



Installation and Maintenance Manual

EX12*-STA1 Series (OMRON SYSMAC C (CV) Series, SYSBUS Wire System)

For future reference, please keep this manual in a safe place

This manual should be read in conjunction with the current product catalogue

Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by label of "CAUTION", "WARNING".

To ensure safety, be sure to observe ISO, JIS and other safety practices.

CAUTION : Operator error could result in injury or equipment damage.

WARNING: Operator error could result in serious injury or loss of life.

CAUTION

Thoroughly read this manual and operate the product within the specified range. Follow the instructions.

Do not drop or impart any impact to the product.

Use within specified voltage range. Use outside of specified voltage will cause malfunction, damage to unit, electric shock, and fire.

Do not touch the terminals or internal circuit board while they are energized. It may cause malfunction, damage to unit, and electric shock.

Use within operating ambient temperature. Do not use where temperatures can rapidly change even though it is within the specifications. Foreign objects should be prevented from entering the product. Contamination by foreign objects, such as wire chips will cause fire, breakage, and malfunction.

Use within the operating environment of the protection structure. Avoid using IP20 where water or oil, etc. can be splashed. IP65 is achieved by mounting on manifold solenoid valve and process wire entry correctly.

Carry out regular checks to confirm correct operation. Safety may not be maintained by unintentional malfunction or incorrect operation.

WARNING

The product specified here is designed to be used in standard factory automation equipment. Do not use in machinery and/or equipment where operators may be injured, and malfunction or failure may cause loss of life.

Do not disassemble to repair or modify the product.

Specifications

Item	Specifications			
	EX120-STA1	EX121-STA1	EX122-STA1	EX123-STA1
Model	EX120-STA1	EX121-STA1	EX122-STA1	EX123-STA1
Output point	16 points			
Output style	Transistor style (NPN open collector style)			
Connecting load	DC24V, Solenoid valve with lamp-surge voltage protection circuit of 2.1W or less			
Residual voltage	0.4V or less			
Power supply voltage	DC24V+10%, -5%			
Current consumption	0.3A or less (inside unit)			
Weight (or less)	110g	140g	130g	240g
Operating ambient temperature	0~+50°C			
Operating ambient humidity	35~85%RH (No dew allowed)			
Vibration resistance	5G (According to JIS C0912)			
Impact resistance	10G (According to JIS C0911)			
Noise resistance	1000Vp-p pulse width 1μs leading 1ns			
Withstand voltage	AC1000V 50/60Hz for 1min. between the terminal and the case			
Insulation resistance	More than 2MΩ (DC500V) between the terminal and the case			
Operating atmosphere	No corrosive gas			
Protection class	IP20			IP65

Outline

This SI unit is able to connect to OMRON Corp. PLC, SYSMAC C(CV) series SYSBUS Wire system.

This SI unit has 16 output points (1 station). Maximum is 512 I/O points (32 stations) per PLC master unit.

Applicable PLC

The following master unit is required to operate SYSBUS wire system:
C500-RM201
C200H-RM201

Note: Refer to the OMRON Corporation User Manual for full details.

Applicable solenoid valves

SI unit	Applicable solenoid valve		
EX120-STA1	VQ1000, VQ2000		
EX121-STA1	VQ1000, VQ2000, SX3000, SX5000, SY3000, SY5000		
EX122-STA1	SX3000, SX5000, SY3000, SY5000		
EX123-STA1	VQ2000, VQ4000		

Refer to the catalogues for each solenoid valve for details.

CAUTION

If solenoid valves, other than those stated in the chart above are used, SMC offers no guarantee against malfunction of the SI unit, nor if any load, other than solenoid valves, is used.

Terminal block

Terminal name	Connected to
24V	24V supply power cable
0V	0V supply power cable
+	Transmission path (+)
-	Transmission path (-)
FG	Grounding conductor and shield

Wiring (Fig 1)

CAUTION

Power of the product and all other equipment should be turned off while wiring.

Tighten the wiring with terminal screw completely. The terminal screw for connection is M3. Use appropriate crimp-style terminal for the terminal screw. Short circuit, fire, and malfunction will be caused if terminal screw is not tightened enough.

