EX12#-TFJ16GB

Installation & Maintenance Manual
SI unit - CC-Link compatible
Series EX120-SMJ1
EX121-SMJ1
EX122-SMJ1
EX124D/U-SMJ1

EMC Directive 89/336/EEC
EN61000-6-2:2001 Electromagnetic Compatibility (EMC) - Immunity
EN55011 A1+A2:2001 Electromagnetic Compatibility (EMC) - Emission

1. Safety Instructions

- This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.
- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "DANGER", "WARNING" or "CAUTION", followed by important safety information which must be carefully followed.
- To ensure safety ISO4414: Pneumatic Fluid power and JIS B 8370: Pneumatic System principles must be observed, along with other relevant safety practices.

⚠ **DANGER**	In extreme conditions, there is a possible result of serious injury or loss of life.
⚠ **WARNING**	If instructions are not followed there is a possibility of serious injury or loss of life.
⚠ **CAUTION**	If instructions are not followed there is a possibility of injury or equipment damage.

⚠ WARNING

- **Do not disassemble, modify (including change of printed circuit board) or repair the product.**
  An injury or product failure may result.
- **Do not operate the product beyond the specification range.**
  Fire, malfunction or equipment damage may result. Use the product only after confirming the specifications.
- **Do not use the product in the presence of flammable, explosive or corrosive gas.**
  Fire, explosion or corrosion may result. This product does not have an explosion proof construction.
- **When using the product as part of an interlocking system:**
  1) Provide a double interlocking system, for example a mechanical system.
  2) Check the product regularly to ensure proper operation.
- **Before performing maintenance, be sure of the following:**
  1) Turn off the power supply.
  2) Stop the air supply, exhaust the residual pressure and verify the release of air from the system.

⚠ CAUTION

- **Always perform a system check after maintenance.**
  Do not use the product if any error occurs.
  Safety cannot be assured if caused by un-intentional malfunction.
- **Provide grounding to ensure correct operation and to improve noise resistance of the product.**
  This product should be individually grounded using a short cable.
- **Follow the instructions given below when handling the product. Failing to do so may result in product damage.**
  - Maintenance space should always be provided around the product.
  - Do not remove labels from the product.
  - Do not drop, hit or apply excessive shock to the product.
  - Follow all specified tightening torques.

1. Safety Instructions (continue)

- Do not bend, apply tensile force, or apply force by placing heavy loads, on the cables.
- Connect wires and cables correctly, and do not connect while the power is ON.
- Do not route wires and cables together with power or high-voltage cables.
- Check the insulation of wires and cables.
- Take proper measures against noise, such as noise filters, when the product is incorporated in equipment or devices.
- Select the required protection (IP) rating according to the environment of operation.
- Take sufficient shielding measures when the product is to be used in the following conditions:
  (1) where noise due to static electricity is generated.
  (2) where electro-magnetic field strength is high.
  (3) where radioactivity is present.
  (4) where power lines are located.
- Do not use the product in a place where electric surges are generated.
- Use suitable surge protection when a surge generating load such as a solenoid valve are to be directly driven.
- Prevent any foreign matter from entering this product.
- Do not expose the product to vibration or impact.
- Use the product within the specified ambient temperature range.
- Do not expose the product to any heat radiation.
- Use a precision screwdriver with flat blade to adjust the Rotary switch.
- Close the cover over the switches before power is applied.
- Do not clean the product with chemicals such as benzene or thinners.

- **Power Supply selection**

A UL approved direct current (DC) power supply should be used with this product, as follows:

1. A limited voltage / current supply in accordance with UL508.
   A circuit from which power is supplied by the secondary coil of a transformer according to the following:

Maximum voltage (no load) : Less than 30Vrms (42.4V peak)
Maximum current : (1) Less than 8A (including when short circuited)
(2) Limited by circuit protection (such as a fuse) with the following rating.

No load voltage (V peak)	Max. current (A)
0 to 20 [V]	5.0
20 to 30 [V]	100 / peak voltage

2. A Class 2 power supply unit in accordance with UL1310, or a power supply circuit of maximum 30Vrms (42.4V peak) or less, using a Class 2 transformer in accordance with UL1585 as power source.

