 13, UPCA, UPCE, QR Code, Data Matrix, Micro QR, AZTEC, PDF 417, and Han Xin Code.

Function	1D Codes	2D Codes	Code 39	Code128	Code93	Codebar
Enable Codes	** 开启全部一维码	** 开启全部二维码	** 开启Code93码	** 开启Code128码	** 开启Code93码	** 开启Codebar码
Disable Codes	关闭全部一维码	关闭全部二维码	关闭Code39码	关闭Code128码	关闭Code93码	关闭Codebar码

Setting Codes

Function	ITF14	ITF25	EAN8	EAN13	UCPA	UCPE
Enable Codes	** 开启ITF14码	** 开启ITF25码	** 开启EAN8码	** 开启EAN13码	** 开启UCPA	** 开启UCPE
Disable Codes	关闭ITF14码	关闭ITF25码	关闭EAN8码	关闭EAN13码	关闭UCPA	关闭UCPE

Function	QR Code	Data Matrix	MicroQR	AZTEC	PDF417	Han Xin Code
Enable Codes	** 开启QR码	** 开启DM码	** 开启MicroQR码	** 开启AZTEC码	** 开启PDF417码	
Disable Codes	关闭QR码	关闭DM码	关闭MicroQR码	关闭AZTEC码	关闭PDF417码	

The supported code types may differ by device models.

Set Setting Codes of Code Color

The setting codes of code color include white code on black wall and black code on white wall.

Function	Black Code On White Wall	White Code On Black Wall	Self-Adaptive
Setting Codes			

- Code 128 and 2D codes can be recognized no matter what kind of code color is configured.
- PDF 417 of white code on black wall cannot be recognized if the code color is white code or self-adaptive.

Set Setting Codes of Code Reading Quantity

You can set the device's code reading quantity via scanning the specific setting codes as shown below.

Steps

1. Read setting codes of editing quantity of code reading.

2. Read the corresponding digital codes according to actual demands.

i	● The quantity of code reading is related with code reading mode. ● If the code reading mode is batch mode and the quantity of code reading is smaller than or equal to 21, you should scan the digital code of tens digit first, and then scan the single digit. If the quantity of code reading is single digit, the digital code of tens digit is 0. For example, if the quantity of code reading is 12, scan the digital code of 1 first, and then scan 2. ● If the code reading mode is continuous mode, the quantity of code reading is not limited. You should scan the digital code in the first place, and then scan the digital code in the second place, etc. For example, if the quantity of code reading is 530, scan 5 first, and then 3, and 0 at last.

3. Read the setting codes of saving to save the parameter settings.

Function	Digital Code 0	Digital Code 1	Digital Code 2	Digital Code 3	Digital Code 4
Setting Codes	数字码0	数字码1	数字码2	数字码3	数字码4
Function	Digital Code 5	Digital Code 6	Digital Code 7	Digital Code 8	Digital Code 9
Setting Codes	数字码5	数字码6	数字码7	数字码8	数字码9

Set Setting Codes of Data Processing

You can set the device's outputted code results via scanning the specific setting codes as shown below.

Steps

1. Read setting codes of enabling prefix or suffix.

Function	Enable Prefix	Disable Prefix	Enable Suffix	Disable Suffix
Setting Codes	** 开启前缀	关闭前缀	** 开启后缀	关闭后缀

2. Read setting codes of editing prefix or editing suffix.

Function	Edit Prefix	Edit Suffix
Setting Codes	修改前缀	修改后缀

3. Set prefix and suffix characters according to actual demands, find the corresponding hexadecimal code value in ASCII table (see ASCII Table for details), and read the corresponding digital codes. For example, if the defined prefix and suffix content is *, the corresponding ASCII code is 2a. Use to the device to read the digital code 2 and digital code a in turn.

Up to ten setting codes can be read.

Function	Digital Code a	Digital Code b	Digital Code c	Digital Code d	Digital Code e	Digital Code f
Setting Codes	数字码a	数字码b	数字码c	数字码d	数字码e	数字码f

Function	Enable Stop Text	Disable Stop Text	Edit Stop Text
Setting Codes	开启结束符	** 关闭结束符	修改结束符

4. Read the setting codes of saving to save the parameter settings.

Set Setting Codes of Aiming System

The aiming system is used to locate codes in the field of view to help read codes easily. The setting codes of aiming system can enable, disable, delay or set delay time of the aiming system.

Function	Enable Aiming System	Disable Aiming System	Enable Aiming System Delay	Disable Aiming System Delay
Setting Codes	** 开启瞄准器	关闭瞄准器	** 开启瞄准器延时	关闭瞄准器延时
Function	Set Delay Time 1 s	Set Delay Time 2 s	Set Delay Time 5 s	Set Delay Time 10 s
Setting Codes	瞄准器延迟关闭1s	** 瞄准器延迟关闭2s	瞄准器延迟关闭5s	瞄准器延迟关闭10s

Set Setting Codes of Light Source

The setting codes of light source can enable or disable the light source, set polling interval, etc. After enabling Light Polling, you can let red and while light sources polling alternately in accordance with configured interval when code reading succeeds or before ending trigger.

- By default, the polling interval is 2 s.
- The supported setting codes of light source may differ by device models.

Function	Enable White Light	Disable White Light
Setting Codes		

Set Setting Codes of Buzzer

The setting codes of buzzer can enable or disable the buzzer function, set its duration, etc.

The supported setting codes of buzzer may differ by device models.

Function	Enable Buzzer When Reading Codes	Disable Buzzer When Reading Codes	Set Buzzer Duration 50 ms When Reading Codes	Set Buzzer Duration 100 ms When Reading Codes	Set Buzzer Duration 150 ms When Reading Codes
Setting Codes					

Set Setting Codes of USB Communication

The setting codes of USB communication can enable or disable the USB communication function, set baud rate, etc.

Function	Enable USB Communicati on	Disable USB Communication	USB HID Communicati on Mode	USB CDC Communication Mode
Setting Codes				

Set Setting Codes of Serial Port

The setting codes of serial port can enable or disable serial port function, set the baud rate, parity bit, and stop bit.

Only the fast Ethernet type device supports serial port function.

Function	Enable Serial Port Function	Disable Serial Port Function	Set Baud Rate as 4800	Set Baud Rate as 9600	Set Baud Rate as 19200
Setting Codes	开启串口调试通道	**关闭串口调试通道	设置波特率为4800	**设置波特率为9600	设置波特率为19200
Function	Set Baud Rate as 38400	Set Baud Rate as 57600	Set Baud Rate as 115200	Set None Parity	Set Odd Parity
Setting Codes	设置波特率为38400	设置波特率为57600	设置波特率为115200	**设置串口奇偶无校验	设置串口奇校验
Function	Set Even Parity	Set Stop Bit 1	Set Stop Bit 2		
Setting Codes	设置串口偶校验	**设置串口停止位1	设置串口停止位2		

Set Setting Codes of Sending Device Information

The device can send its information to the PC via reading specific setting codes, and the device information includes name, version, algorithm version, hardware version, serial number, etc.

Function	Send Device Name	Get Device Version	Get Hardware Version	Get Algorithm Version	Get Serial Number
Setting Codes	发送设备名称	获取设备版本号	获取硬件版本	获取算法版本	获取设备序列号

Set Setting Codes of Trigger

The setting codes of trigger can let the device switch the trigger mode, including pressing trigger switch, self-trigger, response trigger, and support disabling trigger mode.

