

UR+ Solution

Technical Manual Guide

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HIWIN. INDUSTRIE 4.0 Best Partner



Semiconductor

- Subsystem
- Semiconductor/LED/Panel • FFFM

Single-Axis Robot

Precision / Semiconductor /

- (Equipment Front End Module)
- Wafer Robot
- Load Port
- Wafer Aligner

Medical / FPD

• KU, KE, KC

• KK, SK

KS, KA



Multi-Axis Robot

Pick-and-Place / Assembly / Array and Packaging / Semiconductor / Electro-Optical Industry /

- Automotive Industry / Food Industry
- Articulated Robot
- SCARA Robot
- Electric Gripper
- Integrated Electric Gripper

Torque Motor

- RAB Series
- RAS Series
- RCV Series RCH Series

Linear Guideway

Automation / Semiconductor / Medical

- Ball Type--HG, EG, WE, MG, CG
- Quiet Type--QH, QE, QW, QR
- Other--RG, F2, PG, SF, RC

DATORKER®

Strain Wave Gear

Super S Series

- Ecological & Economical
- Lubrication Module E2

Bearing

- Support Unit



- DGC Type
- DGH Type
- DLC Type

Medical Equipment

Hospital / Rehabilitation Centers /

Nursing Homes Robotic Gait Training System

Robotic Endoscope Holder

Ballscrew Bearing

- Semiconductor / Packaging Machine
- / SMT / Food Industry / LCD
- Drives--D1, D2T/D2T-LM, E1





- **Torque Motor & Direct Drive Motor** Machine Tools
- Torque Motor-
- TM-2/IM-2, TMRW Series Inspection / Testing Equipment / Robot

 Direct Drive Motor--DMS, DMY, DMN, DMT Series



- Super T Series
- Mini Roller
- Rotating Nut (R1)
- Energy-Saving & Thermal-
- Controlling (Cool Type)
- Heavy Load Series (RD)
- Ball Spline

- Machine Tools / Robot
 - Crossed Roller Bearing

AC Servo Motor & Drive

- Motors--FR, E1















Single-Axis Linear Motor Stage

Rotary Table

Medical / Automotive Industry / Machine Tools / Machinery Industry



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1. Warranty

The warranty period for the product is 12 months or 5 million operations (whichever comes first), but it does not include any of the following causes of failure:

© Beyond the operation method, operating environment and storage specifications defined in the product manual.

 \bigcirc The damage caused by installation place movement, change of working environment, or improper transfer after being installed by a professional installer.

 \bigcirc Product damaged due to collision or accident caused by improper operation or installation.

The following conditions are not covered by the warranty:

O Product serial number or date of production(month and year) cannot be verified.

- ③ Gripper body and control components using non-HIWIN original products.
- ③ Adding or removing any element into/out the gripper or the controller.

◎ Modifying the wire or the cables between the gripper body and the controller.

◎ Any modification of the appearance of the gripper or controller; Removal of the components inside the gripper or the controller. e.g., demolition of the outer covering, product drilling or cutting.

O Damage caused by any natural disaster. i.e., fire, earthquake, tsunami, lightning, windstorms, floods etc.

HIWIN does not provide any warranty or compensation to all the damage caused by above-mentioned circumstances unless the user can prove that the product is defective.

For more information towards warranty terms and conditions, please contact the technician or the dealer who you purchased with.



2. Technical Info

2.1 Integrated electric gripper S-series

	SEG-24	STG-16		
Category	ltem	Unit	Valu	le
	Stroke per side	mm	12	8
Mation specifications	Gripping force	Ν	35 [Note2]	40 [Note1]
Motion specifications	Gripping speed	mm/s	15(45) [Note3]	30
	Repeatibility	mm	±0.1	±0.1
Power specifications	Operation voltage	V	24±10%	24±10%
Power specifications	Operation current	А	0.5	0.5
	Load torque Mr	N-m	11.76	7
Lood	Load torque Mp	N-m	7.35	4.5
Luau	Load torque My	N-m	7.35	4.5
	Load strength F	Ν	254.8	196
	Weight	kg	0.7	0.7
	IP class	-	IP20	IP40
	Cleanroom class	-	-	-
	Operation temperature	°C	5-45	5-45
Hardware specifications	Operation humidity	%RH	< 85	< 85
	Storage temperature	°C	0-60	0-60
	Total length	mm	105.5	72.3
	Total height	mm	88	100
	Total thickness	mm	38	100

[Note 1] This gripping force is measured at a gripping point (L) of 20mm with a gripping force accuracy of $\pm 25\%$.

[Note 2] This gripping force is measured at a gripping point (L) of 20mm with a gripping force accuracy of ±30%. [Note 3] Moving velocity is 45mm/s.

