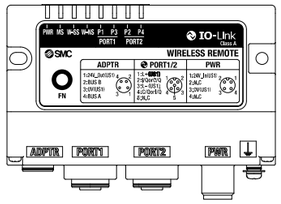
EXW1-TF223-045EN-B

ORIGINAL INSTRUCTIONS

Instruction Manual
SMC Wireless System - Compact Remote Series EXW1-RLAPA8C / -RLBPA7C



The intended use of this product is to provide a connection from the SMC wireless communication system to IO-Link and 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 and safety requirements for systems and their components.
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements.
ISO 10218-1: Robotics - Safety requirements - Part 1: Industrial robots.

- 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.

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

Item	Specification
Enclosure rating	IP67
Ambient operating temperature	-10 to +50˚C
Ambient storage temperature	-20 to +60˚C
Ambient humidity	35 to 85% RH (no condensation)
Withstand voltage (EXW1-RL#)	500 VAC for 1 minute between external terminals (including the FE terminal) and enclosure screws
Insulation resistance (EXW1-RL#)	10 MΩ or more (500 VDC between external terminals (including the FE terminal) and enclosure screws
Vibration resistance	EN61131-2 compliant: 5 ≤ f < 8.4 Hz 3.5 mm 8.4 ≤ f < 150 Hz 9.8 m/s^2
Impact resistance	EN61131-2 compliant: 147 m/s^2, 11 ms
Weight (EXW1-RL# + A11#)	150 g + 40 g

2 Specifications (continued)

2.2 EXW1-RL# specifications

Model		EXW1-RLAPA8C		EXW1-RLBPA7C
Port class		Class A		Class B
Transmission speed		COM1 (4.8 kbps), COM2 (38.4 kbps), COM3 (230.4 kbps) automatically switches depending on connected device		
IO-Link version		Version 1.1		
Number of ports		Max. 4		Max. 2
US1 Power supply current (between L+ and L-)		0.5 A / connector (1 A / unit) max.		0.3 A / connector (0.6 A / unit) max.
US2 Power supply (between P24 and N24)		–		1.6 A / connector 2 A / unit max.
Electrical	US1 (for control) power supply voltage	24 VDC +/-10 %		
	US2 (for output) power supply voltage	24 VDC +/-10 %		
	Current consumption	100 mA or less		
Digital Input	Number of pins	2	4	4
	Input polarity	PNP		
	Protection	Short circuit protection		
	ON input current	2.5 mA Typ.	5.8 mA Typ.	5.8 mA Typ.
	ON voltage	13 V or more		
	OFF voltage	8 V or less		
Digital Output	Number of pins	2,4		4
	Output type	PNP		
	Max. load current (C/Q)	0.25 A / output (from the power supply for control / input)		
	Protection	Short circuit prevention		

2.3 EXW1-A11# wireless adapter specifications

Item	Specification
US1 (for control) power supply voltage	24 VDC +/-10 %
Current consumption	50 mA or less

2.4 Wireless Communication specifications

Item	Specifications
Protocol	SMC original protocol (SMC encryption)
Radio wave type (spread)	Frequency Hopping Spread Spectrum (FHSS)
Frequency band	2.4 GHz (2403 to 2481 MHz)
Frequency channel select function (F.C.S.)	Supported *1
Frequency channel	79 ch max. (Bandwidth: 1.0 MHz)
Communication speed	250 kbps (V1.0) / 1 Mbps (V2.0) *2
Frequency hopping cycle	5ms (V1.0) / 2ms (V2.0)
Communication distance	Up to 100 m line of sight (depending on the environment)
Radio Law certificates	Refer to the official SMC website for the latest information as to which countries the product is certified.

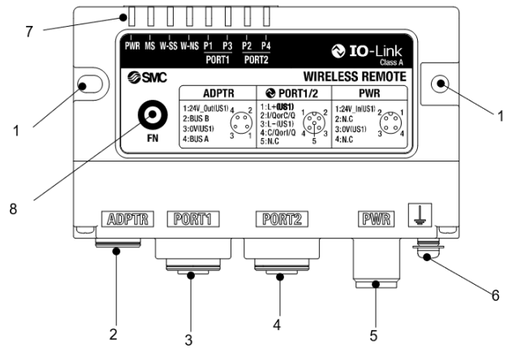
*1: The number of selectable frequency channels varies depending on the product number.
*2: Select a protocol before performing pairing (V2.0: 1 Mbps, V1.0: 250 kbps). Different communication speeds are mutually incompatible.

