



Installation & Maintenance Manual

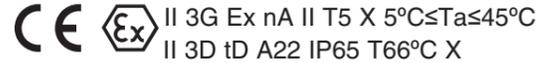
Input Unit and Input Block

Series 56-EX500-IB1

56-EX500-IE1/2/3/4



Series 56-EX500-IE5/6



Read this manual before using this product.

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

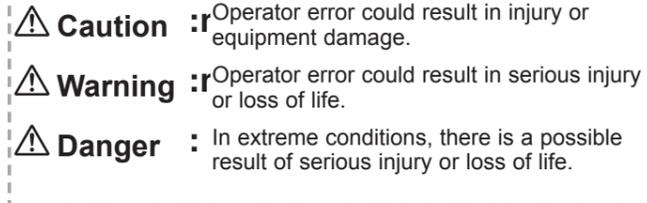
This manual should be read in conjunction with the current catalogue.

Safety Instructions

● General recommendation

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" or "Danger".



⚠ WARNING

- A system designer or a person who decides a system specification should judge the compatibility of a reduced wiring system.

Since the products specified here are used in various operating conditions, their compatibility for the specific wire saving system must be based on specifications or after analysis and/or tests to meet your specific requirements.

- Only trained personnel should operate pneumatically operated machinery and equipment.
 - Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of wire saving systems should be performed by trained and experienced operators.
- Do not service machinery/equipment or attempt to remove component until safety is confirmed.
 - 1) Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
 - 2) When equipment is to be removed, confirm the safety process as mentioned above. Switch off air and electrical supplies.
 - 3) Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of actuators etc. (Supply air into the system gradually to create backpressure, i.e. incorporate a soft-start valve).
- Contact SMC if the product is to be used in any of the following conditions:
 - 1) Conditions and environments beyond the given specifications, or if product is used outdoors.
 - 2) Installations in conjunction with atomic energy, medical equipment, food and beverage, or safety equipment.
 - 3) Applications which have the possibility of having negative effects on people, property or animals. Special safety analysis is required.

Safety Instructions (continue)

ATEX Marking Description

	II 3G Ex nA II T5 X 5°C≤Ta≤45°C
	II 3D tD A22 IP65 T??°C X
Equipment Group II	tD - protected by enclosure
Category 3	A22 - for zone 22
Gas (G) and Dust (D) environment	IP65 - Protection structure
Ex - European standards apply	Ta - Ambient temperature
nA - Non-sparking apparatus	T??°C - Max. surface temperature
II - for all types of gas	X - special conditions apply, see instructions
T5 - temperature classification	

⚠ WARNING

Design and selection

- ① Operate the unit only within the specified supply voltage limits. If the supply voltage exceeds the rated voltage limits the unit and connected equipment might malfunction or could be damaged. It could also become a fire hazard.

- ② Do not operate beyond specification range.

Fire, malfunction or unit and connected equipment damage can result.

- ③ Please construct a backup system, such as making the equipment or unit a multiple system, or designing a fail-safe in advance to prevent damage due to the breakdown and the malfunction of this product.

- ④ Mount the emergency stop outside of the enclosure so that it can stop the system operation immediately and intercept the power supply.

- ⑤ These instructions must be followed when using the Gateway unit in an interlocking circuit:

- Provide valve interlocking by another system such as mechanical protection.
- Check the Gateway unit regularly to ensure mechanical protection.

There is a risk of getting injured if the interlock does not operate correctly.

Wiring

Perform wiring correctly.

- ① There is a possibility that a unit and connected equipment will be destroyed if incorrectly wired.

Do not perform wiring while power is on.

- ② If there is an explosive atmosphere present there is a risk of an explosion.

There is also a possibility of failure of operation due to the damage of a unit and connected equipment.

- ③ Do not lay wires or cables with power cable or high-voltage cable in the same wiring route.

There is a possibility of failure of operation due to electrical noise on the signal cable or a surge in the power cable. Separate the wiring of reduced wiring system from power cables.

- ④ Confirm proper insulation of wiring.

With insulation failure (contact with other circuits, insulation failure between terminals, etc), there is a risk of explosion if an atmosphere is present. There is also a possibility of damage to a unit and connected equipment due to the applied excess pressure or current.

