



iPCU2 驱动器使用说明书

适用产品

iPCU2-SMN

iPCU2-HMN

iPCU2-SMV

iPCU2-HMV



装箱清单



柔触驱动器本体
iPCU2-SMN(V)/HMN(V)X1



电源适配器 (24VDC 2.5A 60W)
EC-64 x 1



电源线
EC-69 x 1



信号航空插头 (免焊, 需自配4芯线缆)
EJ-11 x 1



气源过滤器
PN-272 x 1



变径接头 (10mm转6mm)
PN-228 x 1



变径接头 (10mm转8mm)
PN-227 x 1



6mm气管
x 2m



10mm气管
x 2m

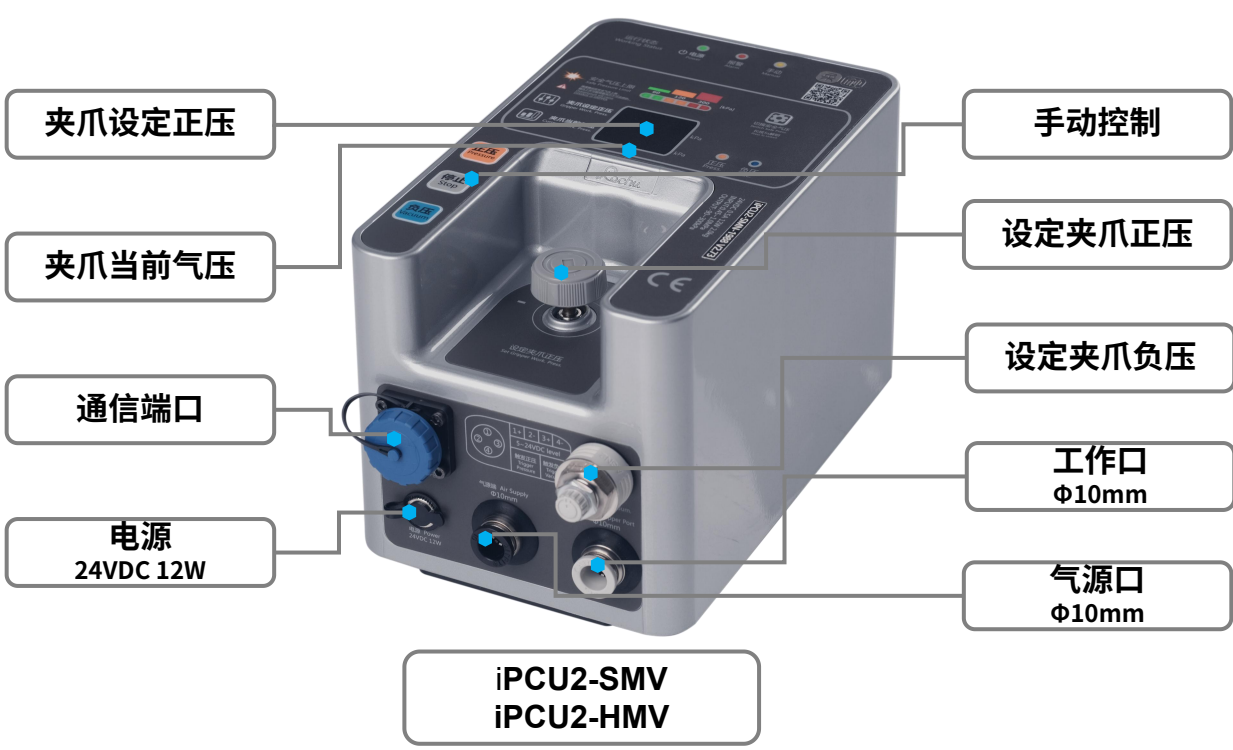
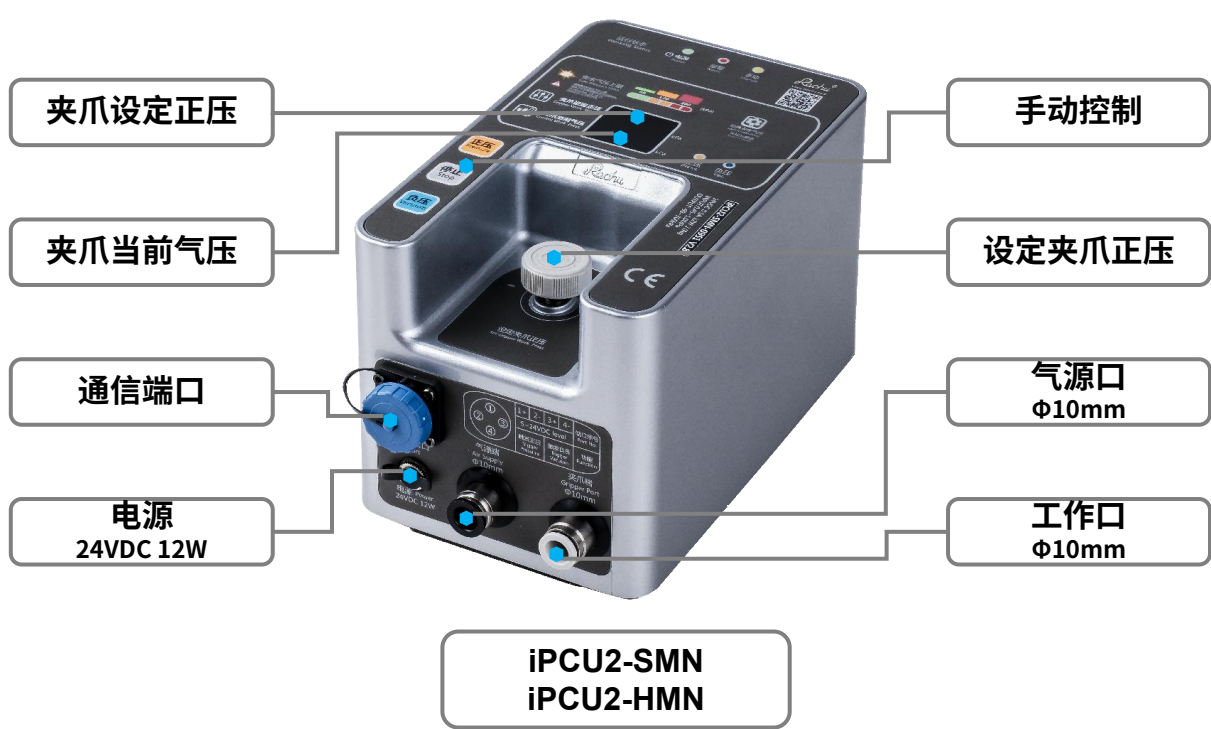
安全注意事项