⚠ Warning

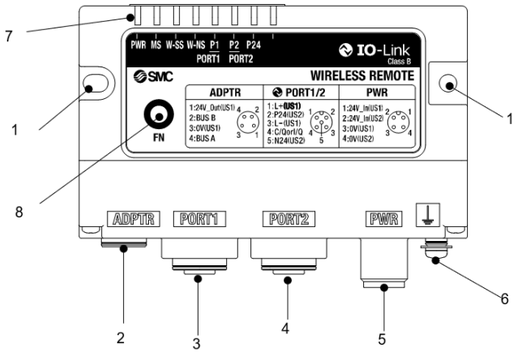
Special products (-X) might have specifications different from those shown in this section. Contact SMC for specific drawings.

3 Name and Function of parts

- **EXW1-RLAPA8C**



- **EXW1-RLBPA7C**



No.	Name	Application
1	Mounting hole	Mounting holes for compact wireless remote (2 x M4).
2	ADPTR Connector	Connector for wireless adapter cable.
3	PORT1 Connector	Connector for IO-Link communication.
4	PORT2 Connector	Connector for IO-Link communication.
5	PWR Power supply connector	Supplies power to the compact wireless remote.
6	FE terminal	To be connected to Ground (for improved noise immunity).
7	LED indicator	Indicates the status of the compact wireless remote or IO-Link device.
8	FN (Pairing button)	Press the button to select pairing mode.

- **EXW1-A11#**

No.	Name	Application
1	Connector	Connector for Wireless Adapter cable.
2	Nut	For mounting.
3	LED display	Indicates the status of the adapter.

* Use the wireless adapter cable specified to connect to the wireless adapter.

- **Ground connection**

The Ground connection to the FE terminal (M4 mounting hole) for the EXW1-RL# should be as close as possible to the product and the grounding wire should be as short as possible.

4 Installation

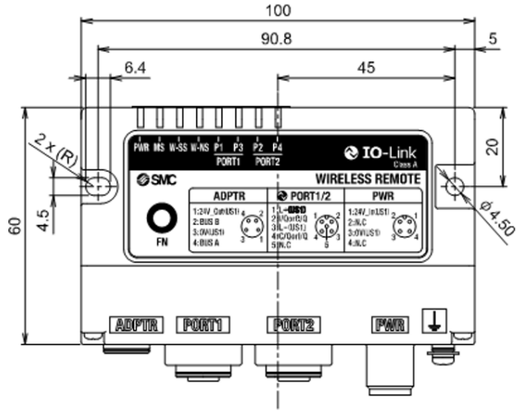
4.1 Installation

⚠ Warning

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

4.2 Mounting the Compact Remote unit

- Mount the unit with M4 screws (not supplied) using the 2 mounting holes in the unit (Recommended torque: 0.8 ±10% N•m).
- Mount the product using 2 screws.

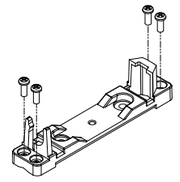


4.3 Mounting the Wireless Adapter (EXW1-A11#)

- **Mounting on a flat surface**

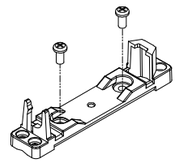
(1) Attachment of installation plate
Attach the installation plate in the required location using either of the following two methods.

Installation using M3 screws x 4 positions
The recommended tightening torque is 0.4 N•m ± 10% (screws are not included).

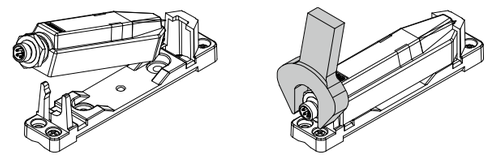


Installation using M4 screws x 2 positions

The recommended tightening torque is 0.6 N•m ± 10% (screws are not included).