[Description 1] Gripping force is recommended to be 10 to 20 times the weight of gripped object.

[Description 2] High-speed movement or rotation after gripping requires the weight of object to be reduced.

[Description 3] Material, shape, grip area, etc. of gripping part will affect the maximum weight of gripped object, and the gripping part required to be installed before gripping.



2.2 Electric gripper X-series

	Mode	XEG-16	XEG-32	XEG-64		
	Stroke	16 ±0.5	32 ±0.5	64 ±0.5		
	Grip	ping Force (N)	25~50	60~150	180~450	
	Speed (mm/s)	Motion	1~60	1~80	1~100	
	Speed (mm/s)	Gripping[Note2]	1~10	1~20	1~20	
	Rep	eatability (mm)	±0.01	±0.01	±0.02	
Electric	[)rive Device	Si	ingle axis rob	ot	
gripper	Grease Suppl	y of Drive Device[Note3]	500,000 cycles or 6 months			
	Impact /Vibra	ation Resistance (m/s^2)	150 / 30			
	Operating T	emperature Range(°C)	5 ~ 45			
	Operating	Humidity $Range(\%)$	RH 35~85 (No condensing)			
		IP Class	IP20			
		Weight (kg)	0.4	0.7	1.9	
		Motor Type	Stepper motor			
	Мо	tor Size(mm)	□ 20	28	□ 42	
Controller	Pov	ver Supply(V)	DC 24 ± 10%			
	Tot	al Current(A)		0.5A		
		Weight (Kg)	0.15			

[Note 1] The weight of workpiece[kg] * acceleration of gravity 9.81(m/s2) should be 1/10~1/20 of the gripping force[N]. If the gripper holding a workpiece moves or turns with high-acceleration/ deceleration, choose the model with higher force allowance.

[Note 2] Set the parameters and operation mode to avoid application of excessive impact force to the attachments (fingers) during operation.

[Note 3] Apply proper amount of grease to the grease hole of single axis robot by a grease supply device or on the surface of ball screws with brushes.

[Note 4] Mass of a workpiece that the attachments (fingers) can grip greatly differs depending on the material quality, shape, and gripping surface condition of the attachments (fingers). Design the attachments (fingers) to be lightweight and minimum length.

[Note 5] The gripping force of the specification sheet is measured at a speed of 2mm/s and a gripping point (L) of 20mm. The accuracy of the maximum gripping force is XEG-16 : $\pm 30\% \times XEG-32 : \pm 16.6\% \times XEG-64 : \pm 13.3\%$.



3. S-Series Getting Started

3.1 What's in the box?

• Model: SEG-24-UR

- 1. Integrated electric gripper SEG-24-UR
- 2. UR Robot adapter set (ISO-9409-1-50-4-M6)
- 3. UR actuator cable
- 4. Accessory kit
 - Pin
 - Centering sleeve
- 5. Software
 - URCap (<u>Download</u>)

• Model: STG-16-UR

- 1. Integrated electric gripper STG-16-UR
- 2. UR Robot adapter set (ISO-9409-1-50-4-M6)
- 3. UR actuator cable
- 4. Accessory kit
 - Pin
 - Centering sleeve
- 5. Software
 - URCap (<u>Download</u>)

Example:



3.2 Mechanical mounting

• Model: SEG-24-UR



Item	Parts	Description	Amount
1	SEG24 adapter		1
2	SEG24 Centering Sleeve	Ø5xØ3x4L	2
3	Spring Washer	M3 SUS304	4
4	Bolt	M3x0.5Px8L SUS304	4
5	UR adapter		1
6	Pin	Ø6x10L	1
7	Spring Washer	M6 SUS304	4
8	Bolt	M6x1Px8L SUS304	4
9	Pin	Ø6x10L	2
10	Spring Washer	M4 SUS304	4
11	Bolt	M4x0.7Px16L SUS304	4



• Model: STG-16-UR



ltem	Parts	Description	Amount
1	UR adapter		1
2	Pin	Ø6x10L	1
3	Spring Washer	M6 SUS304	4
4	Bolt	M6x1Px8L SUS304	4
5	STG16 adapter		1
6	Pin	Ø6x10L	2
7	Spring Washer	M5 SUS304	3
8	Bolt	M5x0.8Px12L SUS304	3
9	Pin	Ø4x6L	2
10	Spring Washer	M5 SUS304	3
11	Bolt	M5x0.8Px12L SUS304	3



