



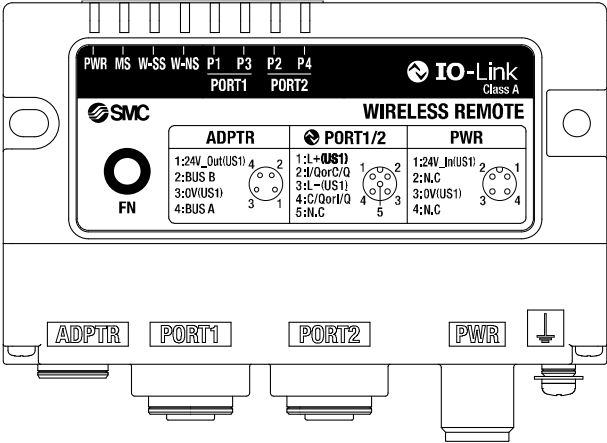
Operation Manual

PRODUCT NAME

Compact Wireless Remote

MODEL / Series / Product Number

EXW1-RL*



SMC Corporation

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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: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots
etc.



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

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.



Safety Instructions

Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)

Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. 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.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

***2) Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

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.

Precautions regarding the Radio Law

EXW1-A11*

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 B digital device, pursuant to part 15 of the FCC rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

This equipment has been tested and found to comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

This device is authorized under Title 47 CFR 15.519 (the FCC Rules and Regulations).

The operation of this device is subject to the following restriction:

The changes or substitutions of the antennas which are furnished with the device is prohibited.

FCC ID : 2AJE7SMC-WEX08

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

"Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device."

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

"This Class B digital apparatus complies with Canadian ICES-003."

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

"This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter."

Cet appareil et son antenne (s) ne doit pas être co-localisés ou fonctionnant en conjonction avec une autre antenne ou transmetteur.

"This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body"

Cet équipement doit être installé et utilisé à une distance minimale de 20cm entre le radiateur et votre corps.

NCC 警語

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

"Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados"

"Para maiores informações, consulte o site da ANATEL – www.anatel.gov.br"

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

Precautions for Handling

○ Follow the instructions given below for selecting and handling.

- The instructions on design and selection

- * Product specifications

- Use within the specified voltage.

- Otherwise, failure or malfunction can result.

- The power is supplied from the circuit reinforced or double-insulated from MAINS.

- The direct current power supply used should be UL approved as follows.

- UL1310 Class 2 power supply unit or UL61010-1 LIM (Limited Energy Circuit).

- All external circuits should also be connected to a circuit that is reinforced or double-insulated from the MAINS and free from risk of electric shock and fire hazard.

- Reserve a space for maintenance.

- Design the system to allow the required space for maintenance.

- Do not remove the label.

- This can lead to incorrect maintenance, or misreading of the operation manual, which can cause damage or malfunction to the product.

- It may also result in nonconformity to safety standards.

- Beware of inrush current when the power supply is turned on.

- An initial charge current may activate the over current protection function depending on the connected load, resulting in the unit malfunctioning.

- For UL/cUL certification, install in a distribution box or other container. (EXW1-RLBPA7C and EXW1-A1*).

- Product Handling

- * Mounting

- Do not drop, hit or apply excessive shock to the product.

- Otherwise damage to the internal parts can result, causing malfunction.

- Tighten to the specified tightening torque.

- If the tightening torque is exceeded, the mounting screws can be broken.

- If the screws are tightened to a different torque, IP67 will not be achieved.

- Never mount the product in a location that will be used as a foothold.

- The product may be damaged if excessive force is applied by stepping or climbing onto it.

- * Wiring (Including connecting/disconnecting of the connectors)

- Avoid bending or stretching the cables repeatedly, or placing a heavy load or apply force to the product.

- Applying repeated bending and tensile stress to the cable may cause broken wires.

- Wire correctly.

- Incorrect wiring may cause malfunction of or damage to the wireless system.

- Do not perform wiring while the power is on.

- Otherwise the wireless system may be damaged or malfunction.

- Do not route wires and cables together with power or high voltage cables.

- The product can malfunction due to interference of noise and surge voltage from power and high voltage cables close to the signal line.

- Route the wires of the wireless system separately from power or high voltage cables.

- Confirm correct insulation of wiring.

- Poor insulation (interference with other circuits, poor insulation between terminals, etc.) can apply excessive voltage or current to the wireless system causing damage to it.

- When a wireless system is installed in machinery/equipment, provide adequate protection against noise by using noise filters, etc.

- Noise in signal lines may cause malfunction.

*Operating environment

- Select the correct type of enclosure according to the operating environment.

IP67 protection class is achieved when the following conditions are met.

(1) The units are connected correctly using power supply cables and communication cables with M12 (or M8) connectors.

(2) Suitable mounting of each unit and manifold valve.

(3) Be sure to fit a water resistant cap on any unused connectors.

If using in an environment that is exposed to water splashes, please take protective measures, such as using a cover.

Do not use in an atmosphere having water, water steam, or where there is direct contact with any of these. These may cause failure or malfunction.

- Do not use the product in a place where the product could be splashed by oil or chemicals.

Operating in environments with coolants, cleaning solvents, various oils or chemicals may cause adverse effects (failure, malfunction) to the unit even in a short period of time.

- Do not use the product in an environment where corrosive gases or fluids can be splashed.

Otherwise damage to the unit can result, causing malfunction.

- Do not use in an area where surges are generated.

If there is equipment generating large surge near the unit (magnetic type lifter, high frequency inductive furnace, welding machine, motor, etc.), this can cause deterioration of the internal circuitry element of the unit or result in damage. Take measures against the surge sources, and prevent the lines from coming into close contact.

- When a surge-generating load such as a relay, valve, or lamp is directly driven, use the product with built in surge protection.

Direct drive of a load generating surge voltage can damage the unit.

- The product is CE marked, but is not immune to lightning strikes. Take measures against lightning strikes in the system.

- Prevent foreign matter such as dust or wire debris from entering inside the product.

Otherwise it can cause damage or malfunction.

- Mount the product in a place that is not exposed to vibration or impact.

Otherwise it can cause damage or malfunction.

- Do not use the product in an environment that is exposed to temperature cycles.

Heat cycles other than ordinary changes in temperature can adversely affect the inside of the product.

- Do not expose the product to direct sunlight.

If using in a location directly exposed to sunlight, shade the product from the sunlight.

Otherwise it can cause damage or malfunction.

- Keep within the specified ambient temperature range.

Otherwise malfunction can result.

- Do not operate close to a heat source, or in a location exposed to radiant heat.

Otherwise malfunction can result.

*Adjustment and Operation

- Perform settings suitable for the operating conditions.

Incorrect setting can cause operation failure.

(Refer to "Setting and Adjustment".)

- Please refer to the PLC manufacturer's manual, etc. for details of PLC-side programming and addresses.

For the PLC protocol and programming, refer to the relevant manufacturer's documentation.

*Maintenance

- Turn off the power supply, stop the supplied air, exhaust the residual pressure and verify the release of air, before performing maintenance.
Otherwise safety is not assured due to an unexpected malfunction or incorrect operation.
- Perform regular maintenance and inspections.
There is a risk of unexpected operation due to malfunction of the equipment.
- After maintenance is complete, perform appropriate functional inspections.
Stop operation if the equipment does not function correctly.
Otherwise safety cannot be assured due to an unexpected malfunction or incorrect operation.
- Do not use solvents such as benzene, thinner, etc. to clean each unit.
These can damage the surface of the body and erase the markings on the product.
Use a soft cloth to remove stains.
For heavy stains, use a damp cloth that has been soaked with diluted neutral detergent and fully squeezed, then wipe up the stains again with a dry cloth.

Important Instructions concerning the Wireless System

● This product should be used with a separately sold wireless adapter (EXW1-A11*) and cable (EXW1-AC*).

- The wireless adapter (EXW1-A11*) and the wireless remote (EXW1-RD*) are certified as wireless equipment in accordance with the Radio Act and the certification of construction type has been obtained. Customers do not need to apply for a license to use this equipment.
Be sure to comply with the following precautions.
 - Do not disassemble or modify the product. Disassembly and modification are prohibited by law.
 - Attach and use the supplied antenna set (EXW1-EA1) as an external antenna of the wireless remote (EXW1-RD*).
The law forbids the use of antennas and coaxial cables that are not sold by SMC.
 - This product is compliant with the Radio Act in Japan, European countries and the US. For the latest information, refer to the catalog on the website below.
URL <https://www.smcworld.com>
- This product communicates using radio waves, and the communication may be temporarily interrupted due to the ambient environments and operating methods. SMC will not be responsible for any secondary failure which may cause an accident or cause damage to other devices or equipment.
- When several units are installed close to each other, the wireless products may interfere with each other, resulting in communication error and response delays.
- Radio waves emitted by this product may adversely affect implantable medical devices such as implantable cardiac pacemakers and brillators.
For precautions regarding the use of equipment or devices that may adversely affect performance, refer to the catalog or instruction manuals for the equipment or devices, or contact the manufacturers directly.
- The communication performance is affected by the ambient environment, so please perform communication testing before use.

SMC Wireless System

Features and Summary

SMC Wireless Products, EX600-W and EXW1 series products, are modular devices consisting of a gateway (hereafter referred to as a Base) and wireless devices (hereafter referred to as Remotes).

From an upper-level (PLC) control component, a Base appears to be a single system including Remotes paired with it. For the number of input/output points per system, refer to the manual of each base.

Bases and Remotes are designed to be identifiable by registering their uniquely assigned PIDs (Product IDs) with each other and operate therefore function without conflicts even when several Bases and Remotes operate in the same area.

The packet of the wireless transmit and receive data is encrypted. It is therefore difficult to manipulate the data.

Fieldbus System/ Industrial IoT Cybersecurity

In recent years, factories have introduced industrial IoT, building up complex networks of production machines. These systems may be subject to a new threat, cyberattack. To protect the industrial IoT from cyberattacks, it is important to take multiple measures (multi-layer protection) for IoT devices, networks and clouds.

For this purpose, SMC recommends that the following measures are always taken into consideration. For further details of the following measures, please see security information published by your local country security agencies.

1. Do not connect the devices via a public network.

- If you unavoidably need to access the device or cloud via a public network, ensure to use a secure, private network such as VPN.
- Do not connect an office IT network and factory IoT network.

2. Build a firewall to prevent a threat from entering the device and system.

- Set up a router or firewall at network boundaries to allow minimum required communications.
- Disconnect from the network or turn off the device if no continuous connection is required.

3. Physically block an access to unused communication ports or disable them.

- Inspect regularly each port if any unnecessary device is connected to the network system.
- Operate necessary services (SSH, FTP, SFTP, etc.) only.
- Set a transmission range of the device using a wireless LAN or other radio system to the minimum required and use only devices approved according to the radio act in the country concerned.
- Install a device generating radio waves in such place as there is no interference from indoor or outdoor.

4. Set up a secure communication method such as data encryption.

- Encrypt data in every environment, including IoT networks, secure gate-way connections, for secure communications.

5. Grant access permissions by user accounts and limit the number of users.

- Regularly review accounts and delete all unused accounts or permissions.
- Establish an account lockout system to block an access to the account for a certain period if log-in fails more than the given threshold.

6. Protect passwords.

- Change the default password when you first use the device or system.
- Choose a long password (minimum 8 characters) using a mix of different letters and characters to make the password more secure and harder to hack.

7. Use the latest security software.

- Install antivirus software on all computers to detect and remove viruses.
- Keep the antivirus software up to date.

8. Use the latest version of the device and system software.

- Apply patches to keep the OS and applications up to date.

9. Monitor and detect abnormalities in the network.

- Keep monitoring the network for any abnormalities to take a prompt measure and issue an alert if any abnormality is detected. Install an intrusion detection system (IDS) and intrusion prevention system (IPS).

10. Delete data from devices when disposed of.

- Before disposing of any IoT devices, delete stored data or physically destruct media to prevent any misuse of the data.