警告：请严格遵守安全注意事项，错误操作可能导致本产品损坏和人身伤害。

1. 请使用配件中的电源适配器。不可用其他电压及低功率电源适配器，以免造成不可逆电路损伤。
2. 请使用**0.45MPa~1.00MPa**且**流量 > 200L/min**干燥、**清洁、稳定**压缩空气。
3. 气源压力过大会造成内部元件不可逆损伤，气源压力过小会造成夹爪夹持力或张开角度不足。气源压力波动可能导致夹持力的波动。
4. 请勿对外壳施加过大外力造成破损，以免降低防护等级。



外观



工作参数

名称	范围	名称	范围
额定电压	24VDC±10%	外壳材质	工程塑胶
额定功率	12W	尺寸	208x134x141mm
寿命	5000万次	净重	2.0kg
输入气源	0.45~1.00MPa 干燥、清洁、稳定 流量 > 200L/min	防护等级	IP54
		控制方式	1. 手动按钮
			2. I/O, 电平信号
输出气压	-90~300kPa	工作模式	持续信号驱动
工作噪音	75dB		

型号

高速版拥有更大的真空流量，适用于高速搬运的工况。
真空调压版可通过调节真空度调节柔爪夹持力，更适用于微小易损的零件。

型号		正压调节		手动 真空 调节	安全 气压 设定	无线 遥控	姿态 反馈	最高真空压 力 [kPa]	正压流量*	负压流量*
		手动	电子						[L/min]	[L/min]
标准版	iPCU2-SMN	●			●			-90	260	40
高速版	iPCU2-HMN	●			●			-90	260	80
真空调压标 准版	iPCU2-SMV	●		●	●			-85	260	40
真空调压高 速版	iPCU2-HMV	●		●	●			-85	260	80

