

2. Electrical specifications (Common to RP-VPM and RP-VPMV)

Item	Contents
Number of control axes	Single axle
Supply voltage	24V DC $\pm 10\%$ ($\pm 10\%$)
Power supply current ^(Note 1)	Rated 0.8A, maximum 1.3A
Power supply capacity	Rated 19.2W, maximum 31.2W
Caloric value	5W
Inrush current ^(Note 2)	2A
Instantaneous Power Failure Resistance	500 μ s max.
Motor size	35 mm dia.
Motor Rotation Speed	3,600 rpm
Motor output rated current	0.5A
Encoder Type	Incremental (resolution: 14bit)
Teaching port specifications	RS-485 1ch (Modbus protocol compliant) (when using interface box)
Interface Specifications (Power input is common to the main unit)	3 entry points: take-off command, adsorption command, alarm reset 3 outputs: takeoff confirmation signal, adsorption confirmation signal, alarm
How to set up and input data	Teaching software for personal computers (IA-OS) Teaching box TB-02, TB-03 Display panel and operation switches on the main unit
Insulation resistance	DC500V 10M Ω
Electric shock protection device	Class 3
Cooling method	Natural air cooling

Note 1: The power supply current includes 0.3A of the control power supply.

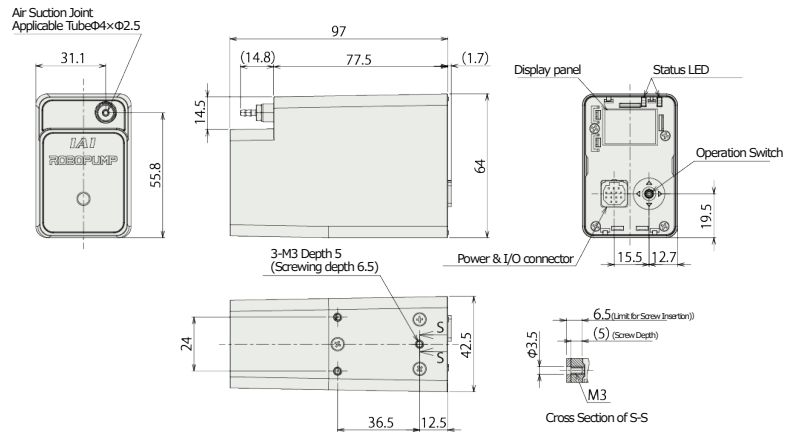
Note 2: Inrush current will flow for approximately 5ms after the power is turned on (at 40°C). The value of inrush current differs depending on the impedance of the power supply line.

3. Environmental specifications

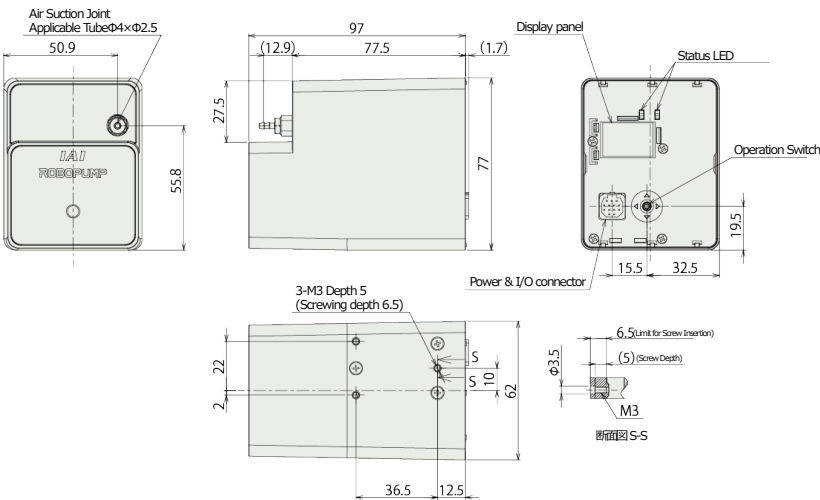
Item	Contents	
	RP-VPM (Standard)	RP-VPMV (Equipped with Air Blow)
Operating ambient temperature	0 to 40°C	5 to 40°C
Operating ambient humidity	85% RH or less (no condensation)	
Operating ambient atmosphere	Refer to section [Usage environment and Installation]	
Storage ambient temperature	-10 to 65°C	0 to 50°C
Storage ambient humidity	90% RH or less (no condensation)	
Protective structure	IP20	

External Dimensions

[1] RP-VPM (Standard)



RP-VPMV (Equipped with Air Blow)



[2] Equipped with Side Mounted Bracket
Refer to [ROBO PUMP Instruction Manual (MJ3827), Chapter 8, Outline Drawing].