Function	Disable Trigger Mode	Response Trigger	Self-Trigger	Auto Run	High Sensitivity
Setting Codes					
Function	Middle Sensitivity	Low Sensitivity			
Setting Codes					

Set Setting Codes of Management

The setting codes of management can save or initialize user parameters, and restart the device.

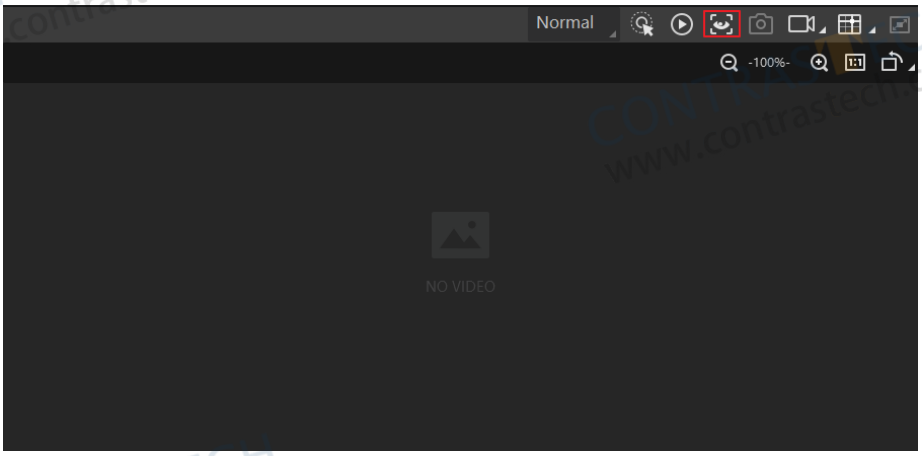
Function	Save	Initialize User Parameters	Restart Device
Setting Codes	保存	初始化用户参数	重启

The device operation section introduces some basic device operations about how to start live view, acquisition and recording, add cross line in the image, split window, view reports, etc.

	Connecting the device to the client software is required before device operation.

Live View

You can view the real-time image in the live view window. Click in live view window to start live view, or click to stop.

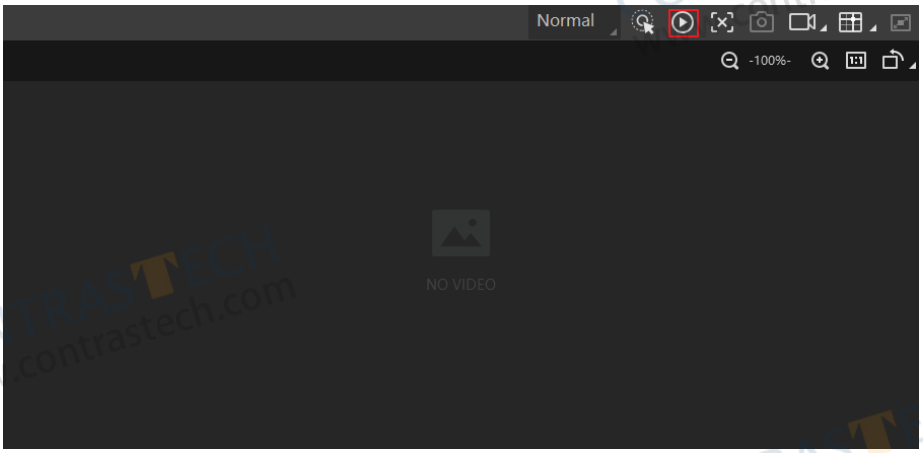


Enable Acquisition

Enabling acquisition allows the device to acquire the real-time stream.

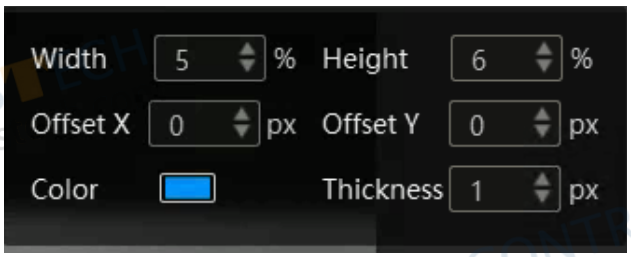
Click in live view window to start acquisition, or click to stop. You can also right click the device on the device list, and click Stop Acquisition to stop acquiring streams.

	Acquisition is still going on if you only stop live view.



Add Cross Line

During live view, you can add a cross line on the live view image to adjust the position of the object in the view.
Click in live view window to add cross line, and click (beside) to open the editing window to set cross line parameters.

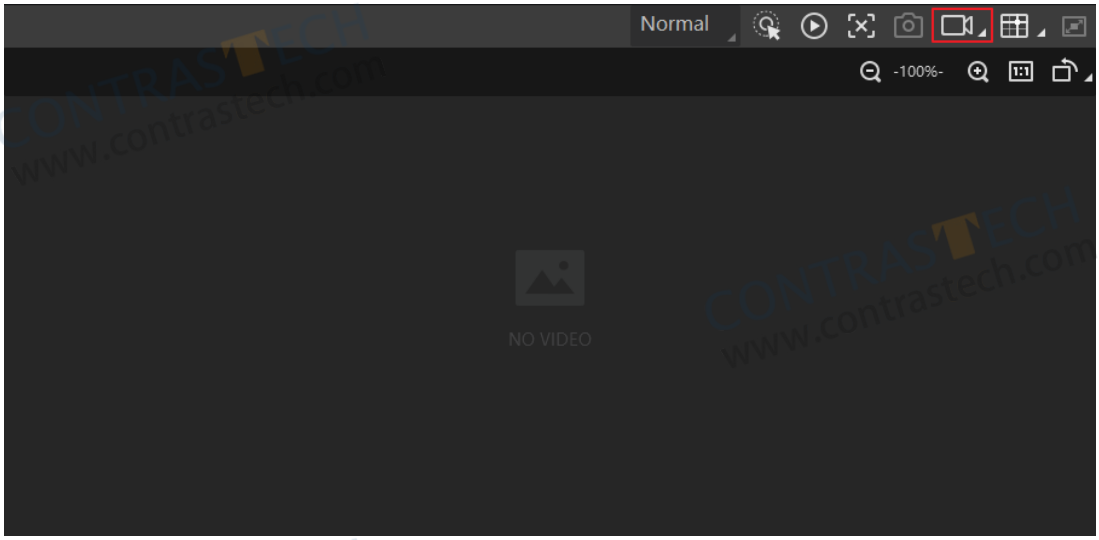


Start Recording

During live view, you can record video files and capture images continuously.

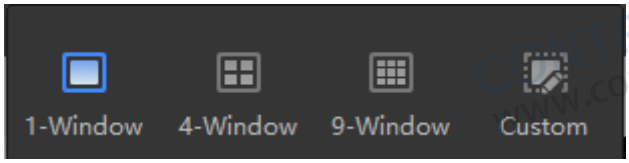
	Enabling acquisition is required before recording.

Click in live view window to start recording, and click the icon again to stop. You can also click (beside), and then click to capture images of the live view continuously.



Split Window

The client software supports window division function that allows you to split the window into multiple-window mode to view the live view of multiple devices at the same time. Click in control toolbar to select window division mode. You can click Custom to customize window division as you desired.

