UFACTORY 2.2.0 xArm Gripper User Manual

Contents

UFACTORY 2.2.0 xArm Gripper

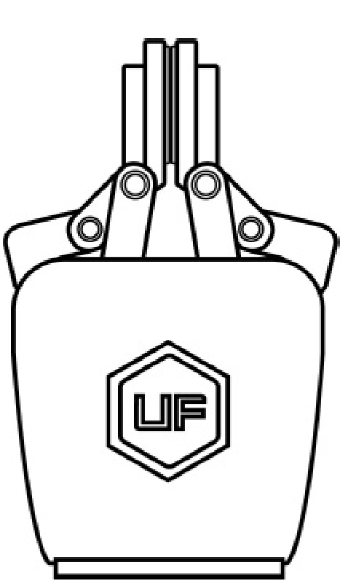
USER MANUAL

SHENZHEN UFACTORY CO., LTD

1. General Presentation

1.1.Gripper Introduction

The gripper is the end-effector of the robotic arm, which can grasp objects dynamically.
The value range of the gripper opening and closing is: -10 to 850. The larger the value, the greater the stroke of the gripper, meaning the smaller the value, the smaller the stroke of the gripper. If the clamping is not tight, a negative value can be set until it is tightened.



1.2.Setup and Control

The gripper is powered and controlled directly via a single gripper connection cable that carries a 24V DC supply and Modbus RTU communication over RS-485.

1.3.Safety

Warning

The operator must have read and understood all of the instructions in the following manual before handling the xArm Gripper.

Caution
The term “operator” refers to anyone responsible for any of the following

operations on the xArm Gripper:

- Installation
- Control
- Maintenance
- Inspection
- Calibration
- Programming
- Decommissioning

This documentation explains the various components of the xArm Gripper and general operations regarding the whole life-cycle of the product from installation to operation and decommissioning.

The drawings and photos in this documentation are representative examples and differences may exist between them and the delivered product.

1.3.1. Warning

Caution

Any use of the Gripper in noncompliance of these warnings is inappropriate and may cause injury or damage.

Warning

- The Gripper needs to be properly secured before operating the robot.
- Do not install or operate a Gripper that is damaged or lacking parts.
- Never supply the Gripper with an alternative current (AC) source.
- Make sure all cord sets are always secured at both ends,Gripper end & Robot end
- Always satisfy the recommended keying for electrical connections.
- Be sure no one is in the robot and/or gripper path before initializing the robot's routine.
- Always satisfy the gripper payload.
- Set the gripper speed accordingly, based on your application.
- Keep fingers and clothes away from the gripper while the power is on.
- Do not use the gripper on people or animals.

1.3.2. Risk Assessment and Final Application

The xArm Gripper is meant to be used on an industrial robot. The robot, gripper and any other equipment used in the final application must be evaluated with a risk assessment. The robot integrator must ensure that all local safety measures and regulations are respected. Depending on the application, there may be risks that need additional protection/safety measures, for example, the work-piece the gripper is manipulating may be inherently dangerous to the operator.

1.3.3. Intended Use

The gripper is designed for grasping and temporarily securing or holding objects.

Caution

The Gripper is NOT intended for applying force against objects or surfaces.

The product is intended for installation on a robot or other automated machinery and equipment.

Info

Always comply with local and/or national laws, regulations and directives on automation safety and general machine safety.
The unit may be used only within the range of its technical data. Any other use of the product is deemed improper and unintended use.

UFACTORY will not be liable for any damages resulting from any improper or unintended use.

2. Installation

The following subsections will guide you through the installation and general setup of xArm Gripper.

(1) The Scope of Delivery section
(2) The Mechanical Installation section
(3) The Electrical Setup section

Warning

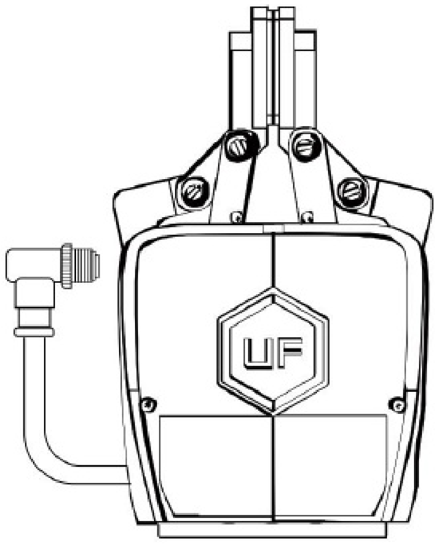
Before installing:
Read and understand the safety instructions related to the xArm Gripper.
Verify your package according to the Scope of delivery and your order info.
Have the required parts, equipment and tools listed in the requirements readily available.

Installing:
Satisfy the environmental conditions.
Do not operate the Gripper, or even turn on the power supply, before it is firmly anchored and the danger zone is cleared.
Caution the fingers of the gripper which may move and cause injury or damage.

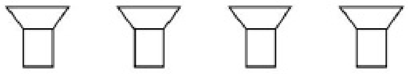
2.1. Scope of Delivery

2.1.1. General Kit

A Gripper Kit generally includes these items: xArm Gripper
Cross countersunk head screws M6*8 (4)