*流量参数测试条件：气源端压力=0.6MPa，夹爪设定正压=100kPa，夹爪设定负压-85kpa。

使用步骤

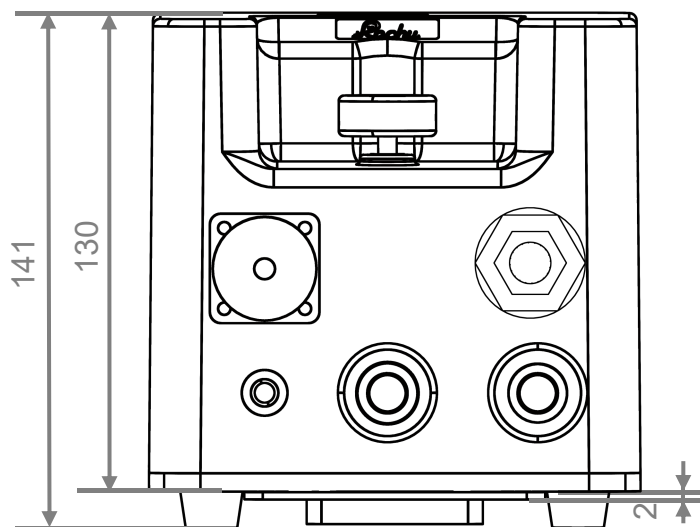
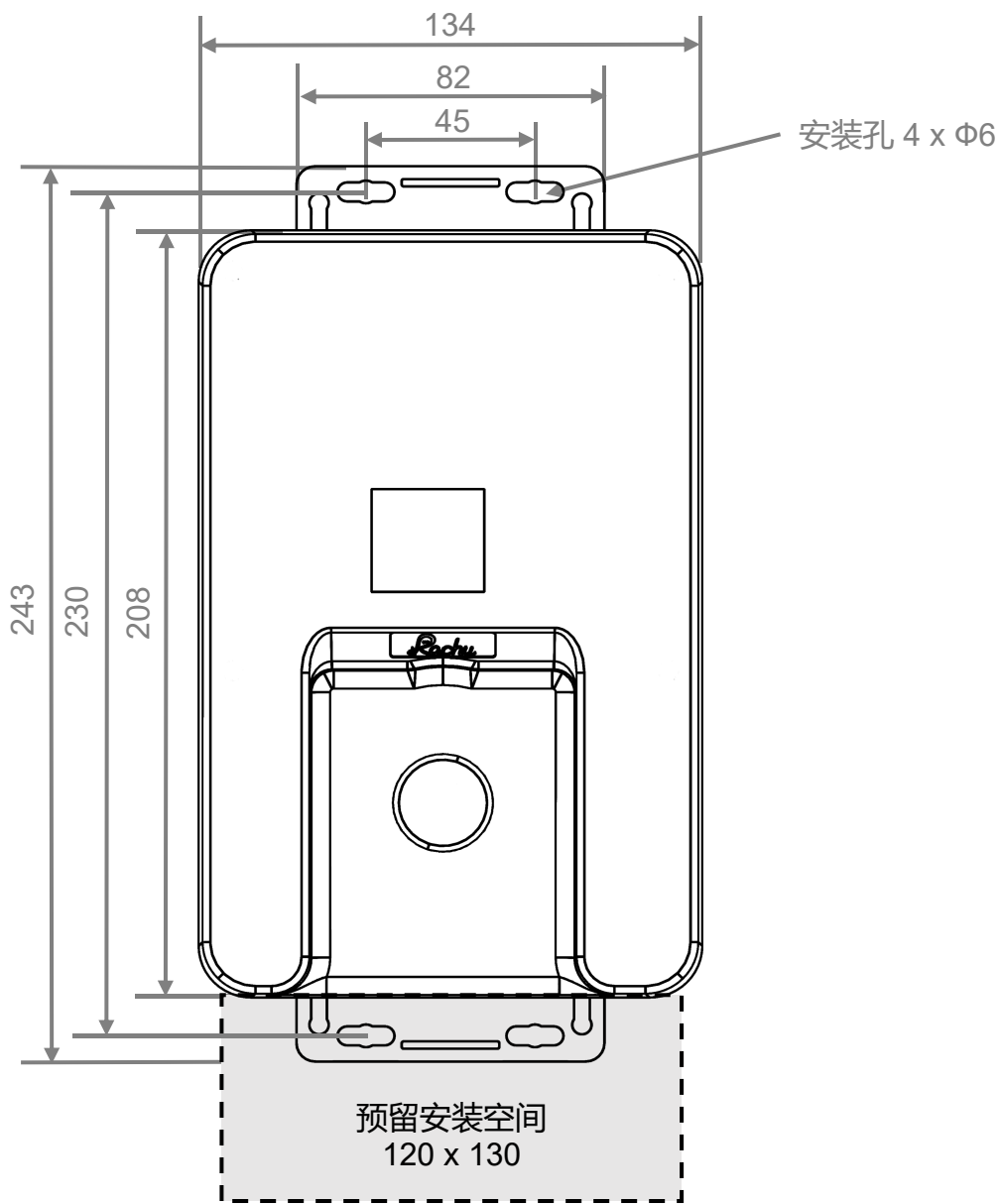
1. 请使用配件中的电源适配器，给驱动器上电。
2. 根据夹爪型号（柔指/柔爪）选择【安全气压上限】档位（非常重要）。
3. 对两个数显表（【夹爪设定正压】、【夹爪当前气压】）校零，参考”常见问题 “。
4. 【气源端】用配件中的**过滤器**连接气源，注意过滤器气流方向。若管径不一致，可使用配件中的变径接头。
5. 检查顶部指示灯，绿灯常亮且红灯常灭即为正常。若有报警红灯亮起，参考 “常见问题” 排除故障。
6. 【夹爪端】气管连接夹爪，为确保开合速度，驱动器与夹爪间的气管长度应尽量短（3m以内），气管管径应尽量大(可选用10mm气管，靠近夹爪时使用变径接头转换为6mm或4mm管径）。
7. 操作【设定夹爪正压】旋钮，**使夹爪设定正压窗口显示数值在夹爪安全气压范围内。**
8. 操作手动按钮，检查夹爪工作情况。
9. 操作【设定夹爪正压】及【设定夹爪负压】旋钮，夹爪调整至合适张开和闭合角度，夹爪兼容任意负压压力，**注意正压不要超过夹爪安全气压。**
10. 准备一根四芯线，接入配件中的信号航空插头，连接【通讯端口】与控制终端设备。

通信

驱动器外部驱动信号类型为电平信号，5-24VDC，NPN/PNP通用，可由PLC或机械臂信号控制。

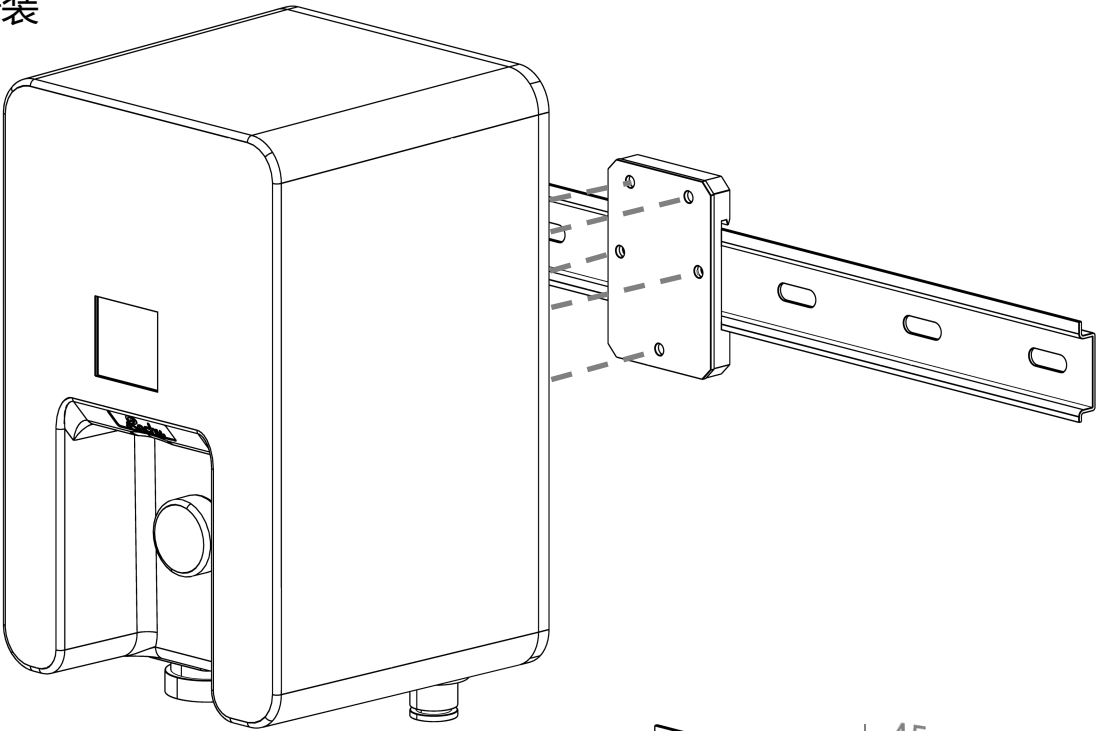
端子序号	内容	功能	柔指姿态	柔爪姿态	案例1： 西门子PLC 200SMVRT 系列，该设备为PNP输出。 则2、4号线接M端口，1、3号线接DQ端口。 案例2： 遨博协作机器人i5系列， 该设备为NPN输出。 则1、3号线接24V+端口， 2、4号线接DO端口。
1	电平输入A+	输出正压			
2	电平输入A-		闭合	张开	
3	电平输入B+	输出真空			
4	电平输入B-		张开	闭合	

