

Before Use

Wireless System

EX600-WEN#/EX600-WSV#



Thank you for purchasing an SMC EX600-WEN#/EX600-WSV# SMC Wireless System.
Please read this manual carefully before operating the product and make sure you understand its capabilities and limitations. Please keep this manual handy for future reference.

To obtain the operation manual about this product and control unit, please refer to the SMC website (URL <http://www.smcworld.com>) or contact SMC directly.

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution", "Warning" or "Danger". They are all important notes for safety and must be followed in addition to International standards (ISO/IEC) and other safety regulations.

- Caution:** CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
- Warning:** WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
- Danger:** DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Operator

- ◆ This operation manual is intended for those who have knowledge of machinery using pneumatic equipment, and have sufficient knowledge of assembly, operation and maintenance of such equipment. Only those persons are allowed to perform assembly, operation and maintenance.
- ◆ Read and understand this operation manual carefully before assembling, operating or providing maintenance to the product.

Safety Instructions

Warning	
■ Do not disassemble, modify (including changing the printed circuit board) or repair.	An injury or failure can result.
■ Do not operate or set with wet hands.	This may lead to an electric shock.
■ Do not operate the product outside of the specifications.	Do not use for flammable or harmful fluids. Fire, malfunction, or damage to the product can result. Verify the specifications before use.
■ Do not operate in an atmosphere containing flammable or explosive gases.	Fire or an explosion can result. This product is not designed to be explosion proof.
■ If using the product in an interlocking circuit:	• Provide a double interlocking system, for example a mechanical system. • Check the product regularly for proper operation. Otherwise malfunction can result, causing an accident.
■ The following instructions must be followed during maintenance:	• Turn off the power supply. • Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance. Otherwise an injury can result.
Caution	
■ When handling the unit or assembling/replacing units:	• Do not touch the sharp metal parts of the connector or plug for connecting units. • Take care not to hit your hand when disassembling the unit. The connecting portions of the unit are firmly joined with seals. • When joining units, take care not to get fingers caught between units. An injury can result.
■ After maintenance is complete, perform appropriate functional inspections.	Stop operation if the equipment does not function properly. Safety cannot be assured in the case of unexpected malfunction.
■ Provide grounding to assure noise resistance of the Fieldbus system.	Individual grounding should be provided close to the product with a short cable.

Caution	
Notice:	Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.
NOTE:	This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

[Limited warranty and Disclaimer]

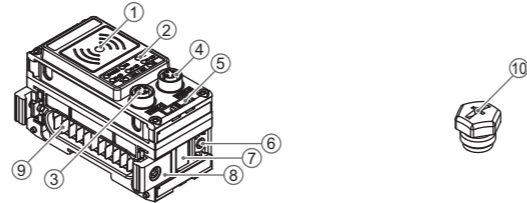
- The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

<Important>

- This product is a wireless unit in accordance with the Radio Act. Be sure to comply with the following precautions.
 - Do not disassemble or modify the product. Disassembly and modification are prohibited by law.
 - This product is compliant with the Radio Act in Japan, European countries and the US. For use in other countries, please consult SMC. Refer to the product catalog or SMC website (URL <http://www.smcworld.com>) for the latest information.
- This product communicates by radio waves, and the communication may stop instantaneously due to ambient environments and operating methods. SMC will not be responsible for any secondary failure which may cause an accident or damage to other devices or equipment.
- When several units are installed closely to each other, slight interference may occur due to the characteristics of the wireless product.
- Do not use this product close to any equipment which may cause malfunction due to radio waves from this product.
- The communication performance is affected by the ambient environment, so please perform the communication testing before use.