3.3 Electrical mounting

6

OUT2

Alarm

				The co	onnector of cal	ole (F	Robot side	: 8 pins)	
						No.	Pin define	Function	Wire color
			Ø			1	AI3	Analog	NC
	XA		0			2	AI2	input	NC
- M						3	TO1	Tool	Pink
			0		E CO	4	TO0	output	Blue
				2 500	00	5	POWER	24V	Black
						6	TI1	Tool	White
	_/	/		v [∞]		7	TIO	input	Brown
	(2)) The con	nector o	f cable		8	GND	0V	Gray
	\bigcirc	(Grippe	r side: 6	pins)					
					1				
	No.	Pin define	Function	Wire color					
	1	IN1	Ready	Brown					
	2	IN2	O/C	White					
	3	OUT1	Busy	Blue					
	4	VCC	24V	Black					
	5	GND	0V	Gray					

Note : The default tool digital outputs setting for S-Series is NPN type, while tool digital input is PNP type. The design is applied to UR3, UR5, UR10, CB3.0 and CB3.1.

Pink



3.4 Installing URCap

- Click <u>here</u> for free downloading of URCap, and save it to a USB stick.
- Insert the USB with the URCaps file into the UR teach pendant. From the main menu, please select "Setup Robot".
- Click "+" on the button side of page to open the URCap file.
- 4. Restart the robot when prompted.

Note : The HIWIN URCaps requires Universal Robots Polyscope software version above 3.3 or higher, and lower version may not function properly. The current URCaps only limited to UR3, UR5, UR10, CB3.0 and CB3.1.

- 5. After successfully installing the URCaps, please follow the instruction to initialize UR Robot.
- 6. Set the voltage of the tool output to 24V under IO page.



8 😑 🗉 Universal Robots Graphical Programming Environment			
PolyScope Robo	t User Interface (2	
	Please select		
	Run Program		
UNIVERSAL			
ROBOTS	Program Robot		
		/	•
	Setup Robot 🧉		
About			
	Shutdown Robot		

😣 🚍 🗉 🛛 Universal Robots Grap	phical Programming Environment	
	Setup Robot	
Initialize Robot	Select URCap to install	
Language	Current Directory: //programs	
Update	xseriesgripper-1.0.urcap	
Set Password		
Calibrate Screen		
Network		Step 3
Time		
URCaps		
	Filename:	
Back	Filter: URCap Files	Open Cancel



🗕 🕒 🗉 Universal Robots Grap	hical Programming Environment	
	Setup Robot	
Initialize Robot	URCaps Active URCaps	
Language	X-series Gripper S-series Gripper	
Update		
Set Password	URCap Information	
Calibrate Screen		
Network		
Time		
URCaps		Step 4
Back		N Restart



e sure that the installa	tion and payload are correct and press	the button with the green icon to initialize the robot.
Robot	Normal	
	• START	OFF
Active Payload	0.0 kg	
nstallation file	default	Load Installation
	1	Configure TCP Configure Mounting
1,1	" <u>H</u>	





- 3.5 Installation page
- Click the "Ready On" to initialize the center point of gripper under installation page.
- To make sure the gripper function well before programming, please click "> <" and "< >" shape button to manually move gripper.

😣 🗐 💷 🛛 Universal R	lobots	Graphical Programm	ing Env	ironment			
🖳 🗶 File	_	-			15:15:12	cccc 🕜	
Program Installat	ion	Move I/O Log					Ctar 1
Mounting	^	S-series Gr	ippe	er			> Step I
I/O Setup							
🛜 Safety					—НІ И	IN ®	
Variables		Support model:SEG-24,	STG-16				
MODBUS		Ready On		•			
Features		When tool_out[0](Read a reset motion action t	y)=ON of o confirm	SEG-24,electric grippe origin and then open t	r will perform :o outside.		
Smooth Transition							
Conveyor Tracking		Move gripper manually.					
EtherNet/IP		Г		M	adal	_	
DDOEINET		ltem	Unit	SEG 24	STG 16	-	
FROFINET		Stroke perside	mm	12	8	-	
S-series Gripper		Gripper force	N	35	40		
		Gripper speed	mm/s	15[45][Note]	30		
X-series Gripper		Repeatibility	mm	±0.1	±0.1		
Default Program		[Note] Moving velocity i	s 45mm/:	s.			
Load/Save	•	< >					