[3] Equipped with Cable Support Bracket
Refer to [ROBO PUMP Instruction Manual (MJ3827), Chapter 8, Outline Drawing].

Usage Environment and Installation

1. Installation environment

Avoid the following locations for installation.

- Where the unit receives radiant heat from strong heat sources such as heat treatment furnaces
- Where the elevation exceeds 1,000 m
- Where the ambient temperature exceeds the range of 0 to 40°C
- Where the main unit is subjected to direct vibration or shock
- Locations subject to rapid temperature changes and condensation
- Places directly exposed to sunlight
- Where relative humidity exceeds 85%RH
- Locations subject to splashing water, oil, or chemicals
- Where corrosive or flammable gases are present
- Locations with high dust, salt, or iron powder

Allow space for the following maintenance and inspection tasks

- Space for inserting teaching tool connectors
- Space for replacing motors and controllers

When using the product in the following places, take adequate measures to block it.

- Where noise is generated by static electricity, etc.
- Where the unit is subject to ultraviolet or radiation
- Where strong electric or magnetic fields are generated

2. Storage and preservation environment

- Storage and preservation environment is based on the installation environment.

In the case of long-term storage and preservation, especially, please keep the product free from condensation.

- Unless otherwise specified, moisture absorbent is not included in the shipment.

When storing or keeping the product in an environment where condensation is expected, take measures to prevent condensation.

- For short periods of time, it can be stored and kept at or below 60°C. If the storage period is longer than one month, it should be kept at or below 50°C.

- When storing/storing the product, it should be in a stable position.

When storing the product in its packaging, please follow the storage conditions when the storage posture is specified.

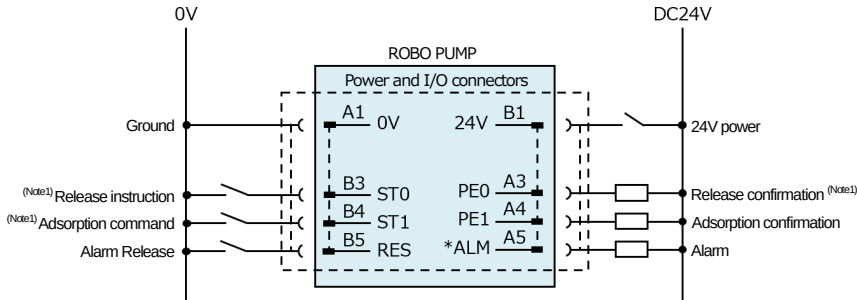
3. Installation frame

- The frame must be rigid enough to prevent large vibrations.
- Consider the space required for maintenance work such as replacement and inspection of the ROBO PUMP.

