



ORIGINAL INSTRUCTIONS

Instruction Manual

Wireless System

Compact Remote unit

Series EX600-WD#A1 / EX600-WD#E1



The intended use of this product is to provide a connection from the SMC wireless communication system to pneumatic devices.

1 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)¹⁾, and other safety regulations.

¹⁾ ISO 4414: Pneumatic fluid power - General rules relating to systems.

ISO 4413: Hydraulic fluid power - General rules relating to systems.

IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)

ISO 10218-1: Manipulating industrial robots - Safety. etc.

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

	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.

Warning

- Always ensure compliance with relevant safety laws and standards.**

All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

2 Specifications

2.1 General specifications

Enclosure	e-CON type	IP20
	Grommet type	IP67
Cable tensile strength	e-CON type	10 N
	Grommet type	100 N
Ambient operating temperature	-10 to +50°C	
Ambient humidity	35 to 85% RH (no condensation)	
Withstand voltage	500 VAC for 1 minute between external terminals and metallic parts	
Insulation resistance	10 MΩ or more (500 VDC between external terminals and metallic parts)	
Vibration resistance	EN61131-2: 5 ≤ f < 8.4 Hz 3.5 mm 8.4 ≤ f < 150 Hz 9.8 m/s ²	
Impact resistance	EN61131-2: 147 m/s ² , 11 ms	
Mounting	e-CON type	M4 (2 locations)
	Grommet type	M5 (4 locations)
Weight	e-CON type	130 g (body only)
	Grommet type	480 g (body only)

2 Specifications (continued)

2.2 Electrical specifications: e-CON type (EX600-WD#E1)

Item	Specification		
Power supply for control and inputs (US1)	24 VDC ±10%		
Power supply voltage for outputs (US2)	24 VDC ±10%		
Current consumption	Input unit: 100 mA or less Output unit: 50 mA or less		
Input	Number of inputs	8 inputs (1 input / connector)	
	Input polarity	PNP (-COM)	
	Connector type	e-CON (4 pin)	
	Maximum sensor supply current	0.3 A / connector 2 A / unit	
	Input resistance	1.5 kΩ	
	Rated input current	5 mA or less	
	Criteria value	OFF voltage	5 VDC or less / 2 mA or less
		OFF current	
		ON voltage	15 VDC or more / 5 mA or more
	ON current		
Protection	Short circuit protection		
Output	No. of outputs	8 outputs (1 output / connector)	
	Output polarity	PNP (-COM)	
	Connector type	e-CON (4 pin)	
	Max. load current	100 mA / output	
	Protection	Short circuit protection	

2.3 Electrical specifications: Grommet type (EX600-WD#A1)

Item	Specification		
Power supply for control and inputs (US1)	24 VDC ±10%		
Power supply voltage for outputs (US2)	24 VDC ±10%		
Current consumption	Input unit: 100 mA or less Output unit: 50 mA or less		
Input	Number of inputs	16 inputs (2 inputs / connector)	
	Input polarity	PNP (-COM)	
	Connector type	M12 5 pin socket (female)	
	Maximum sensor supply current	0.3 A / connector 2 A / unit	
	Input resistance	1.5 kΩ	
	Rated input current	5 mA or less	
	Criteria value	OFF voltage	5 VDC or less / 2 mA or less
		OFF current	
		ON voltage	15 VDC or more / 5 mA or more
	ON current		
Protection	Short circuit protection		
Output	No. of outputs	16 outputs (2 outputs / connector)	
	Output polarity	PNP (-COM)	
	Connector type	M12 5 pin socket (female)	
	Max. load current	100 mA / output	
	Protection	Short circuit protection	

2.4 Wireless Communication specifications

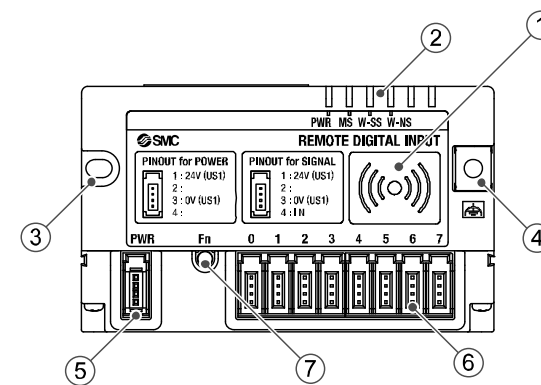
Protocol	SMC original protocol (SMC encryption)
Radio wave type	Frequency Hopping Spread Spectrum (FHSS)
Frequency	2.4 GHz (2403 to 2481 MHz)
No. of Frequency channels	79 ch (Bandwidth: 1.0 MHz)
Communication speed	250 kbps
Communication distance	Within 10 m (depending on the operating environment)
Radio Law certificates	Refer to the operation manual on the SMC website