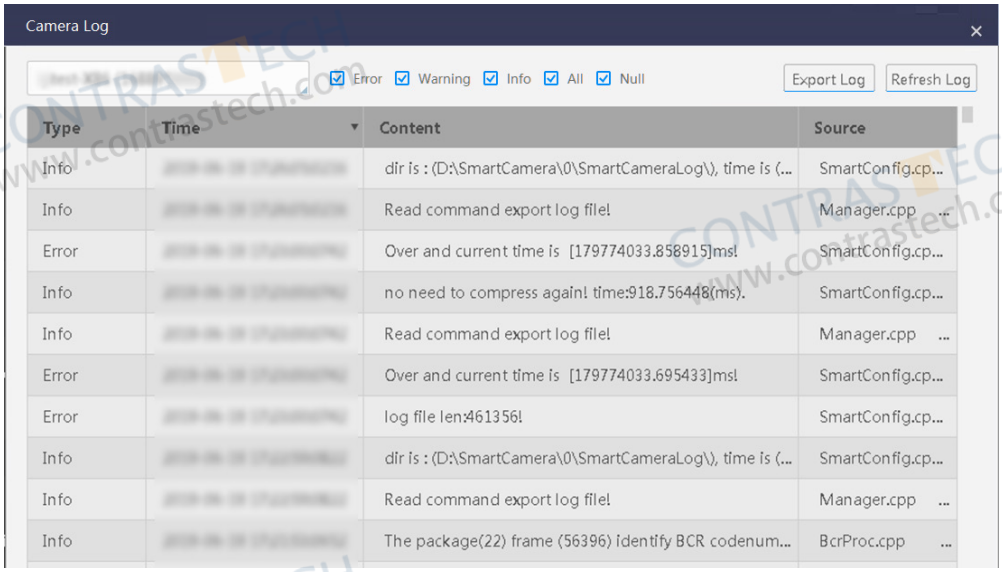


View Reports

During acquisition or live view, you can view the reading status of the device.
Click in control toolbar to open the statistics window to view the detailed information. Read Code Images refers to the number of the images on which the barcodes are read by the device. Unread Code Images refers to the number of the images on which the barcodes are not read by the device. Read Rate refers to the code reading rate.

View Log

You can view the device logs and export them to the local PC.
Click in control toolbar to open the device log window, and you can view different types of logs, including device errors, warning, and informational log, etc.



Set Time

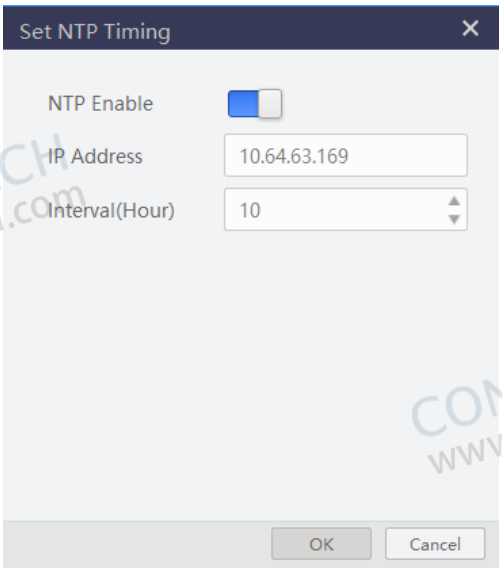
After enabling NTP time synchronization, the device will synchronize time according to the configured interval.

Steps

1.Go to Config Management, and find Timing.
2.Click Setting and enable NTP Enable.
3.Set parameters according to actual demands.

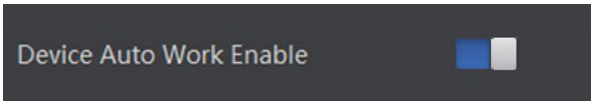
i	Configure NTP server settings before using NTP time synchronization function.

4. Click OK after settings.



Enable Device Auto Work

This function allows the device to automatically enter the operating status after being powered on.
You can go to Config Management → Device Auto Work Enable, and enable Device Auto Work Enable.



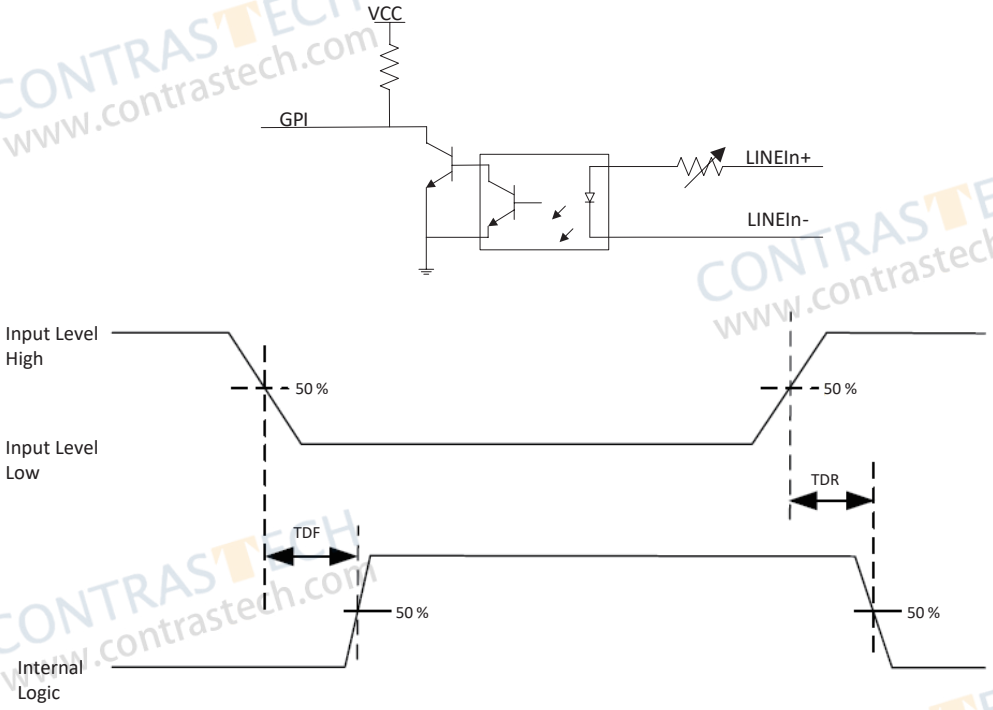
CHAPTER 6 I/O WIRING

Electrical Feature And Wiring Of Fixed Focal Type Devices

Opto-isolated Input

The device's LineIn 0/1 are input signals, and their internal circuit is as follows.

- The input voltage ranges from 5 VDC to 30 VDC.
- The maximum current is 25 mA.
- The breakdown voltage is 36 VDC. Keep voltage stable.