⚠ WARNING

Operating environment

- ① Do not use in an environment where water, chemicals, or oil are present. Prevent dust and particles collecting on or around the unit. It will cause failure or malfunction.
- ② Do not use in an area where a magnetic field is generated. It will cause malfunction.
- ③ Do not connect or disconnect cables when the unit is powered. Fire or an explosion may result if an explosive or combustible gas is present.
- ④ Do not use in an environment with temperature cycle. Heat cycles other than that of daily change of the temperature can effect inside of the units.
- ⑤ Do not expose the wiring system to heat radiation from a heat source located nearby. It will cause failure or malfunction.
- ⑥ Do not use in an environment where a surge source more than the CE marking standard allow is present. Internal circuit elements can deteriorate or break when equipment generating a large surge (electromagnetic lifter, high frequency induction furnace, motor, etc.) is located near the wiring system. Provide surge preventives, and avoid interface.
- ⑦ Use the wiring system equipment with surge absorber when a surge-generating load such as relay or solenoid valve is driven directly.
- ⑧ Do not expose the wiring system to vibration and impact. It will cause failure or malfunction.

Adjustment and Operation

- ① Do not allow short circuit of loads.

Connected equipment may be damaged by excess current flow if a load is short circuit. Input unit fuse will break. Output and SI unit have protective function for excess current flow, but it is possible that they will be damaged, as the protective function does not cover all modes.

- ② Do not carry out operation or setting of this equipment with wet hands.

It may cause an electric shock to the operator.

Maintenance

- ① Do not disassemble, modify (including change of printed circuit board) or repair. An injury or failure can result.
- ② Perform the following maintenance periodically in order to prevent possible danger due to the unexpected. Confirm wiring and screws are not loose. Loose screws or wires may cause unintentional malfunction.
- ③ These instructions must be followed while in maintenance:
 - Turn off the power supply.
 - Stop the supplied fluid, exhaust the residual pressure and verify the release of fluid before performing maintenance. Otherwise it can cause injury.

⚠ CAUTION

Design and selection

- ① Ensure there is sufficient clearance for maintenance activities. When designing an application, be sure to allow sufficient clearance for maintenance and inspections.

The direct current power supply to be used should be UL1310 class 2 power supply when conformity to UL is necessary.

⚠ CAUTION

Mounting

- ① Do not drop, bump or apply excessive impacts while handling. Otherwise it can result in damage to the unit causing failure or malfunction.
- ② Hold the body for handling. Otherwise it can result in damage to the unit causing failure or malfunction.
- ③ Mount units using the proper tightening torque. If a unit is tightened beyond the range of tightening torque, the mounting screws, mounting brackets or unit may be damaged.
- ④ Do not mount the unit where it may be stepped on. If the unit is stepped on it will be damaged.

Wiring

- ① Avoid repeatedly bending or stretching the lead wires. Do not crush or strain the wire. It will cause the wire to break and make the unit malfunction.
- ② Ground the reduced wiring system to a secure, safe and noise-proof place. Grounding should be performed near the unit to shorten the grounding distance.

Maintenance

- ① Only clean the product with a damp cloth. Do not wipe the product with chemicals such as benzene or thinners. It will cause damage to the product.

Model Indication Method

56-EX500-IB1

ATEX Category 3

56-EX500-IE

ATEX Category 3

Connector Type	Input specification
1	M8 connector, PNP
2	M8 connector, NPN
3	M12 connector, PNP
4	M12 connector, NPN
5	8 point unit, M8 connector, PNP
6	8 point unit, M8 connector, NPN

Intended conditions of use

The Input units should be used within the range of specifications given below and in the product catalogue.