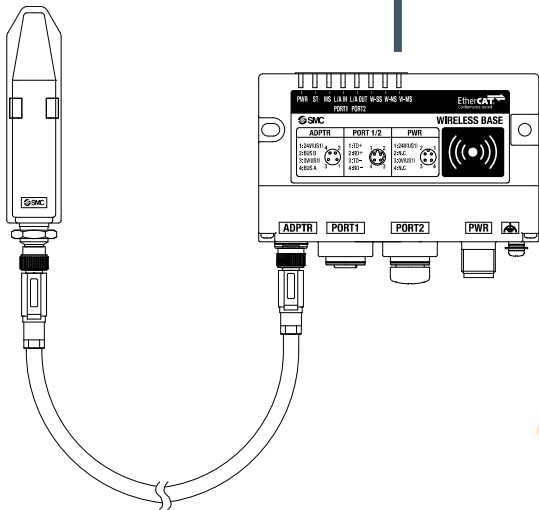
System Configuration



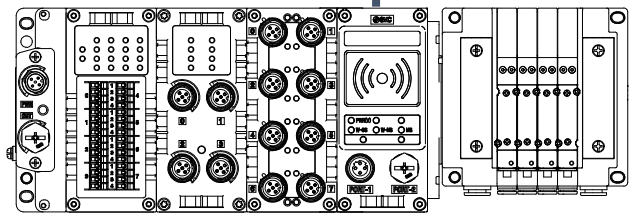
PLC compatible with EX600-W and EXW1 series communication protocols.

<Base>

EXW1 series



EX600-W Series

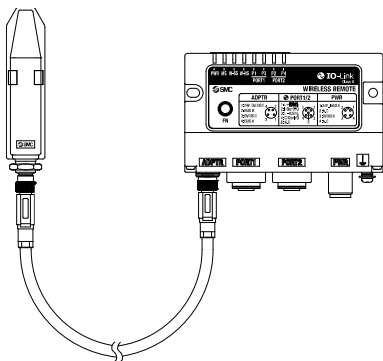


For settings and other information, refer to the operation manual for EX600-WEN/WPN*.

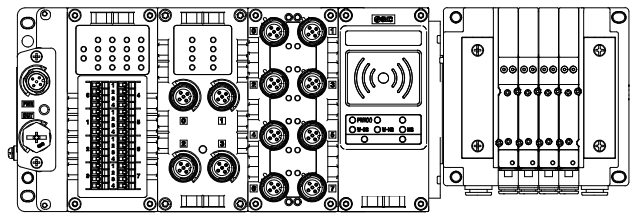


<Remote>

EXW1 series



EX600-W Series



For settings and other information, refer to the operation manuals for EX600-WSV* and the connected digital and analog units.



Input/output/IO-Link devices.

System compatibility

Mixed use with EX600-W Series

Although it is possible to use with EX600-W series, the operating conditions must comply with the specifications of the existing wireless system. Note that the following functions may be restricted:

- Communication distance
The maximum communication distance will vary depending upon the system configuration. Please see the details in the table on the next page.
- Protocol
This refers to the wireless communication version. For more details, check the system settings of the Base.
- Frequency channel select function (F.C.S.)
The frequency channel to use can be selected using this function.
 - * The number of selectable frequency channels varies depending on the country of use.
 - For more details, check the product number.

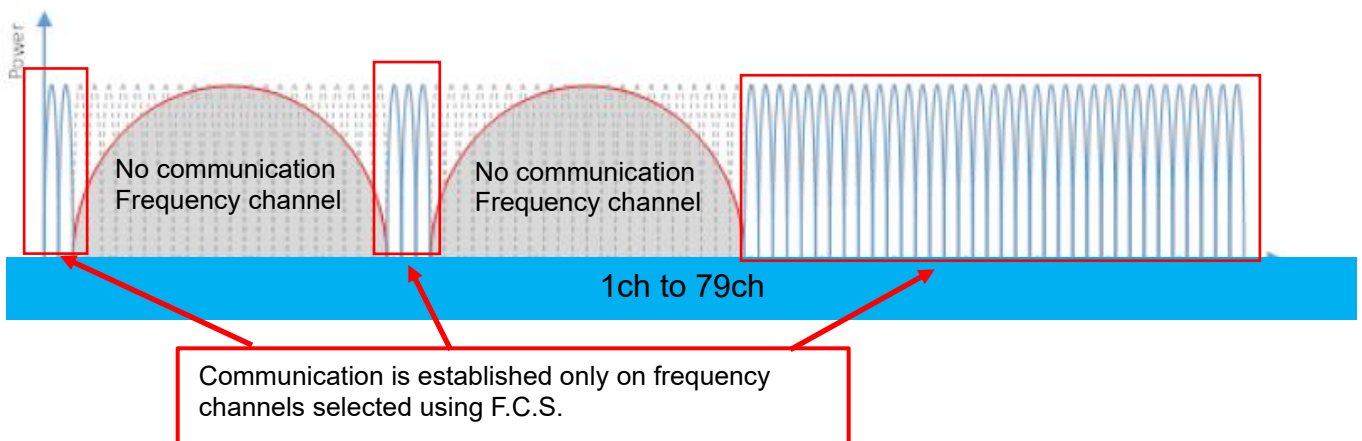
Number of selectable frequency channels	Applicable country
Min. 5 channels, Max. 79 channels	Certified countries except for the U.S., Canada, South Korea, Brazil, Taiwan, Argentina, and Mexico.
Min. 15 channels, Max. 79 channels	Certified countries including the U.S., Canada, South Korea, Brazil, Taiwan, Argentina, and Mexico.

* If no channel is selected, communication is established on 79 channels by default.

* For the latest information, refer to the catalog on the website below.

URL <https://www.smcworld.com>

The figure below shows an example where only the frequency channels that do not clash with two wireless LAN channels are used for wireless communication.



- WEB function (supported only by EX600-WEN/WPN)
Various product settings and communication statuses can be checked by accessing EX600-WEN/WPN from a PC.

Refer to the system configuration example below.

Refer to the manual of each wireless base for the maximum number of wireless remote that can be paired.

System configuration example			Applicable function		
No.	Wireless Base	Wireless Remote	Communication distance	Protocol	Frequency channel select function (F.C.S.)
1	EXW1	EXW1	Up to 100 m	V.1.0/ V.2.0*1	Available*2
2	EXW1	EXW1+EX600	*3	V.1.0	NA
3	EXW1	EX600	Up to 10 m	V.1.0	NA
4	EX600	EXW1	Up to 10 m	V.1.0	NA
5	EX600	EXW1+EX600	Up to 10 m	V.1.0	NA
6*4	EX600	EX600	Up to 10 m	V.1.0	NA
7*5	EXA1	EXW1-RL*	Up to 100 m	V.2.0	NA

*1: For more details, check the system settings of the Base.

*2: Only available in Protocol V.2.0.

*3: Up to 100 m between an EXW1 series Base and Remote, and up to 10 m between an EXW1 series Base and an EX600-W series Remote.

*4: This configuration consists solely of EX600-W series units; refer to the operation manual of the product in use for the further details.

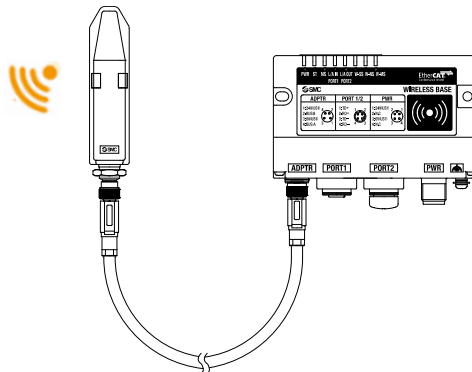
*5: When EXA1 series is paired, I/O map and parameters are fixed at default.
Refer to I/O map (page 40) and parameters details (page 45).