尺寸

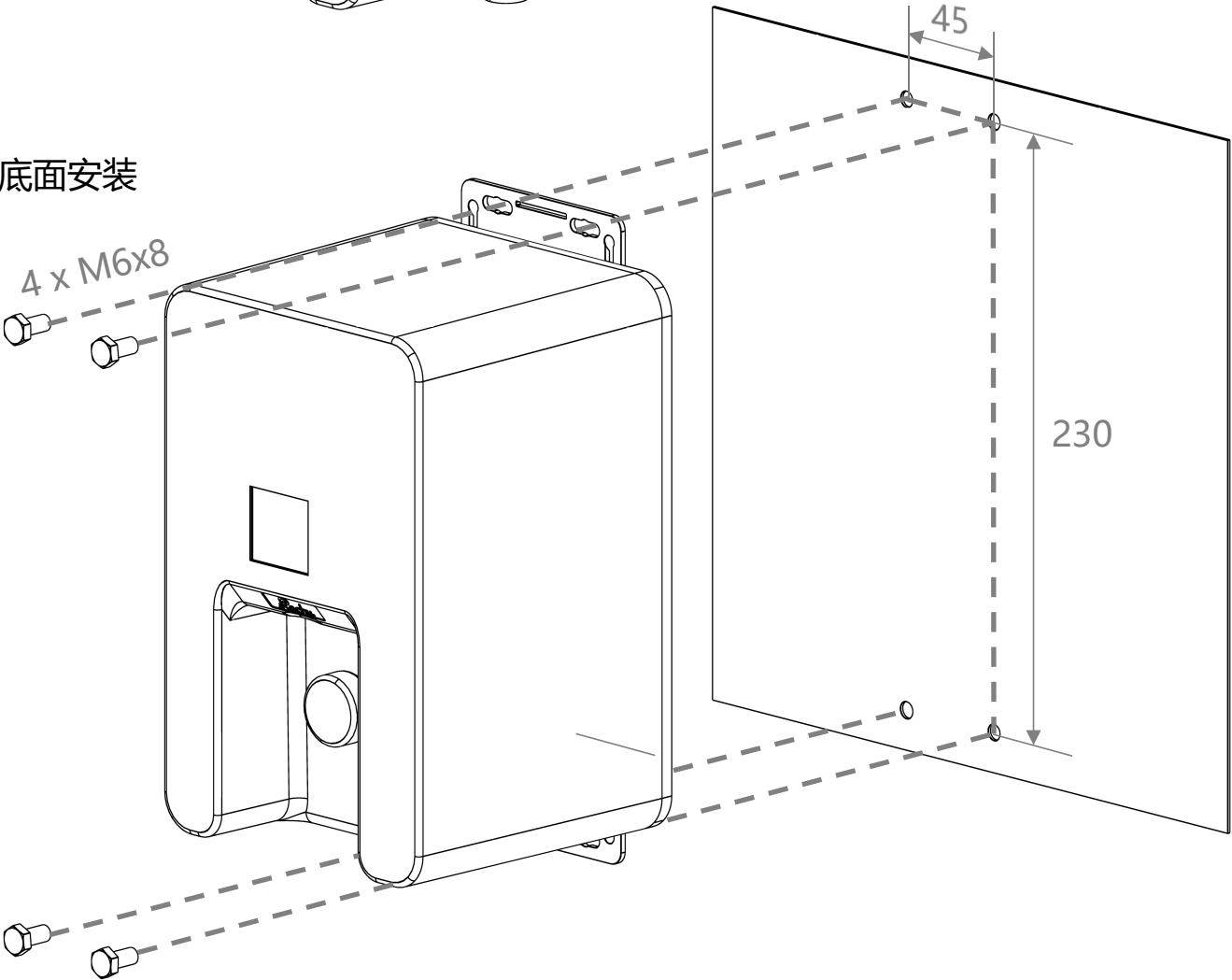


安装

①导轨安装



②底面安装



1. 报警灯红灯常亮。

设定的夹爪正压超过了【安全气压上限】，即数显表上方数值超过了当前安全气压档位值。要解除该报警，需逆时针旋转【设定夹爪正压】手拧阀，降低设定的夹爪正压值，直到在安全气压上限档位范围内。该报警状态下，驱动器停止工作，解除故障后可恢复正常工作。