If labelled with X: special conditions apply:

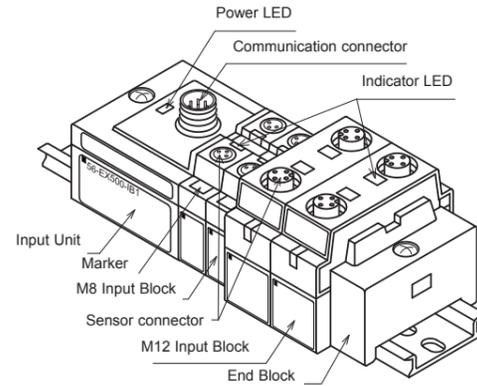
1. Protect the Input units from sources of heat which can generate surface temperatures higher than the ATEX temperature classification.
2. Protect the Input units and cables against all impact or mechanical damage using a suitable ATEX compliant enclosure.
3. Protect the Input units from direct sunlight or UV light using a suitable protective cover.
4. Do not disconnect the M12 connectors before first switching off the power supply.
5. Use only ATEX approved M12 connectors and use only shielded cable to provide grounding.
6. Use only a damp cloth to clean the Input units body, to avoid an electrostatic charge.

Specification

56-EX500-IB1

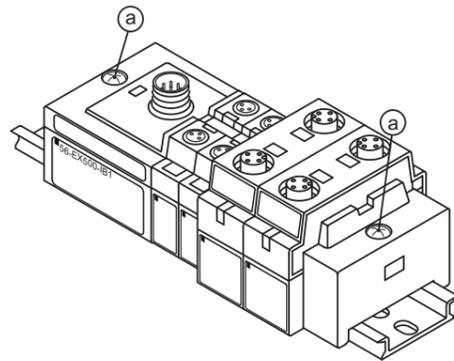
Connecting block	Current source type Input Block (PNP) or Current sink type Input Block (NPN)
Communication connector	M12 connector (8 pin, plug)
Number of connecting block	4 blocks Max.
Power supply for block	24VDC
Current supply for block	0.3A Max.
Current consumption	100mA or less (at rated voltage)
Short circuit protection	1A Typ. for each unit (cutting supply power) Cut the power for Gateway unit once and then supply it again for restart.
Ambient temperature / humidity	+5°C to 45°C / 35% to 85%RH (without condensation)
Protection structure	IP65
Weight	100g (Input Unit + End Block, without DIN)
Pollution Degree	Pollution Degree 2

Names and Functions of individual parts



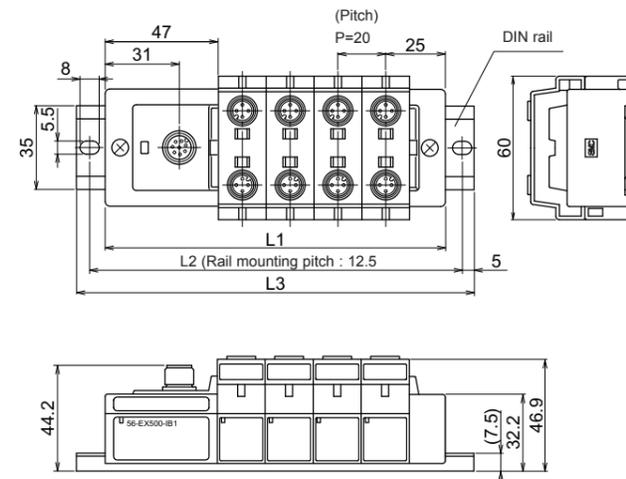
Installation

Push the input unit and end block together firmly once they are mounted on the DIN rail to ensure a good seal between all the input blocks. Tighten the two screws (a) to secure the assembly on DIN rail. Tighten the screws with specified tightening torque (0.6Nm).



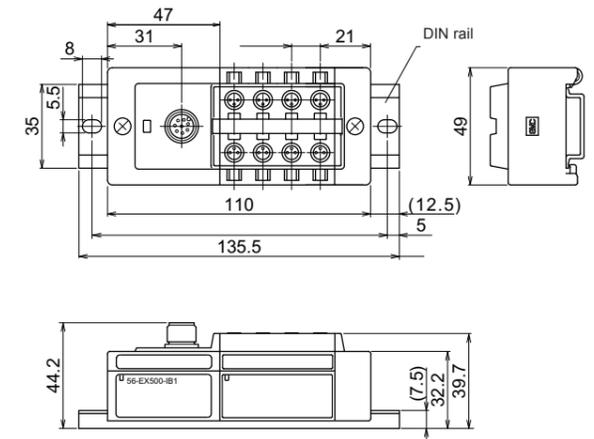
Outline with Dimensions (continue)