UFACTORY xArm Gripper

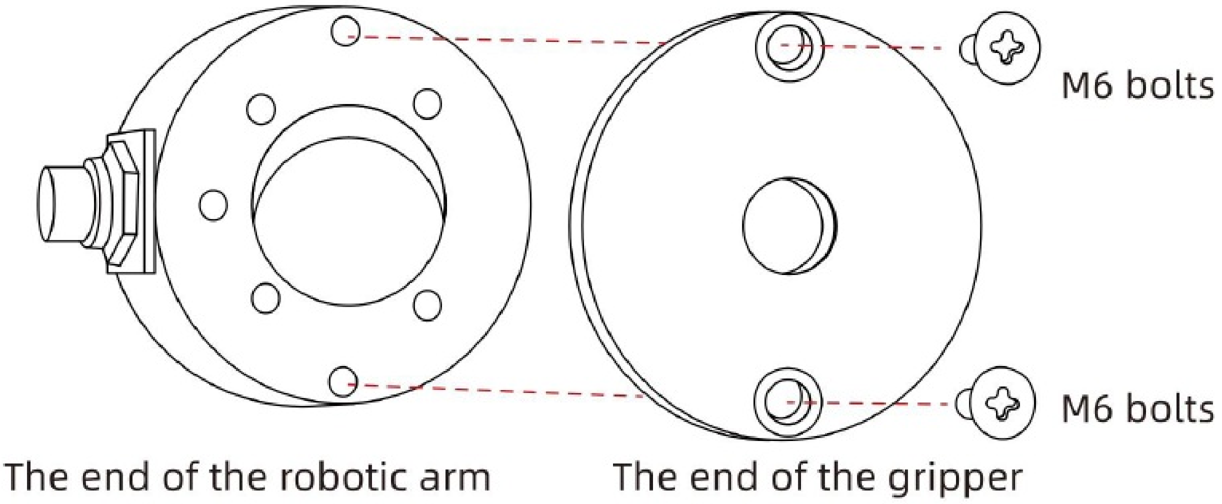


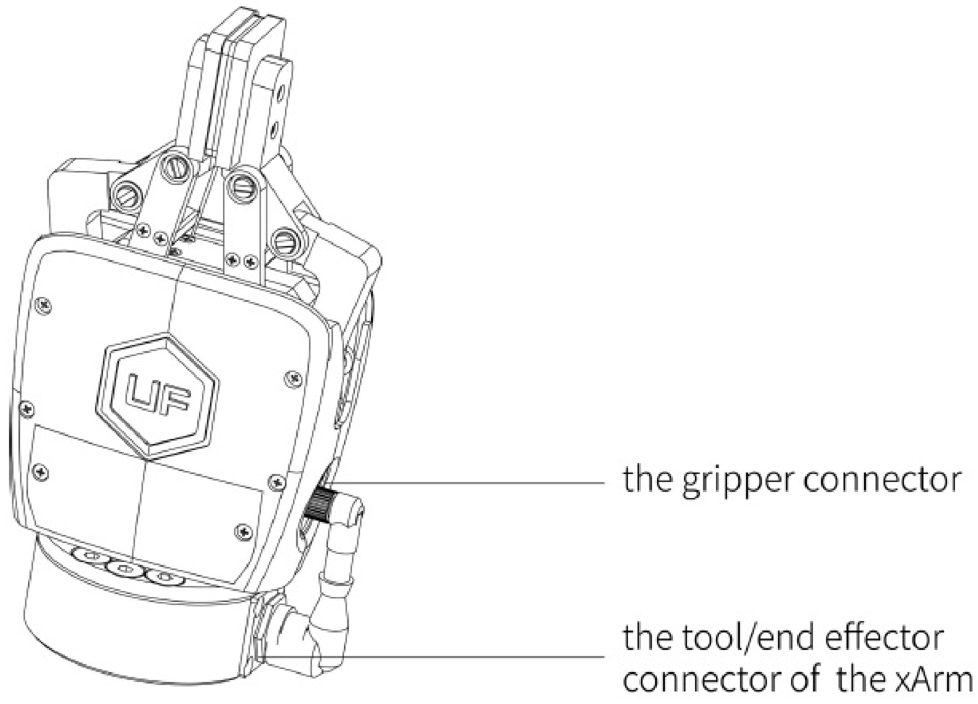
Cross Countersunk Head Screws M6*8 (4)

2.2. Mechanical Installation

xArm Gripper installation steps (as shown below):

1. Move the robotic arm to a safe position. Avoid touching the robotic arm mounting surface or other equipment;
2. Power off the robotic arm by pressing the emergency stop button on the control box;
3. Fix the gripper on the end of the robotic arm with 2 M6 bolts;
4. Connect the robotic arm and the gripper with the gripper connection cable;





Note:

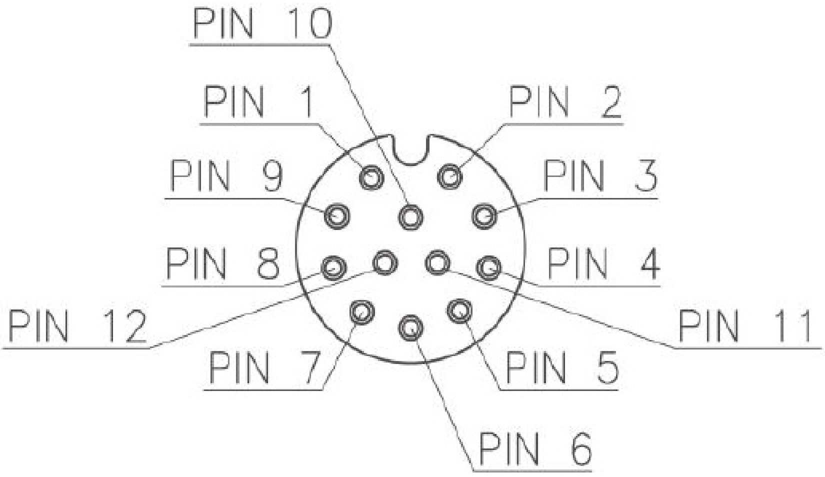
1. When wiring the gripper connection cable, be sure to power off the robotic arm, the emergency stop button is in the pressed state and the power indicator of the robotic arm is off, so as to avoid robotic arm failure caused by hot plugging;
2. Due to the limitation of the length of the gripper connection cable, the gripper connector and the tool/end effector connector must be on the same side;
3. When connecting the gripper and the robotic arm, be sure to align the positioning holes at the ends of the gripper and the robotic arm. Since the male pins of the gripper connection cable are relatively thin, avoid bending the male pins during disassembly.