2. 报警灯红灯快闪。

【夹爪端】气压值过大。请检查【夹爪端】气路，是否与【气源端】接反。

3. 报警灯红灯慢闪。

【气源端】气压值低于0.4MPa或流量不足时，有可能导致驱动器输出负压不足（低于-50kPa）。柔指系列表现为张开角度不够，柔爪系列表现为夹持力不够。要解除该报警，请检查气源状态或提高气源压力。该报警状态下，驱动器不会自动停止工作，请及时排查解除故障。

4. 数显表头校零。

【气源端】和【夹爪端】悬空状态下，解锁面板后，手动按钮停止键长按5秒直至数显表头显示“0000”，即校零完成。

5. 真空可调范围。

调节真空旋钮在夹爪端上方，真空不会损坏夹爪，可放心调试，在气源端压力大于0.45MPa的条件下，SMV型号真空压力可调范围-15~-90kPa，HMV型号真空压力可调范围-15~-85kPa。



iPCU2-SMN

iPCU2-HMN

iPCU2-SMV

iPCU2-HMV



Packing List



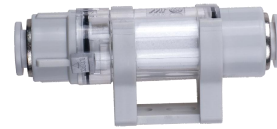
Rochu Control Unit
iPCU2-SMN(V)/HMN(V)X1



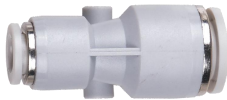
Power Adapter
(24VDC 1.04A 25W)
EC-02 x 1



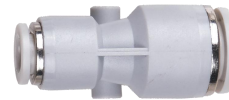
Signal Aviation Plug
(weld-free and requires a 4-core cable)
EJ-11 x 1



Air Filter
PN-272 x 1



Reducing Joint
(10mm to 6mm)
PN-228 x 1



Reducing Joint
(10mm to 6mm)
PN-227 x 1



6mm Pipe
x 2m



10mm Pipe
x 2m

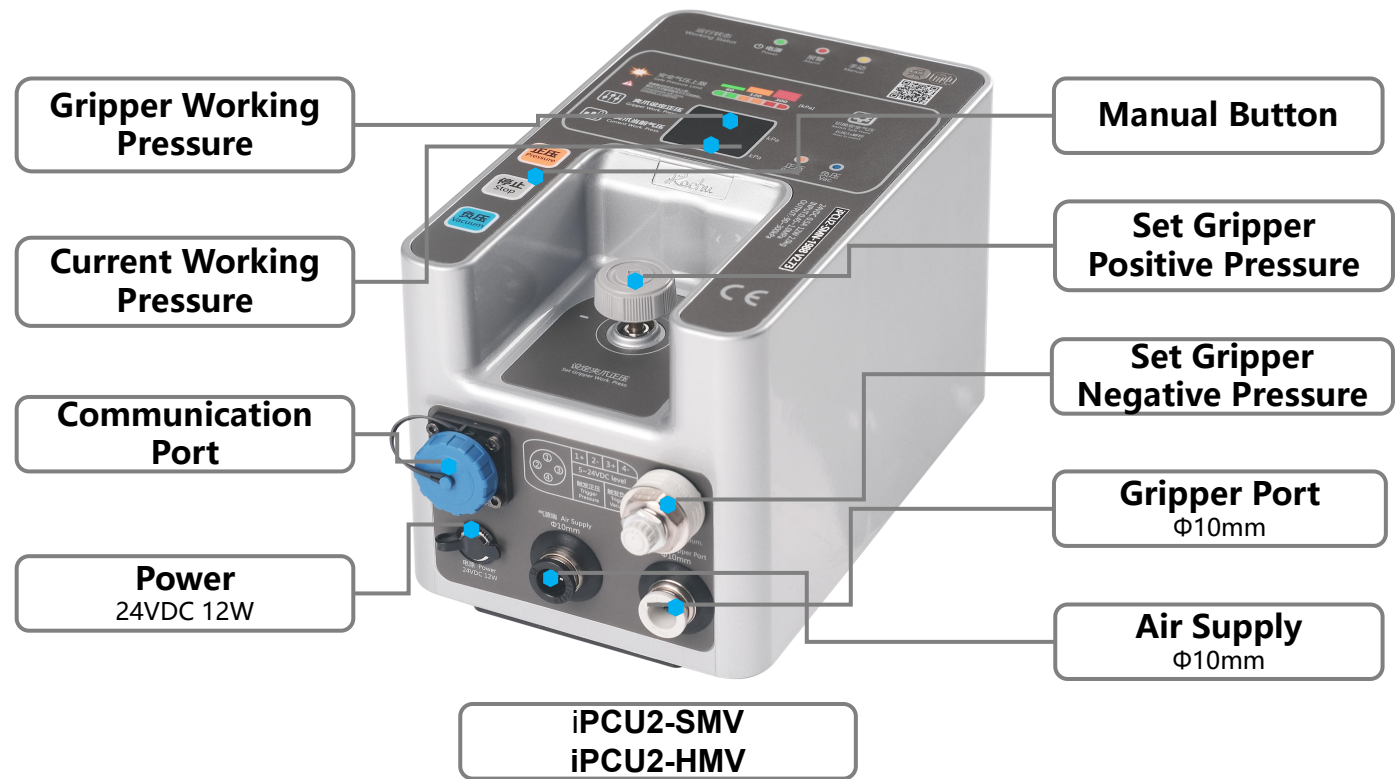
Safety Caution

Warning: Please strictly observe the safety cautions, incorrect operation may cause damage to the product and personal injury.