○ System configuration example 1

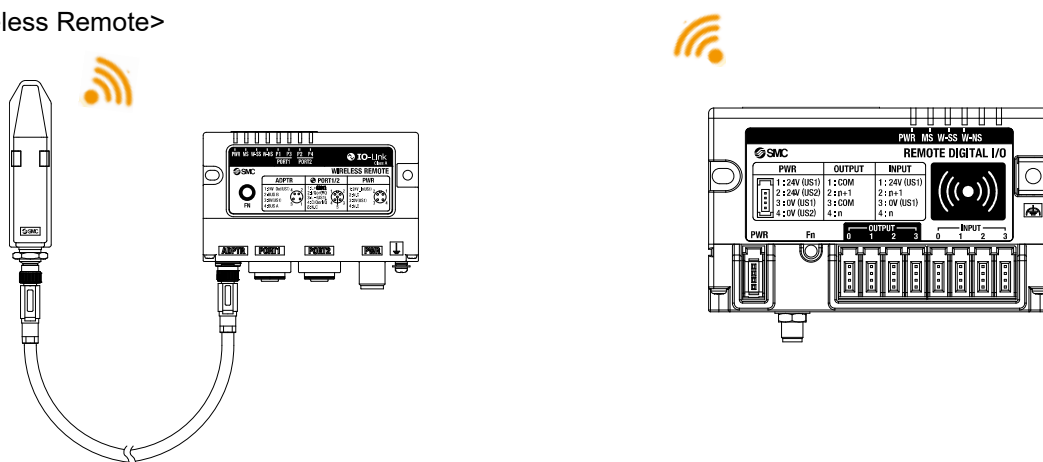
Wireless Base: EXW1-BECAC

Wireless Remote: EXW1 series

<Wireless Base>



<Wireless Remote>

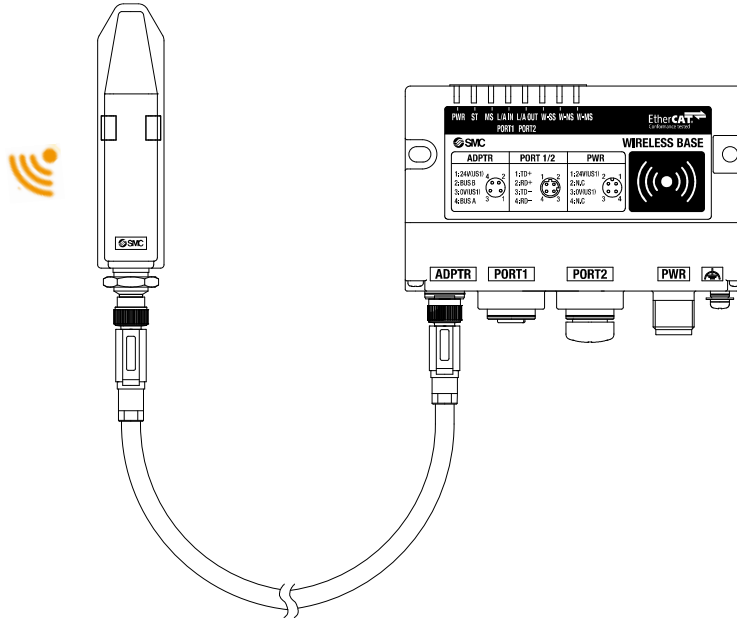


○ System configuration 2

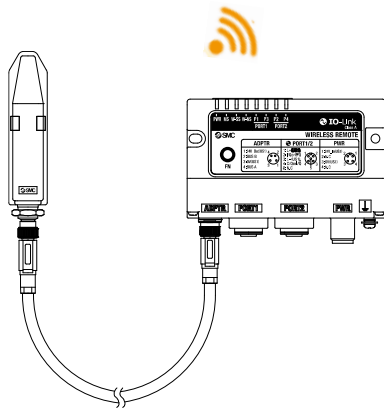
Wireless Base: EXW1-BECAC

Wireless Remote: EXW1 series, EX600-W series

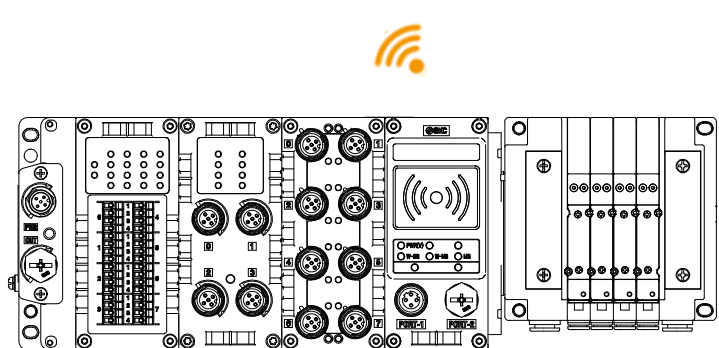
<Wireless Base>



<Wireless Remote>



EXW1 series



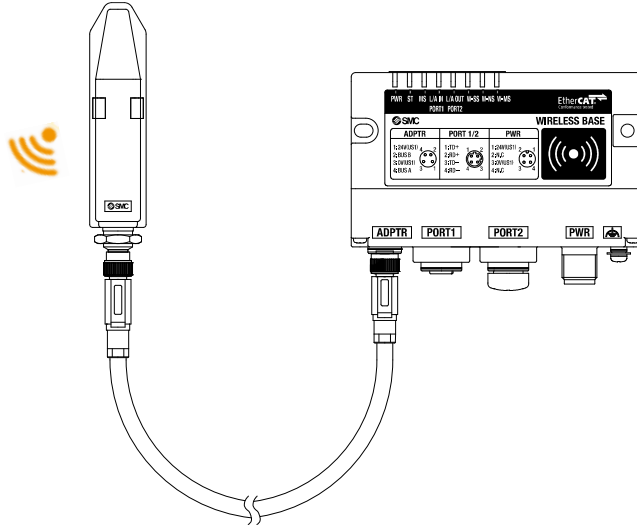
EX600-W Series

o System configuration 3

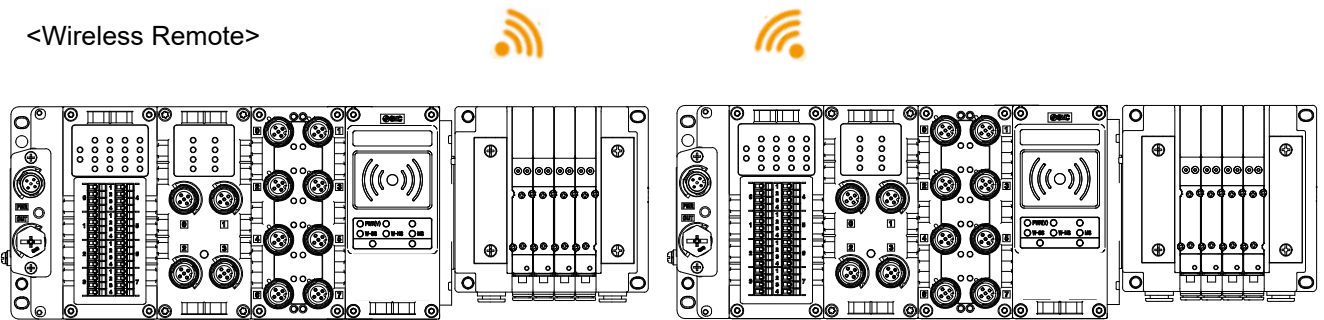
Wireless Base: EXW1-BECAC

Wireless Remote: EX600-W

<Wireless Base>



<Wireless Remote>



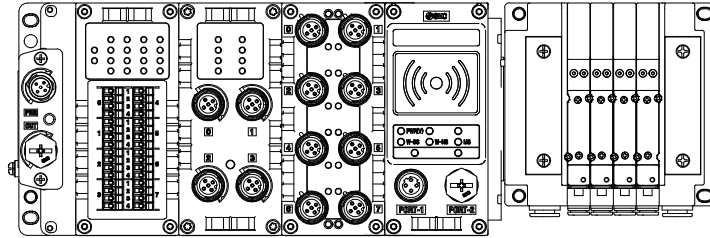
EX600-W Series

○ System configuration 4

Wireless Base: EX600-W series

Wireless Remote: EXW1 series

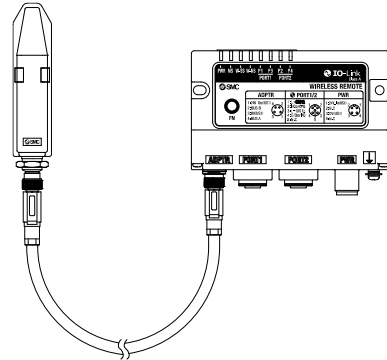
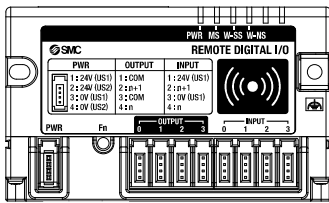
<Wireless Base>



EX600-W Series



<Wireless Remote>

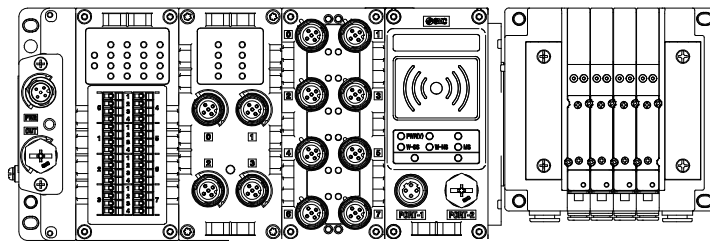


○ System configuration 5

Wireless Base: EX600-W series

Wireless Remote: EXW1 series, EX600-W series

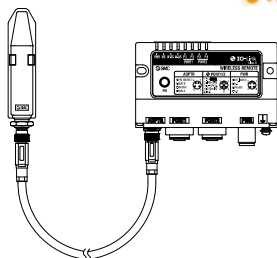
<Wireless Base>



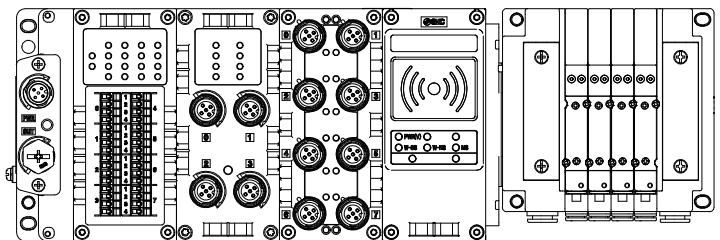
EX600-W Series



<Wireless Remote>



EXW1 series



EX600-W Series

○ System configuration 6

Wireless Base: EX600-W series

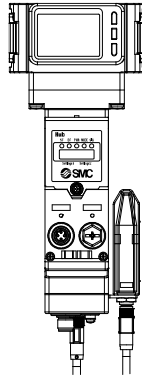
Wireless Remote: EX600-W series

For system configurations of EX600-W series, refer to the operation manual of the product in use for the further details.

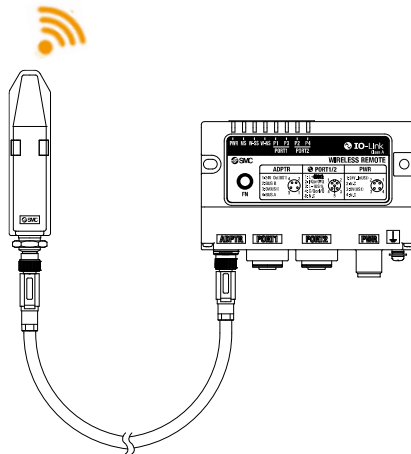
○ System configuration 7

Wireless Base: EXA1 series

Wireless Remote: EXW1-RL* series



EXA1 series



EXW1-RL*

How to Order

The product system, model names and part numbering system of SMC wireless systems are as follows.

<Compact wireless Remotes>

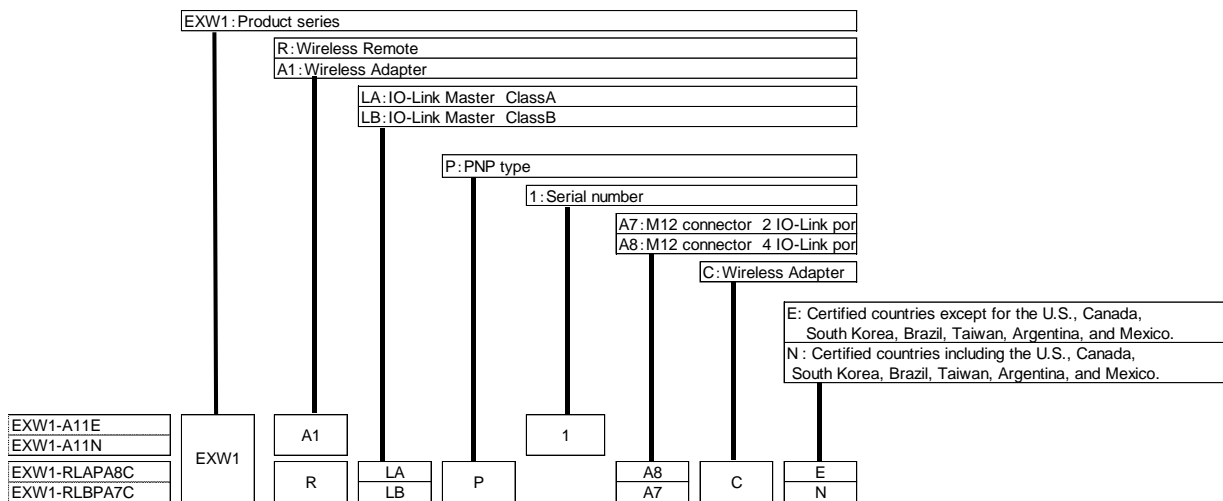
This product line-up consists of 2 models, namely EXW1-RLAPA8C and EXW1-RLBPA7C.

EXW1-RLAPA8C and EXW1-RLBPA7C are the wireless system remote used in combination with a wireless adapter that has wireless communication capabilities.

When using these products, it is necessary to order the wireless adapter and the wireless adapter cable separately.

<Wireless Adapter>

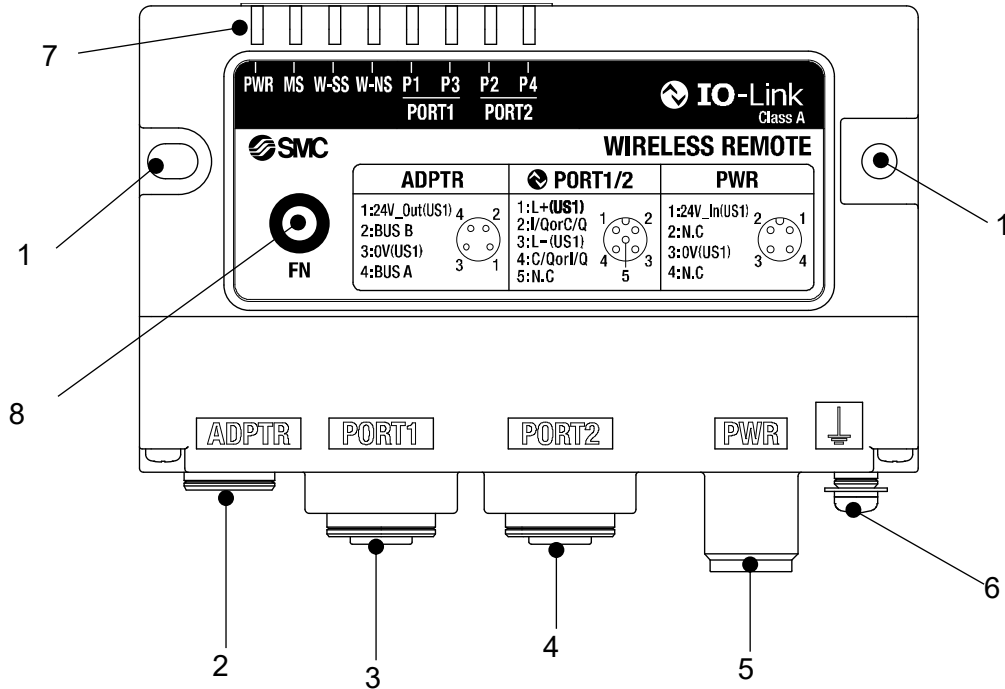
This product line-up consists of two models, namely EXW1-A11E and EXW1-A11N.