Avoid incorrect wiring. It may damage the product and/or other equipment.

Ensure that the FG terminal is correctly earthed. Power with correct capacity should be prepared by considering the in-rush current when starting.

Influence of noise should be avoided for the wiring. Wiring should be separated from power cables and high voltage cables.

Wiring of the signal cables

Wiring of twisted pair cable should follow the drawing shown in Fig 1. Use cable recommended by OMRON Corporation.

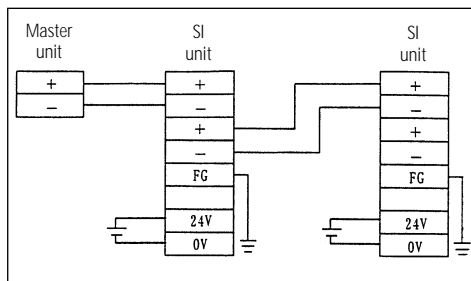


Fig 1

Wiring of power supply

Ensure that the power is within the specified voltage range.

Ensure that the cable is capable of supporting the solenoid and SI unit in terms of rating.

Corresponding SI unit output and solenoid valve

1. Standard wiring

The outputs of the SI unit are assigned from the D side (down) solenoid valve in the order 0, 1, 2, etc. The SI unit can be mounted from the direction of the D side or the U side (up).

CAUTION

Products exist that can only be mounted from one side of the manifold. Please refer to the current catalogue for each solenoid valve. When the number of stations on a VO, SX manifold are 8 or less the internal wiring will default to DOUBLE solenoid wiring.

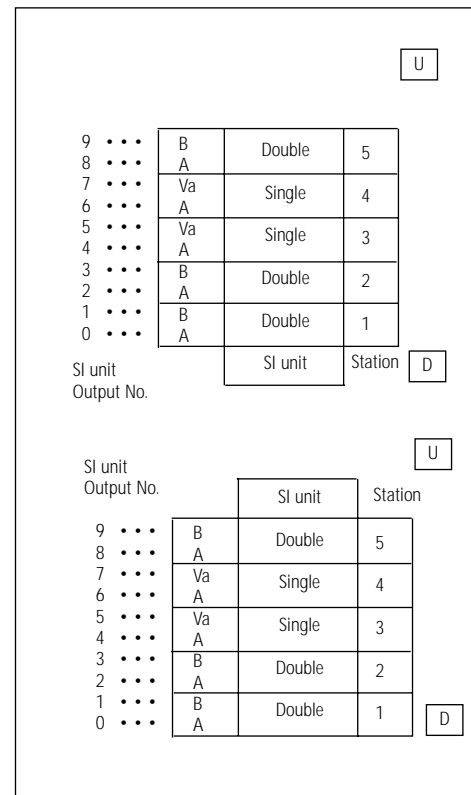


Fig 2

2. Non standard wiring (mixed wiring)

Mixed wiring is available as a non-standard option. If mixed wiring is specified, the positions of the single and double solenoids on the manifold must be indicated when ordering.

LED display

LED name	Content
RUN	Normal operation PLC/Operation: Light
T/R ERR	Normal transmission: Blink Abnormal transmission: Light

Address setting (Fig 3)

Power should be turned off to set address. Open the SI unit cover, adjust by turning the address setting switch using a small bladed screwdriver. Setting range is 0-31. It is not possible to set address overlap.

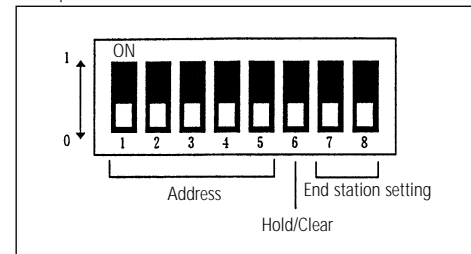


Fig 3

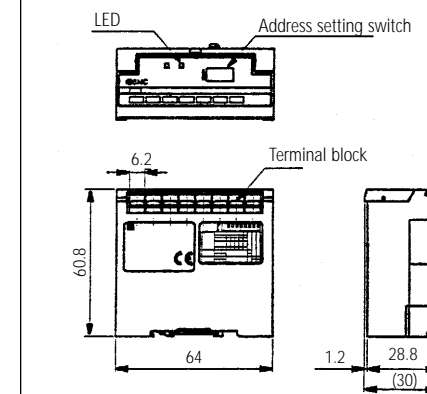
Set the address as follows by SW1-5.