2.5 NFC Communication specifications

Communication standard	ISO/IEC14443B (Type-B)
Frequency	13.56 MHz
Communication speed	20 to 100 kHz (I2C)
Communication distance	Up to 1 cm

3 Name and Function of parts

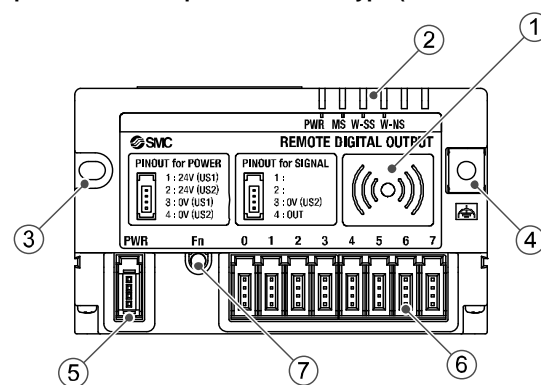
• Compact Remote Input unit: e-CON type (EX600-WDXE1)



No.	Item	Description
1	NFC antenna area	This area is for close contact with the NFC reader/writer. "O" marks the centre of the NFC antenna.
2	Status indication LED	LED display to indicate the unit status.
3	Mounting hole	Hole for mounting the unit (M4 x 2)
4	FG Terminal *	Terminal for connecting to Ground (for improved noise immunity).
5	Power supply connector	Connector to supply power to the unit.
6	Connector for Inputs	Connectors for input equipment
7	Pairing button	Button to select pairing mode

* Grounding should be as close as possible to the product and the grounding wire should be as short as possible

• Compact Remote Output unit: e-CON type (EX600-WDYE1)

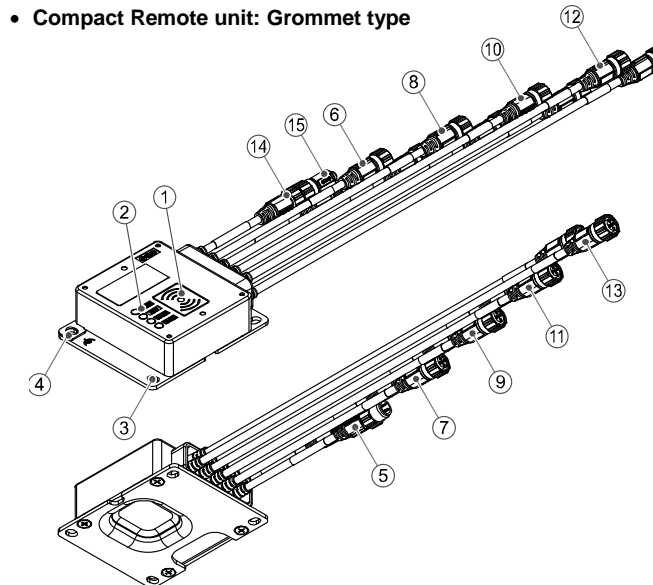


No.	Item	Description
1	NFC antenna area	This area is for close contact with the NFC reader/writer. "O" marks the centre of the NFC antenna.
2	Status indication LED	LED display to indicate the unit status.
3	Mounting hole	Hole for mounting the unit (M4 x 2)
4	FG Terminal *	Terminal for connecting to Ground (for improved noise immunity).
5	Power supply connector	Connector to supply power to the unit.
6	Connector for Outputs	Connectors for output equipment
7	Pairing button	Button to select pairing mode

* Grounding should be as close as possible to the product and the grounding wire should be as short as possible

3 Name and Function of parts (continued)

• Compact Remote unit: Grommet type



• Compact Remote Input unit: Grommet type (EX600-WDXA1)