1. Please use the power adapter in the fittings. Do not use other voltage or low power adapter to avoid irreversible circuit damage.
2. Please use **0.45 ~ 1.0 MPa dry clean stable** compressed air with **flow rate > 200 L/min**.
3. Excessive high pressure will cause irreversible damage to internal components, excessive low pressure will cause insufficient gripping force or insufficient opening angle of gripper. Fluctuations in air source pressure may lead to fluctuations in gripping force.
4. Do not put too much force to the shell. It may cause damage and lower the protection level.



Appearance



Parameter

Parameter	Range	Parameter	Range
Rated Voltage	24VDC±10%	Shell Material	engineering plastics
Rated Power	12W	Size	208x134x141mm
Lifetime	50 million times	Net Weight	2.0kg
Air Source	0.45~1.0MPa dry, clean, stable flow > 200L/min	Protection Level	IP54
		Control Mode	1. manual button
			2. I/O, level signal
Output Pressure	-90~300kPa	Working Mode	continuous signal drive
Working Noise	75dB		

Model

The iPCU2 is available in standard iPCU2-SMN and high-speed iPCU2-HMN options. High-speed version has a larger vacuum flow, which is suitable for high-speed handling.

Model		Positive pressure regulation		Manual vacuum adjustment	Safety Pressure Adjustable	Wireless remote control	Vacuum adjustable	Maximum Vacuum [kPa]	Pressure Flow*	Vacuum Flow*
		Manual	Posture						[L/min]	[L/min]
Standard	iPCU2-SMN	●			●			-90	260	40
High-speed vacuum	iPCU2-HMN	●			●			-90	260	80
Standard vacuum adjustable	iPCU2-SMV	●		●	●			-85	260	40
High-speed vacuum adjustable	iPCU2-HMV	●		●	●			-85	260	80

*Flow parameter test conditions: air source pressure=0.6 MPa, positive pressure of gripper=100 kPa, negative pressure of gripper=-85 kPa.

Using Steps

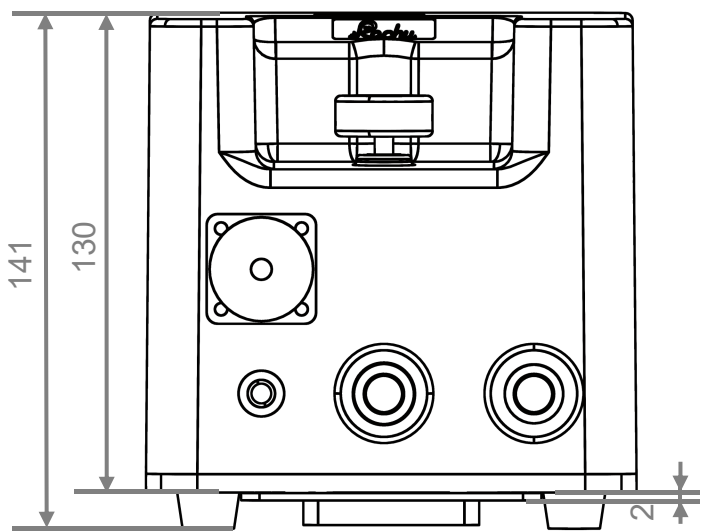
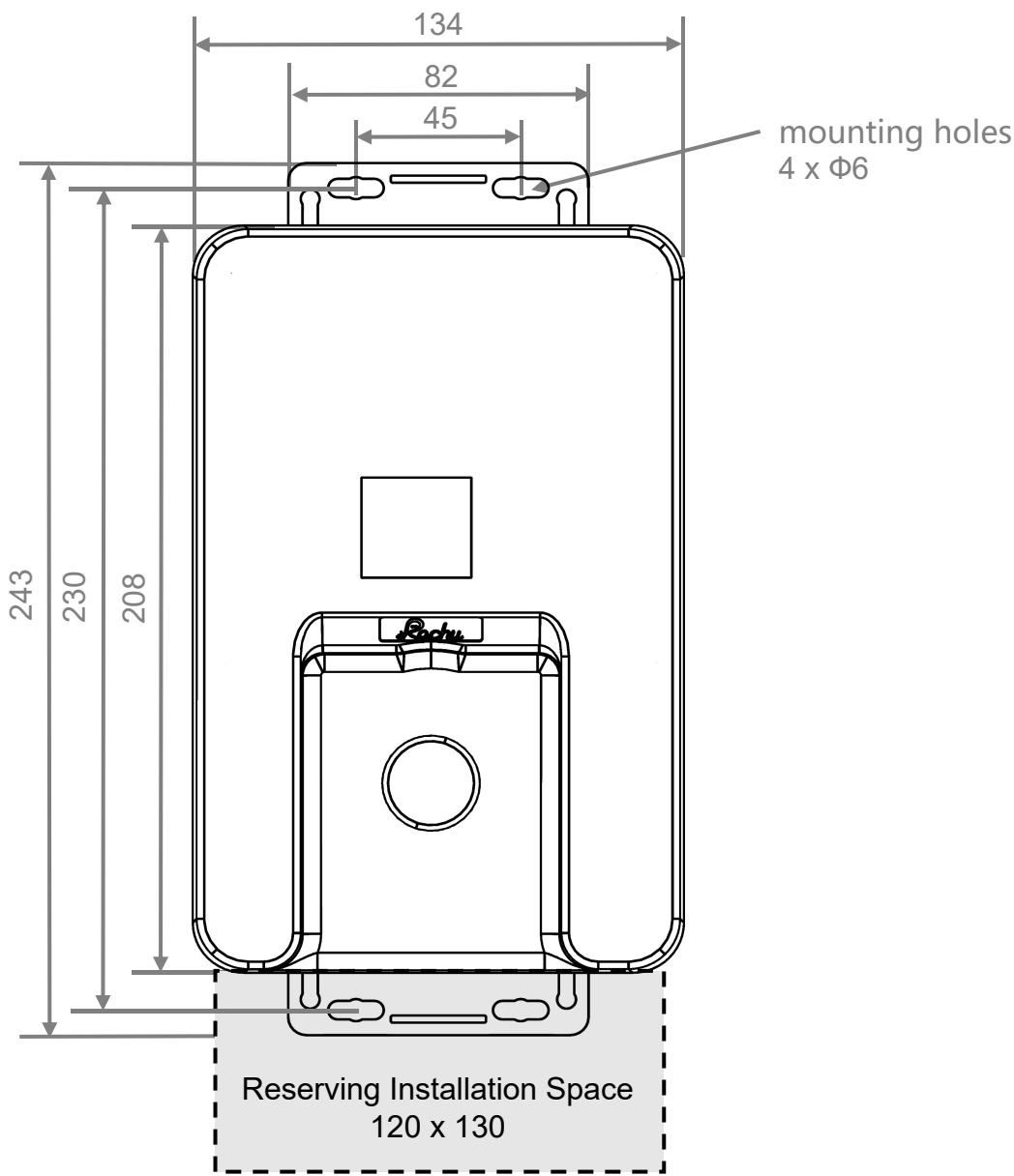
1. Use the power adapter to power up the control unit.
2. **Adjust the [Safe Pressure Limit] according to the type of the gripper (IMPORTANT).**
3. Zero the two digital display meters ([Gripper Work. Press.] and [Current Work. Press.]), refer to 'F&Q' .
4. Connect the [Air Supply] to the air source with the **filter** in the fitting, and pay attention to the airflow direction of the filter. If the pipe diameter is not consistent, use the reducing joint.
5. Check the top lights. If the green light is on, the red light is off, the control unit is ready. If there is an alarm red light, refer to 'F&Q' to troubleshoot the fault.
6. Connect the [Gripper Port] to the gripper. To ensure the speed of opening and grabbing, the length of the pipe between the control unit and the pipe should be as short as possible (within 3m), and the diameter of the pipe should be as large as possible (the pipe can be 10mm, and it should be changed to 6mm or 4mm using a reducing joint when it is close to the gripper).
7. Operate the [Set Gripper Work. Press.] knob to make the value displayed in the [Gripper Work. Press.] window within the safe pressure range of the gripper.
8. Operate the manual button to check the working performance of the gripper.
9. Prepare a four-core wire, connect it to the signal aviation plug in the fitting, and connect the communication [Port] to the control terminal equipment.