R R Iniversal R	ohol	s Graphical Programm		vironment			
R S File	0000	s draphicat Programm		nonmene	15:15:12	cccc 🕜	
Program Installat	ion	Move I/O Log				-	
Mounting	•	S-series Gr	ippe	۹r			
I/O Setup		0 001100 01	.662				
Safety					HIW	∕IN₀	
Variables		Support model:SEG-24,	STG-16	1			Step 2
MODBUS		Ready On					5.0p 2
Features		When tool_out[0](Read	ly)=ON of	f SEG-24, electric gripper	will perform		
Smooth Transition Conveyor Tracking	_		· · · · ·				
, ,		Move gripper manually.					
EtherNet/IP				Mc	del	¬	
PROFINET		Item	Unit	SEG-24	STG-16	_	
		Stroke perside	mm	12	8	-	
S-series Gripper		Gripper force	N	35	40		
V.carias Crippor		Gripper speed Benestibility	mm/s	15[45][Note] +0.1	30	_	
x-series unpper							
Default Program		[Note] Moving velocity i	s 45mm/	s.			
Load/Save	•	< >					

3.6 Program page

- Please go to Program→Structure→URCaps to insert "Sseries Gripper" under robot program. Undefined function will be labeled as yellow.
- Set "Ready On" to confirm the central point of gripper.
 Normally, it happen when the first time supply the power.
- Set grip and release stroke through "> <" and "< >" shape button.



😣 🖨 🗉 🛛 Universal Robo	ts Graphical Programmin	g Environment				
<u> </u> File			16:42	2:17	cccc 🕜	
Program Installation	Move I/O Log					
<pre> <unnamed></unnamed></pre>	Command Graphics	Structure Variab	les			
▼ Robot Program 	Program Struc					Sten 1
<u>`````````````````````````````````````</u>	Set placement of hode					_ Step I
	Basic Advanced	Wizards UBCaps				
	S-series	Gripper	X-series G	iripper		
	Edit					
	A Move	Сору	Paste	Su	ppress	
२ ♠ ▲ ►	Move	Cut	Delete			
Simulation	★ ► ► ■ Speed =	√100%	🔷 P	revious	Next 🜩	



🔗 🗖 🗊 Universal Robo	ts Graphical Programming Environme	ent			
R 🜒 File	,,,,,		16:42:31	cccc 🕜	
Program Installation	Move I/O Log			•	
-unnamed>	Command Graphics Structure	Variables			
S-serise Readyon	S-series Gripper				
			HIW	IN.	
	Ready On				- Step 2
	When tool_out[0](Ready)=0N of SEG-2 a reset motion action to confirm origin	24,electric gripper will pe and then open to outs	erform ide.		200p -
	Input signal:		-		
	Pin	Function	-		
	tool in[1](SEG-24 only)	Alarm	-		
	The tool_in[0](busy) signal is ON when The tool_in[0](busy) signal is OFE afte	electric gripper action i	」 s executed. d		
♀ ♠			a 1		
O Simulation			A Passiana		
🔇 Real Robot 🛛 🔄	Speed	100%	Tevious	Next 🌳	
Image: Second state Image: Second state Image: Second state Image: Second state	ts Graphical Programming Environme	ent	16:42:31	cccc 🕜	
-unnamed>	Command Graphics Structure	Variables			
Robot Program	S-series Gripper				
S-serise Release					
			HIW	IN _®	
	Ready On				Step 3
Ň,	When tool_out[0](Ready)=0N of SEG-	24, electric gripper will pe	arform		-
	Input signal:		_		
	Pin	Function	-		
	tool in[1](SEG-24 only)	Alarm	-		
	The back location (1) (SEG-24 only)	Aidm			
	The tool_in[0](busy) signal is ON when The tool_in[0](busy) signal is OFF afte	r electric gripper action i r the action is completed	s executed. d.		
Real Robot	🖌 🕨 📕 Speed	100%	< Previous	Next 🔿	

1.7 Any specific functions for UR

Busy and alarm signal are provided, and user can use it depends on the actual application. The busy signal happens when gripper is executing the program. The alarm signal happens when error shows up during gripper operation.



🛚 🖨 🕒 Universal Robo	ts Graphical F	Programmin	g Environme	ent						
<u> </u> File						16:55	:10	ccc	с 🕜	
Program Installation	Move I/O	Log								
<pre>unnamed></pre>	Command	Graphics	Structure	Variables]					
▼ Robot Program ■ S-serise ReadyOn ■ S-serise Grip ■ S-serise Release ■ Wait	Series Readyon Series Readyon S-series Readyon Wait Please select what should trigger the robot's next action; Wait Wait Wait									
		 V = 14 = 1 / 12 = 1 + 1	Dilasta							
	wait for L	ngitai input	<di.input></di.input>	Low	-					Busy and
	🖉 Wait for 🛛	<an.input></an.input>	- > -	4.0 mA						
	- F									alarm signal
Input <input/>	True	(HI)	F	alse (LO)		Esc	+	Backsp	ace	
read_port_bit(<address>) read_port_register(<address< td=""><td>s>)</td><th></th><td></td><td></td><td>ot</td><td>7</td><td>8</td><td>9</td><td></td><td></td></address<></address>	s>)				ot	7	8	9		
S-se ies Gripper - Hiwin							-			
s_se_is_busy()			•		*	4	5	6		
s_se <mark>_</mark> is_alarm()						1	2	2		
X-series Gripper - Hiwin				· ·	T.	1	2	5	Submit	
<function></function>	АВС			•	•	(0			