Summary of Product parts

EXW1-RLAPA8C

■ Appearance

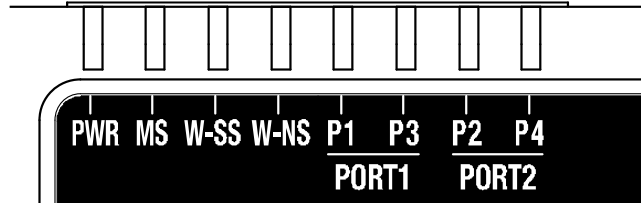


No.	Name	Application
1	Screw hole for mounting (2 x M4)	Mounting the compact Wireless Remote.
2	Connector for wireless adapter (ADPTR)	Connect the cable for wireless adapter.
3	Communication connector (PORT1)	Connection for the cable for IO-Link device.
4	Communication connector (PORT2)	Connection for the cable for IO-Link device.
5	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 when switching to pairing mode.

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

LED indicator

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



LED indicators of the compact Wireless Remote

Refer to below for LED status of PWR, MS, W-SS and W-NS.

LED name	Function	LED status		Description
		Color of LED	ON/Flashing	
PWR	US1 (for control) power supply status indicator	Green	ON	The US1 (for control) power supply is ON.
		-	OFF	The US1 (for control) power supply is OFF.
MS	Remote system status indicator	Green	ON	Operating normally.
		Green	Flashing(1Hz)	US1 (for control) power supply voltage level is abnormal.
		Red	Flashing(1Hz)	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. •Connection device matching error. •Process data mapping size error.
		Red	ON	Unrecoverable error is detected.
		-	OFF	•The US1 (for control) power supply is OFF. •Wireless adapter is disconnected.
W-SS	Radio wave receiving intensity	Green	ON	The level of received radio wave power is 3.
		Green	Flashing(1Hz)	The level of received radio wave power is 2.
		Green	Flashing(2Hz)	The level of received radio wave power is 1.
		Red	Flashing	Base that support protocol V.1.0 is not connected.
		Orange	Flashing	Base that support protocol V.2.0 is not connected.
		-	OFF	•The US1 (for control) power supply is OFF. •Base not registered.
W-NS	Wireless communication connection status indicator	Green	ON	Base connected correctly.
		Red	Flashing	Base not registered.
		Red	ON	Base not connected (Unrecoverable error in wireless communication)
		Red Green	Alternate Flashing	Wireless communication connection is being configured (pairing)
		Orange	ON	Force ON mode
-	OFF	•The US1 (for control) power supply is OFF. •Base not registered.		

LED indicator P1 to P4 are differ from each pin No function.
Refer to below for pin function and LED status of P1 to P4.

Refer to below for pin function of P1 to P4.

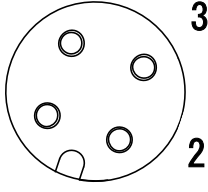
Connector	LED	Connector pin No.	Function
PORT1	P1	4	Default setting: C/Q (Can be changed DI, DO, Inactive with parameters.)
	P3	2	Default setting: DI Can be changed C/Q, DO, Inactive with parameters.)
PORT2	P2	4	Default setting: C/Q (Can be changed DI, DO, Inactive with parameters.)
	P4	2	Default setting: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

Refer to below for LED status of P1 to P4.

LED name	Function	LED status		Description
		Color of LED	ON/Flashing	
P1 P2 P3 P4	Deactivated	-	OFF	Port disabled
		Red	ON	Short circuit detection (L+)
	C/Q (IO-Link communication)	Green	ON	IO-Link device communicating
		Green	Flashing(1Hz)	IO-Link device disconnected
		Green	Flashing(2Hz)	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.
		Orange	ON	Input signal ON
	DI(Input)	Red	ON	Short circuit detection (L+)
		-	OFF	Input signal OFF
	DO(Output)	Orange	ON	Output signal ON
		Red	ON	Short circuit detection (L+ or DO)
	-	OFF	Output signal OFF	

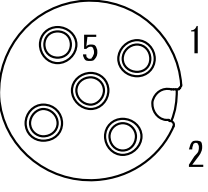
Connectors

Power supply connector

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

*1: 24 VDC \pm 10%

Communication connector for IO-Link or digital I/O PORT1/PORT2

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

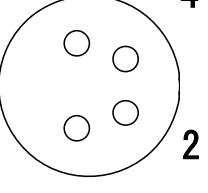
*1: Do not turn on the power supply.

*2: When using pin No.2 and No.4 for IO-Link communication, use the Y connector (EXW1-ACY1).

*3: Can be changed with parameters. Default setting is digital input.

*4: Can be changed with parameters. Default setting is digital IO-Link communication.

Connector for wireless adapter*1

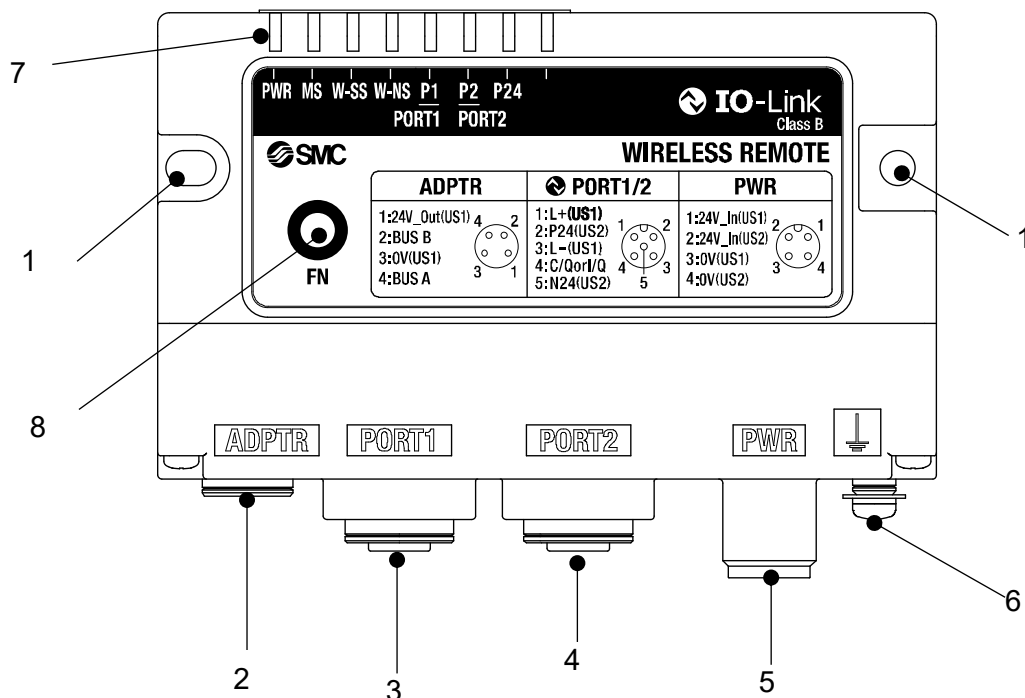
No.	Signal	Description	M8, 4-pin, socket
			A code
1	24VDC (US1)	DC 24V (US1): Output*2	
2	Internal BUS B	Communication B	
3	0VDC (US1)	DC 0V (US1)	
4	Internal BUS A	Communication A	

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

*2: Do not turn on the power supply.

EXW1-RLBPA7C

Appearance

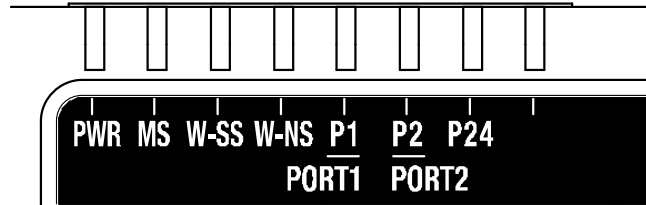


No.	Name	Application
1	Screw hole for mounting (2 x M4)	Mounting the compact Wireless Remote.
2	Connector for wireless adapter (ADPTR)	Connect the cable for wireless adapter.
3	Communication connector (PORT1)	Connection for the cable for IO-Link device.
4	Communication connector (PORT2)	Connection for the cable for IO-Link device.
5	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 when switching to pairing mode.

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

LED indicator

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



LED indicators of the compact Wireless Remote

Refer to below for LED status of PWR, MS, W-SS and W-NS.

LED name	Function	LED status		Description
		Color of LED	ON/Flashing	
PWR	US1 (for control) power supply status indicator	Green	ON	The US1 (for control) power supply is ON.
		Green	Flashing	US2 (for output) power supply voltage level is abnormal.
		-	OFF	The US1 (for control) power supply is OFF.
MS	Remote system status indicator	Green	ON	Operating normally.
		Green	Flashing(1Hz)	US1 (for control) power supply voltage level is abnormal.
		Red	Flashing(1Hz)	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 system inputs/outputs setting error. •Wireless adapter internal connection error. •Connection device matching error. •Process data mapping size error.
		Red	ON	Unrecoverable error is detected.
		-	OFF	•The US1 (for control) power supply is OFF. •Wireless adapter is disconnected.
W-SS	Radio wave receiving intensity	Green	ON	The level of received radio wave power is 3.
		Green	Flashing(1Hz)	The level of received radio wave power is 2.
		Green	Flashing(2Hz)	The level of received radio wave power is 1.
		Red	Flashing	Base that support protocol V.1.0 is not connected.
		Orange	Flashing	Base that support protocol V.2.0 is not connected.
		-	OFF	•The US1 (for control) power supply is OFF. •Base not registered.
W-NS	Wireless communication connection status indicator	Green	ON	Base connected correctly.
		Red	Flashing	Base not registered.
		Red	ON	Base not connected (Unrecoverable error in wireless communication)
		Red Green	Alternate Flashing	Wireless communication connection is being configured (pairing)
		Orange	ON	Force ON mode
		-	OFF	•The US1 (for control) power supply is OFF. •Base not registered.

LED indicator P1, P2 and P24 are differ from each pin No function.
Refer to below for pin function and LED status of P1, P2 and P24.

Refer to below for pin function of P1 to P4.

Connector	LED	Connector 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 is common.

Refer to below for LED status of P1, P2, and P24.

LED name	Function	LED status		Description
		Color of LED	ON/Flashing	
P1 P2	Deactivated	-	OFF	Port disabled
		Red	ON	Short circuit detection (L+)
	C/Q (IO-Link communication)	Green	ON	IO-Link device communicating
		Green	Flashing(1Hz)	IO-Link device disconnected
		Green	Flashing(2Hz)	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.
		Orange	ON	Input signal ON
	DI(Input)	Red	ON	Short circuit detection (L+)
		-	OFF	Input signal OFF
	DO(Output)	Orange	ON	Output signal ON
		Red	ON	Short circuit detection (L+ or DO)
		-	OFF	Output signal OFF
	P24	P24(Output)	Green	ON
Red			ON	Short circuit detection (P24)
-			OFF	P24 OFF

Connectors

•Power supply connector

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

*1: 24 VDC \pm 10%

Communication connector for IO-Link or digital I/O PORT1/PORT2

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

*1: Do not turn on the power supply. P24 of PORT1 and PORT2 is common.

*2: Can be changed with parameters. Default setting is digital IO-Link communication.

•Connector for wireless adapter*1

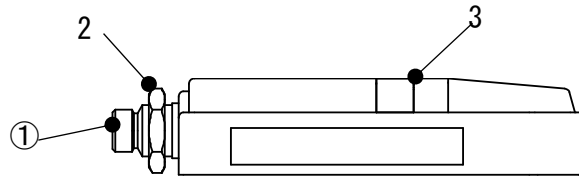
No.	Signal	Description	M8, 4-pin, socket
			A code
1	24V (US1)	DC 24V (US1): Output*2	
2	Internal BUS B	Communication B	
3	0V (US1)	DC 0V (US1)	
4	Internal BUS A	Communication A	

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

*2: Do not turn on the power supply.

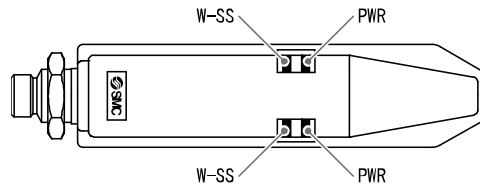
EXW1-A11*

■ Appearance



No.	Name	Application
1	Connector	Connector for Wireless Adaptor cable.
2	Nut	For fixing to Air Management system.
3	LED display	Indicates the status of the adaptor.