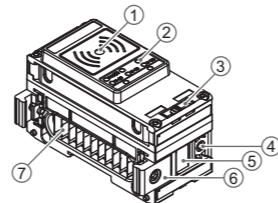
Summary of Product elements

•Wireless master unit



No.	Item	Application
1	Area close to NFC antenna	This area is in close contact with the NFC reader/writer. "O" is the center of the NFC antenna.
2	Status indication LED	LED display to indicate the unit status.
3	Connector (PORT-1)	Fieldbus input/output cable connection.
4	Connector (PORT-2)	Fieldbus input/output cable connection.
5	Marker groove	Marker (EX600-ZT1) can be mounted.
6	Screw hole for valve plate mounting	For fixing the valve plate.
7	Valve plate mounting groove	Groove to insert the valve plate.
8	Joint bracket	Bracket for mounting adjacent units.
9	Unit connector (plug)	Transfers signals to the next unit and supplies power.
10	Seal cap (1 pc.)	To be mounted on unused connectors (PORT 1 or PORT 2).

•Wireless slave unit

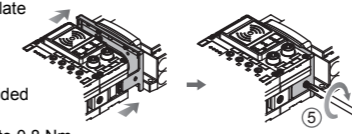
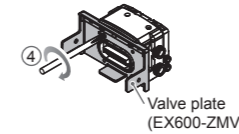
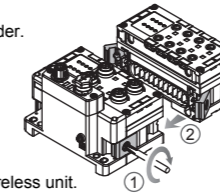


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Assembly

Assembling the unit as a manifold

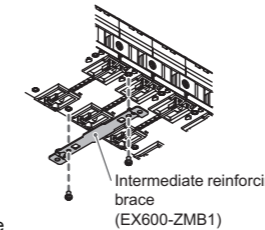
- Connect the unit to the end plate.
Digital and analogue units can be connected in any order.
Tighten the bracket of the joint using tightening torque 1.5 to 1.6 Nm.
- Add more units.
Up to 9 units can be connected to one manifold.
- Connecting the wireless unit.
After connecting the required I/O units, connect the wireless unit.
The connection method is as above.
- Mounting the valve plate.
Mount the valve plate (EX600-ZMV□) to the valve manifold using the set screws. (M3 x 8)
Apply 0.6 to 0.7 Nm tightening torque to the screws.
- Connect the wireless unit to the valve manifold.
Insert the valve plate into the valve plate mounting groove on the side of the wireless unit, and then fix both surfaces of the plate using the valve plate mounting screws (M4 x 6) provided with the product.
Tightening torque for set screws 0.7 to 0.8 Nm.



Mounting and Installation

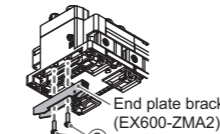
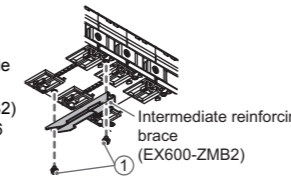
Installation

- Direct mounting
 - When joining six or more units, fix the middle part of the complete EX600 unit with an intermediate reinforcing brace (EX600-ZMB1) before mounting using 2-M4 x 5 screws.
Tightening torque: 0.7 to 0.8 Nm
 - Mount and tighten the end plate and the valve manifold (intermediate reinforcing brace if necessary) at one end of the unit. (M4)
Tightening torque: 0.7 to 0.8 Nm
Refer to the Operation Manual of the applicable valve manifold for the mounting method of the valve side.

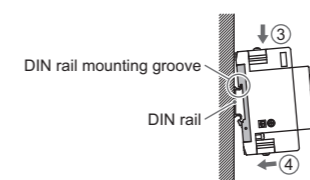


• DIN rail mounting
(Available for series other than SY series. Refer to the catalog for SY series.)

- When joining six or more units, fix the middle part of the complete EX600 unit with an intermediate reinforcing brace (EX600-ZMB2) for DIN rail before mounting, using 2-M4 x 6 screws.
Tightening torque: 0.7 to 0.8 Nm
- Mount the end plate bracket (EX600-ZMA2) to the end plate using 2-M4 x 14 screws.
Tightening torque: 0.7 to 0.8 Nm.