4. X-Series Getting Started

4.1 What's in the box?

• Model: XEG-16-C15L1-W1-UR

- 1. Electric gripper XEG-16
- 2. Electric gripper controller XEG-C1
- 3. UR Robot adapter set (ISO-9409-1-50-4-M6)
- 4. Cable
 - Actuator cable 5M-L
 - I/O cable 1.5M
 - USB cable 1.5M
- 5. Accessory kit
 - Power plug
 - Pin
 - Greasing nozzle/tubing
- 6. Software
 - URCap (<u>download</u>)

• Model: XEG-32-C15L1-W1-UR

- 1. Electric gripper XEG-32
- 2. Electric gripper controller XEG-C1
- 3. UR Robot adapter set (ISO-9409-1-50-4-M6)
- 4. Cable
 - Actuator cable 5M-L
 - I/O cable 1.5M
 - USB cable 1.5M
- 5. Accessory kit
 - Power plug
 - Pin
 - Greasing nozzle/tubing
- 6. Software
 - URCap (<u>download</u>)

HT 2019-07

• Model: XEG-64-C15L1-W1-UR

- 1. Electric gripper XEG-64
- 2. Electric gripper controller XEG-C1
- 3. UR Robot adapter set (ISO-9409-1-50-4-M6)
- 4. Cable
 - Actuator cable 5M-L
 - I/O cable 1.5M
 - USB cable 1.5M
- 5. Accessory kit
 - Power plug
 - Pin
 - Greasing nozzle/tubing
- 6. Software
 - URCap (<u>download</u>)

Example:





4.2 Mechanical mounting

• Model: XEG-16-C15L1-W1-UR



11	Bolt	M4X0.7PX6L SUS304	4
10	Spring washer	M4 SUS304	4
9	Pin	Ø6X10L	2
8	Bolt	M3X0.5PX5L SUS304	4
7	Spring washer	M3 SUS304	4
6	XEG-16 adapter	_	1
5	Pin	¢2X4.4L	2
4	Bolt	M6X1PX8L SUS304	4
3	Spring washer	M6 SUS304	4
2	UR adapter	—	1
1	Pin	Ø6X10L	1
Items	Parts	Description	Amount



• Model: XEG-32-C15L1-W1-UR



11	Bolt	M4X0.7PX6L SUS304	4
10	Spring washer	M4 SUS304	4
9	Pin	Ø6X10L	2
8	Bolt	M4X0.7PX6L SUS304	4
7	Spring washer	M4 SUS304	4
6	XEG-32 adapter		1
5	Pin	Ø3X4L	2
4	Bolt	M6X1PX8L SUS304	4
3	Spring washer	M6 SUS304	4
2	UR adapter	—	1
1	Pin	Ø6X10L	1
Items	Parts	Description	Amount



• Model: XEG-64-C15L1-W1-UR



11	Bolt	M6X1PX8L SUS304	4
10	Spring washer	M6 SUS304	4
9	Pin	Ø5X6L	2
8	Bolt	M6X1PX8L SUS304	4
7	Spring washer	M6 SUS304	4
6	XEG-64 adapter		1
5	Pin	Ø5X6L	2
4	Bolt	M6X1PX8L SUS304	4
3	Spring washer	M6 SUS304	4
2	UR adapter		1
1	Pin	Ø6X10L	1
Items	Parts	Description	Amount



4.3 Electric mounting





4.4 Installing URCap

- Click <u>here</u> for free downloading of URCap, and save it to a USB stick.
- Insert the USB with the URCaps file into the UR teach pendant. From the main menu, please select "Setup Robot".
- Click "+" on the button side of page to open the URCap file.
- 4. Restart the robot when prompted.

Note : The HIWIN URCaps requires Universal Robots Polyscope software version above 3.3 or higher, and lower version may not function properly. The current URCaps only limited to UR3, UR5, UR10, CB3.0 and CB3.1.

5. After successfully installing the URCaps, please follow

the instruction to initialize UR Robot.