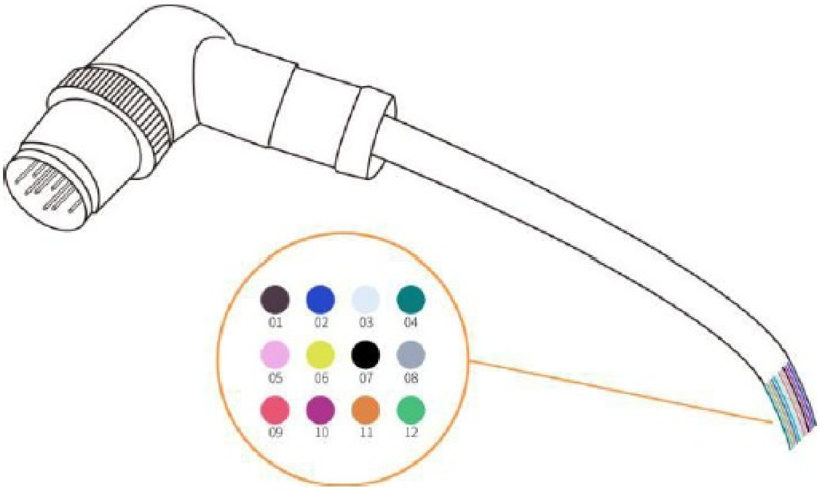
2.3. Electrical Setup

Power and communication are established with the xArm Gripper via a single gripper connection cable. The gripper connection cable provides a 24V power supply to the Gripper and enables serial RS485 communication to the control box.

Warning
Power must be off before connecting the Gripper and the robotic arm via the gripper connection cable.

2.3.1. Pinout Interface





There are 12 pins inside the cable with different colors, each color represents different functions, please refer to the following table:

Pin sequence	Color	Signal
1	Brown	+24V Power
2	Blue	+24V Power
3	White	0V (GND)
4	Green	0V (GND)
5	Pink	User 485-A
6	Yellow	User 485-B
7	Black	Tool Output 0 TO0
8	Grey	Tool Output 1 TO1
9	Red	Tool Input 0 TI0
10	Purple	Tool Input 1 TI1
11	Orange	Analog input 0 (AI0)
12	Light Green	Analog input 1 (AI1)

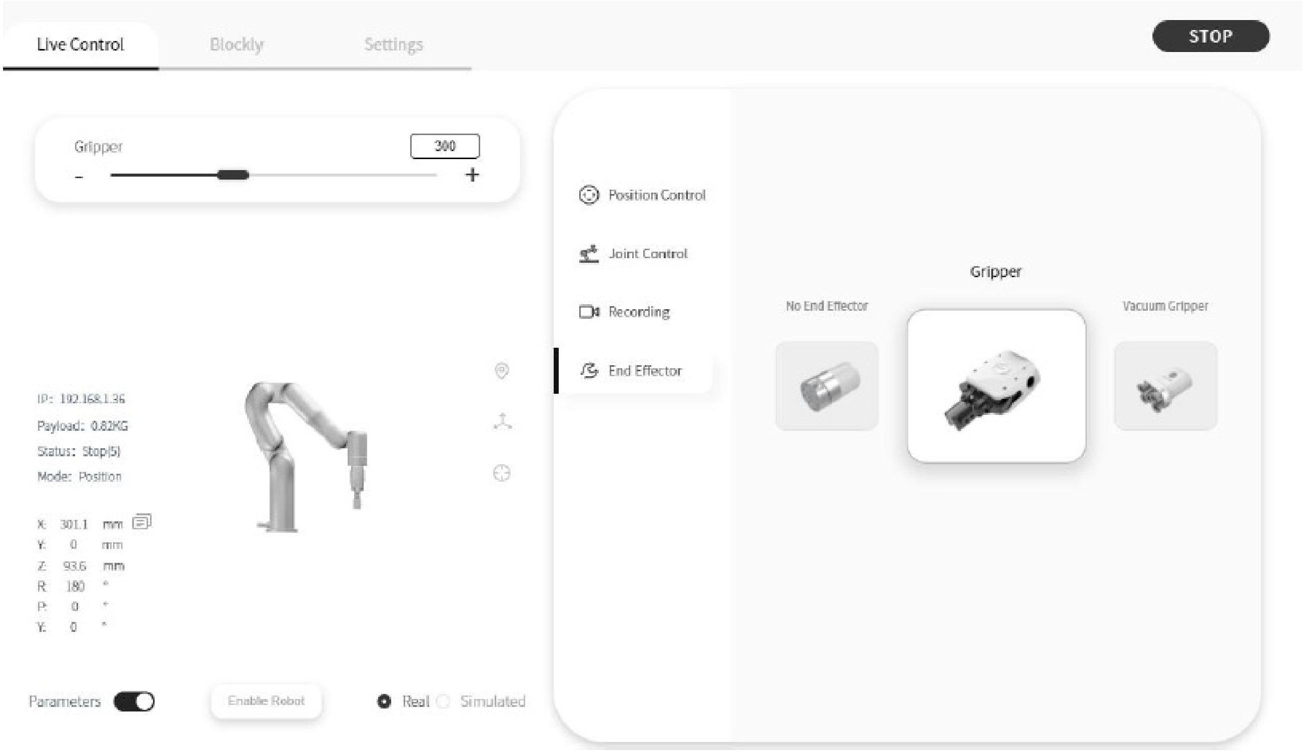
3. Control

3.1.Use xArm Studio to Control xArm Gripper

1. Set up xArm Gripper

- Enter [Settings]-[End Effector]