2. How to Order

EX □□□ - S MJ 1

Applicable PLC

MJ	Mitsubishi Electric Corp. CC-Link System

SI unit

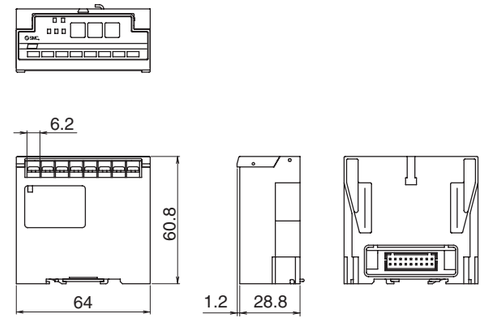
120	VQ1000/2000/SV Direct mounting
121	DIN rail mounting
122	SX/SY Direct mounting
124D 124U	VQ4000

3. Specifications

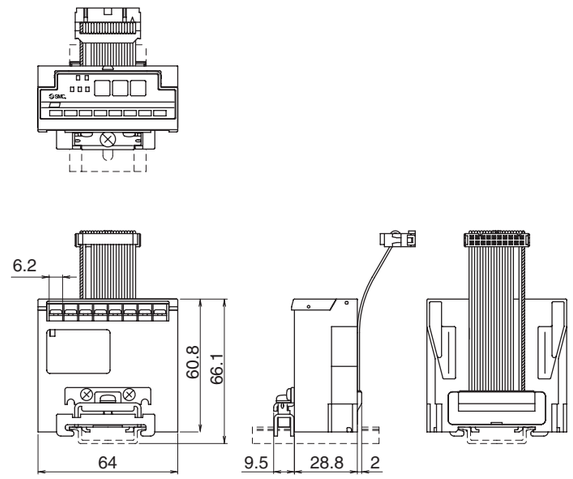
Item	Specifications
Supply voltage for communication	15V to 30VDC
Supply voltage for solenoid valve	24VDC +10%/-5%
Power consumption	Communication, Internal power supply : 24VDC, 0.1A or less Solenoid valve power supply : 24VDC, 1.5A or less
Output number	16 points
Output type	Open collector type (NPN)
Connected load	24VDC, SMC solenoid valve with 2.1W or less of light/ surge voltage suppressor
Withstand voltage	Between external terminal package and ground, 1500VAC for 1min.
Insulation resistance	Between all the live terminals and ground, 2MΩ (with insulation resistance tester of 500VDC)
Vibration resistance	5G (Compliance with JIS C0911, 10 to 55Hz, 0.5mm of one-side amplitude)
Shock resistance	10G (Compliance with JIS C0912)
Ambient temperature	0 to +55℃ (when 8 points of valves are ON) 0 to +50℃ (when 16 points of valves are ON)
Ambient humidity	35 to 85% RH (without dew condensation)
Environment	No corrosive gas
Storage temperature	-10 to +60℃
Weight	EX120 : 110g or less EX121, EX122 : 140g or less EX124D/U : 240g or less
Dimensions	EX120 : 64×30×60.8mm EX121, EX122 : 64×40×60.8mm EX124D/U : 114×67×53.8mm