Details of M12 Input Block



Stations	1	2	3	4
L1	82	102	122	142
L2	100	112.5	137.5	162.5
L3	110.5	123	148	173

Details of 8 point integrated type Input Block

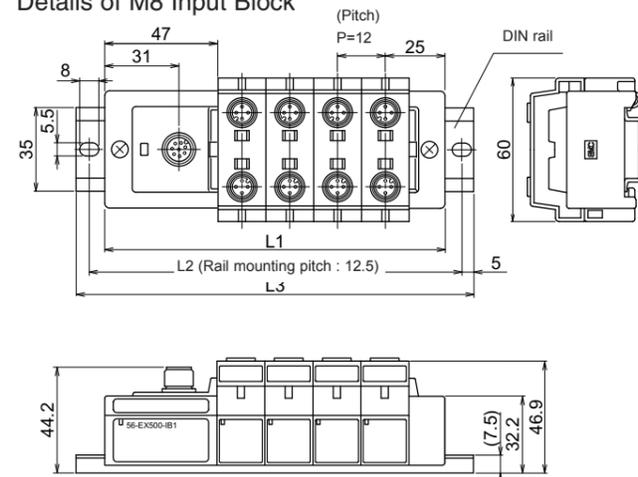


56-EX500-IE1/2/3/4/5/6

Applicable sensor	Current source type (PNP output)	Current sink type (NPN output)
Sensor connector	M8 connector (3 pin, socket), M12 connector (4 pin, socket)	
Input points	2 points / 8 points (M8 only)	
Rated voltage	24VDC	
Logical "1" input voltage	15V to 26.4V	0V to 8V
Logical "0" input voltage	0V to 5V	19V to 26.4V
Logical "1" input current	5mA Typ.	-5mA Typ.
Logical "0" allowable current	1.5mA	-1.5mA
Input delay	1m sec. or less	
Display	Green LED	
Insulation	Not provided	
Sensor supply current	30mA Max. / sensor	
Ambient temperature / humidity	+5°C to 45°C / 35% to 85%RH (without condensation)	
Protection structure	IP65	
Weight	[M8 : 20g] [M12 : 40g] [8 points (M8) : 55g]	

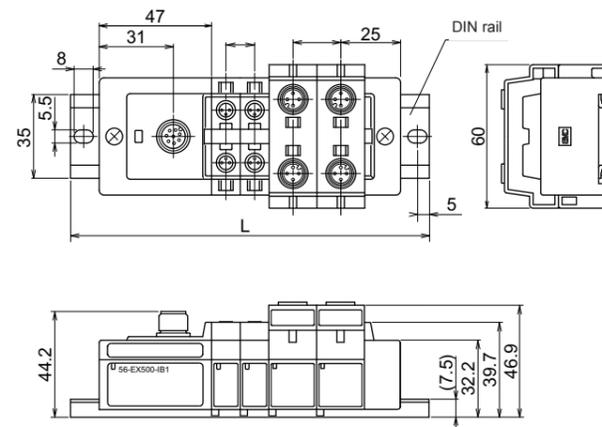
Outline with Dimensions (in mm)

Details of M8 Input Block



Stations	1	2	3	4
L1	74	86	98	110
L2	87.5	100	112.5	125
L3	98	110.5	123	135.5

Details of M8 and M12 mixed



Stations	M8 input block(m)					Connector type : For M8 Input Block (n=1 to 4)	No.	L	No.	L
	0	1	2	3	4					
M12 Input Block (n)	0	0	1	2	3	L dimension	0	98	4	148
	1	1	2	3	4		1	110.5	5	160.5
	2	2	3	4			2	123	6	173
	3	4	5				3	135.5		
	4	6								

Connector type :
For M8 and M12 mixed
(m+n=2 to 4)

56-EX500-IB1 56-EX500-IE1/2/3/4/5/6

Mark	Year	Mark	Month
H	2003	O	January
I	2004	P	February
J	2005	Q	March
K	2006	R	April
⋮	⋮	S	May
		T	June
		U	July
		V	August
		W	September
		X	October
		Y	November
		Z	December

Contact

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SMC Corporation

URL <http://www.smcworld.com> (Global) <http://www.smceu.com> (Europe)

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