No.	Item	Description
1	NFC antenna area	This area is for close contact with the NFC reader/writer. "O" marks the centre of the NFC antenna.
2	Status indication LED	LED display to indicate the unit status.
3	Mounting hole	Hole for mounting the unit (M5 x 4)
4	FG Terminal *	Terminal for connecting to Ground (for improved noise immunity).
5	Power supply cable	Connect power supply for control.
6	Input cable (E/F)	Connect the input equipment (M12)
7	Input cable (C/D)	Connect the input equipment (M12)
8	Input cable (A/B)	Connect the input equipment (M12)
9	Input cable (8/9)	Connect the input equipment (M12)
10	Input cable (6/7)	Connect the input equipment (M12)
11	Input cable (4/5)	Connect the input equipment (M12)
12	Input cable (2/3)	Connect the input equipment (M12)
13	Input cable (0/1)	Connect the input equipment (M12)
14	Pairing cable	Cable used to select pairing mode.
15	Shorting jumper	Connect the jumper connector in normal use and disconnect when pairing.

• Compact Remote Output unit: Grommet type (EX600-WDYA1)

No.	Item	Description
1	NFC antenna area	This area is for close contact with the NFC reader/writer. "O" marks the centre of the NFC antenna.
2	Status indication LED	LED display to indicate the unit status.
3	Mounting hole	Hole for mounting the unit (M5 x 4)
4	FG Terminal *	Terminal for connecting to Ground (for improved noise immunity).
5	Power supply cable	Connect power supply for control.
6	Output cable (E/F)	Connect the output equipment (M12)
7	Output cable (C/D)	Connect the output equipment (M12)
8	Output cable (A/B)	Connect the output equipment (M12)
9	Output cable (8/9)	Connect the output equipment (M12)
10	Output cable (6/7)	Connect the output equipment (M12)
11	Output cable (4/5)	Connect the output equipment (M12)
12	Output cable (2/3)	Connect the output equipment (M12)
13	Output cable (0/1)	Connect the output equipment (M12)
14	Pairing cable	Cable used to select pairing mode.
15	Shorting jumper	Connect the jumper connector in normal use and disconnect when pairing.

* Grounding should be as close as possible to the product and the grounding wire should be as short as possible.

* Attach a waterproof cap (EX9-AWTS) to any unused M12 connector to maintain the IP67 enclosure rating.

4 Installation

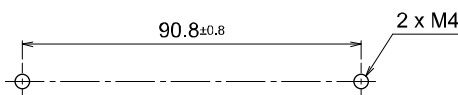
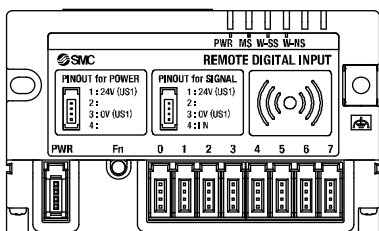
4.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.

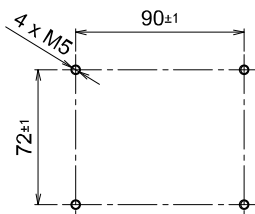
Direct mounting EX600-WD#E#

Mount the unit with M4 screws (not supplied) using the 2 holes in the unit. (Tightening torque: 1.35 to 1.65 N•m)



EX600-WD#A#

Mount the unit with M5 screws (not supplied) using the 4 holes in the unit. (Tightening torque: 2.7 to 3.3 N•m)



4.2 Environment

Warning

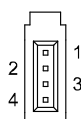
- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

5 Wiring

5.1 Wiring and Connection: e-CON type

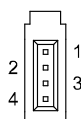
Input unit (EX600-WDXE1)

- Power Connector (socket)



Pin No.	Signal name
1	24 V (Control and Inputs)
2	N.C.
3	0 V (Control and inputs)
4	N.C.