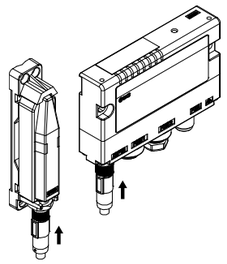


(2) Installation of wireless adapter
Clip the wireless adapter onto the installation plate as shown below and secure the adapter in place using the M10 nut already fitted to the wireless adapter. The recommended tightening torque is 0.9 N•m ± 10%.



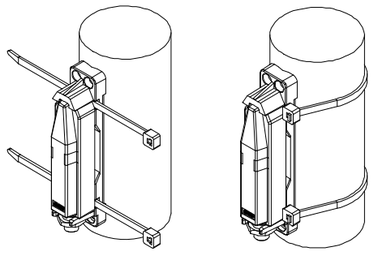
4 Installation (continued)

(3) Connection of the cable for wireless adapter
Connect the cable between the compact remote and the wireless adapter.



- **Mounting on a curved surface**

(1) Thread 2 x cable ties through the installation plate at the top and bottom.
(2) Secure the wireless adapter to the installation plate and then secure in the required position by tightening the cable ties.



4.4 Environment

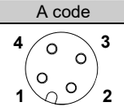
Warning

- 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 specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

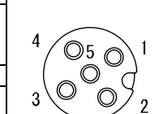
5 Wiring

5.1 Wiring Connections – EXW1-RLAPA8C

- Power supply connector (PWR)

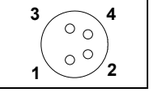
No.	Signal	Description	M12, 4-pin, plug A code
1	24 V (US1)	24 VDC (US1): Input	
2	N.C	N.C	
3	0 V (US1)	0 VDC (US1)	
4	N.C	N.C	

- Communication connector for IO-Link / Digital I/O (PORT1 / PORT2)

No.	Signal	Description	M12, 5-pin, socket A code
1	L+	24 VDC (US1): Output	
2	C/Q	IO-Link communication Digital input (PNP) Digital output (PNP)	
3	L-	0 VDC (US1)	
4	C/Q	IO-Link communication Digital input (PNP) Digital output (PNP)	
5	N.C	N.C	

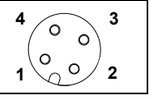
5 Wiring (continued)

- Connector for wireless adapter (ADPTR)

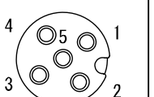
No.	Signal	Description	M8, 4-pin, socket
1	24V (US1)	24 VDC (US1): Output	
2	Internal BUS B	Communication B	
3	0V (US1)	DC 0V (US1)	
4	Internal BUS A	Communication A	

5.2 Wiring Connections – EXW1-RLBPA7C

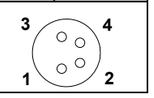
- Power supply connector (PWR)

No.	Signal	Description	M12, 4-pin, plug A code
1	24 V (US1)	24 VDC (US1): Input	
2	24 V (US2)	24 VDC (US2): Input	
3	0 V (US1)	0 VDC (US1)	
4	0 V (US2)	0 VDC (US2)	

- Communication connector for IO-Link / Digital I/O (PORT1 / PORT2)

No.	Signal	Description	M12, 5-pin, socket A code
1	L+	24 VDC (US1): Output	
2	P24	24 VDC (US2): Output	
3	L-	0VDC (US1)	
4	C/Q	IO-Link communication Digital input (PNP) Digital output (PNP)	
5	N24	0VDC (US2): Output	

- Connector for wireless adapter (ADPTR)