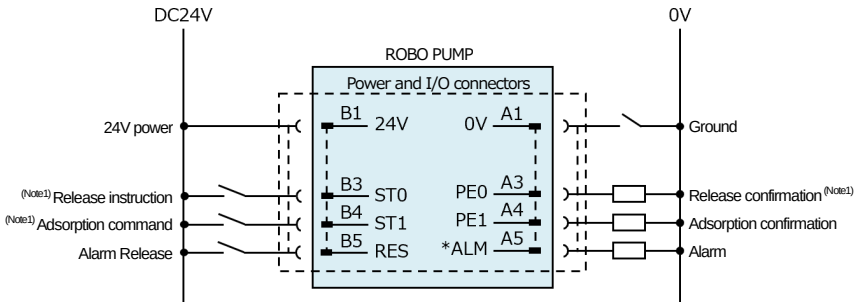
Wiring

1. Connection development diagram

(1) In case of NPN specification



(2) In case of PNP specification

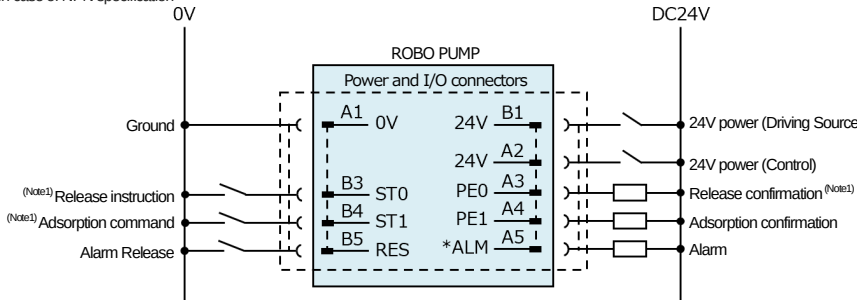


Caution

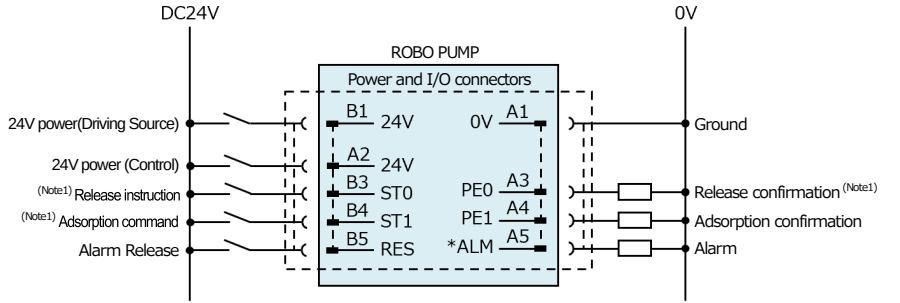
- "Note 1" changes its function depending on the setting of parameter No.5. Note that this figure shows the Double Solenoid Mode 2 status is shown. Refer to [section 5.4.5 of the ROBO PUMP Instruction Manual] for details.
- "*ALM" is a b-contact (negative logic) signal. Output signal is ON in normal state, alarm is present. It is turned off in the state.

◎2-circuit power supply specification TMD2 (option)

(1) In case of NPN specification



(2) In case of PNP specification

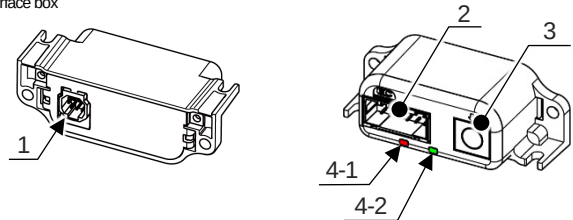


Caution

- "Note 1" changes its function depending on the setting of parameter No.5. Note that this figure shows the Double Solenoid Mode 2 status is shown. Refer to [section 5.4.5 of the ROBO PUMP Instruction Manual] for details.
- "*ALM" is a b-contact (negative logic) signal. Output signal is ON in normal state, alarm is present. It is turned off in the state.

2. Installation and wiring of interface box

(1) About the interface box

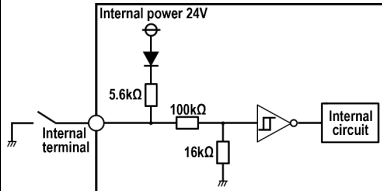
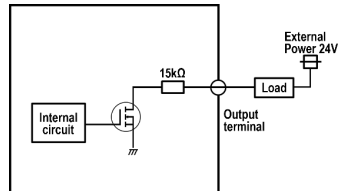
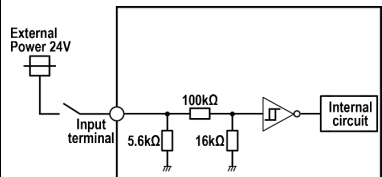
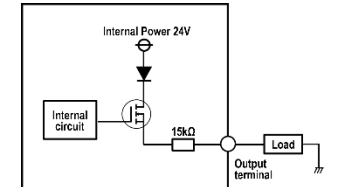


No.	Name	Contents
1	Actuator connection connector	Connector to connect actuator. Products shipped before 2026 should be connected to the interface box using an interface box conversion cable.
2	Power and I/O connectors	Connectors for power and I/O wiring.
3	Teaching port	This connector is for connection to PC dedicated teaching software and teaching box. Remove the cap when connecting.
4	Status LED [®]	1 LED1 The servo ON/OFF status and the alarm status should be indicated.
		2 LED2 The wireless status should be indicated.

* For details on the display status, refer to [ROBO PUMP Instruction Manual (MJ3827), Section 6.1: Troubleshooting Confirmations].

(2) Input/output specifications

PIO input/output (interface box) specifications of the ROBO PUMP should be as stated below.

I/O		Input portion		Output part	
Specification		Input voltage	24V DC $\pm 10\%$ ($\pm 10\%$)	Load voltage	24V DC $\pm 10\%$ ($\pm 10\%$)
		Input	5mA/1 circuit	Maximum added current	50mA/1 point
		ON/OFF Voltage	ON voltage Min. 18V DC OFF voltage Max. DC6V	Residual voltage	2V or less
		Leakage current	Max. 1mA/1 point	Leakage current	Max. 0.1mA/1 point
Insulation method		Non-isolated from external circuits		Non-isolated from external circuits	
I/O logic	NPN				
	PNP				

Caution

- PIO circuit is non-isolated for both input and output. The ground of external devices such as PLCs connected to the ROBO PUMP should be common to the ground of the ROBO PUMP.

(3) Wiring of interface box

Use an interface box conversion cable to wire the interface box and the actuator cable.