Select the end effector: xArm Gripper



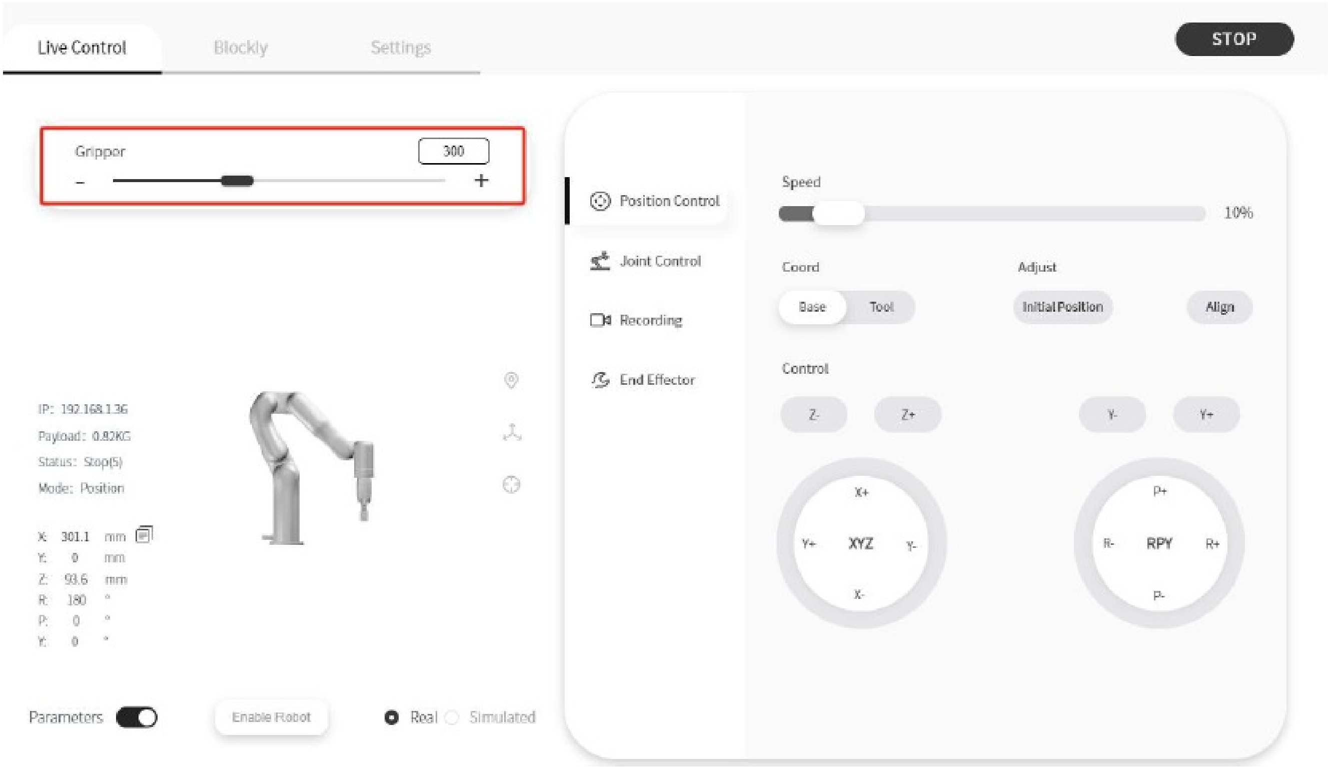
IP: 192.168.1.36
Payload: 0.82KG
Status: Stop(5)
Mode: Position

X: 301.1 mm
Y: 0 mm
Z: 93.6 mm
R: 180 °
P: 0 °
Y: 0 °

1. The opening and closing speed of the gripper can be adjusted.
2. Control xArm Gripper

Control the xArm gripper in the live control Control Method:

1) By dragging this progress bar, you can control the opening and closing stroke of the gripper.