Signal Communication

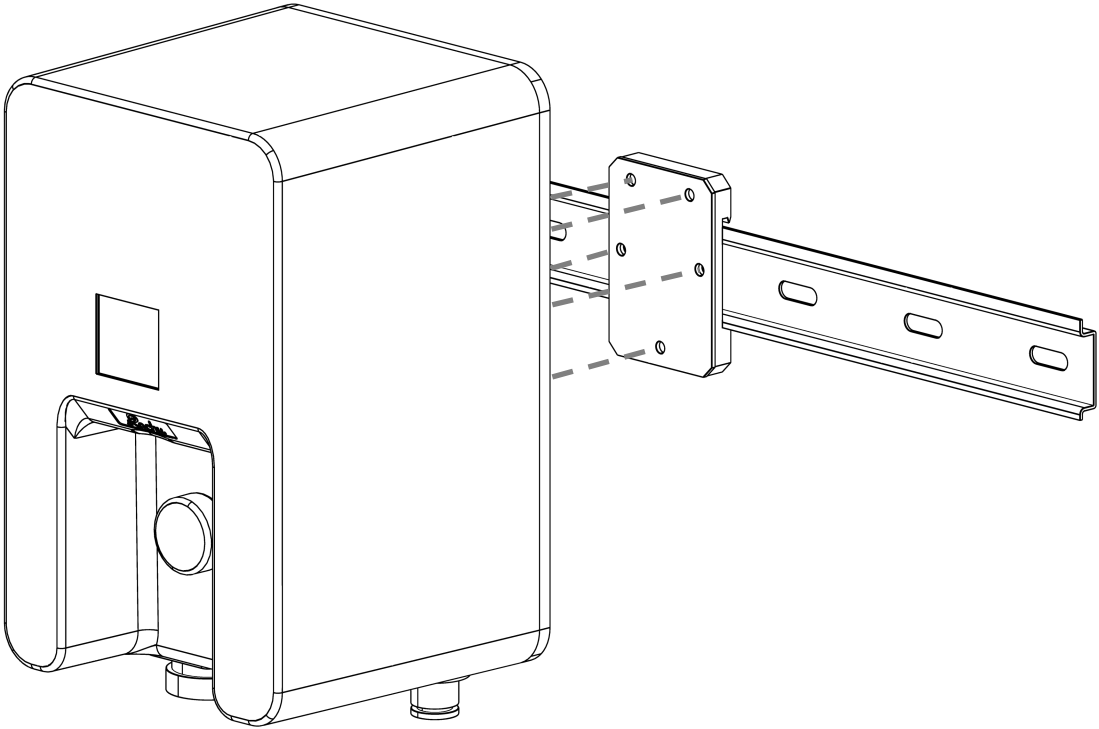
The external driving signal type of the control unit is level signal, 5~24VDC, both PNP and NPN can be used, which can be controlled by PLC or robot signal.