4. Outline dimensions(mm)

- **EX120-SMJ1**

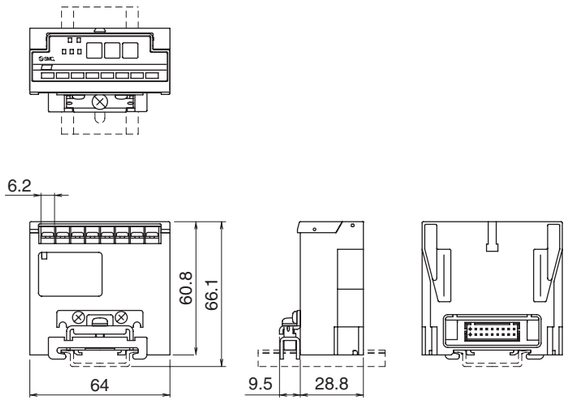


- **EX121-SMJ1**

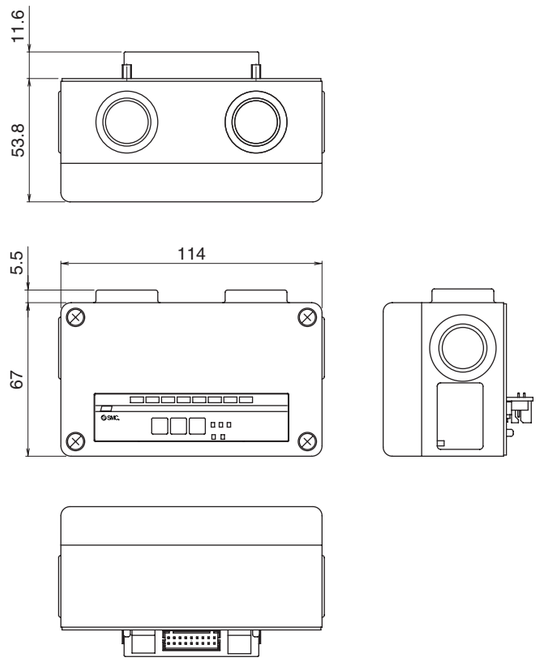


4. Outline dimensions(mm) (continue)

• EX122-SMJ1

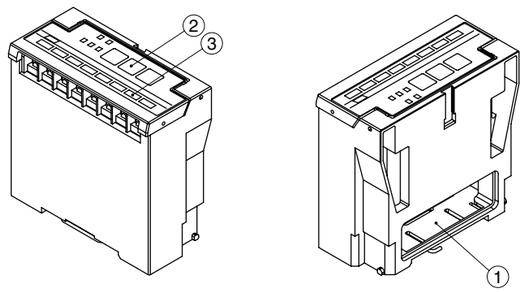


• EX124D/U-SMJ1

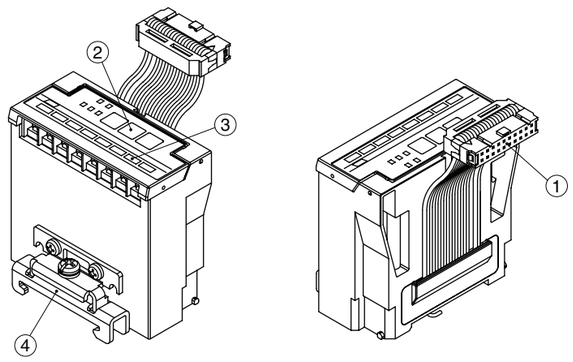


5. Names / Functions of individual Parts

• EX120-SMJ1



• EX121-SMJ1



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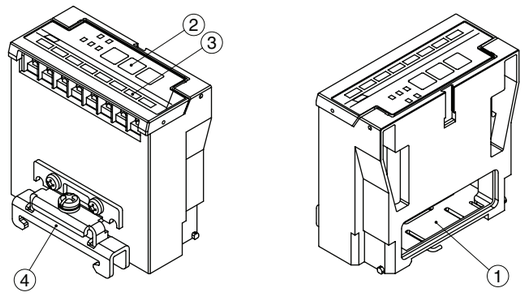
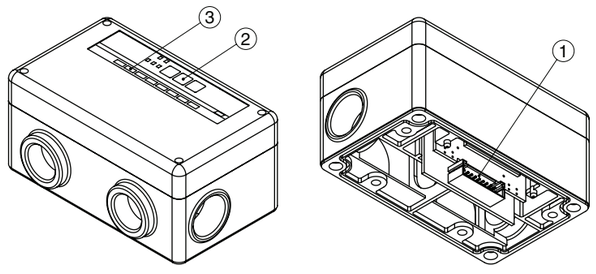


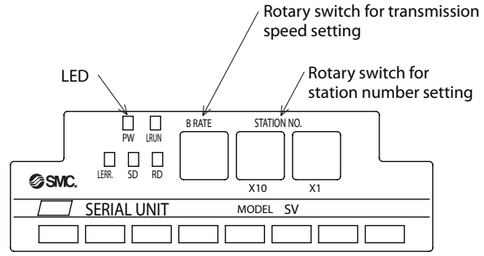
• EX124D/U-SMJ1



5. Names / Functions of individual Parts (continue)

No.	Parts	Purpose
1	Output equipment connector	To connect the output equipment such as a solenoid valve.
2	Indication and address setting panel	To provide LED's to indicate the unit status, setting of address and communication speed. (Baud Rate)
3	Terminal	To connect the power line and communication line.
4	DIN rail mounting bracket	To mount on DIN rail.

Setting for Display



Display	Meaning
PW	LED is ON when power supply for communication is supplied.
L RUN	LED is ON when SI unit communicates data with master station normally. LED is OFF when communication is terminated (overtime error).
SD	LED is ON when sending data.
RD	LED is ON when receiving data.
L ERR.	LED is ON when a transmission error (CRC error) occurs, or if there is an error in station number setting or transmission speed setting. LED flashing indicates the setting of station number or transmission speed has changed. LED is OFF when communication is normal.

* "PW", "L RUN", "SD" and "RD" ON when data linked normally.

• Transmission speed setting switch : "B RATE"

Setting	Transmission speed
0	156kbps
1	625kbps
2	2.5Mbps
3	5Mbps
4	10Mbps

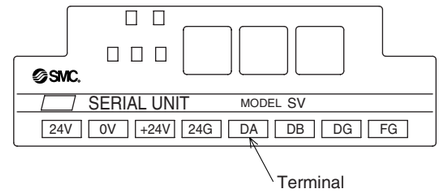
Set transmission speed within the range of 0 to 4.

• Station number setting switch : "STATION NO."

Set station number within the range of 01 to 64.
(Overlapped station number setting is not allowed.)
"×10" is to set the tens digit of a station number.
"×1" is to set the units digit of a station number.

6. Internal Circuit and Wiring

Terminal block for external wiring



Terminal	Connect to
24V	24VDC power supply line for solenoid valve
0V	0VDC power supply line for solenoid valve
+24V	24VDC power supply line for communication
24G	0VDC power supply line for communication
DA	Communication line DA
DB	Communication line DB
DG	Communication line DG
FG	Grounding conductor

* Terminal screws are M3 thread.

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