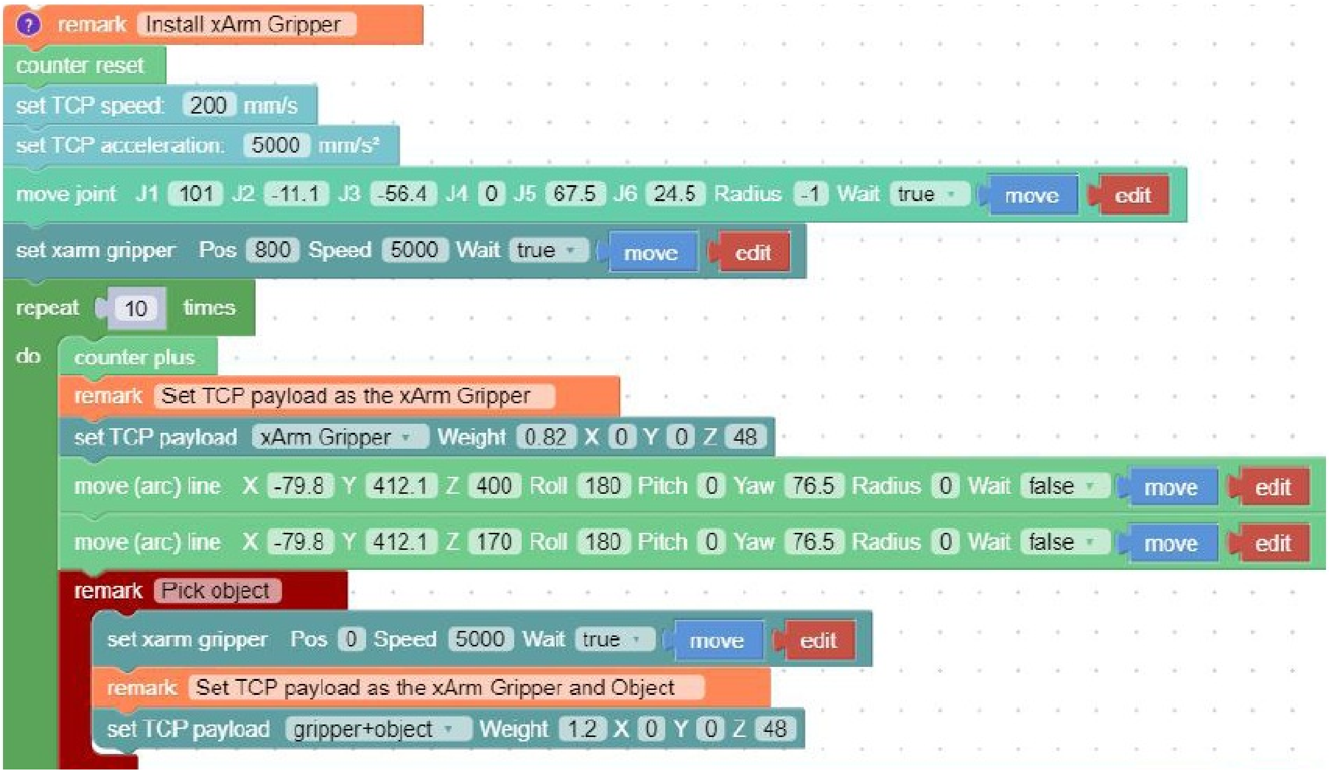


IP: 192.168.1.36
Payload: 0.82KG
Status: Stop(5)
Mode: Position

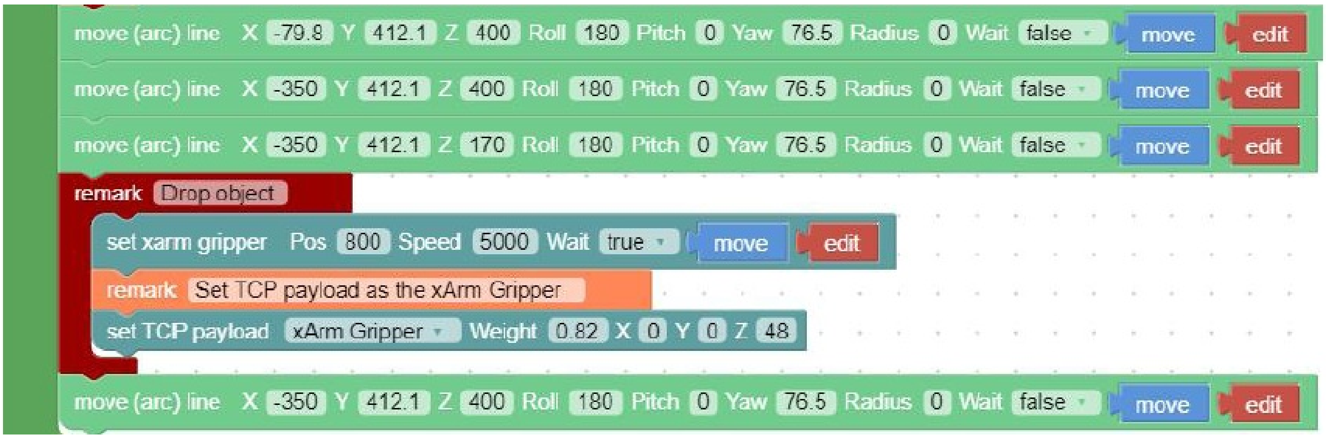
X: 301.1 mm
Y: 0 mm
Z: 93.6 mm
R: 180 °
P: 0 °
Y: 0 °

- Control the xArm gripper through Blockly

xArm Gripper.Blockly



```
remark Install xArm Gripper
counter reset
set TCP speed: 200 mm/s
set TCP acceleration: 5000 mm/s²
move joint J1 101 J2 -11.1 J3 -56.4 J4 0 J5 67.5 J6 24.5 Radius -1 Wait true move edit
set xarm gripper Pos 800 Speed 5000 Wait true move edit
repeat 10 times
do  counter plus
    remark Set TCP payload as the xArm Gripper
    set TCP payload xArm Gripper Weight 0.82 X 0 Y 0 Z 48
    move (arc) line X -79.8 Y 412.1 Z 400 Roll 180 Pitch 0 Yaw 76.5 Radius 0 Wait false move edit
    move (arc) line X -79.8 Y 412.1 Z 170 Roll 180 Pitch 0 Yaw 76.5 Radius 0 Wait false move edit
    remark Pick object
        set xarm gripper Pos 0 Speed 5000 Wait true move edit
        remark Set TCP payload as the xArm Gripper and Object
        set TCP payload gripper+object Weight 1.2 X 0 Y 0 Z 48
```



```
    move (arc) line X -79.8 Y 412.1 Z 400 Roll 180 Pitch 0 Yaw 76.5 Radius 0 Wait false move edit
    move (arc) line X -350 Y 412.1 Z 400 Roll 180 Pitch 0 Yaw 76.5 Radius 0 Wait false move edit
    move (arc) line X -350 Y 412.1 Z 170 Roll 180 Pitch 0 Yaw 76.5 Radius 0 Wait false move edit
    remark Drop object
        set xarm gripper Pos 800 Speed 5000 Wait true move edit
        remark Set TCP payload as the xArm Gripper
        set TCP payload xArm Gripper Weight 0.82 X 0 Y 0 Z 48
    move (arc) line X -350 Y 412.1 Z 400 Roll 180 Pitch 0 Yaw 76.5 Radius 0 Wait false move edit
```

The role of this program: execute this program to control the gripper to pick the target object at the specified position, and then place the target object at the target position.

Note:

1) When the gripper is installed on the robotic arm, the TCP Payload of the gripper should be set in the Blockly program. When the total weight of the gripper changes after the object is picked, a new TCP Payload needs to be set.

3.2.Use Python-SDK to Control xArm Gripper

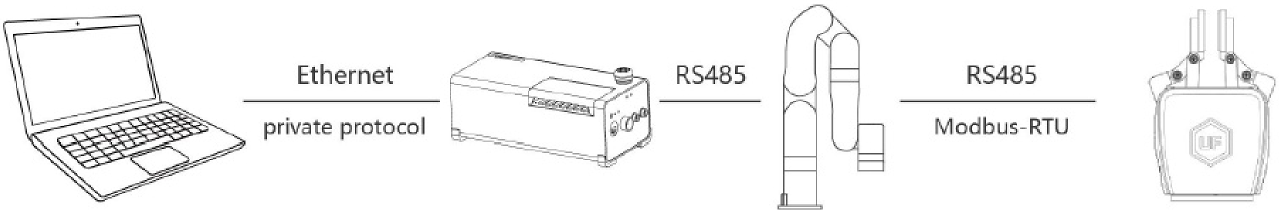
For details on controlling Gripper with python-SDK, please refer to the link below:
https://github.com/xArm-Developer/xArm-Python-SDK/blob/master/example/wrapper/common/5004-set_gripper.py

3.3.Use ROS-SDK to Control xArm Gripper

Please refer to Section 5.7.7 in the ReadMe file attached to the ROS package to control the gripper.

xArm ROS-SDK link :
https://github.com/xArm-Developer/xarm_ros

3.4.Use Private Protocol Communication Protocol to Control xArm Gripper



This section mainly explains how to control the xArm Gripper by using the Private Protocol protocol through xArm control box.