Input Electrical Feature:

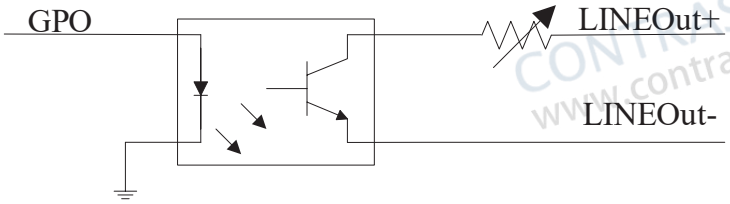
Parameter Name	Parameter Symbol	Value
Input Logic Level Low	VL	1.5 VDC
Input Logic Level High	VH	2 VDC
Input Rising Delay	TDR	7 μs
Input Falling Delay	TDF	81.6 μs

Electrical Feature And Wiring Of Fixed Focal Type Devices

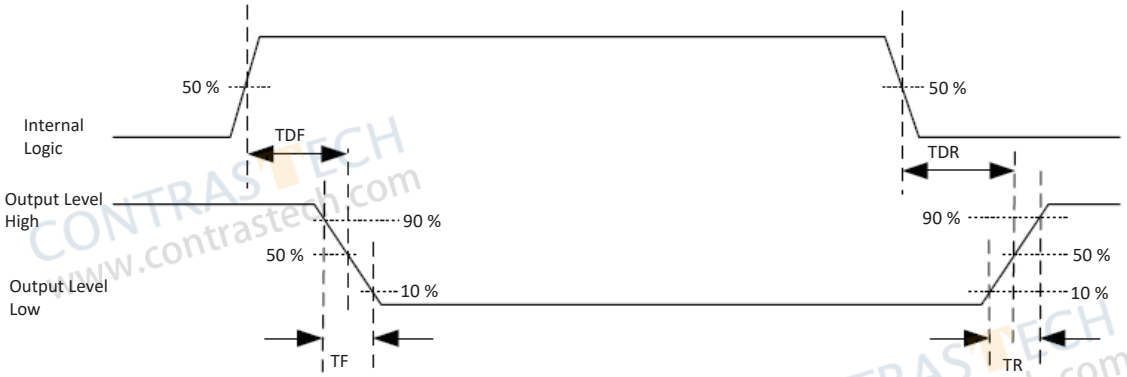
Opto-isolated Output

The device's LineOut 0/1 are output signals, and their internal circuit is as follows.

- The output voltage ranges from 5 VDC to 30 VDC.
- The maximum current is 25 mA.
- Do not directly connect with inductive load (e.g. DC motor, etc.) when outputting.
- If the external voltage and resistance change, the corresponding current of output signal and output logic level low may differ.



Output Logic Level:



Parameter Name	Parameter Symbol	Value
Output Logic Level Low	VL	730 mV
Output Logic Level High	VH	3.2 VDC
Output Rising Time	TR	60 μs
Output Falling Time	TF	3 μs
Output Rising Delay	TDR	68 μs
Output Falling Delay	TDF	6.3 μs

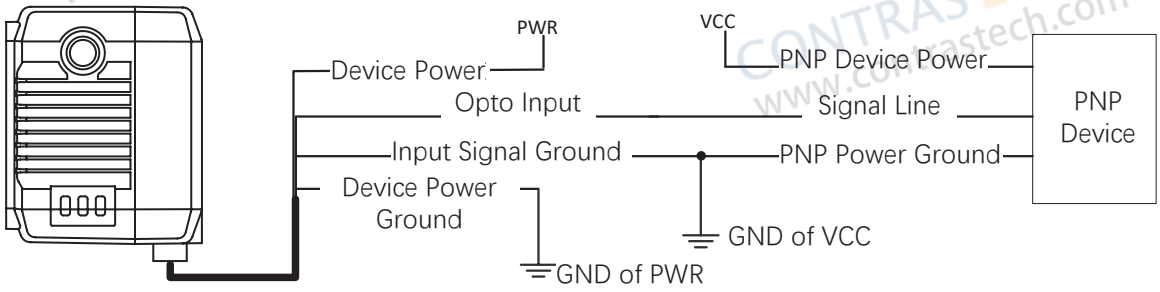
Electrical Feature And Wiring Of Fixed Focal Type Devices

Input Signal Wiring

The device can receive the external input signal via I/O interface, and this section introduces input signal wiring.

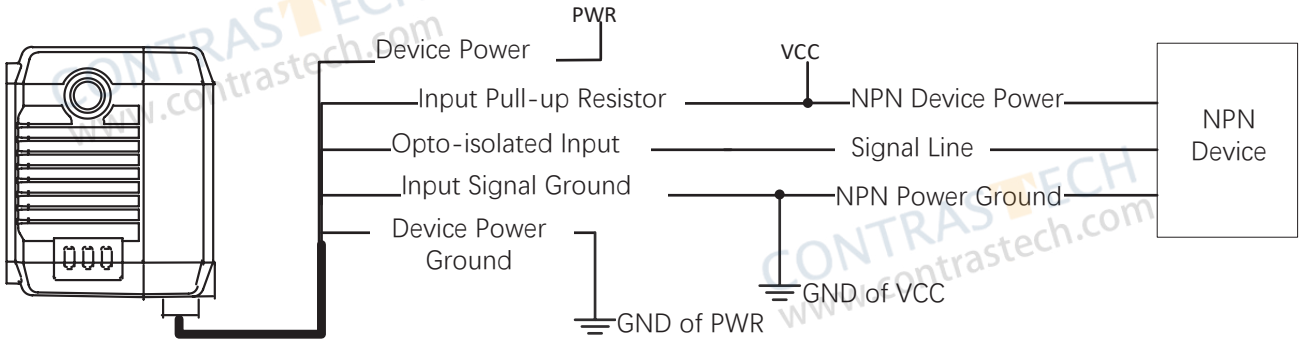
- Input signal wiring may differ by external device types.
- The voltage of VCC should be equal to or less than that of PWR. Otherwise, the output signal exception may occur.

PNP Device



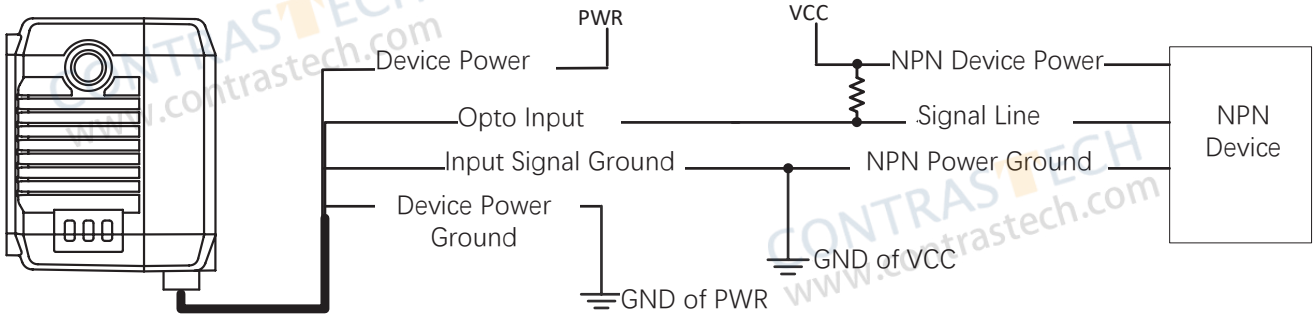
NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC, and the pull-up resistor of the IO box is used.



Input Signal Connecting to NPN Device (Pull-Up Resistor of IO Box Used)

If the VCC of NPN device is 12 VDC or 24 VDC and the external pull-up resistor is used, it is recommended to use 1 KΩ pull-up resistor.