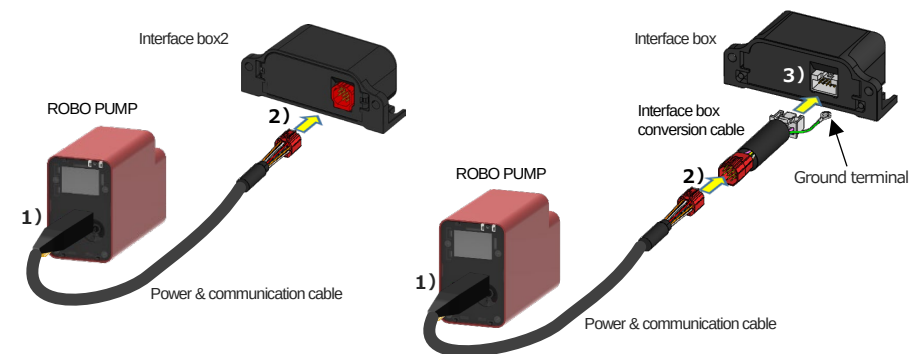
○interface box2

- (1) Connect a power & communication cable to the connector on the ROBO PUMP main body.
- (2) Join the actuator cable to the interface box.

○interface box (Products shipped prior to 2026)

- (1) Connect the power and communication cable to the connector on the main body of the ROBO PUMP.
- (2) Connect the actuator cable and interface box conversion cable.
- (3) Connect the interface box conversion cable to the interface box.
- (4) Connect the ground terminal. For details.
Refer to [ROBO PUMP Instruction Manual (MJ3827), Section 3.4: Frame Ground Wiring].

Cable connection diagram



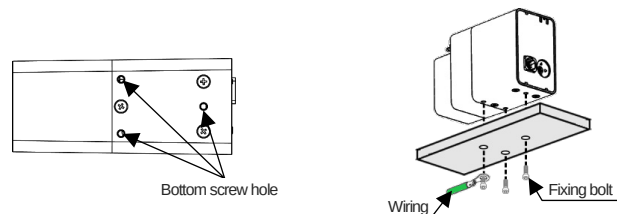
3. Frame ground wiring

ROBO PUMP has a built-in controller board. The frame ground line of the controller is connected to ROBOPUMP body and is grounded through ROBO PUMP mounting surface.

* Ground wire and grounding screw must be provided by the customer.

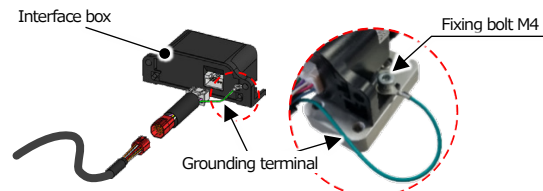
(1) Grounding of ROBO PUMP Main Unit.

Connect the ground to one of the threaded holes on the bottom surface.



(2) Grounding of Interface Box (Not required for Interface Box 2)

Fasten jointly the grounding terminal on the interface box conversion cable with fixing bolt.



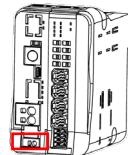
(3) Grounding for Noise Measure of the R-unit

Ground the FG (frame grounding) on the gateway unit or SEL unit side.

Refer to [REC System Instruction Manual (ME0394)] for details.

Ground resistance 100Ω or below (Class D grounding construction)

*Annealed copper wire: 1.6 mm diameter (2mm²: AWG14) or more.



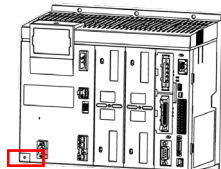
(4) Grounding for Noise Measure of XSEL2

Ground the FG (frame grounding)

Refer to [XSEL2 Controller Instruction Manual (MJ0478)] for details.

Ground resistance 100Ω or below (Class D grounding construction)

*Annealed copper wire: 3.5 mm² (AWG12) or more.



Commissioning Procedure

This section describes the procedures for commissioning. For details of each procedure, refer to the instruction manuals listed in the table and the item number] in the table.

No.	Procedure	Contents
1	Product Verification	Ensure that all components are present. (Refer to [ROBO PUMP Instruction Manual (ME3827), Chapter 1].)
2	Installation and wiring	Ensure that the ROBO PUMP and peripheral equipment are securely installed and wired. (Refer to [ROBO PUMP Instruction Manual (ME3827), Chapters 2 and 3].)
3	Power on	Turn on the power. (Refer to [ROBO PUMP Instruction Manual (ME3827),Section 4.1.2].)
4	Test Operation	Perform commissioning operation using IA-OS or teaching box. (Refer to [ROBO PUMP Instruction Manual (ME3827),Sections 4.2 and 4.3].)



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