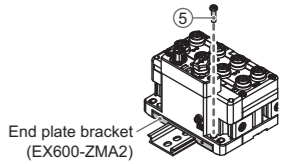


- Hook the DIN rail mounting groove on to the DIN rail.



- Press the manifold using its side hooked to the DIN rail as a fulcrum until the manifold is locked.

- Fix the end plate bracket (EX600-ZMA2) to the manifold using the M4 x 20 screws provided with the product.
Tightening torque: 0.7 to 0.8 Nm.
Refer to the Operation Manual of the applicable valve manifold for the mounting method of the valve side.



Connector (Wireless master unit only)

The wireless master unit is connected to the upper level communication (Ethernet). The connector has 2 ports, PORT-1 and PORT-2, and both ports can connect to Ethernet. The Ethernet/IP topology corresponds to star, line, tree and DLR (Device Level Ring).

• Connector pin No.

M12 4-pin Socket D code

Configuration		Pin No.	Signal name
PORT-1	PORT-2		
1	2	1	TX+
2	3	2	RX+
3	4	3	TX-
4	1	4	RX-

Ethernet connector of wireless master unit

Power supply connector

• Connector pin No.

(1) EX600-ED2-□

PWR IN: M12 5-pin Plug B code

Configuration		Pin No.	Signal name
1	2		
3	4	2	0 V (Output)
4	5	3	24 V (Control and input)
5	1	4	0 V (Control and input)
2	3	5	FE

(2) EX600-ED3-□

PWR IN: 7/8 inch 5-pin Plug

Configuration		Pin No.	Signal name
1	2		
3	4	2	0 V (Control and input)
4	5	3	FE
5	1	4	24 V (Control and input)
2	3	5	24 V (Output)

(3) EX600-ED4-□

PWR IN: M12 4-pin Plug A code

Configuration		Pin No.	Signal name
1	2		
3	4	2	24 V (Output)
4	1	3	0 V (Control and input)
2	3	4	0 V (Output)

PWR OUT: M12 5-pin Socket A code

Configuration		Pin No.	Signal name
1	2		
3	4	2	24 V (Output)
4	1	3	0 V (Control and input)
2	3	4	0 V (Output)
5	5	5	Not used

(4) EX600-ED5-□

PWR IN: M12 4-pin Plug A code

Configuration		Pin No.	Signal name
1	2		
3	4	2	0 V (Output)
4	1	3	24 V (Control and input)
2	3	4	0 V (Control and input)
5	5	5	Not used

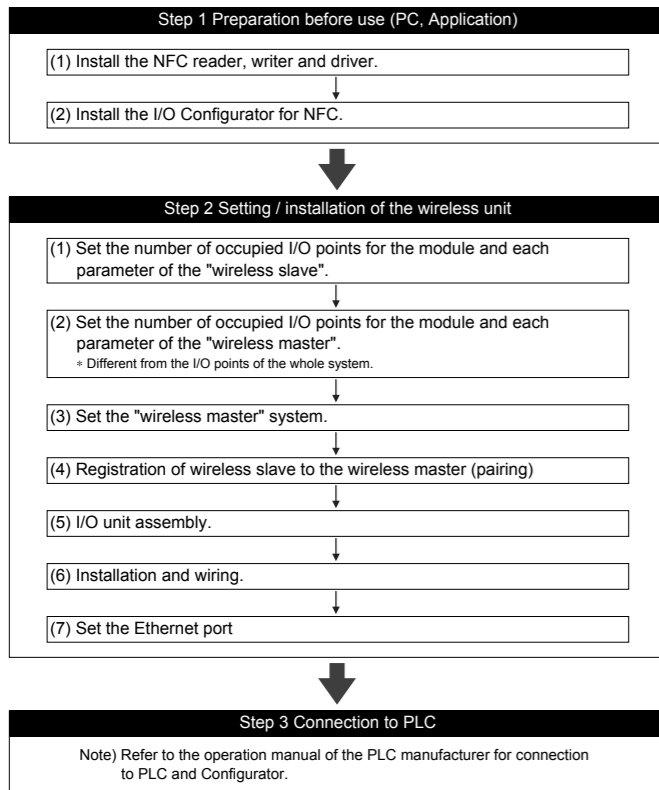
PWR OUT: M12 5-pin Socket A code

Configuration		Pin No.	Signal name
1	2		
3	4	2	0 V (Output)
4	1	3	24 V (Control and input)
2	3	4	0 V (Control and input)
5	5	5	Not used

Refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about end plate.