■ LED indicator



LED name	Function	LED status		Description
		Color of LED	ON/Flashing	
PWR	Power supply and status indication	Green	ON	Power supply voltage is in ON state
		Orange	Flashing	An internal communication error is detected
		Red	ON	Unrecoverable error is detected
		-	OFF	Power supply voltage is in OFF state
W-SS	Received signal strength indicator	Green	ON	The level of received radio wave power is 3.
		Green	Flashing (1 Hz)	The level of received radio wave power is 2.
		Green	Flashing (2 Hz)	The level of received radio wave power is 1.
		Red	Flashing	Protocol V.1.0 base is not established
		Orange	Flashing	Protocol V.2.0 base is not established
		-	OFF	Base or Remote is not registered

■ Connector

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

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

Setting and Adjustment

Flow chart for operating the wireless system

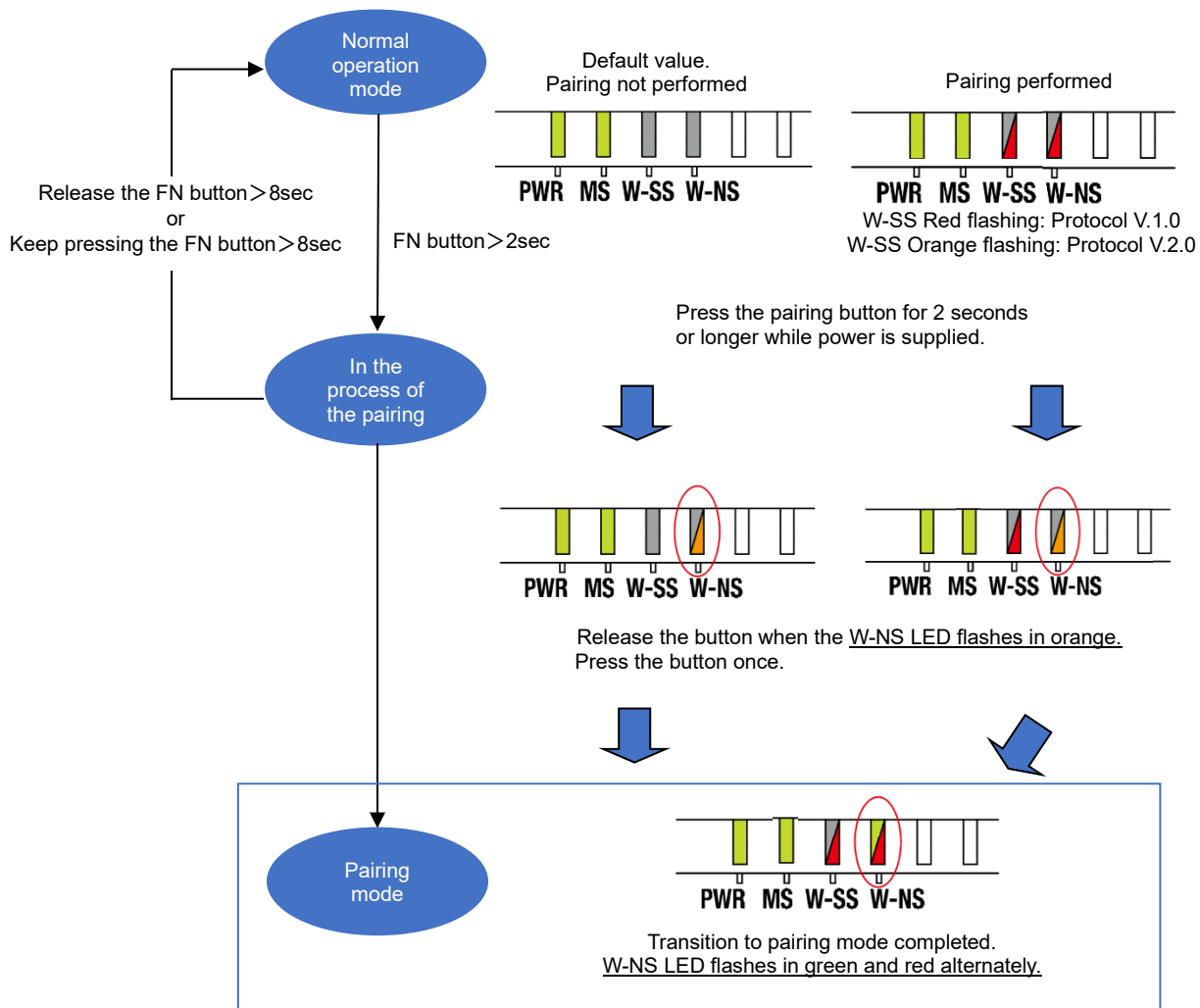
Flow chart for using the wireless system

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 of the product or I/O configurator in use for the further details.

EXW1-RL* series does not support NFC and default mode is pairing mode.

The operating mode can be changed from pairing mode to operating mode using the FN button.

○Switching pairing modes using a button on the Remote



Mounting and Installation of Units

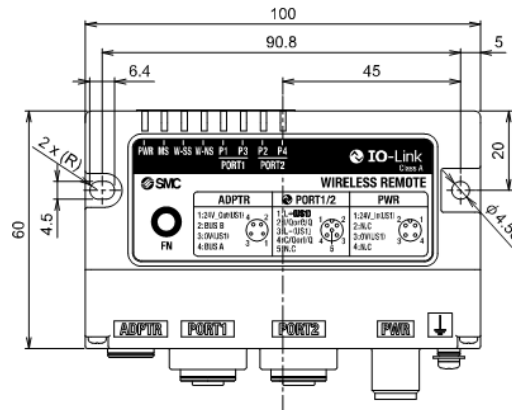
EXW1-RL*

Installation

Compact wireless remote

⚠ Caution

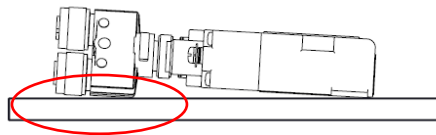
- To avoid damage to parts, apply the recommended tightening torque.
 - Mount the product using two screws.
- 2 x M4 screws are required (Recommended torque = 0.8+/-10% N·m).



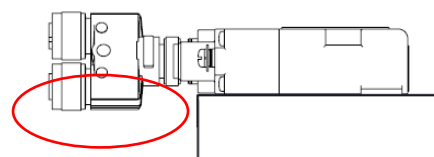
Y connector (PCA-1557785)

Note that the mounting and wiring, when using Y connector.

<Mounting>



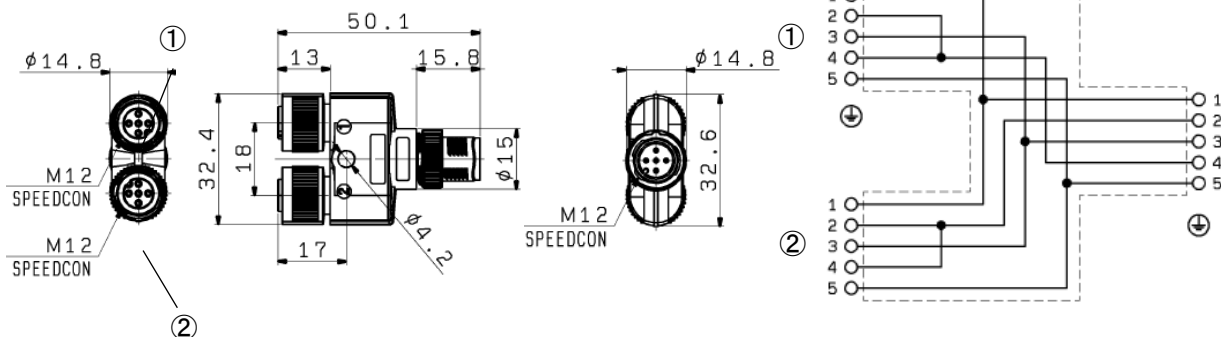
Y connector interferes with the mounting surface, product cannot be installed.



Y connector does not interfere with mounting surface.

<Wiring>

Note that pin 2 and Pin 4 are shorted at the branch destination, when connecting the I/O device.



•Precautions for handling

Be sure to fit a seal cap on any unused connectors. Proper use of the seal cap enables the enclosure to achieve IP67 specification.

■ Wireless adaptor

⚠ Caution

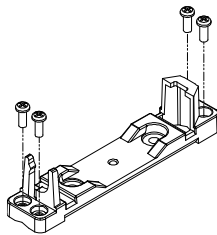
- To avoid damage to parts, apply the recommended tightening torque.
- Refer to the operation manual of the Wireless Adaptor for details.
- This product is sold separately. The installation plate is included with the wireless adapter.

(1) Attachment of installation plate

Attach the installation plate to the target object by either of the following two methods.

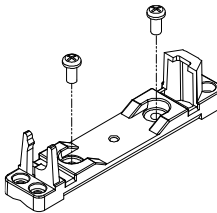
Installation with M3 x 4 positions

The tightening torque should be 0.4 N•m +/- 10%.
(Mounting screws are not included.)



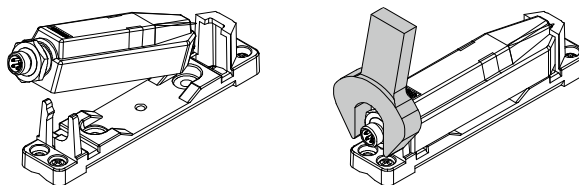
Installation with M4 x 2 positions

The tightening torque should be 0.6 N•m +/- 10%.
(Mounting screws are not included.)



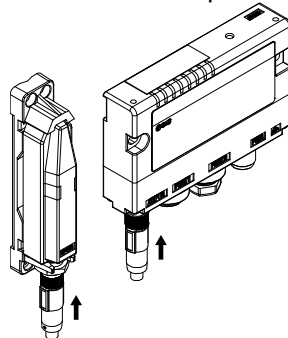
(2) Installation of wireless adaptor

Clip the wireless adaptor onto the installation plate as shown below and secure the adaptor in place using the M10 nut already fitted to the wireless adaptor.
The tightening torque should be 0.9 N•m +/- 10%.



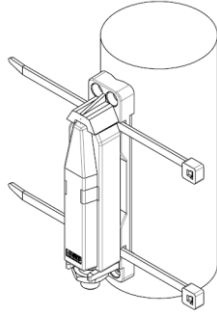
(3) Connection of the cable for wireless adaptor

Connect the cable to the base and the wireless adaptor.

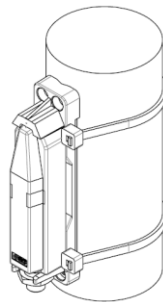


●Curved surface mounting

(1) Thread the top and bottom cable ties through the installation plate.



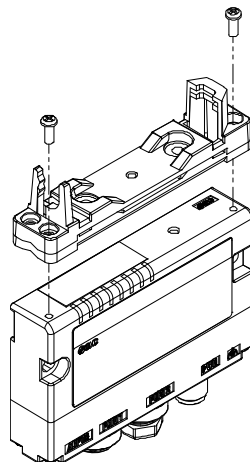
(2) Secure the wireless adaptor to the mount by tightening the cable ties. Trim back the loose ends of the cable ties.



●Mounting the Wireless Adaptor

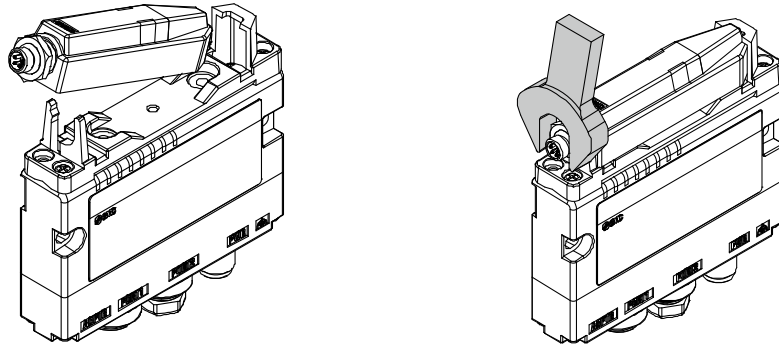
(1) Attachment of installation plate

Secure the base and installation plate with the two tapping screws (M3 x 8) included with the wireless adaptor. The tightening torque should be 0.4 N•m +/- 10%.