No.	Content	Function	Soft Finger	Soft Beak	Case 1: Siemens PLC 200SMVrt series, the device is PNP output. Then lines 2 and 4 are connected to port M and lines 1 and 3 are connected to port DQ. Case 2: AUBO cooperative robot i5 series, the device is NPN output. Then line 1 and 3 are connected to port 24V+, and lines 2 and 4 are connected to port DO.
1	level input A+	output pressure			
2	level input A-		grab	open	
3	level input B+	output vacuum			
4	level input B-		open	grab	

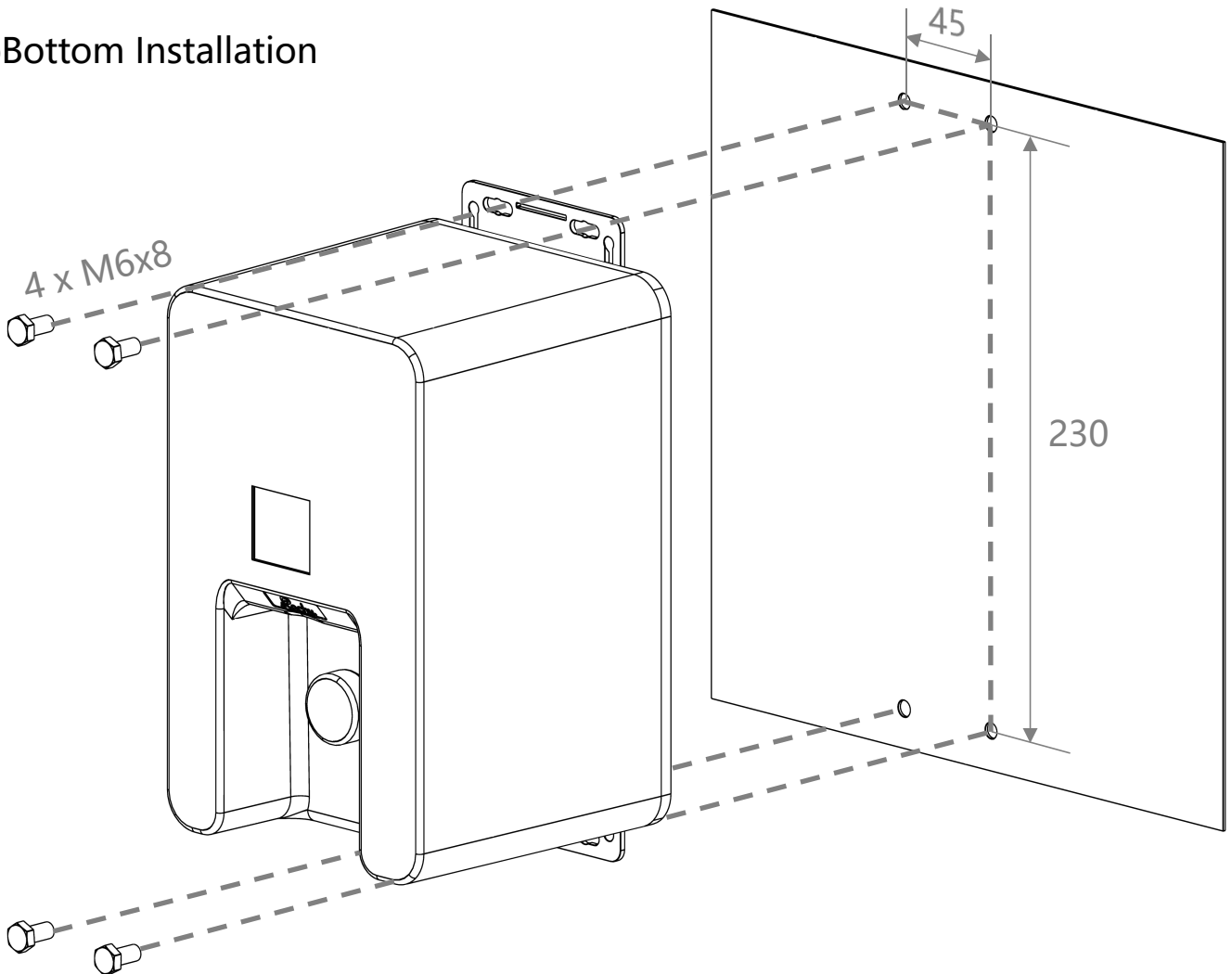
Size



① DIN-Rail Installation



② Bottom Installation



1. The red alarm light is always on.

The [Gripper Work. Press.] exceeds the [Safe Pressure Limit], namely the value of the digital display meter exceeds the current safety value. To remove the alarm, manually turn the valve anticlockwise to reduce the [Gripper Work. Press.] until it is within the [Safe Pressure Limit] range. In this state, the control unit stops working and can be ready after the alarm is removed.

2. The red alarm light flashes quickly.

The pressure in the [Gripper Port] is overload. Please check whether the [Gripper Port] air circuit is connected with the [Air Supply].

3. The red alarm light flashes slowly.

When the pressure of the [Air Supply] is lower than 0.4MPa or the flow is insufficient, the vacuum of the control unit may be less than -50kPa. The soft finger shows less opening, while the soft beak shows less grabbing force. To remove the alarm, please increase the air pressure. In this state, the control unit will not stop working. Please check and remove the alarm in time.

4. Zero calibration of digital display meters.

When the [Air Supply] and [Gripper Port] are suspended, after unlocking the panel, press the manual button stop key for 5 seconds until the digital display meters shows '0000'. Then zero calibration is completed.

5. Vacuum adjustable range

Adjust the vacuum knob is above the end of gripper, the vacuum will not damage the gripper, so just debug with confidence. If the air source pressure is greater than 0.45MPa, the adjustable vacuum pressure range of SMV model is -15~-90kPa and HMV model is -15~-85kPa.