



## Installation and Maintenance Manual

### Input Block

#### Series EX240-IE1



EMC Directive 89/336/EEC

EN61000-6-2:2001: Electromagnetic Compatibility (EMC) - Immunity

EN61000-6-3:2001: 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.

<b>⚠ DANGER</b>	In extreme conditions, there is a possibility of serious injury or loss of life.
<b>⚠ WARNING</b>	If instructions are not followed there is a possibility of serious injury or loss of life.
<b>⚠ CAUTION</b>	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:**
  - Provide a double interlocking system, for example a mechanical system.
  - Check the product regularly to ensure proper operation.
- Before performing maintenance, be sure of the following:**
  - Turn off the power supply.
  - 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 (continued)

- 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:
  - where noise due to static electricity is generated.
  - where electro-magnetic field strength is high.
  - where radioactivity is present.
  - 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 DIP 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:

- 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

- 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 Specifications

### General specifications

Dimension (W x H x D)	54 x 72.4 x 120 *1
Weight	370 g *1
Ambient temperature	0 to 50°C
Ambient humidity	30 to 95%RH (without condensation)
Applicable altitude	Less than 1000 m above sea
Vibration proof	10 to 57 Hz 0.35mm (constant amplitude) 57 to 150 Hz 5 G (constant speed)
Shock resistance	Peak value: 15 G / 11 ms 3 times each in directions of ± X, Y and Z
Enclosure	IP65

\*1) Attachments excluded

### Input specifications

Standard	IEC1131-2
Corresponding sensor	Current source type (PNP output) Current sink type (NPN output) *1
Rated voltage	24 VDC *2
Logical "1" input voltage	11 to 30 V
Logical "0" input voltage	-3 to 5 V
Logical "1" input current	8 mA typical
Connection of 2-wire type sensor	Possible
Logical "0" allowable current	2.5 mA Max.
Input delay	3 ms typical
Sensor supply current	500 mA/DI unit (60 mA Max./sensor)
Short circuit suppressor	600 mA typical for each SI unit (supply power up) Cut power once and then supply it again for return

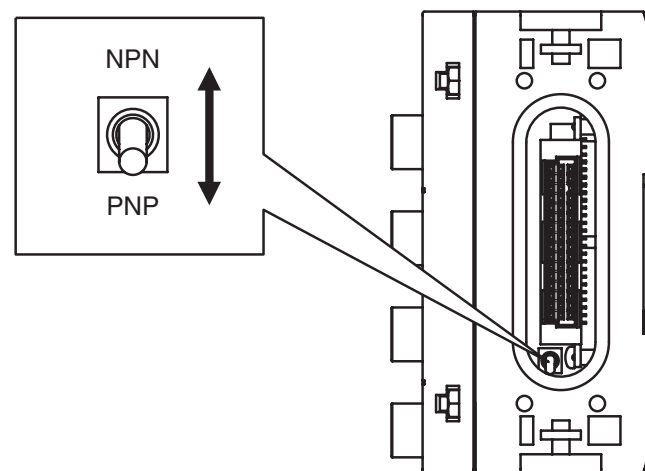
\*1) Changed over by switch (for every DI unit)

\*2) Approx. 2 V of voltage drop for power supply voltage (power supply for SI/DI units)