(2) Installation of wireless adaptor

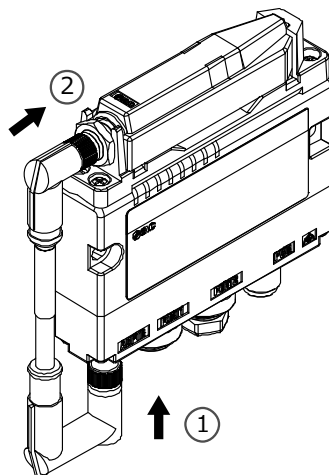
Chip the wireless adaptor onto the installation plate as shown below and secure the adaptor in place using the M10 nut already fitted to the wireless adaptor. The recommended tightening torque is 0.9 N•m +/- 10%.



(3) Connecting the cable for the wireless adaptor

Follow the procedure below to connect the cable for the wireless adaptor.

- 1) Connect the U-side connector of the cable for the wireless adaptor to the base.
- 2) Connect the S-side connector of the cable for the wireless adaptor to the adaptor.



Troubleshooting

When problems occur, take appropriate countermeasures while referring to the LED indication, troubleshooting and parameter settings.
 If a cause applicable to the failure cannot be identified, this indicates that the equipment itself is broken.
 The fieldbus system damage can be caused by the operating environment. Contact SMC to obtain countermeasures.

•Remote troubleshooting items.

LED	Description	LED status		No.	
		Color of LED	ON/Flashing		
-	All LEDs are OFF.	-		Problem 1	
PWR	Except green ON	Green	Flashing	Problem 2	
		-	OFF		
MS	Except green ON	Green	Flashing	Problem 3	
		Red	Flashing		
		Red	ON		
		-	OFF		
W-SS	Red Flashing or OFF	Red	Flashing	Problem 4	
		Orange	Flashing		
		-	OFF		
W-NS	Except Green ON	Red	Flashing	Problem 5	
		Orange	ON		
		Red	ON		
		Red	Green		Alternate Flashing
		-	OFF		
P1 to P4	Green ON, except orange ON	Green	Flashing	Problem 6	
		Red	ON		
		-	OFF		
P24*1	Except green ON	Red	ON	Problem 7	

*1: EXW1-RLBPA7C only.

•Remote troubleshooting

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures
		Color of LED	ON/Flashing		
1	All	-	OFF	The US1 (for control) power supply is OFF	Supply 24 VDC +/-10% for US1 (for control) power source.
2	PWR	Green	Flashing	US2 (for output) power supply voltage level is abnormal.	The US2 (for output) power supply voltage is low. Supply 24 VDC +/-10%.
		Orange	Flashing	Received remote search command.	Remote search commands are received from the paired base.
		-	OFF	The US1 (for control) power supply is OFF	Supply 24 VDC +/-10% for US1 (for control) power source.
3	MS	Green	Flashing	US1 (for control) power supply voltage level is abnormal.	The US1 (for control) power supply voltage is low. Supply 24 VDC +/-10%.
		Red	Flashing	The following diagnostic information is detected.	After checking the error contents while referring to the system diagnostic information and LED indication, refer to the following countermeasures.
				(1) US1 (for control: L+ or C/Q) or US2 (for output: P24) power supply short circuit detection.	(1) Re-wire the short-circuited part or check if the cable and connected device are normal.
				(2) Number of system inputs/outputs setting error.	(2) The total IO size of each port exceeds the total size of the remote IO size. Don't exceed the total IO size of each port than the total size of the remote IO size.
				(3) Wireless adapter internal connection error.	(3) Internal communication with the wireless adaptor is not performed normally. Check for loose connectors and broken wires.
(4) Connection device matching error.	(4) Check the setting of Validation and Backup.				
(5) Process data mapping size error.	(5) Check the process data of each port of the IO-Link master. When setting the size, it should be more than that of the IO-Link device connected.				
Red	ON	Remote malfunction	Replace the Remote If the error persists after replacement, stop using the equipment and contact your SMC sales representative.		
-	OFF	(1) The US1 (for control) power supply is OFF. (2) Wireless adapter is disconnected.	(1) Supply 24 VDC +/-10% for US1 (for control) power source. (2) Connect wireless adapter.		

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures
		Color of LED	ON/Flashing		
4	W-SS	Red	Flashing	When Protocol V.1.0 is used (1) Power supply for the Base is OFF (2) Outside the wireless coverage area	(1) Supply 24 VDC +/-10% for the US1 (for control) power source of the Base. (2) The distance which wireless communication between wireless systems can be established may have been exceeded. Reconsider the operating environment, such as the installation conditions, of the Base and Remote.
		Orange	Flashing	When Protocol V.2.0 is used (1) Power supply for the Base is OFF (2) Outside the wireless coverage area	(1) Supply 24 VDC +/-10% for the US1 (for control) power source of the Base. (2) The distance which wireless communication between wireless systems can be established may have been exceeded. Reconsider the operating environment, such as the installation conditions, of the Base and Remote.
		-	OFF	(1) Base not registered (2) The US1 (for control / input) power supply is OFF	(1) Check the registration status of the base and perform pairing correctly. (2) Supply 24 VDC +/-10% for US1 (for control) power source.

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures	
		Color of LED	ON/Flashing			
5	W-NS	Red		Flashing	(1) Power supply for the base is OFF (2) Outside the wireless coverage area	(1) Supply 24 VDC +/-10% for the US1 (for control) power source of the Base. (2) The distance which wireless communication between wireless systems can be established may have been exceeded. Reconsider the operating environment, such as the installation conditions, of the Base and Remote.
		Red		ON	Remote malfunction	Replace the Remote If the error persists after replacement, stop using the equipment and contact your SMC sales representative.
		Red	Green	Alternate Flashing	In pairing mode.	The system has been set to "Pairing enable". Change the setting to "Pairing disable" when pairing is not conducted.
		Orange		Flashing(1Hz)	FN (pairing button) in use	FN is being used. Change the mode according to the application.
		Orange		ON	Force ON mode	Change the mode depending on the purpose.
		-		OFF	(1) Base not registered (2) The US1 (for control / input) power supply is OFF	(1) Check the registration status of the base and perform pairing correctly. (2) Supply 24 VDC +/-10% for US1 (for control) power source.

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures
		Color of LED	ON/Flashing		
6	P1 P2 P3 P4	Green	Flashing (1Hz)	In IO-Link mode, IO-Link device disconnected.	Connect the IO-Link device.
		Green	Flashing (2Hz)	In IO-Link mode, (1) Connected IO-Link device matching error. (2) Data size error. (3) Data storage writing error.	(1) Check the setting of Validation and Backup. (2) Check the process data of each port. When setting the size, it should be more than that of the IO-Link device connected. •Perform writing of the data storage once again.
		Red	ON	L+ or C/Q short circuit detection.	Re-wire the short-circuited part or check if the cable and connected device are normal.
		-	OFF	(1) Port mode is "Deactivated". (2) L+ is OFF (3) Input signal OFF (Port mode is DI) (4) Output signal OFF (Port mode is DO)	(1) Port mode is "Deactivated". Change the mode depending on the purpose. (2) L+ is OFF. Change the setting depending on the purpose. (3) Port mode is "DI", input signal is OFF. (4) Port mode is "DO", output signal is OFF.
7	P24	Red	ON	P24 short circuit detection.	Re-wire the short-circuited part or check if the cable and connected device are normal.
		-	OFF	P24 is OFF.	P24 is OFF. Change the setting depending on the purpose.

•Wireless Adaptor troubleshooting items

LED	Description	LED status		No.
		Colour of LED	ON/Flashing	
-	All LEDs are OFF.	-	-	Problem 1
PWR	PWR LED is red or flashes orange or is off.	-	OFF	Problem 2
		Orange	Flashing	
		Red	ON	
W-SS	W-SS LED flashes red or orange or is off.	Red	Flashing	Problem 3
		Orange	Flashing	
		-	OFF	

• Wireless Adaptor troubleshooting

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures
		Colour of LED	ON/Flashing		
1	All	-	OFF	The US1 (for control) power supply is OFF.	Supply 24 VDC +/-10% to the US1 (for control / input) power source of the connected Remote.
2	PWR	-	OFF	The US1 (for control) power supply is OFF.	Supply 24 VDC +/-10% to the US1 (for control / input) power source of the connected Remote.
		Orange	Flashing	Internal communication error with the wireless adaptor.	Check for loose connectors and broken wires.
		Red	ON	Wireless Adaptor malfunction.	Replace the Wireless Adaptor. If the error persists after replacement, stop using the equipment and contact your SMC sales representative.
3	W-SS	Red	Flashing	When Protocol V.1.0 is used. (1) Power supply of registered Base is OFF. (2) Outside the wireless coverage area.	(1) Supply 24 VDC +/-10% to the US1 (for control / input) power source of the registered Base. (2) The distance which wireless communication between wireless systems can be established may have been exceeded. Reconsider the operating environment, such as the installation conditions, of the Base and Remote.
		Orange	Flashing	When Protocol V.2.0 is used. (1) Power supply of registered Base is OFF. (2) Outside the wireless coverage area.	(1) Supply 24 VDC +/-10% to the US1 (for control / input) power source of the registered Base. (2) The distance which wireless communication between wireless systems can be established may have been exceeded. Reconsider the operating environment, such as the installation conditions, of the Base and Remote.
		-	OFF	Not registered.	Check the registration status of the Remotes and perform pairing correctly.

Technical Information

I/O Map

The number of input and output occupied bytes is shown in the table below. The product selects the occupied bytes (input and output: Max.130 bytes for each) of the entire unit and the respective IO-Link port size within that range.

The number of bytes occupied by the entire unit and the IO-Link port size depends on the Wireless protocol. Refer to below for default input and output size.

Product No.	Wireless protocol	Occupied bytes	
		Input	Output
EXW1-RLAPA8C	V.1.0	16*1	16*1
	V.2.0	2~130*2	2~130*2
EXW1-RLBPA7C	V.1.0	16*1	16*1
	V.2.0	2~66*2	2~66*2

*1: Refer to the parameter details (page 42).

*2: Refer to the parameter details (page 40).

■ Wireless protocol V.2.0

Refer to IO map table below for Wireless protocol V.2.0.

Fixed 2 byte (Byte N to Byte N+1) + IO-Link Process data 32 bytes

Default input and output size of P1 and P2 are 16 bytes for each and P3 and P4 are 0 byte.

When EXA1 series is paired, IO map table is fixed at default input and output size.

<EXW1-RLAPA8C IO map>

	Input								Output							
	Bit 7				Bit 0				Bit 7				Bit 0			
Byte N ¹	Dev Com4	X2	Dev Com3	X2	Dev Com2	X4	Dev Com1	X4	—	Y2	—	Y2	—	Y4	—	Y4
Connector	PORT2		PORT1		PORT2		PORT1		PORT2		PORT1		PORT2		PORT1	
IO-Link Port	Port4 (P4)		Port 3 (P3)		Port 2 (P2)		Port 1 (P1)		Port 4 (P4)		Port 3 (P3)		Port 2 (P2)		Port 1 (P1)	
Byte N+1	Dev Err4	PQ 4	Dev Err3	PQ 3	Dev Err2	PQ 2	Dev Err1	PQ 1	Reserved (Fixed: 0)							
Connector	PORT2		PORT1		PORT2		PORT1									
IO-Link Port	Port4 (P4)		Port 3 (P3)		Port 2 (P2)		Port 1 (P1)									
Byte N+2 - *2	IO-Link Process data P1 to P4								IO-Link Process data P1 to P4							

*1: X2 is the input signal of each connector Pin No.2. (Port mode is DI.)

X4 is the input signal of each connector Pin No.4. (Port mode is DI.)

Y2 is the output signal of each connector Pin No.2. (Port mode is DO.)

Y4 is the output signal of each connector Pin No.4. (Port mode is DO.)

*2: When the IO-Link port mode is IO-Link mode, data is mapped from IO-Link port 1.