Input Signal Connecting to NPN Device (External Pull-Up Resistor Used)

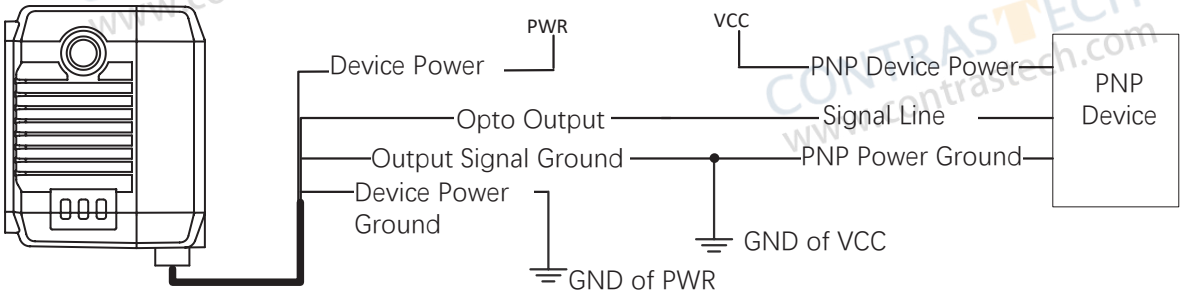
Electrical Feature And Wiring Of Fixed Focal Type Devices

Output Signal Wiring

The device can output signal to external device via I/O interface, and this section introduces output signal wiring.

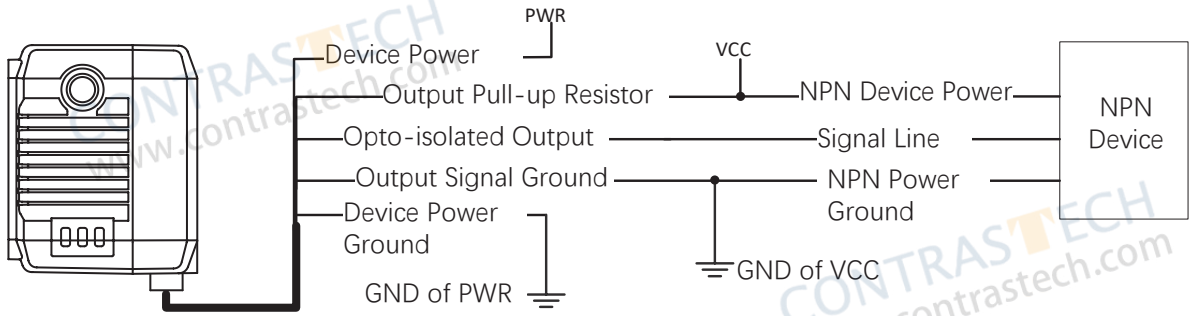
- Output signal wiring may differ by external device types.
- The voltage of VCC should be equal to or less than that of PWR. Otherwise, the output signal exception may occur.

PNP Device



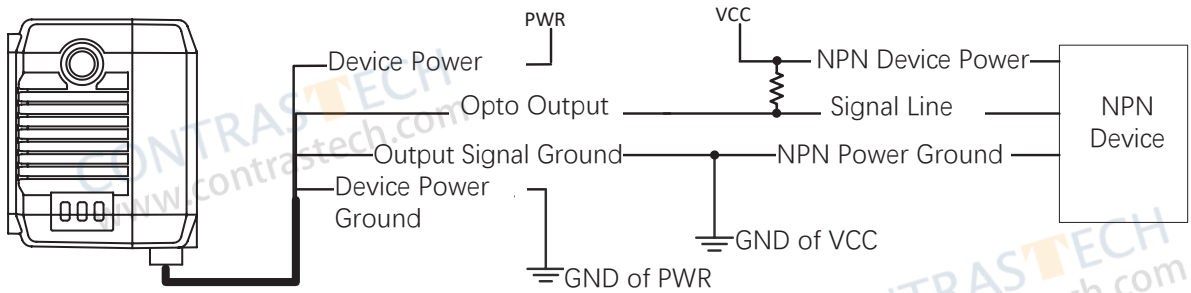
NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC, and the pull-up resistor of the IO box is used.



Output Signal Connecting to NPN Device (Pull-Up Resistor of IO Box Used)

If the VCC of NPN device is 12 VDC or 24 VDC and the external pull-up resistor is used, it is recommended to use 1 KΩ pull-up resistor.



Output Signal Connecting to NPN Device (External Pull-Up Resistor Used)

1

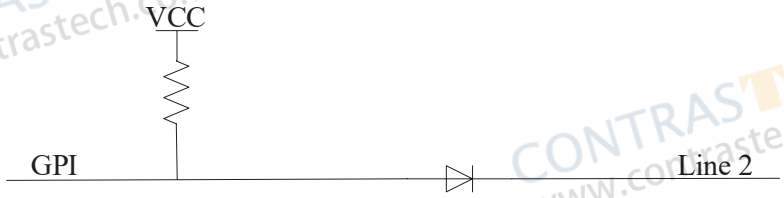
Electrical Feature and Wiring of other type Devices

The other devices include Vari focal type devices(Fig.1-1/2/3) 、C-Mount type device(Fig.1-4) and Fixed focus buzzer-type device(Fig.1-6) .With different device types, their I/O electrical feature varies.

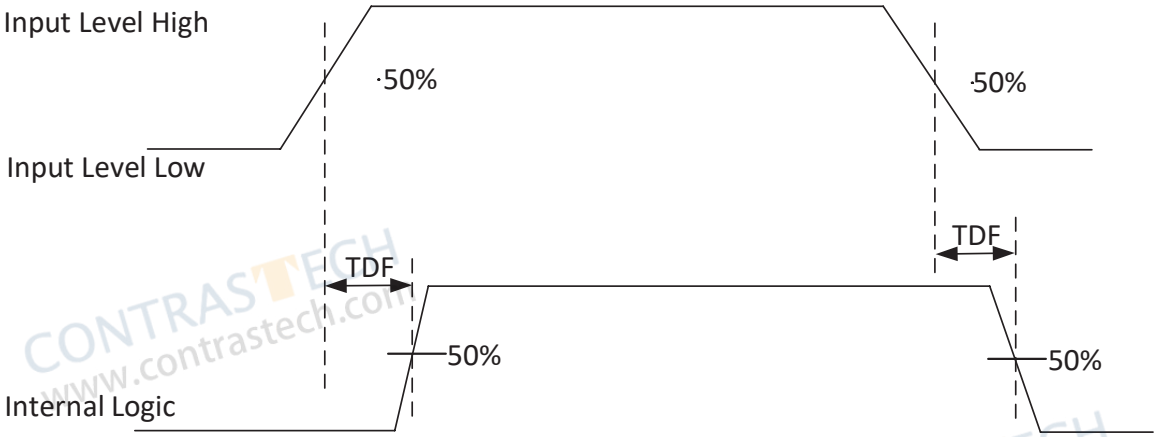
Their Line 2 is non-isolated input signal, Line 3 is non-isolated output signal, and Line 0/1 are both bi-directional signals.

■ Non-isolated Input Signal

The internal circuit of the device's none-isolated input signal is as follows.