Node address	SW1	SW2	SW3	SW4	SW5
0	0	0	0	0	0
1	1	0	0	0	0
2	0	1	0	0	0
3	1	1	0	0	0
⋮					
31	1	1	1	1	1

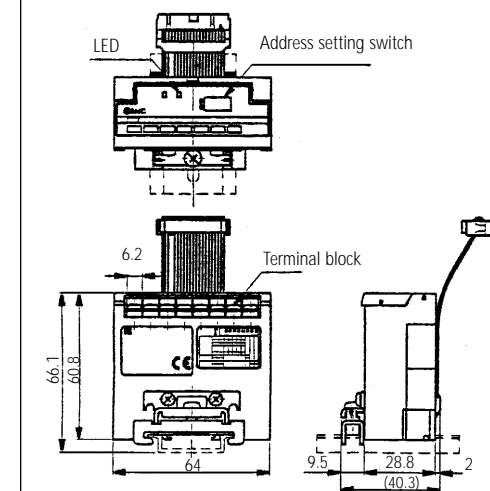
Part identification (Fig 4)

Name of each part and dimension

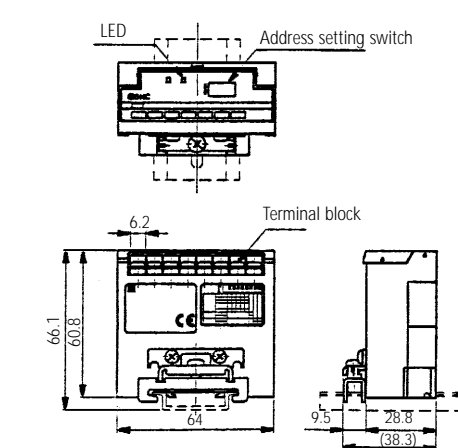
1) EX120-STA1



2) EX121-STA1



3) EX122-STA1



4) EX123-STA1

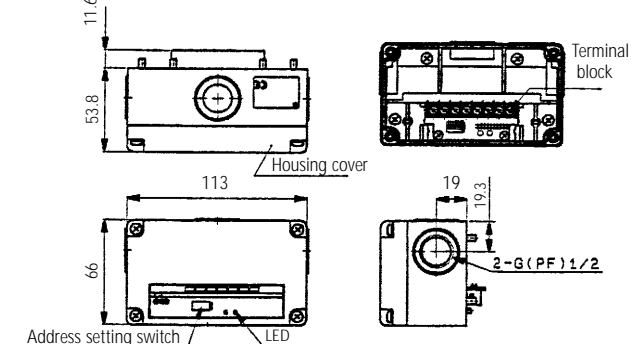


Fig 4

Hold/Clear setting

Set whether to maintain SI unit output condition or tune off all of it when communication error is generated.

Hold/Clear setting	SW6
Clear	1
Hold	0

End station setting

Turn on both SW7 and 8 when unit is at the end station.

End station setting	SW7	SW8
ON	1	1
OFF	0	0

For additional information please contact your local SMC office, see below:

When you enquire about the product, please contact the following

SMC Corporation:		
ENGLAND	Phone 01908-563888	TURKEY Phone 212-2211512
ITALY	Phone 02-92711	GERMANY Phone 6103-402-0
HOLLAND	Phone 020-5318888	FRANCE Phone 01-64-76-10-00
SWITZERLAND	Phone 052-396-31-31	SWEDEN Phone 08-603 07 00
SPAIN	Phone 945-184100	AUSTRIA Phone 02262-62-280
	Phone 902-255255	IRELAND Phone 01-4501822
GREECE	Phone 01-3426076	DENMARK Phone 70 25 29 00
FINLAND	Phone 09-68 10 21	NORWAY Phone 67-12 90 20
BELGIUM	Phone 03-3551464	POLAND Phone 48-22-6131847