Setting and Adjustment

Flow chart for using the wireless system

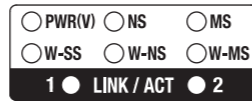


With the above settings, it is possible to control the upper level controller. Refer to the operation manual for each manufacturer for how to set the controller and the PLC.

Refer to the I/O Configurator for NFC operation manual and I/O Configurator (Web) operation manual for details of the I/O Configurator.

LED Display

LED indication of wireless master unit



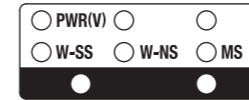
LED indication of wireless master

*LED indication of wireless master unit

LED name	Function	Colour of LED	Operation
PWR(V)	Power supply voltage for output (US2)	Green LED is ON.	Power supply voltage for output (US2) is normal.
		Red LED flashes.	Power supply voltage for output (US2) is abnormal. (Indication only. The product can be operated.)
		OFF	Power supply for control and input (US1) is not supplied.
NS	EtherNet/IP™ connection status	Green LED is ON.	EtherNet/IP™ communication is established.
		Green LED flashes.	EtherNet/IP™ communication is not established.
		Red LED flashes.	EtherNet/IP™ communication time out.
		Red LED is ON.	Duplicated IP addresses are detected.
MS	Wireless master module system status	Green LED is ON.	Wireless master module is normal.
		Green LED flashes.	EtherNet/IP™ communication is not connected.
		Red LED flashes.	Restorable error is detected. (LED flashes when more than one diagnostic information item is detected.) *Abnormal power supply voltage level for control and input *Excessive I/O setting inputs/outputs *Analogue I/O upper and lower set limit exceeded *Analogue Input range upper and lower limit exceeded *Abnormal number of slave connections *Error in communication between units *EX600 I/O unit detects diagnostic information *Valve diagnostic information detected
		Red LED is ON.	Non-restorable error is detected. (e.g. Hardware failure)
		OFF	Power supply for control and input (US1) is not supplied.
W-SS	Radio wave receiving intensity (For communication from wireless slave to wireless master)	Green LED is ON.	Received power level of all slaves is 3.
		Green LED flashes. (1Hz)	There are connected slaves with received power level 2.
		Green LED flashes. (2Hz)	There are connected slaves with received power level 1.
		Red LED flashes.	No wireless slaves connected.
		OFF	Wireless slave unit is not registered.
W-NS	Wireless communication connection status	Green LED is ON.	All wireless slave units are connected correctly.
		Green LED flashes.	There are unconnected wireless slave units.
		Red LED flashes.	All wireless slave units are unconnected.
		Red LED is ON.	All wireless slave units are unconnected. (non-restorable error in wireless communication)
		Red/green	Wireless communication connection is under construction. (Pairing)
Orange LED is ON.	Forced output mode		
OFF	Wireless slave unit is not registered.		
W-MS	Wireless slave module connection system status	Green LED is ON.	Wireless slave module is normal.
		Red LED flashes.	Restorable error is detected (LED flashes when more than one diagnostic information item is detected) *Abnormal power supply voltage level for control and input (US1) *Abnormal power supply voltage level for output (US2) *Excessive I/O setting inputs/outputs *Analogue I/O upper and lower set limit exceeded *Analogue Input range upper and lower limit exceeded *Error in communication between units *EX600 I/O unit detects diagnostic information *Valve diagnostic information detected
		Red LED is ON.	Non-restorable error is detected. (e.g. Hardware failure)
LINK/ACT1	Communication status of EtherNet/IP™ ports 1 and 2	Green LED is ON.	Link, No Activity (100 Mbps)
		Green LED flashes.	Link, Activity (100 Mbps)
		Orange LED is ON.	Link, No Activity (10 Mbps)
		Orange LED flashes.	Link, Activity (10 Mbps)
		Red LED is ON.	IP address has been duplicated.
LINK/ACT2	100 Mbps: Green 10 Mbps: Orange	Green LED is ON.	Link, No Activity (100 Mbps)
		OFF	EtherNet/IP™ is not connected.