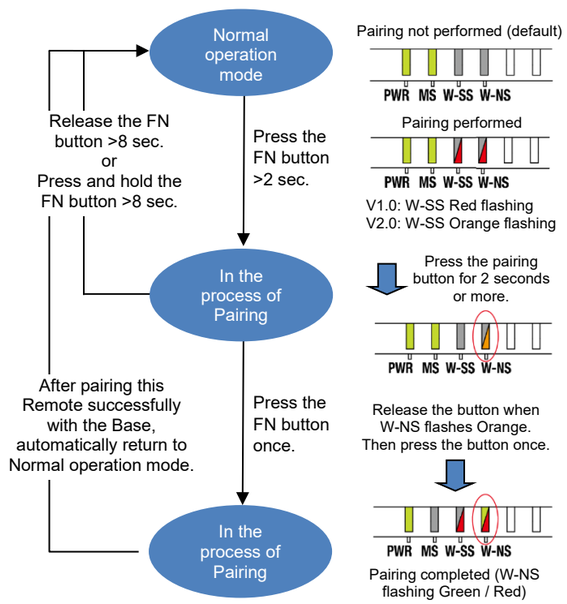
No.	Signal	Description	M8, 4-pin, socket
1	24V (US1)	24 VDC (US1): Output	
2	Internal BUS B	Communication B	
3	0V (US1)	DC 0V (US1)	
4	Internal BUS A	Communication A	

Note: All unused connectors must be fitted with a seal cap.

6 Setting

6.1 Flow chart for using the wireless system.

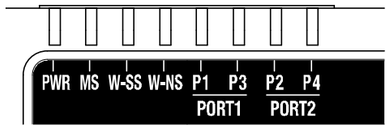
- To use SMC wireless units (Base and Remotes), they need to be set up using an NFC reader/writer and the I/O Configurator.
- Refer to the operation manual for the product in use for further details.
- The EXW1-RL* series compact remote does not support the NFC and the default mode is pairing mode. The operating mode can be changed from pairing mode to operating mode using the FN button.



7 LED Display

- The LED indicators at the top left of the compact Wireless Remote indicate the power supply, communication and diagnostic status.

7.1 EXW1-RLAPA8C



- LED status of PWR, MS, W-SS and W-NS.

LED	LED status	Operation
PWR	Green ON	US1 (for control) power supply is ON
	OFF	US1 (for control) power supply is OFF
MS	Green ON	Operating normally
	Green flashing (1 Hz)	US1 (for control) power supply voltage level is abnormal.
	Red flashing (1 Hz)	Recoverable error is detected. (LED flashes when more than one diagnostic information item is detected). • US1 (for control) power supply short circuit detection (L+ or C/Q). • Number of system inputs/outputs setting error. • Wireless adapter internal connection error. • Connected device matching error. • Process data mapping size error.
	Red ON	Unrecoverable error is detected.
	OFF	• US1 (for control) power supply is OFF. • Wireless adapter is not connected.
W-SS	Green ON	Level of received radio wave power of all the connected Remotes is 3.
	Green flashing (1 Hz)	Level of received radio wave power of some connected Remotes is 2.
	Green flashing (2 Hz)	Level of received radio wave power of some connected Remotes is 1.
	Red flashing	Wireless Base that supports protocol V.1.0 is not connected.
	Orange flashing	Wireless Base that supports protocol V.2.0 is not connected.
	OFF	• US1 (for control) power supply is OFF. • Wireless Base not registered.
W-NS	Green ON	Wireless Base connected correctly.
	Red flashing	Wireless Base not registered.
	Red ON	Wireless Base not connected (Unrecoverable error in wireless communication).
	Red / Green flashing	Wireless communication connection is being configured (Pairing).
	Orange ON	Force ON mode.
	OFF	• US1 (for control) power supply is OFF. • Wireless Base not registered.

- The LED indicator for P1 to P4 are different for each connector pin number function.

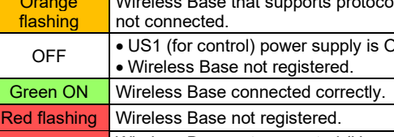
Connector	LED	Pin No.	Function
PORT1	P1	4	Default setting: C/Q (can be changed DI, DO, Inactive with parameters).
	P3	2	Default setting: DI (can be changed C/Q, DO, Inactive with parameters).
PORT2	P2	4	Default setting: C/Q (can be changed DI, DO, Inactive with parameters).
	P4	2	Default setting: DI (can be changed C/Q, DO, Inactive with parameters).

7 LED Display (continued)

- LED status of P1 to P4.