Input Logic Level:



Input Electrical Feature:

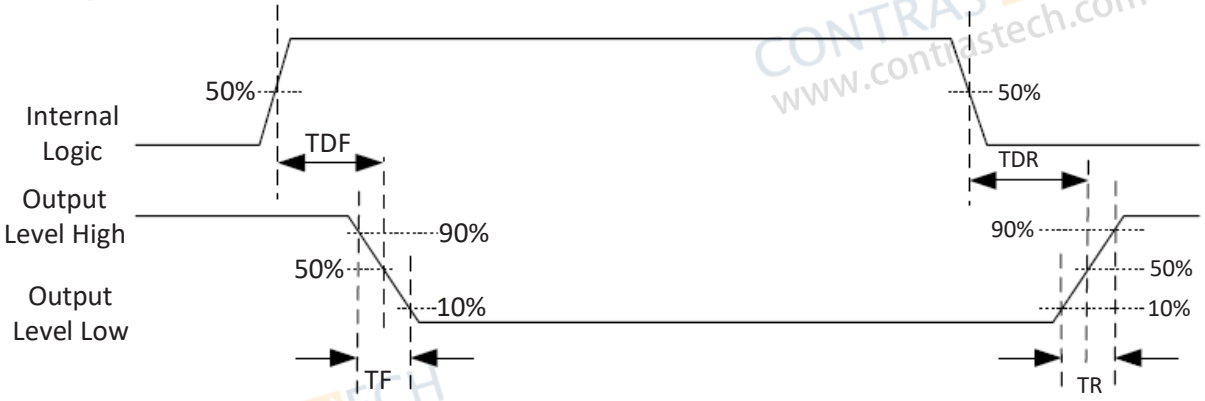
Parameter Name	Parameter Symbol	Value
Input Logic Level Low	VL	● Vari focal type、C-Mount type device：1 V ● Fixed focus buzzer-type device：0.6V
Input Logic Level High	VH	2 VDC
Input Rising Delay	TDR	1 μs
Input Falling Delay	TDF	200 ns

Electrical Feature and Wiring of other type Devices

Non-isolated Output Signal

The internal circuit of the device's none-isolated output signal is as follows.

Output Logic Level:



When the external voltage is 12 VDC and pull-up resistor is 1 KΩ, output electric feature is shown below.

Parameter Name	Parameter Symbol	Value
Output Logic Level Low	VL	500 mV
Output Logic Level High	VH	12 VDC (external pull-up resistor)
Output Rising Time	TR	3.8 μs
Output Falling Time	TF	116 ns
Output Rising Delay	TDR	4.4 μs
Output Falling Delay	TDF	330 ns

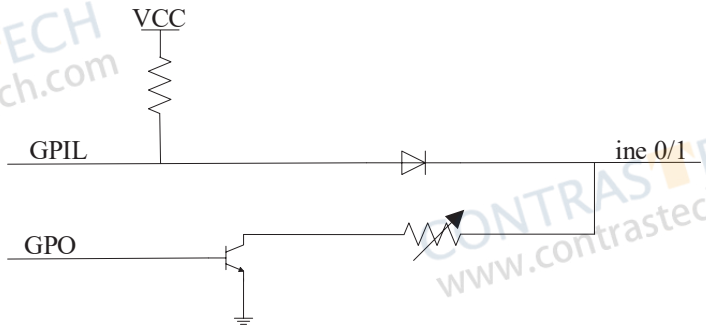
Relation between different external voltages and output logic level low is shown below.

External Voltage	Output Logic Level Low(VL)
3.3 V	180 mV
5 V	260 mV
12 V	500 mV
24 V	900 mV

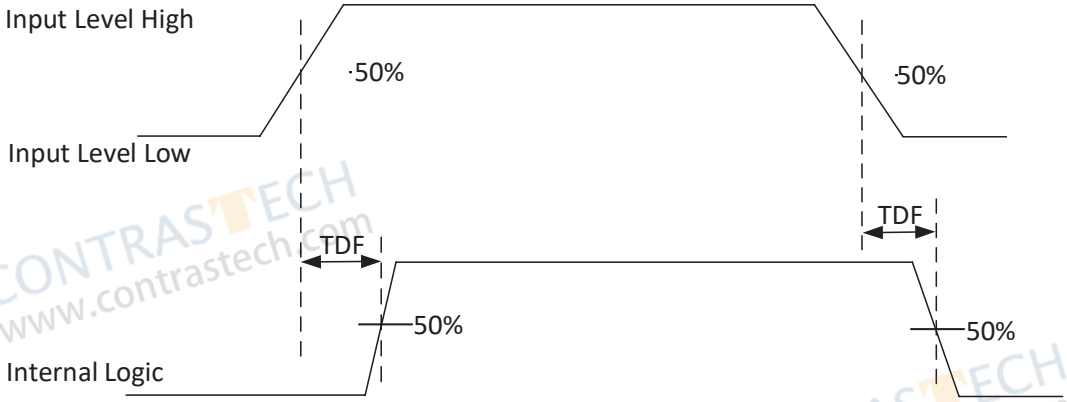
Electrical Feature and Wiring of other type Devices

Bi-directional I/O Signal

The bi-directional signal in I/O signal can be use as input signal or output signal according to demands. Its internal circuit is shown below.



Configured as Input Signal

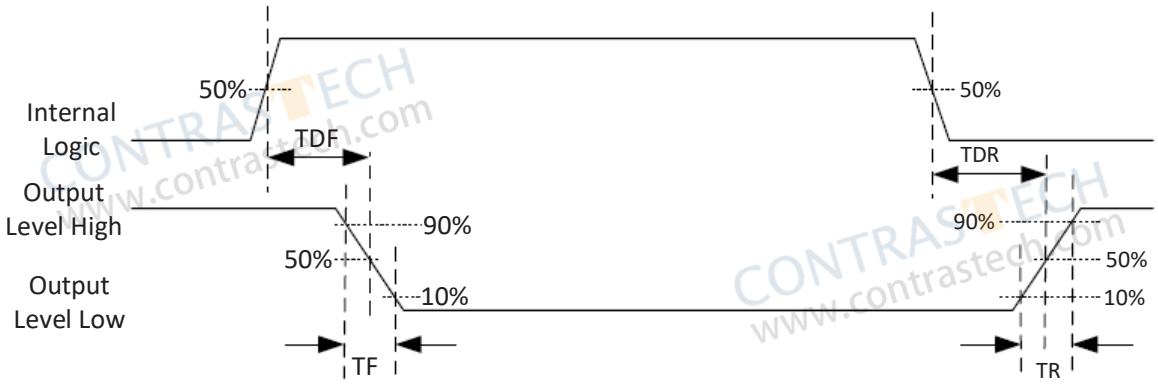


Relation between different external voltages and output logic level low is shown below.

Parameter Name	Parameter Symbol	Value
Output Logic Level Low	VL	1 VDC
Output Logic Level High	VH	2 VDC
Output Rising Delay	TDR	1 μs
Output Falling Delay	TDF	200 ns

Electrical Feature and Wiring of other type Devices

Configured as Output Signal



When the external voltage is 12 VDC and pull-up resistor is 1 KΩ, output electric feature is shown below.

Parameter Name	Parameter Symbol	Value
Output Logic Level Low	VL	500 mV
Output Logic Level High	VH	12 VDC (external pull-up resistor)
Output Rising Time	TR	3.8 μs
Output Falling Time	TF	116 ns
Output Rising Delay	TDR	4.4 μs
Output Falling Delay	TDF	330 ns

Relation between different external voltages and output logic level low is shown below.