😣 🗇 💷 Universal Robots Graphical Programming Environment		
PolyScope Rob	ot User Interface 🛛 🕜	
	Please select	
	Run Program	
ROBOTS	Program Robot	Step
	Setup Robot	
About	Shutdown Robot	

Setup Robot Initialize Robot Language Update Update Set Password Calibrate Screen Network Time URCaps Flename: Back URCap Files Open	Universal Robots Graph	ical Programming Environment	
Initialize Robot Language Update Set Password Calibrate Screen Network Time URCaps Filename: Back Filer: URCap Files		Setup Robot	
Language Update Set Password Calibrate Screen Network Time URCaps Filename: Back Filter: URCap Files	Initialize Robot	Select URCap to insta	Ш
Update Update Set Password Calibrate Screen Network URCaps Filename: Back Filter: URCap Files Open Cancel	Language	Current Directory: /programs	 ▼ ▲ ☆
Set Password Calibrate Screen Network Time URCaps Filename: Filename: Filename: Filename: Cancel	Update	xseriesgripper-1.0.urcap	
Calibrate Screen Network Time URCaps Filename: Back Filter: URCap Files Open Cancel	Set Password		
Network Time URCaps Filename: Back Filter: URCap Files	Calibrate Screen]	
Time URCaps Filename: Back Filter: URCap Files Open Cancel	Network	1	
URCaps Filename: Back Filter: URCap Files Open Cancel	Time		
Filename: Back Filter: URCap Files Open Cancel	URCaps]	
Back Filter: URCap Files		Filename:	
	Back	Filter: URCap Files	Open Cancel



8 🖻 🗉 🛛 Universal Robots Graj	hical Programming Environment		
	Setup Robot		
Initialize Robot	URCaps Active URCaps		
Language	 X-series Gripper S-series Gripper 		
Update			
Set Password	URCap Information		
Calibrate Screen			
Network			
Time			
URCaps		Step 4	
Back	<u>г</u> —	N Restar	

😣 🖨 💷 🛛 Universal Robo	ts Graphical Programming Environment		
	Initialize Rob	ot 📀	
Make sure that the insta	llation and payload are correct and press the b	outton with the green icon to initialize the robot.	Step 5
Robot	Normal		-
	• START	OFF	
Active Payload	0.0 kg		
Installation file	default	Load Installation	
3D View ବ୍ରୁ ତ୍ରୁ ବ୍ରୁ			
	0	Configure TCP	
]		Configure Mounting	



4.5 Installation page

Here are some detailed description under setting and action

page.





	es drapineat Programming Environment	
🥂 🔮 File	16:41:1	8 CCCC 🕜
Program Installation	Move I/O Log	
Mounting //O Setup	X-series Gripper	
Safety	Setting Action	
/ariables	Enable Disable	
MODBUS	Connection runs	
eatures	Sripper type: xeg-16	
Smooth Transition		
Conveyor Tracking		
EtherNet/IP		
PROFINET		
5-series Gripper		
K-series Gripper	Gripper Status:	
Default Program	Busy Hold Alarm	
E Load/Save	Position N/A mm	

Busy: The busy signal happens when gripper is executing the program.

Hold : When the gripper exactly grips the gripped part, then the hold signal will show up.

Alarm : The alarm signal happens when error shows up during gripper operation.

Position : Gripper absolute position.



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Program Installation	Move I/O Log			
Mounting	X-series Gripper			
I/O Setup				
🛜 Safety	Setting Action			
Variables	Reset Stop Move Grip			
MODBUS	Execute			
Features				
Smooth Transition				
Conveyor Tracking				
EtherNet/IP				
PROFINET				
S-series Gripper				
X-series Gripper	Gripper Status:			
Default Program	🔵 Busy 💮 Hold 🌍 Alarm			
Load/Save	Position N/A mm			

Reset : Initializing the center point of gripper.

Stop: Manually stop for any function.

Move : Manually move gripper in an absolute position.

Grip : Manually move gripper in a relative position. When the gripper exactly grips the gripped part, then the hold signal will show up.

Execute : Manually execute above function after clicking, and each time can only run one movement.

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<u> </u> File	16:41:35 CCCC 🕜		
Program Installation	Move I/O Log		
Mounting	X-series Gripper		
I/O Setup			
Safety	Setting Action		
Variables	Reset Stop Move Grip		
MODBUS	Position mm		
Features	Speed 50%		
Smooth Transition	Execute		
Conveyor Tracking			
EtherNet/IP			
PROFINET			
S-series Gripper			
X-series Gripper	Gripper Status:		
Default Program	🕒 Busy 🌑 Hold 🜑 Alarm		
Load/Save	Position N/A mm		

Set position and speed according to actual application, and then manually execute the gripper.