The initial values of IO-Link process data size for P1 and P2 are each input/output 16/16 Bytes.

For P3 and P4 each input/output are 0/0 Byte. The initial mode of P3 and P4 are DI.

The settings for each port can be selected from 0 to 32 Bytes. Refer to the parameter details (page 45).

<EXW1-RLBPA7C IO map>

	Input								Output											
	Bit 7				Bit 0				Bit 7				Bit 0							
Byte N ^{*1}	-	-	-	-	Dev Com2	X4	Dev Com1	X4	Y2 ^{*2}	-	-	-	-	Y4	-	Y4				
Connector	-				PORT2				PORT1				-							
IO-Link Port	-				Port 2 (P2)				Port 1 (P1)				-							
Byte N+1	-	-	-	-	Dev Err2	PQ2	Dev Err1	PQ1	Reserved (Fixed: 0)											
Connector	-				PORT2												PORT1			
IO-Link Port	-				Port 2 (P2)												Port 1 (P1)			
Byte N+2 - ^{*3}	IO-Link Process data P1 and P2								IO-Link Process data P1 and P2											

*1: X4 is the input signal of each connector Pin No.4. (Port mode is DI.)

Y4 is the output signal of each connector Pin No.4. (Port mode is DO.)

*2: Y2 is P24 output signal of connector Pin No.2. (P24 of PORT1 and PORT2 is output at the same time.)

*3: When the IO-Link port mode is IO-Link mode, data is mapped from IO-Link port 1.

The initial values of IO-Link process data size for P1 and P2 are each input/output 16/16 Bytes.

The settings for each port can be selected from 0 to 32 Bytes. Refer to the parameter details (page 45).

•The input of Byte N and Byte N+1 details.

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte N ^{*1}	Dev Com4	X2	Dev Com3	X2	Dev Com2	X4	Dev Com1	X4
Byte N+1 ^{*1}	Dev Err4	PQ4	Dev Err3	PQ3	Dev Err2	PQ2	Dev Err1	PQ1

*1: Bit 4 to Bit 7 is available for EXW1-RLAPA8C.

Description	Details	Value
DevCom# ^{*1}	Port communication status	0: Device not connected 1: Operate or Pre operate
DevErr# ^{*1}	Event status (Device or master event status)	0: No event or Notification 1: Warning or Error
PQ# ^{*1}	Received input process data Valid(normal) / invalid(abnormal) ^{*2}	0: Invalid(abnormal) 1: Valid(normal)

*1: # is in 1 to 4 and represented each IO-Link Port.

*2: Process data is held when the received input process data is abnormal (Process Data Invalid).

Wireless protocol V1.0

Refer to the IO map table below for Wireless protocol V1.0. Input and output occupied bytes are 16/16 bytes fixed.

Fixed 2 bytes (Byte N to Byte N+1) + IO-Link Process data 14 bytes

Default input and output size are P1: 8 bytes, P2: 6 bytes, P3: 0 byte and P4: 0 byte.

<EXW1-RLAPA8C IO map>

	Input								Output							
	Bit 7				Bit 0				Bit 7				Bit 0			
Byte N ^{*1}	Dev Com4	X2	Dev Com3	X2	Dev Com2	X4	Dev Com1	X4	-	Y2	-	Y2	-	Y4	-	Y4
Connector	PORT2		PORT1		PORT2		PORT1		PORT2	PORT1	PORT2	PORT1	PORT2	PORT1	PORT2	PORT1
IO-Link Port	Port4 (P4)		Port 3 (P3)		Port 2 (P2)		Port 1 (P1)		Port 4 (P4)	Port 3 (P3)	Port 2 (P2)	Port 1 (P1)	Port 4 (P4)	Port 3 (P3)	Port 2 (P2)	Port 1 (P1)
Byte N+1	Dev Err4	PQ 4	Dev Err3	PQ 3	Dev Err2	PQ 2	Dev Err1	PQ 1	Reserved (Fixed: 0)							
Connector	PORT2		PORT1		PORT2		PORT1									
IO-Link Port	Port4 (P4)		Port 3 (P3)		Port 2 (P2)		Port 1 (P1)									
Byte N+2 - N+15 ^{*2}	IO-Link Process data P1 to P4								IO-Link Process data P1 to P4							

*1: X2 is the input signal of each connector Pin No.2. (Port mode is DI.)

X4 is the input signal of each connector Pin No.4. (Port mode is DI.)

Y2 is the output signal of each connector Pin No.2. (Port mode is DO.)

Y4 is the output signal of each connector Pin No.4. (Port mode is DO.)

*2: When the IO-Link port mode is IO-Link mode, data is mapped from IO-Link port 1.

The initial values of IO-Link process data size are P1: 8 bytes, P2: 6 bytes, P3: 0 byte and P4: 0 byte.

The settings for each port can be selected from 0 to 14 Bytes. Refer to the parameter details (page 45).

<EXW1-RLBPA7C IO map>

	Input								Output							
	Bit 7				Bit 0				Bit 7				Bit 0			
Byte N ^{*1}	-	-	-	-	Dev Com2	X4	Dev Com1	X4	Y2 ^{*2}	-	-	-	-	Y4	-	Y4
Connector	-		-		PORT2		PORT1		-	-	PORT2	PORT1	-	-	PORT2	PORT1
IO-Link Port	-		-		Port 2 (P2)		Port 1 (P1)		-	-	Port 2 (P2)	Port 1 (P1)	-	-	Port 2 (P2)	Port 1 (P1)
Byte N+1	-	-	-	-	Dev Err2	PQ2	Dev Err1	PQ1	Reserved (Fixed: 0)							
Connector	-		-		PORT2		PORT1									
IO-Link Port	-		-		Port 2 (P2)		Port 1 (P1)									
Byte N+2 - N+15 ^{*3}	IO-Link Process data P1 and P2								IO-Link Process data P1 and P2							

*1: X4 is the input signal of each connector Pin No.4. (Port mode is DI.)

Y4 is the output signal of each connector Pin No.4. (Port mode is DO.)

*2: Y2 is P24 output signal of connector Pin No.2. (P24 of PORT1 and PORT2 is output at the same time.)

*3: When the IO-Link port mode is IO-Link mode, data is mapped from IO-Link port 1.

The initial values of IO-Link process data size are P1: 8 bytes, P2: 6 bytes, P3: 0 byte and P4: 0 byte.

The settings for each port can be selected from 0 to 14 Bytes. Refer to the parameter details (page 45).

•The input of Byte N and Byte N+1 details.

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte N ^{*1}	Dev Com4	X2	Dev Com3	X2	Dev Com2	X4	Dev Com1	X4
Byte N+1 ^{*1}	Dev Err4	PQ4	Dev Err3	PQ3	Dev Err2	PQ2	Dev Err1	PQ1

*1: Bit 4 to Bit 7 is available for EXW1-RLAPA8C.

Description	Details	Value
DevCom# ^{*1}	Port communication status	0: Device not connected 1: Operate or Pre operate
DevErr# ^{*1}	Event status (Device or master event status)	0: No event or Notification 1: Warning or Error
PQ# ^{*1}	Received input process data Valid(normal) / invalid(abnormal) ^{*2}	0: Invalid(abnormal) 1: Valid(normal)

*1: # is in 1 to 4 and represented each IO-Link Port.

*2: Process data is held when the received input process data is abnormal (Process Data Invalid).

The EXW1-RL* has a diagnostic function for each port. The diagnostics are shown via the LED display and process data input (PQI) in accordance with the diagnostic contents. The details of LED display and event code for each diagnostic are shown below.

Port diagnostics function	Details	LED	Port LED status	Input Bit No. (Description)	Event code
L+ short circuit detection	Pin No. 1-3 short circuit diagnostics	MS	Red Flashing	-	0x1806
		P1 to P4	Red ON		
P24 short circuit detection	Pin No. 2-5 short circuit diagnostics	MS	Red Flashing	-	0x180F
		P24	Red ON		
C/Q short circuit	Pin No. 1-4 or 3-4 short circuit diagnostics	MS	Red Flashing	-	0x1804 0x1813
		P1 to P4	Red ON		
Connected device matching error	Dagnositcs are available when -the port operation mode is IO-Link and -the communication port is set as "Type Compatible". If the detected Vendor ID and Device ID are not matched with registerd values, an error is diagnosed.	MS	Red Flashing	-	0x1803
		P1 to P4	Green Flashing		
Device process data mapping error *1	If connected device has longer process data than mapped data, an error will be diagnosed. This diagnostic is valid during port operation mode is IO-Link.	MS	Red Flashing	-	0x1F01
		P1 to P4	Green Flashing		
Device disconnection is detected *2	When the pin function / operation mode is set to IO-Link, device disconnection is detected.	P1 to P4	Green Flashing	5 (DevCom)	0x1800
P24 power supply reduction	Power supply reduction of class B type Pin No. 2-5 is diagnosed.	P24	OFF	-	0x180E

*1: Under the mapping error, all of the process data input and output are zero.

*2: When the port is not connected to devices, all of the input process data will be zero.

Parameters

Parameters can be changed by paired base. For more details, check the manual of the paired base.
When EXA1 series is paired, parameters of EXW1-RL* is fixed default setting.

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range	
1	Brown-out Detection for US1	Generated error when US1 power supply voltage goes under approx. 19 V.	Enable	Generates an error.	○	Unit	
			Disable	Does not generate an error.			
2	Output State Fieldbus FaultIdle*1	Sets output status when Fieldbus Communication Fault/Idle is occurred.	Clear	Turn off the output.	○	Unit	
			Hold	Hold the output.			
			Individual	Refer to No.7, 9, 22 and 23.			
3	Short Circuit Detection(L+,C/Q)	Either of the following detects the short-circuit, diagnostics is generated. •L+ power supply •C/Q signal •P24 power supply	Enable	Generates an error.	○	Unit	
			Disable	Does not generate an error.			
4	AD Update Time	Update Time of IO-Link input Process data.	20 to 60000 [ms]	Set the sampling frequency of IO-Link input Process data.	0.5	Unit	
5	Output State for RF Timeout	Sets output status when Wireless Communication Timeout is occurred.	Clear	Turn off the output		Unit	
			Hold	Hold the output	○		
			Individual	Refer to No.12			
6	Brown-out Detection for US2*2	Generated error when US2 power supply voltage goes under approx. 16 V.	Enable	Generates an error.		Unit	
			Disable	Does not generate an error.	○		
7	Hold State for Fieldbus Fault	Hold State for Fieldbus Fault*3*4	Hold	Hold the output		IO-Link Port (P1 to P4)	
			Individual	Refer to No.8	○		
8	Output State for Fieldbus Fault	Sets output status when Fieldbus Communication error is occurred.	Individual	OFF	Turn off the output	○	IO-Link Port (P1 to P4)
				ON	Turn on the output		
9	Hold State for Fieldbus Idle	Sets hold status when Fieldbus Communication idle is occurred.	Hold	Hold the output		IO-Link Port (P1 to P4)	
			Individual	Refer to No.10	○		

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range	
10	Output state for Fieldbus Idle	Sets output status when Fieldbus Communication idle is occurred.	Individual	OFF	Turn off the output	○	IO-Link Port (P1 to P4)
				ON	Turn on the output		
11	Hold State for RF Timeout	Sets hold status when Wireless Communication timeout is occurred.	Hold		Hold the output		IO-Link Port (P1 to P4)
			Individual		Refer to No.12 and 24	○	
12	Output state for RF Timeout	Sets output status when Wireless Communication timeout is occurred.	Individual	OFF	Turn off the output	○	IO-Link Port (P1 to P4)
				ON	Turn on the output		
13	Pd Byte Swap ^{*3}	Swap the byte order of the process data, which is exchanged between fieldbus communication and IO-Link master.	Direct		Data order is not swapped.	○	IO-Link Port (P1 to P4)
			Swap 16 bit		Swapped by word.		
			Swap 32 bit		Swapped by double word.		
			Swap All		All bytes swapped.		
14	L+ Power ON	Control L+.	OFF		Turn off the L+		PORT (PORT1/2)
			ON		Turn on the L+	○	
15	Port Input IO-Link Size	Setting the IO-Link input Process data size.	0 to 32 (Wireless protocol V2.0)		Setting the IO-Link input Process data size for each IO-Link Port.	P1 and P2: 16 P3 and P4: 0 (Wireless protocol V2.0)	IO-Link Port (P1 to P4)
			0 to 14 (Wireless protocol V1.0)			P1: 8 P2: 6 P3: 0 P4: 0 (Wireless protocol V1.0)	
16	Port Output IO-Link Size	Setting the IO-Link output Process data size.	0 to 32 (Wireless protocol V2.0)		Setting the IO-Link output Process data size for each IO-Link Port.	P1 and P2: 16 P3 and P4: 0 (Wireless protocol V2.0)	IO-Link Port (P1 to P4)
			0 to 14 (Wireless protocol V1.0)			P1: 8 P2: 6 P3: 0 P4: 0 (Wireless protocol V1.0)	