- Input Connector (socket)

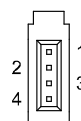


Pin No.	Signal name
1	24 V (Control and Inputs)
2	N.C.
3	0 V (Control and inputs)
4	Input

5 Wiring (continued)

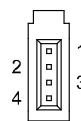
Output unit (EX600-WDYE1)

- Power Connector (socket)



Pin No.	Signal name
1	24 V (Control and Inputs)
2	24 V (Outputs)
3	0 V (Control and inputs)
4	0 V (Outputs)

- Output Connector (socket)

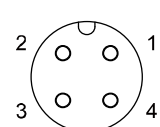


Pin No.	Signal name
1	N.C.
2	N.C.
3	0 V (Outputs)
4	OUT

5.2 Wiring and Connection: Grommet type

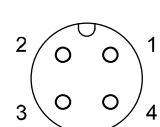
Input unit (EX600-WDXA1)

- Pairing Cable - M12 4 pin plug (male) A-coded



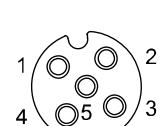
Pin No.	Signal name
1	Shorting Jumper Connector
2	• When connected: Normal operation mode
3	• When not connected: Pairing mode
4	

- Power Supply Cable - M12 4 pin plug (male) A-coded



Pin No.	Signal name
1	24 V (Control and Inputs)
2	N.C.
3	0 V (Control and Inputs)
4	N.C.

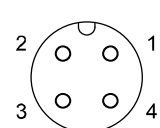
- Input Cable - M12 5 pin socket (female) A-coded



Pin No.	Signal name
1	24 V (Control and Inputs)
2	Input n+1
3	0 V (Control and Inputs)
4	Input n
5	N.C.

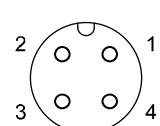
Output unit (EX600-WDYA1)

- Pairing Cable - M12 4 pin plug (male) A-coded



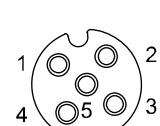
Pin No.	Signal name
1	Shorting Jumper Connector
2	• When connected: Normal operation mode
3	• When not connected: Pairing mode
4	

- Power Supply Cable - M12 4 pin plug (male) A-coded



Pin No.	Signal name
1	24 V (Control and Inputs)
2	24 V (Outputs)
3	0 V (Control and Inputs)
4	0 V (Outputs)

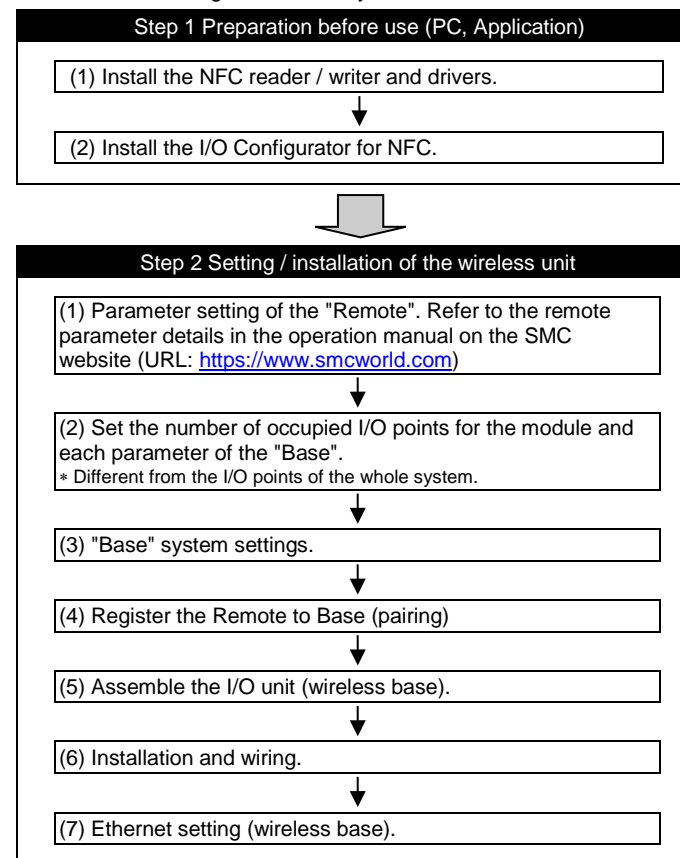
- Output Cable - M12 5 pin socket (female) A-coded



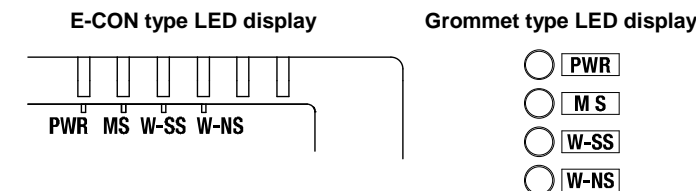
Pin No.	Signal name
1	N.C.
2	Output n+1
3	0 V (Outputs)
4	Output n
5	N.C.