3.4.1. Private Protocol Communication Format

Private Protocol:
Modbus protocol is an application layer message transmission protocol, including three message types: ASCII, RTU, and TCP. The standard Modbus protocol physical layer interface includes RS232, RS422, RS485 and Ethernet interfaces, and adopts master / slave communication.

Private Protocol Communication Process:

1. Establish a TCP connection
2. Prepare Modbus messages
3. Use the send command to send a message
4. Waiting for a response under the same connection

5. Use the recv command to read the message and complete a data exchange
6. When the communication task ends, close the TCP connection Parameter:

Default TCP Port: 502 Protocol: 0x00 0x02
On the problem of users using communication protocols to organize data in big endian and little endian:

In this article, data analysis is big-endian analysis.

3.4.2. Read xArm Gripper Register

3.4.2.1. Register Function

Transaction Identifier	2 Bytes	0x0001
Protocol Identifier	2 Bytes	0x0002
Length	2 Bytes	6+N*x2
Unit Identifier	1 Byte	0x7C
Internal Use	1 Byte	0x09
Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x03
Register Starting Address	2 Bytes	Address
Quantity of Registers	N*x2 Bytes	N*

Response		
Transaction Identifier	2 Bytes	0x0001
Protocol Identifier	2 Bytes	0x0002
Length	2 Bytes	6+N*x2
Unit Identifier	1 Byte	0x7C

Resgister

indicate an error(except 0)

No error occurred: 0x0000

Example

Get the xArm Gripper status

Transaction Identifier	2 Bytes	0x00 0x01
Protocol Identifier	2 Bytes	0x00 0x02
Length	2 Bytes	0x00 0x08

Get the xArm Gripper status Request

MBTP Header

Unit Identifier	1 Byte	0x7C
Internal Use	1 Byte	0x09
Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x03
Register Starting Address	2 Bytes	0x00 0x00
Quantity of Registers	2 Bytes	0x00 0x01
Response		
Transaction Identifier	2 Bytes	0x00 0x01
Protocol Identifier	2 Bytes	0x00 0x02
Length	2 Bytes	0x00 0x08
Unit Identifier	1 Byte	0x7C
Status Value	1 Byte	0x00
Internal Use	1 Byte	0x09
Slave ID	1 Byte	0x08
Function Code	1 Byte	0x03
Byte Count	1 Byte	0x02

Registers Value (Robotic arm is in motion status)	2 Bytes	0x00 0x01

Internal Use Modbus RTU Data

MBTP Header

Internal Use

Modbus RTU Data

Get the xArm Gripper position

Transaction Identifier	2 Bytes		0x00,0x01
Protocol Identifier	2 Bytes		0x00,0x02
Length	2 Bytes		0x00,0x08
Unit Identifier	1 Byte		0x7C
Internal Use	1 Byte		0x09
Slave ID (Gripper)	1 Byte		0x08
Function Code	1 Byte		0x03
Register Starting Address	2 Bytes		0x07,0x02
Quantity of Registers	2 Bytes		0x00,0x02
Response			
Transaction Identifier		2 Bytes	0x00,0x01
Protocol Identifier		2 Bytes	0x00,0x02
Length Unit Identifier		2 Bytes 1 Byte	0x00,0x09 0x7C
	19		

Get the xArm Gripper position Request

MBTP Header

Internal Use Modbus RTU Data

MBTP Header

	Status Value	1 Byte	0x00
Parameters	Sate	1 Byte	0x00
Internal Use	Internal Use	1 Byte	0x09
	Slave ID	1 Byte	0x08
	Function Code	1 Byte	0x03
Modbus RTU Data	Byte Count	1 Byte	0x04
	Registers Value	4 Bytes	0x00,0x00,0x01,0x90
	(position: 400)		

Get the xArm Gripper Error

Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02
Length	2 Bytes	0x00,0x08
Unit Identifier	1 Byte	0x7C
Internal Use	1 Byte	0x09
Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x03
Register Starting Address	2 Bytes	0x00,0x0F

Quantity of Registers	2 Bytes	0x00,0x01
Response		
Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02
Length	2 Bytes	0x00,0x08
Unit Identifier	1 Byte	0x7C
Status Value	1 Byte	0x00
Sate	1 Byte	0x00
Internal Use	1 Byte	0x09
Slave ID	1 Byte	0x08
Function Code	1 Byte	0x03
Byte Count	1 Byte	0x02

Get the xArm Gripper Error Request

MBTP Header

Internal Use Modbus RTU Data

MBTP Header

Parameters Internal Use

Modbus RTU Data

Registers Value

(No error occurred in the Gripper)

2 Bytes 0x00,0x00

Write xArm Gripper Register

Register Function

Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02
Length	2 Bytes	9+N*x2
Unit Identifier	1 Byte	0x7C
Internal Use	1 Byte	0x09
Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	Address
Quantity of Registers	2 Bytes	N*
Byte Count	1 Byte	N*x2
Registers Value	N*x2 Bytes	Value
Response		
Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02

Length	2 Bytes	0x00,0x09
Unit Identifier	1 Byte	0x7C
Status Value	1 Byte	0x00
Internal Use	1 Byte	0x09
Slave ID	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	Address
Quantity of Registers	2 Bytes	N*

Write Register Request

MBTP Header

Internal Use

Modbus RTU Data

MBTP Header

Internal Use Modbus RTU Data

N* = Quantity of Registers

Address = Register Starting Address

Resgister:

Resgister Starting Address

Registers Value

Set Gripper Mode Register 0x0101 2bytes **Position mode** 0x0000

Enable/Disable Gripper Register

0x0100 2 Bytes **Enable :** 0x0001 **Disable :** 0x0000

Set Gripper Position Register 0x0700 4 Bytes

Open the Gripper : 0x0000 0x0082

Close the Gripper : 0x0000 0x0032

Set Position Speed Register 0x0303 2 Bytes

0x0100-0x0400

Example

Set xArm Gripper Mode

MBTP Header

Internal Use

Modbus RTU Data

Set xArm Gripper Mode Request

Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02
Length	2 Bytes	0x00,0x0B
Unit Identifier	1 Byte	0x7C
Internal Use	1 Byte	0x09
Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	0x01,0x01
Quantity of Registers	2 Bytes	0x00,0x01
Byte Count	1 Byte	0x02

Registers Value (Position mode)

2 Bytes 0x00,0x00

Response

MBTP Header Transaction Identifier 2 Bytes 0x00,0x01 Protocol Identifier 2 Bytes 0x00,0x02

	Length	2 Bytes	0x00,0x09
	Unit Identifier	1 Byte	0x7C
	Status Value	1 Byte	0x00
Parameters	Sate	1 Byte	0x00
Internal Use	Internal Use	1 Byte	0x09
	Slave ID	1 Byte	0x08
Modbus RTU Data	Function Code Register Starting Address	1 Byte 2 Bytes	0x10 0x01,0x01
	Quantity of Registers	2 Bytes	0x00,0x01

Enable/Disable xArm Gripper

Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02
Length	2 Bytes	0x00,0x0B
Unit Identifier	1 Byte	0x7C
Internal Use	1 Byte	0x09
Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	0x01,0x00

Quantity of Registers	2 Bytes	0x00,0x01
Byte Count	1 Byte	0x02
Registers Value	2 Bytes	0x00,0x01
Response		
Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02
Length	2 Bytes	0x00,0x09
Unit Identifier	1 Byte	0x7C
Status Value	1 Byte	0x00
Sate	1 Byte	0x00
Internal Use	1 Byte	0x09
Slave ID	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	0x01,0x00
Quantity of Registers	2 Bytes	0x00,0x01

Enable/Disable xArm Gripper Request

MBTP Header

Internal Use

Modbus RTU Data

MBTP Header

Parameters Internal Use

Modbus RTU Data

Set xArm Gripper Speed

MBTP Header

Internal Use

Modbus RTU Data

MBTP Header

Parameters Internal Use

Modbus RTU Data

Set xArm Gripper Speed Request

Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02
Length	2 Bytes	0x00,0x0B
Unit Identifier	1 Byte	0x7C
Internal Use	1 Byte	0x09
Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	0x03,0x03
Quantity of Registers	2 Bytes	0x00,0x01
Byte Count	1 Byte	0x02
Registers Value(1500r/min)	2 Bytes	0x05,0xDC

Transaction Identifier	2 Bytes	0x00,0x01
Protocol Identifier	2 Bytes	0x00,0x02
Length	2 Bytes	0x00,0x09
Unit Identifier	1 Byte	0x7C
Status Value	1 Byte	0x00
Sate	1 Byte	0x00
Internal Use	1 Byte	0x09
Slave ID	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	0x03,0x03
Quantity of Registers	2 Bytes	0x00,0x01

Response

Set xArm Gripper Position

Transaction Identifier		2 Bytes	0x00 0x01
Protocol Identifier		2 Bytes	0x00 0x02
Length Unit Identifier		2 Bytes 1 Byte	0x00 0x0D 0x7C
Internal Use		1 Byte	0x09
	24		

Set xArm Gripper Position Request

MBTP Header

Internal Use

Registers Value

0x00,0x00,0x01,0x90

(400)

Response

BTP Header

Parameters Internal Use

Modbus RTU Data

ransaction Identifier

Protocol Identifier Length

Unit Identifier Status Value Sate

Internal Use Slave ID Function Code

Register Starting Address

Q

Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	0x07,0x00
Modbus RTU Data Quantity of Registers	2 Bytes	0x00,0x02
Byte Count	1 Byte	0x04

xArm Gripper Control Process

The complete process of controlling the motion of the xArm Gripper is as follows:

Enable the Gripper

0x00, 0x01, 0x00, 0x02, 0x00, 0x0B, 0x7C, 0x09, 0x08, 0x10, 0x01, 0x00, 0x00, 0x01, 0x02, 0x00,

0x01

Open the Gripper

0x00, 0x01, 0x00, 0x02, 0x00, 0x0D, 0x7C, 0x09, 0x08, 0x10, 0x07, 0x00, 0x00, 0x02, 0x04, 0x00,

0x00, 0x01, 0x90

Close the Gripper

0x00, 0x01, 0x00, 0x02, 0x00, 0x0D, 0x7C, 0x09, 0x08, 0x10, 0x07, 0x00, 0x00, 0x02, 0x04, 0x00,

0x00, 0x00, 0x32

Use Modbus-RTU Communication Protocol to Control xArm Gripper

Modbus RTU Communication Format

The gripper defaults to the standard Modbus RTU protocol at a default baud rate is 2Mbps and the slave ID is 0x08. The currently supported function codes are: 0x03 / 0x10. In this article, data analysis is big-endian analysis.