*: LED indicates the status only when the conditions for ON/Flashing are satisfied regardless of the diagnostic allocation. If there are multiple conditions for LED ON/Flashing, the detailed information can be seen only when the setting of the diagnostic information is "Simple" or "Detailed".

LED indication of wireless slave unit



LED indication of wireless slave

*LED Indication of wireless slave unit

LED name	Function	Colour of LED	Operation
PWR(V)	Power supply voltage for output (US2)	Green LED is ON.	Power supply voltage for output (US2) is normal.
		Red LED flashes.	Power supply voltage for output (US2) is abnormal. (Indication only. The product can be operated.)
		OFF	Power supply for control and input (US1) is not supplied.
MS	Wireless slave module system status	Green LED is ON.	Wireless slave module is normal.
		Red LED flashes.	Restorable error is detected. (LED flashes when more than one diagnostic information item is detected.) *Abnormal power supply voltage level for control and input *Excessive I/O setting inputs/outputs *Analogue I/O upper and lower set limit exceeded *Analogue Input range upper and lower limit exceeded *Error in communication between units *EX600 I/O unit detects diagnostic information *Valve diagnostic information detected
		Red LED is ON.	Non-restorable error is detected. (e.g. Hardware failure)
		OFF	Power supply for control and input (US1) is not supplied.
		Green LED is ON.	Received power level is 3.
W-SS	Radio wave receiving intensity (Communication from wireless master to wireless slave)	Green LED flashes. (1Hz)	Received power level is 2.
		Green LED flashes. (2Hz)	Received power level is 1.
		Red LED flashes.	Wireless communication is not connected.
		OFF	Wireless master unit is not registered.
W-NS	Wireless communication connection status	Green LED is ON.	Wireless slave is connected correctly.
		Red LED flashes.	No wireless slaves connected.
		Red LED is ON.	No wireless slaves connected. (non-restorable error in wireless communication)
		Red/green	Wireless communication connection is under construction. (Pairing)
		Orange LED is ON.	Forced output mode.
OFF	Wireless master unit is not registered.		

*: LED indicates the status only when the conditions for ON/Flashing are satisfied regardless of the diagnostic allocation. If there are multiple conditions for LED ON/Flashing, the detailed information can be seen only when the setting of the diagnostic information is "Simple" or "Detailed".

Refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about LED display.

Maintenance

*Maintenance should be performed according to the Safety Instructions.
*Perform regular maintenance and inspections. There is a risk of unexpected malfunction.
*Do not use solvents such as benzene, thinner etc. to clean each unit. They could damage the surface of the body and erase the markings on the body. Use a soft cloth to remove stains. For heavy stains, use a cloth soaked with diluted neutral detergent and fully squeezed, then wipe up the stains again with a dry cloth.

Refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about maintenance.

Troubleshooting

Refer to the LED Display. Refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about troubleshooting.

Specification

Refer to the product catalog or SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about product specifications.

Commissioning

*Parameter Setting
*Hardware Configuration (EDS file)
*I/O Map

Refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about these setting above.

Diagnostic

Refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about diagnostic.

Outline with Dimensions

Refer to the product catalog or SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about outline dimensions.

Contacts

AUSTRIA	(43) 2262 62 280
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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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