LED	Function	LED status	Description
P1 P2 P3 P4	Deactivated	OFF	Port disabled
		Red ON	Short circuit detection (L+)
	C/Q (IO-Link comms.)	Green ON	IO-Link device communicating.
		Green flashing (1 Hz)	IO-Link device disconnected.
		Green flashing (2 Hz)	Either of the following conditions are detected: • Connected IO-Link device matching error. • Data size error. • Data storage writing error.
		Red ON	Short circuit detection (L+ or C/Q).
		OFF	•The L+ power supply is OFF.
	DI (Input)	Orange ON	Input signal ON
		Red ON	Short circuit detection (L+)
		OFF	Input signal OFF
	DO (Output)	Orange ON	Output signal ON
		Red ON	Short circuit detection (L+ or C/Q)
		OFF	Output signal OFF

7.2 EXW1-RLBPA7C



- LED status of PWR. MS. W-SS and W-NS.

LED	LED status	Operation
PWR	Green ON	US1 (for control) power supply is ON
	Green flashing	US2 (for output) power supply voltage level is abnormal.
	OFF	US1 (for control) power supply is OFF
MS	Green ON	Operating normally
	Green flashing (1 Hz)	US1 (for control) power supply voltage level is abnormal.
	Red flashing (1 Hz)	Recoverable error is detected. (LED flashes when more than one diagnostic information item is detected). US1 (for control: L+ or C/Q) or US2 (for output: P24) power supply short circuit detection). • Number of inputs/outputs setting error. • Wireless adapter internal connection error. • Connected device matching error. • Process data mapping size error.
	Red ON	Unrecoverable error is detected.
	OFF	• US1 (for control) power supply is OFF. • Wireless adapter is not connected.
W-SS	Green ON	Level of received radio wave power of all the connected Remotes is 3.
	Green flashing (1 Hz)	Level of received radio wave power of some connected Remotes is 2.
	Green flashing (2 Hz)	Level of received radio wave power of some connected Remotes is 1.
	Red flashing	Wireless Base that supports protocol V.1.0 is not connected.
	Orange flashing	Wireless Base that supports protocol V.2.0 is not connected.
	OFF	• US1 (for control) power supply is OFF. • Wireless Base not registered.
W-NS	Green ON	Wireless Base connected correctly.
	Red flashing	Wireless Base not registered.
	Red ON	Wireless Base not connected (Unrecoverable error in wireless communication).
	Red / Green flashing	Wireless communication connection is being configured (Pairing).
	Orange ON	Force ON mode.
	OFF	• US1 (for control) power supply is OFF. • Wireless Base not registered.

7 LED Display (continued)

- The LED indicator for P1, P2 and P24 are different for each connector pin number function.

Connector	LED	Pin No.	Function
PORT1	P1	4	Default setting: C/Q (can be changed DI, DO, Inactive with parameters).
	P3	2	P24 (for output from US2) *1
PORT2	P2	4	Default setting: C/Q (can be changed DI, DO, Inactive with parameters).
	P4	2	P24 (for output from US2) *1

*1: P24 (Pin 2) of PORT1 and PORT2 are common.

- LED status of P1, P2 and P24.

LED	Function	LED status	Description
P1 P2	Deactivated	OFF	Port disabled
		Red ON	Short circuit detection (L+)
	C/Q (IO-Link comms.)	Green ON	IO-Link device communicating.
		Green flashing (1 Hz)	IO-Link device disconnected.
		Green flashing (2 Hz)	Either of the following conditions are detected: • Connected IO-Link device matching error. • Data size error. • Data storage writing error.
		Red ON	Short circuit detection (L+ or C/Q).
		OFF	•The L+ power supply is OFF.
	DI (Input)	Orange ON	Input signal ON
		Red ON	Short circuit detection (L+)
		OFF	Input signal OFF
	DO (Output)	Orange ON	Output signal ON
		Red ON	Short circuit detection (L+ or C/Q)
		OFF	Output signal OFF
P24	P24 (Output)	Green ON	P24 ON
		Red ON	Short circuit detection (P24)
		OFF	P24 OFF

8 How to Order

Refer to drawings or catalogue for ‘How to Order’.

9 Outline Dimensions

Refer to drawings or catalogue 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.

Caution

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.smc.eu (Europe)
SMC Corporation, 1-5-5, Kyobashi, Chuo-ku, Tokyo 104-0031, JAPAN
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