Slave ID (Gripper)	1 Byte	0x08
Function Code	1 Byte	0x03
Register Starting Address	2 Bytes	Address
Quantity of Register	2 Bytes	N*
Modbus CRC16 Response	2 Bytes	CRC*
Slave ID	1 Byte	0x08
Function Code	1 Byte	0x03
Byte Count	1 Byte	N*x2

Read Register Request

Modbus RTU Data

Modbus RTU Data

Registers Value **N***x2 Bytes **Value**

Modbus CRC16 2 Bytes **CRC***

Read xArm Gripper Register

N* = Quantity of Registers

Address = Register Starting Address

CRC* = Cyclic Redundancy Check

Resgister

Resgister Starting Address

Register Value

Get Gripper status Register

Stop status: 0x0000 0x0000 2 Bytes Motion status: 0x0001

Clipping status: 0x0010

Get Gripper position

Register 0x0702 4bytes 0xFFFFFFFB-0x00000320

Get Gripper Error Register

0x000F 2 Bytes

An error occurs:

all other return values indicate an error(except 0)

No error occurred: 0x0000

Write xArm Gripper Register

Modbus RTU Data

Write Register Request

Slave ID (Gripper) 1 Byte 0x08

Function Code 1 Byte 0x10

Register Starting Address 2 Bytes **Address**

Quantity of Register 2 Bytes **N***

Byte Count 1 Byte **N*x2**

Registers Value **N***x2 Bytes **Value**

Modbus RTU Data

Modbus CRC16 2 Bytes **CRC***

Slave ID	1 Byte	0x08
Function Code	1 Byte	0x10
Register Starting Address	2 Bytes	Address
Quantity of Registers	2 Bytes	N*
Modbus CRC16	2 Bytes	CRC*

Response

N* = Quantity of Registers

Address = Register Starting Address

CRC* = Cyclic Redundancy Check

Resgister:

Resgister Starting Address

Register Value

Enable/Disable Gripper 0x0100 2 Bytes **Enable :** 0x0001 **Disable :** 0x0000

Set Gripper Position Register	0x0700	4 Bytes
Set Position Speed Register	0x0303	2 Bytes
Set Gripper Mode Register	0x0101	2bytes

Open the Gripper : 0x0000 0x0082

Close the Gripper : 0x0000 0x0032 0x0100-0x0400

Unit : r/min

Position mode 0x0000

Modbus RTU Example

Gripper Alarm Code & General Response

The user can re-power on the robotic arm as an error handling, the steps are as follows (all the following steps are needed):

Re-powering the robotic arm via the emergency stop button on the control box.

Enable the robotic arm.

1. xArm Studio enable method: Click the guide button of the error pop-up window or the ‘ STOP’ red button in the upper right corner.
2. **xArm-Python-SDK enable method: Refer to Error** Handling Method.
3. **xArm_ros: users can view related documents at https://github.com/xArm-Developer/xarm_ros**

Re-enable the gripper.

If the problem remains unsolved after power on/off multiple times, please contact UFACTORY team for support.

Software Error Error Handling

Gripper Current Detection Error

Please restart the xArm with the Emergency Stop Button on the xArm Control Box.

Gripper Current Overlimit

Please click “OK” to re-enable the Gripper.

G12 Gripper Speed Overlimit

Please click “OK” to re-enable the Gripper.

Gripper Position Command Overlimit

Please click “OK” to re-enable the Gripper.

Gripper EEPROM Read and Write Error Please click “OK” to re-enable the Gripper.

Gripper Driver IC Hardware Error Please click “OK” to re-enable the Gripper.

Gripper Driver IC Initialization Error Please click “OK” to re-enable the Gripper.

Gripper Large Motor Position Deviation

Please check if the movement of the Gripper is blocked, if not, please click “OK” to re-enable the Gripper.

Gripper Command Over Software Limit

Please check if the gripper command is set beyond the software limit.

Gripper Feedback Position Software Limit Please contact technical support.

Gripper Drive Overloaded Please contact technical support.

Gripper Motor Overload Please contact technical support.

Gripper Driver Type Error

Please click “OK” to re-enable the Gripper.

For alarm codes that are not listed in the above table: enable the robotic arm and gripper. If the problem remains unsolved after power on/off for multiple times, please contact technical support.:

xArm-Python-SDK alarm processing method:

When designing the robotic arm motion path with the Python library, if the robot fails, you need to manually clear the errors. After clearing the error, you still need to re-enable the robotic arm and set the robot to motion mode for the robot to move normally. Then the path planning of the robotic arm should be re-adjusted according to the reported error information.

Python library error clearing steps: (Please check GitHub for details on the following interfaces)

1. error clearing: clean_error()
2. Re-enable the robotic arm: motion_enable(true)
3. Set the motion state: set_state(0)

xArm Gripper Technical Specifications

Gripper

Nominal Supply Voltage 24V DC Absolute Maximum Supply Voltage 28V DC

Quiescent Power (Minimum Power Consumption)

1.5W

Peak Current 1.5A

Working Range 0- 84mm

Maximum Clamping Force 30N Weight 802g

Communication Mode RS-485 Communication Protocol Modbus RTU

Programmable Gripping Specification

Position, Speed

Feedback Position

6. After-sales Service

1. After-sales policy:

For the detailed after-sales policy of the product, see the official website:

https://store-ufactory-cc.myshopify.com/pages/warranty-returns

1. The general process of after-sales service is:

1. Contact UFACTORY technical support (support@ufactory.cc) to confirm whether the product needs to repair and which part should be sent back to UFACTORY.
2. After the bill of lading on UPS, we will send the invoice and label to you by mail. You need to make an appointment with the local UPS and then send the product to us.
3. UFACTORY will check the product warranty status according to the after-sales policy.
4. Generally, the process takes around 1-2 weeks except for shipment.

Note:

1. Please keep the original packaging materials of the product. When you need to send the product back to get repaired, please pack the product with the original box to protect the product during the transportation.

Specifications

- Product: xArm Gripper
- Version: 2.2.0
- Operating Range: -10 to 850 (gripper opening and closing)
- Power Supply: 24V DC
- Communication: Modbus RTU over RS-485

FAQ

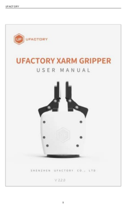
Q: What is the operating range of the gripper?

A: The gripper opening and closing range is from -10 to 850.

Q: How should I connect the gripper to the robotic arm?

A: Use 2 M6 bolts to fix the gripper at the end of the robotic arm and connect them using the provided gripper connection cable.

Documents / Resources

 UFACTORY XARM GRIPPER USER MANUAL	**UFACTORY 2.2.0 xArm Gripper** [pdf] User Manual 2.2.0 xArm Gripper, 2.2.0, xArm Gripper, Gripper

References

- **User Manual**

Manuals+, **Privacy Policy**