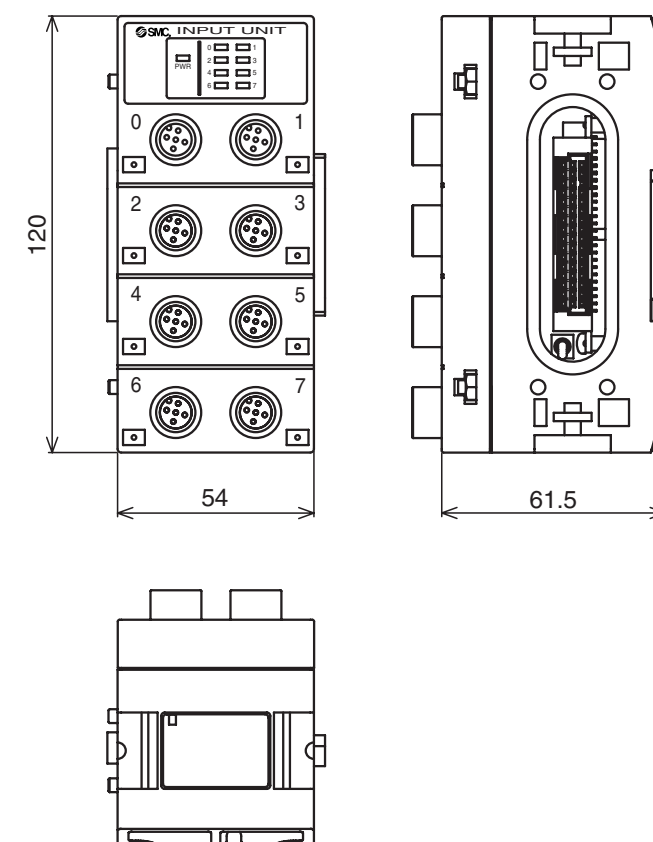
## 3 Installation

### Input selector switch

Setting for the sensor input is "PNP" when units are shipped from the factory. When connecting NPN sensor, please change the setting from PNP to NPN by selector switch as shown in the picture below. The Input manifold must be dis-assembled into individual Input Blocks to change the switch position.



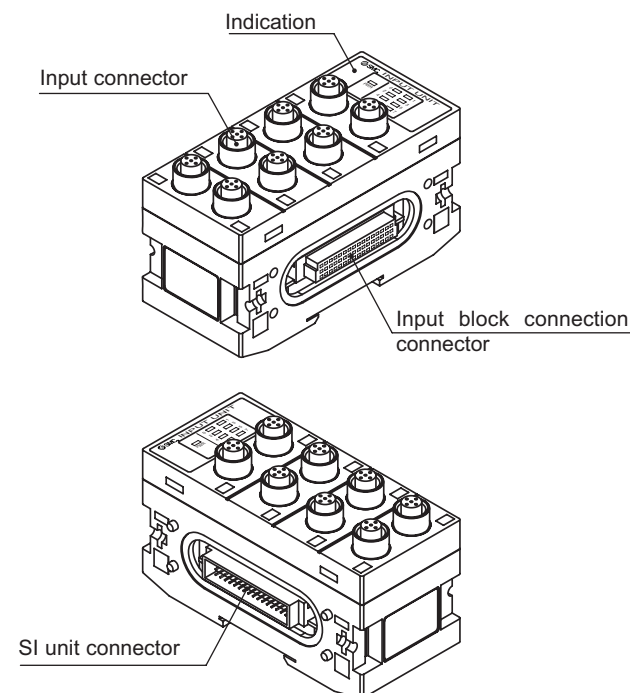
## 4 Outline dimensions (in mm)

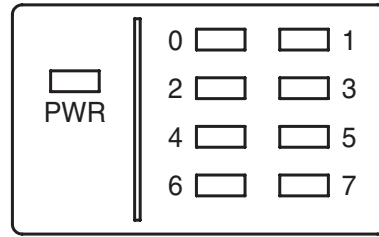


## 5 Names / Functions of Individual Parts

### Body

- Input connector : To connect the sensors.
- SI unit connector : To connect the SI unit.
- Input block connection connector : To connect the Input block.
- Indication : LED to indicate the condition of the unit.



**5 Names / Functions of Individual Parts (continued)****LED indication**

Description	Function
PWR	LED is ON when power for sensor is supplied. LED is OFF when short-circuit suppressor works.
0 to 7	LED is ON when each sensor input turns on.

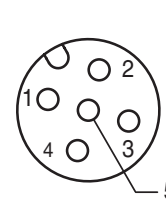
**6 Wiring****Input current**

The available current to the sensor is 60mA maximum for each input point.

In the power supply for the sensor, if an over current flows because of short circuit etc, the power supply will be cut-off by the short circuit suppressor.

In this case, cut power once and the user must fix the cause of the short circuit.

The power supply should be connected again to return.



No.	Description	Function
1	SW+	Supply power + for sensor
2	N.C	Free *
3	SW-	Supply power - for sensor
4	SIGNAL	Sensor input signal
5	PE	Protection earth for sensor

**Connector**

\* No.2 pins of connectors with input no. 0, 2, 4, and 6 (connectors on the right side of each DI unit) are internally connected to no.4 pins of input no.1, 3, 5 and 7 (sensor input signals) one by one. This allows direct input for 2 points which are put in one cable with a collective connector.

\* For IP65 protection, Connect protection cap to all unused input connector, (Protection cap example : Hirschmann M12VS )

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