6 Settings

- Flow chart for using the wireless system



7 LED Display



7.1 Compact Remote: Input unit (EX600-WDX#1)

LED	LED Colour	Operation
PWR	Green LED ON.	Power supply voltage for control and inputs (US1) is normal.
	OFF	Power supply for control and input (US1) is not supplied.
MS	Green LED ON	Operating normally
	Red LED flashing	Restorable error is detected. <ul style="list-style-type: none"> Short circuit of US1 power supply detected. Abnormal power supply for US1 (applicable when power supply monitor is enabled).
	Red LED ON	Unrestorable error is detected.
	OFF	Power supply for control and inputs (US1) not supplied.

7 LED Display (continued)

Compact Remote: Input unit (continued)

LED	LED Colour	Operation
W-SS	Green LED ON	Received Radio wave intensity level 3
	Green LED flashing (1 Hz)	Received Radio wave intensity level 2
	Green LED flashing (2 Hz)	Received Radio wave intensity level 1
	Red LED flashing	Wireless communication is not connected.
	OFF	Base not registered
W-NS	Green LED ON	Remote input is connected correctly
	Red LED flashing	Remote input not connected.
	Red LED ON	Remote input not connected (non-restorable error in wireless communication).
	Red/Green	Wireless communication connection under construction (pairing).
	Orange LED flashing	Pairing operation in progress (EX600-WDXE1 e-CON type input unit only).
OFF	Base is not connected	

7.2 Compact Remote: Output unit (EX600-WDY#1)

LED	LED Colour	Operation
PWR	Green LED ON.	Normal power supply voltage for control and input (US1) ON, and normal power supply voltage level for outputs (US2).
	Red LED flashing	Abnormal power supply voltage level for outputs (US2) (applicable when the power supply voltage monitor is enabled).
	OFF	Power supply for control and input (US1) is not supplied.
MS	Green LED ON	Operating normally
	Red LED flashing	Restorable error is detected. <ul style="list-style-type: none"> Short circuit of US1 power supply detected. Abnormal power supply for US1 (applicable when power supply monitor is enabled).
	Red LED ON	Unrestorable error is detected.
	OFF	Power supply for control and inputs (US1) not supplied.
W-SS	Green LED ON	Received Radio wave intensity level 3
	Green LED flashing (1 Hz)	Received Radio wave intensity level 2
	Green LED flashing (2 Hz)	Received Radio wave intensity level 1
	Red LED flashing	Wireless communication is not connected.
	OFF	Base not registered
W-NS	Green LED ON	Remote output connected correctly
	Red LED flashing	Remote output not connected.
	Red LED ON	Remote output not connected (non-restorable error in wireless communication).
	Red/Green	Wireless communication connection under construction (pairing).
	Orange LED flashing	Pairing operation in progress (EX600-WDYE1 e-CON type output unit only).
OFF	Base is not connected	

Refer to the Operation manual on the SMC website (URL: <https://www.smcworld.com>) for further LED Display details.

8 How to Order

Refer to the Operation manual or catalogue on the SMC website (URL: <https://www.smcworld.com>) for How to Order information.

9 Outline Dimensions (mm)

Refer to the Operation manual or catalogue on the SMC website (URL: <https://www.smcworld.com>) for Outline dimensions.

10 Maintenance

10.1 General Maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

11 Limitations of Use

11.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

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.

• Influence of radio frequency on implantable medical devices:

The radio frequency generated by this product may give an adverse effect on implantable medical devices, such as implantable cardiac pacemakers and implantable cardioverter defibrillators. Please read catalogues or instruction manuals of the equipment and device which may be affected by radio frequencies for any instructions for use or contact their manufacturers.

12 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

13 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

SMC Corporation

URL: <https://www.smcworld.com> (Global) <https://www.smceu.com> (Europe)
 SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan
 Specifications are subject to change without prior notice from the manufacturer.
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