External Voltage	Output Logic Level Low (VL)
3.3 V	180 mV
5 V	260 mV
12 V	500 mV
24 V	900 mV

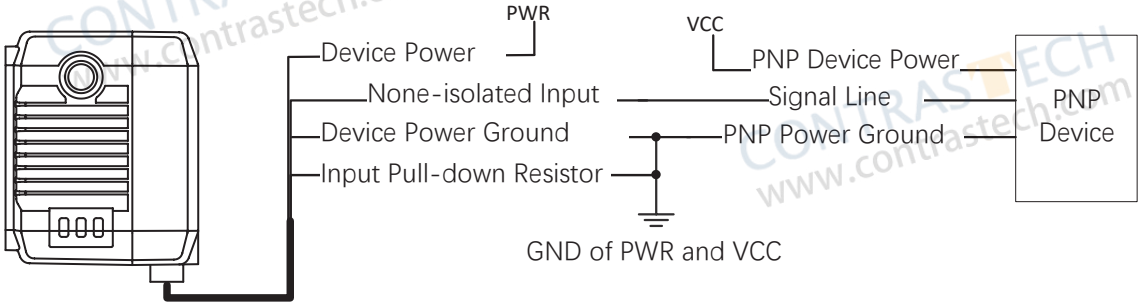
Input Signal Wiring

The device can receive the external input signal via I/O interface, and this section introduces input signal wiring.

- Input signal wiring may differ by external device types.
- The voltage of VCC should be equal to or less than that of PWR. Otherwise, the output signal exception may occur.

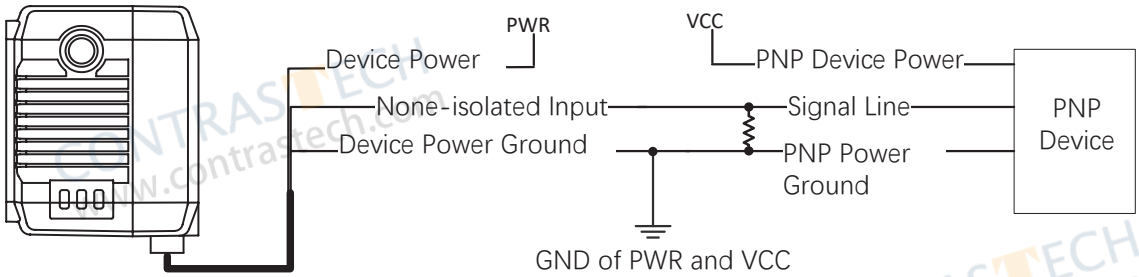
PNP Device

If you use the pull-down resistor of the IO box, the wiring is shown below, the wiring is shown below.



Input Signal Connecting to PNP Device (Pull-Down Resistor of IO Box Used)

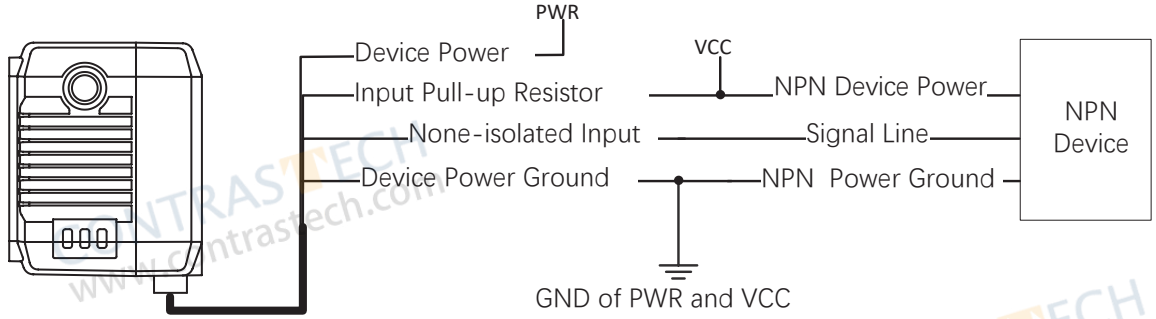
If you use external pull-down resistor, it is recommended to use 1 KΩ pull-down resistor.



Input Signal Connecting to PNP Device (External Pull-Down Resistor Used)

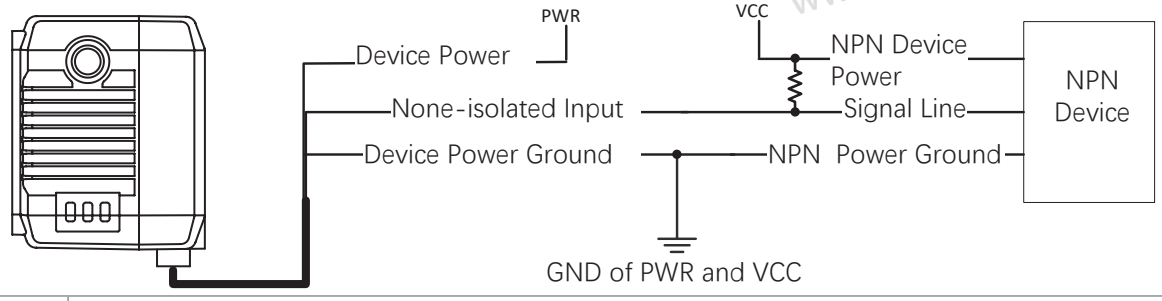
NPN Device

If you use the pull-down resistor of the IO box, the wiring is shown below, the wiring is shown below.



Input Signal Connecting to NPN Device (Pull-Up Resistor of IO Box Used)

If the external pull-up resistor is used, it is recommended to use 1 KΩ pull-up resistor.

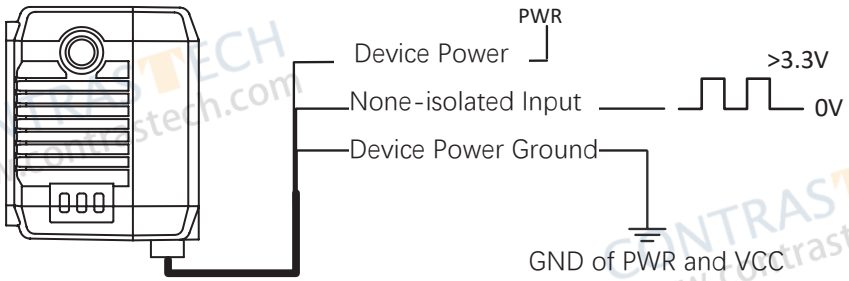


Input Signal Connecting to NPN Device (External Pull-Up Resistor Used)

Input Signal Wiring

Switch

The switch can provide low electrical level to trigger the bi-directional I/O.

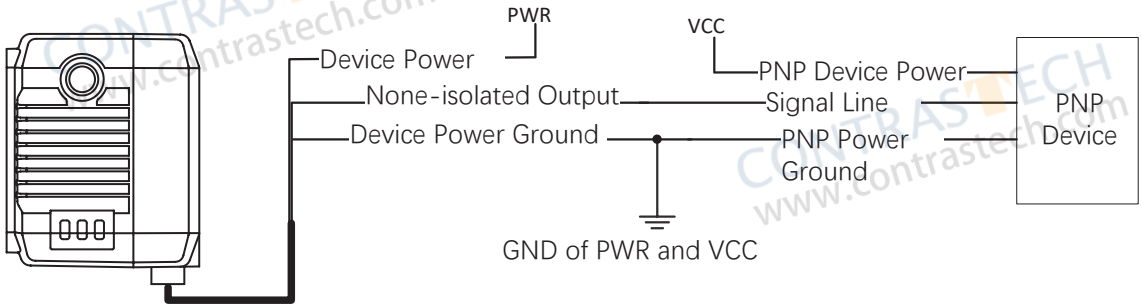


Output Signal Wiring

The device can receive the external input signal via I/O interface, and this section introduces input signal wiring.