⊗ ⊜ ☺ Universal Robots Graphical Programming Environment				
🔣 🔮 File	16:42:00 CCCC ()			
Program Installation Move I/O Log				
Mounting	X-series Gripper			
I/O Setup				
Safety	Setting Action			
Variables	Reset Stop Move Grip			
MODBUS				
Features				
Smooth Transition	Max distance 64.0 mm			
Conveyor Tracking	Speed 50%			
EtherNet/IP	Force 50%			
PROFINET	Execute			
S-series Gripper				
X-series Gripper	Gripper Status:			
Default Program	Busy Hold Ararm			
Load/Save	Position N/A mm			

Set distance, speed and force according to actual application, and then manually execute the gripper.

4.6 Program page

1. Please go to Program→Structure→URCaps to insert

"X-series Gripper" under robot program. Undefined function will be labeled as yellow.

- 2. Set "Reset" to confirm the central point of gripper.
- 3. Set "Move" to define position and speed.
- 4. Set "Grip" to define distance, speed and force.



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👌 File		16:42:17 CCCC 🕜	
Program Installation	Move I/O Log		
<pre><unnamed></unnamed></pre>	Command Graphics Structure Variables		
▼ Robot Program ← <empty></empty>	Program Structure Editor Set placement of node After selected Insert Basic Advanced Wizards URCaps S-series Gripper	X-series Gripper	
	Edit		
	Move Copy	Paste Suppress	
२ ♠ ◄ ►	Move Cut	Delete	
Simulation Real Robot	▲ ► ► ■ Speed □ 100%	💠 Previous 🛛 Next 🜩	



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Program Installation	Move I/O Log			
Robot Brogram	Command Graphics Structure Variables			Step 2
X-serise Move 0.0	X-series Gripper			~ .
	Gripper status:			Step 3
	Busy Hold Alarm			
	Position N/A mm			
	Action:			
	Reset Move Grip			
	Position 0.0 mm			
	Speed 50%			
९ ♠ ♪ ◄>				
Simulation Real Robot	↓ ► ► Speed □ 100%	🕈 Previous	Next 🜩	
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O Universal Robo O File Program Installation	ts Graphical Programming Environment	08:46:34	cccc 🕜	Stop 4
Ouriversal Robo Original Color Original Installation Original Color Original Color	ts Graphical Programming Environment Move / 1/0 / Log / Command / Graphics / Structure / Variables /	08:46:34	сссс 🕐	Step 4
Cuniversal Robo	ts Graphical Programming Environment Move 1/0 Log Command Graphics Structure Variables X-series Gripper	08:46:34		Step 4
Control Contro	ts Graphical Programming Environment Move VO Log Command Graphics Structure Variables X-series Gripper Gripper status:	08:46:34	CCCC ()	Step 4
Control Contro	ts Graphical Programming Environment Move 1/0 Log Command Graphics Structure Variables X-series Gripper Gripper status: Busy Hold Alarm	08:46:34		Step 4
Control Contro	ts Graphical Programming Environment Move 1/0 Log Command Graphics Structure Variables X-series Gripper Gripper status: Busy Hold Alarm Position N/A mm	08:46:34		Step 4
Constant Con	ts Graphical Programming Environment Move V/O Log Command Graphics Structure Variables X-series Gripper Gripper status: Busy Hold Alarm Position N/A mm Action:	08:46:34		Step 4
Control Contro	ts Graphical Programming Environment Move 1/0 Log Command Graphics Structure Variables X-series Gripper Gripper status: Busy Hold Alarm Position N/A mm Action: Reset Move Grip	08:46:34		Step 4
Ouriversal Robo Program Installation Installation Installation Product Program Robot Program Sector Sector	ts Graphical Programming Environment	08:46:34		Step 4
Control Contro	ts Graphical Programming Environment Move 1/0 Log Command Graphics Structure Variables X-series Gripper Gripper status: Busy Hold Alarm Position N/A mm Action: Reset Move Grip Max distance mm	08:46:34		Step 4
Control Contro	ts Graphical Programming Environment	08:46:34		Step 4
Cuniversal Robo	ts Graphical Programming Environment	08:46:34		Step 4
Iniversal Robo File Program Installation	ts Graphical Programming Environment	08:46:34		Step 4

4.7 Any specific functions for UR

Position, busy, alarm and hold signal are provided, and user can use it depends on the actual application. The position signal happens when gripper finishes the position movement. The busy signal happens when gripper is



executing the program. The alarm signal happens when error shows up during gripper operation. The hold signal happens when gripped part was exactly hold with grip function.

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Program Installation	Move I/O Log							
🔲 <unnamed></unnamed>	Command Graphics	Structure Variables]					
▼ Robot Program — X-serise Grip outside — Wait	Wait							
	Please select what should tri	gger the robot's next acti	on;					
	No Wait							
	Wait 0.01 seconds							
	Wait for Digital Input <di.input></di.input>							
	Wait for <an.input></an.input>	▼ > ▼ 4.0 mA						Position, bus
								alarm and ho
Input <input/>	True (HI)	False (LO)		Esc	+	Backsp	ace	- signal.
s_ser_is_busy()		- n	ot	7	8	9	-	
X-series Gripper - Hiwin			*	4	5	6		
x_ser_get_position()								
x_ser_is_busy()				1	2	2		
x_ser_is_alarm()		= '	Ť	T	2	3	Submit	
x_ser_is_hold()								
<function></function>	ABC	•		0)	•		



Appendix.1 : Example program

To set up the HIWIN Electric gripper with Universal Robot, a quick example is provided as below.

Universal Robot model : UR5 with CB3.0 Software version : Polyscope version above 3.3 URCap version: URCap 1.0 Gripper type : SEG24

- S-series ReadyOn → Initialize the center point of gripper under installation page. Normally, it happens when the first time supply the power. Therefore, we put it before executing the main program.
- Wait s_ser_is_busy → To make sure gripper finishes the movement, then it will run the next program line.
- 3. S-series Grip \rightarrow Set grip stroke according to the actual application.
- Wait s_ser_is_busy → To make sure gripper finishes the movement, then it will run the next program line.
- 5. If s_ser_is_alram \rightarrow Popup an alarm warming when there is a one.
- 6. S-series Release \rightarrow Set release stroke according to the actual application.
- 7. Wait s_ser_is_busy \rightarrow To make sure gripper finishes the movement, then it will run the next program line.
- 8. If s_ser_is_alram \rightarrow Popup an alarm warming when there is a one.





Universal Robot model : UR5 with CB3.0 Software version : Polyscope version above 3.3 URCap version: URCap 1.0 Gripper type : XEG16

- X-series Reset → Initialize the center point of gripper under installation page. Normally, it happens when the first time supply the power. Therefore, we put it before executing the main program.
- Wait x_ser_is_busy → To make sure gripper finishes the movement, then it will run the next program line.
- 2. X -series Grip \rightarrow Set grip stroke according to the actual application.
- 3. Wait x_ser_is_busy \rightarrow To make sure gripper finishes the movement, then it will run the next program line.
- 4. If x_ser_is_alram \rightarrow Popup an alarm warming when there is a one.
- 5. X -series Release \rightarrow Set release stroke according to the actual application.
- 6. Wait x_ser_is_busy \rightarrow To make sure gripper finishes the movement, then it will run the next program line.
- 7. If x_ser_is_alram \rightarrow Popup an alarm warming when there is a one.





Appendix.2 : Certification

Declarations of conformity with the following directives and standards are available on request.

CE Compliance			
Machinery Directives	2006/42/EC		
Low Voltage Directives (LVD)	2014/35/EU		
Cafety of Mashingan	EN ISO 12100:2010		
Safety of Machinery	EN 60204-1:2006+AC:2010		
Electronectic Connectivity Disactions (EMC)	EN 61000-6-2:2005		
Electromagnetic Compatibility Directives (EMC)	EN 61000-6-4:2007+A1:2011		
Hazardous Substances Restriction Directives (RoHS)	2011/65/EU		

UR+ Solution Technical Manual Guide

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Subsidiaries / Research Center

HIWIN GmbH OFFENBURG, GERMANY www.hiwin.de www.hiwin.eu info@hiwin.de

HIWIN JAPAN KOBE · TOKYO · NAGOYA · NAGANO · TOHOKU · SHIZUOKA · HOKURIKU · HIROSHIMA · FUKUOKA · KUMAMOTO, JAPAN www.hiwin.co.jp info@hiwin.co.jp

HIWIN USA CHICAGO, U.S.A. www.hiwin.com info@hiwin.com

HIWIN Srl BRUGHERIO, ITALY www.hiwin.it info@hiwin.it HIWIN Schweiz GmbH JONA, SWITZERLAND www.hiwin.ch info@hiwin.ch

> HIWIN s.r.o. BRNO, CZECH REPUBLIC www.hiwin.cz info@hiwin.cz

HIWIN SINGAPORE SINGAPORE www.hiwin.sg info@hiwin.sg HIWIN KOREA SUWON · CHANGWON, KOREA www.hiwin.kr info@hiwin.kr

HIWIN CHINA SUZHOU, CHINA www.hiwin.cn info@hiwin.cn

Mega-Fabs Motion Systems, Ltd. HAIFA, ISRAEL www.mega-fabs.com info@mega-fabs.com

HIWIN TECHNOLOGIES CORP.

No. 7, Jingke Road, Taichung Precision Machinery Park, Taichung 40852, Taiwan Tel: +886-4-23594510 Fax: +886-4-23594420 www.hiwin.tw business@hiwin.tw

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