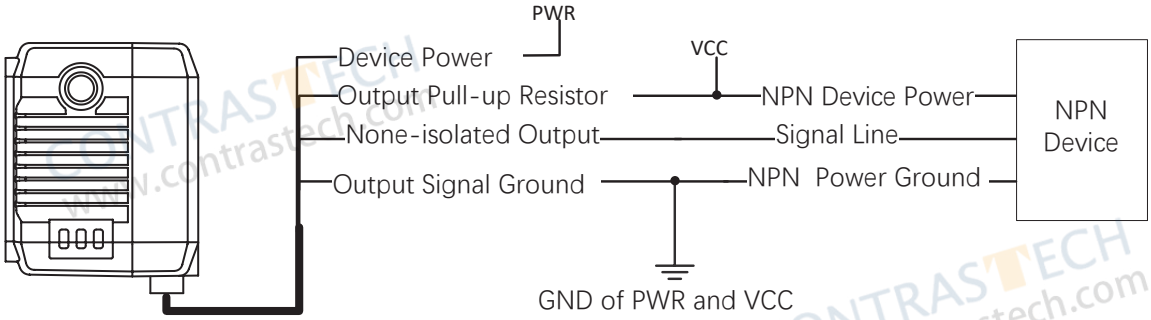
> ● Output signal wiring may differ by external device types.
> ● The voltage of VCC should be equal to or less than that of PWR. Otherwise, the output signal exception may occur.

PNP Device

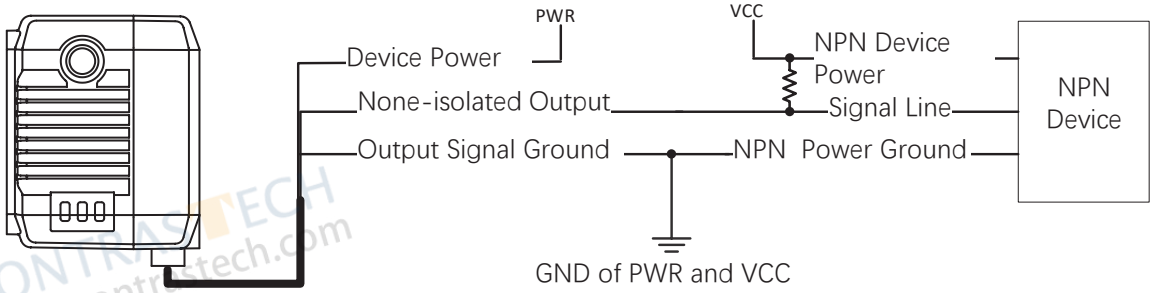


NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC, and the pull-up resistor of the IO box is used.

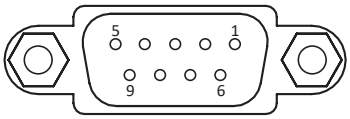


If the VCC of NPN device is 12 VDC or 24 VDC and the external pull-up resistor is used, it is recommended to use 1 KΩ pull-up resistor.



RS-232 Serial Port

The device supports outputting data via RS-232 serial port, and the supplied cable has a 9 pin female serial port connector. Refer to the figure and table below for pin definitions.



9-Pin Connector Definitions：

Pin No.	Name	Description
2	TX	Transmits Data
3	RX	Receives Data
5	GND	Signal Ground

CHAPTER 7 OTHER FUNCTIONS

Trouble Shooting

PROBLEM	Reason	Solution
Run client, there is no listed device.	The device is powered off.	Check the device power connection (observe whether the top PWR light is solid green or not), to make sure the device is powered up normally.
	Network exception.	Check the network connection (observe whether the top LNK light is flashing green or not), to make sure the device can be connected to the network normally. PC port and the device are in the same network segment.
All black or too dark during preview.	Insufficient brightness of supplement light.	Increase the brightness of supplement light appropriately, or change to a brighter one. Increase exposure and gain appropriately.
	Too small adjustment value of exposure and gain.	Increase exposure and gain appropriately.
	The polarization lens cap may be used.	The brightness of polarization lens cap is low, and it is not recommended to use it in normal condition.
Image incoherent/Low frame rate/ Image tearing when adjusting the view preview.	Network circuitry speed is not 100 Mbps.	Check whether network transit speed is 100 Mbps or not.
No image in the live view.	Enabled trigger mode, but there is no trigger signal.	Sent the trigger signal to the device/Disable the trigger mode.
	Network circuitry speed is not 100 Mbps.	Check whether network circuitry speed is 100 Mbps or not.

ASCII Table

Character	Value	Character	Value	Character	Value	Character	Value
NUL	0	(Space)	20	@	40	`	60
SOH	1	!	21	A	41	a	61
STX	2	"	22	B	42	b	62
ETX	3	#	23	C	43	c	63
EOT	4	$	24	D	44	d	64
ENQ	5	%	25	E	45	e	65
ACK	6	&	26	F	46	f	66
BEL	7	'	27	G	47	g	67
BS	8	(	28	H	48	h	68
HT	9	)	29	I	49	i	69
LF/NL	0a	*	2a	J	4a	j	6a
VT	0b	+	2b	K	4b	k	6b
FF/NP	0c	,	2c	L	4c	l	6c
CR	0d	-	2d	M	4d	m	6d
SO	0e	.	2e	N	4e	n	6e
SI	0f	/	2f	O	4f	o	6f
DLE	10	0	30	P	50	p	70
DC1/XON	11	1	31	Q	51	q	71
DC2	12	2	32	R	52	r	72
DC3/XOFF	13	3	33	S	53	s	73
DC4	14	4	34	T	54	t	74
NAK	15	5	35	U	55	u	75
SYN	16	6	36	V	56	v	76
ETB	17	7	37	W	57	w	77
CAN	18	8	38	X	58	x	78
EM	19	9	39	Y	59	y	79
SUB	1A	:	3A	Z	5A	z	7A
ESC	1B	;	3B	[	5B	{	7B
FS	1C	<	3C	\	5C	|	7C
GS	1D	=	3D	]	5D	}	7D
RS	1E	>	3E	^	5E	~	7E
US	1F	?	3F	_	5F	DEL	7F

The USB type device supports the red color character only regarding setting prefix and suffix characters.

CHAPTER 8 TECHNICAL SUPPORT

If you need advice about your camera or if you need assistance troubleshooting a problem with your camera, it's highly recommended to describe your issue in details and contact us via E-mail at support@contrastech.com

It would be helpful if you can fill-in the following table and send to us before you contact our technical support team.

Model:		SN:	
Describe the issue in as much detail as possible:			
If known, what's the cause of the issue?			
How often did/does the issue occur?			
How severe is the issue?			
Parameter set			

Hangzhou Contrastech Co., Ltd

No.8 Xiyuan 9th Road, West Lake District Hangzhou Zhejiang 310030 China
Tel: 86-571-89712238
www.contrastech.com