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
17	PortMode	Setting the IO-Link Port mode.	Deactivated	Deactivate the port.		IO-Link Port (P1 to P4)
			IOL_Manual	Start-up IO-LINK communication based on the IO-Link device comparison function.		
			IOL_Autostart	Start up the IO-Link communication instead of comparing IO-Link device.	○*4	
			DI_C/Q	Digital input only.	○*5	
			DO_C/Q	Digital output only.		
18	Validation & Backup ⁷⁶	Set the function of the comparison function (comparison of vendor ID and device ID) of the connected device and data storage (DS).	No Device Check	Comparison function: invalid DS function: invalid	○	IO-Link Port (P1 to P4)
			Type compatible Device V1.0	Connected device: V1.0 Comparison function: valid DS function: invalid		
			Type compatible Device V1.1	Connected device: V1.1 Comparison function: valid DS function: invalid		
			Type compatible Device V1.1, Backup+Restore	Connected device: V1.1 Comparison function: valid DS function: Valid (Backup & restore)		
			Type compatible Device V1.1, Restore	Connected device: V1.1 Comparison function: valid DS function: valid (for restore only)		

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
19	PortCycleTime ^{*7}	Setting for communication cycle time with IO-Link device. Ranges (with time increments) in brackets are shown below 0.4-6.3 ms (by 0.1 ms) 6.4-31.6 ms (by 0.4 ms) 32-132.8 ms (by 1.6 ms)	0: As fast as possible	Automatically set as a minimum cycle time of IO-Link device.	○	IO-Link Port (P1 to P4)
			1 to 255: 0.4ms to 132.8ms	0.4ms to 132.8ms		
20	VendorID	Setting for vendor ID which is compared when the IO-Link device comparison function is valid.	0 to 65535	Set the vendor ID of the device to be connected.	0	IO-Link Port (P1 to P4)
21	DeviceID	Setting for device ID which is compared when the IO-Link device comparison function is valid.	0 to 16777215	Set device ID of the device to be connected.	0	IO-Link Port (P1 to P4)
22	IO-Link State for FieldbusFault ^{*8}	Sets Process data status when Fieldbus Communication error is occurred.	Clear/ PD Out valid	All outputs are turned OFF and process data outputs remain valid.		IO-Link Port (P1 to P4)
			Hold	Process data outputs remain valid. IO-link master holds the last process data it received.		
			Clear/ PD Out invalid	All outputs are turned OFF and Process data outputs become invalid.	○	
23	IO-Link State for Fieldbus Idle ^{*8}	Sets Process data status when Fieldbus Communication Idle is occurred.	Clear/ PD Out valid	All outputs are turned OFF and process data outputs remain valid.		IO-Link Port (P1 to P4)
			Hold	Process data outputs remain valid. IO-link master holds the last process data it received.		
			Clear/ PD Out invalid	All outputs are turned OFF and Process data outputs become invalid.	○	

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
24	IO-Link State for RF Timeout ^{*8}	Sets Process data status when Wireless Communication timeout is occurred.	Clear/ PD Out valid	All outputs are turned OFF and process data outputs remain valid.		IO-Link Port (P1 to P4)
			Hold	Process data outputs remain valid. IO-link master holds the last process data it received.		
			Clear/ PD Out invalid	All outputs are turned OFF and Process data outputs become invalid.	○	

*1: This function is valid only when "Unit: Output State Fieldbus FaultIdle" for the Wireless Base is set to "Individual".

*2: EXW1-RLBPA7C only.

*3: The available byte swap parameters vary depending on the process data of the device to be connected.

Refer to I/O byte swap function for details (page 50).

*4: Default setting Pin 4 for each PORT.

*5: Default setting Pin 2 for each PORT.

*6: Valid when the IO-Link port operation mode is in "IOL_Manual". Refer to data storage function (page 51)

*7: The settable minimum cycle time is dependant on the IO-Link device minimum cycle time, communication speed or process data size. The selected port cycle time must be supported by the IO-Link device. The IO-Link master will over-ride an unsupported value and automatically select the minimum cycle time (0.7ms or more) that the IO-Link device can accommodate.

*8: Refer to Output setting / IO-Link communication mode when fieldbus and wireless communication error is generated or idling for difference in operation of the connected device due to difference in setting (page 50).

Output setting when the fieldbus and wireless communication error occurs. (For IO-Link mode)

IO-Link master setting (Output setting during fieldbus and wireless Communication Fault)		Operation of the connected device
Setting item	Details	
Clear/PD Out valid	All outputs are turned OFF and process data outputs remain valid	Output is cleared.
Hold	Process data outputs remain valid and hold the last data which IO-link master received	Output is held.
Clear/PD Out invalid	All outputs are turned OFF and Process data outputs become invalid	Based on the output setting function when the IO-Link communication error is generated.

I/O byte swap function

The byte order of input process data / output process data for the IO-Link device can be set per port. Settable parameters are shown below.

Setting	Description	Initial value
Direct	Data order does not change	○
Swap 16 Bit	Swap bytes in word units	—
Swap 32 Bit	Swap bytes in double word units	—
Swap All	Swap all bytes	—

Port setting (data format)

Example) Process data byte swap (process data size: 8 bytes)

Setting	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Original data	01	23	45	67	89	AB	CD	EF
Direct	01	23	45	67	89	AB	CD	EF
Swap 16 Bit	23	01	67	45	AB	89	EF	CD
Swap 32 Bit	67	45	23	01	EF	CD	AB	89
Swap All	EF	CD	AB	89	67	45	23	01

Example) Process data byte swap (process data size: 7 bytes)

設定	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Original data	01	23	45	67	89	AB	CD	00
Direct	01	23	45	67	89	AB	CD	00
Swap 16 Bit	23	01	67	45	AB	89	00	CD
Swap 32 Bit	67	45	23	01	00	CD	AB	89
Swap All	00	CD	AB	89	67	45	23	01

*: When the mapping size is 2 byte, even though "swap 32bit" is selected, the byte will not be swapped.

*: When the mapping size of the master connection process data and the process data size of the connected device are different, swap the byte with the blank byte zero.

Port cycle time setting

The communication cycle time is set automatically or selected from the range of 0.4 ms to 132.8 ms.

Note) The settable minimum cycle time is dependant on the IO-Link device minimum cycle time, communication speed or process data size. The selected port cycle time must be supported by the IO-Link device. The IO-Link master will over-ride an unsupported value and automatically select the minimum cycle time (0.7ms or more) that the IO-Link device can accomodate.

Value	Setting range
As fast as possible	Automatically set to the minimum cycle time of IO-Link device..
0.4 to 6.3ms	The range from 0.4 to 6.3ms can be set in 0.1ms increments.
6.4 to 31.6ms	The range from 6.4 to 31.6ms can be set in 0.4ms increments.
32.0 to 132.8ms	The range from 32.0 to 132.8ms can be set in 1.6ms increments.

Data storage function

The data storage function is available when the

-IO-Link port operation mode is "Manual" and

-Validation & Backup is "Type compatible, Device V1.1, Backup + Restore" or "Type compatible, Device V1.1, Restore".

•Outline of backup and restore

The parameter setting data for each IO-Link device can be stored (referred to as "backup") in the IO-Link master.

When the IO-Link device is replaced by another identical device, the backup parameters in the IO-Link master can be transferred to the replacement IO-Link device (referred to as "restore").

•Condition of the backup / restore operation when the IO-Link communication starts up

The data storage operation will be as follows based on the Data storage status of the IO-Link master and whether the IO-link device parameters have been changed.

Validation & Backup set value	Condition			Data storage operation
	Data storage status	Backup requirement from the device	Checksum of the data storage and device parameter	
No Device Check	-	-	-	Cleared
Type compatible, Device V1.0	-	-	-	Cleared
Type compatible, Device V1.1	-	-	-	Cleared
Type compatible, Device V1.1, Backup + Restore	Data exists	Required	-	Backup
	Data exists	No requirement	Not identical	Restore
	Data exists	Required	Identical	Nothing occurs
	No data	-	-	Backup
Type compatible, Device V1.1, Restore	Data exists	-	Not identical	Restore
	Data exists	-	Identical	Nothing occurs
	No data	-	-	Nothing occurs

Note 1) When the vendor ID or device ID are changed, the data storage will be cleared.

Note 2) When the IO-Link port operation mode is changed to a setting other than "Manual", Validation & Backup values are automatically changed to "No Device Check". Therefore, the data storage will be cleared.

IO-Link SMI service

Reading and writing of the IO-Link master and device parameter.
Refer to the manual of wireless base how to read and write.

The following 5 types of data can be read or written in the SMI service.

No	Description	Data type	Read	Write
1	SMI_MasterIdentification	IO-Link master information	○	—
2	SMI_PortConfiguration	IO-Link master port parameter setting	○	—
3	SMI_PortStatus	Acquires IO-Link master port status	○	—
4	SMI_DeviceRead	Receives ISDU from IO-Link device	○	—
5	SMI_DeviceWrite	Sends ISDU to IO-Link device	—	○

1. SMI_MasterIdentification(acquires IO-Link master information)

Name	Description
Vendor ID	Vendor ID for the IO-Link master (SMC)
Master ID	IO-Link master ID (EXW1-RLAPA8C、EXW1-RLBPA7C)
Master type	IO-Link master type
Feature	Functions that IO-Link master supports
Max number of ports	Maximum IO-Link port quantity of the IO-Link master
Port 1 type	Port type Class A(EXW1-RLAPA8C) Class B(EXW1-RLBPA7C)
Port 2 type	
Port 3 type	
Port 4 type	

1-1. PDIn

Name	Description
PQI	Port Qualifier Information
InputDataLength	Process input data length of IO-Link device
PDIO	Process input data 0
.
PDIn	Process input data n

1-2. PDOut

Name	Description
OutputDaraLength	Process output data length of IO-Link device
PDO0	Process output data 0
.
PDO _n	Process output data n

1-3. PDInOut

Name	Description
PQI	Port Qualifier Information
InputDaraLength	Process input data length of IO-Link device
PDIO	Process input data 0
.
PDIm	Process input data m
OutputDaraLength	Process output data length of IO-Link device
PDO0	Process output data 0
.
PDO _n	Process output data n

2. SMI_PortConfigList(acquires IO-Link master port parameter)

Name	Description
Port mode	Deactivated IOL_Manual IOL_Autostart DI_C/Q DQ_C/Q
Validation&Backup	No Device Check Type compatible Device V1.0 Type compatible Device V1.1 Type compatible Device V1.1、Backup+Restore Type compatible Device V1.1、Restore
I/Q behavior (Pin2 at M12 Connector)	Digital input (EXW1-RLAPA8C) Power2 (EXW1-RLBPA7C)
Port Cycle time	Port Cycle time (Refer to page 51)
Max number of ports	Maximum IO-Link port quantity of the IO-Link master
Vendor ID	Vendor ID for IO-Link device comparison function
Device ID	Vendor ID for IO-Link device comparison function

3. SMI_PortStatusList(Acquires IO-Link master port status)

Name	Description
PortStatusInfo	NO_DEVICE、DEACTIVATED、PORT_DIAG PREOPERATE、OPERATE、DI_C/Q、DO_C/Q
PortQualityInfo input	Input process data valid Input process data invalid
PortQualityInfo output	Output process data valid Output process data invalid
RevisionID	IO-Link device revision ID
TransmissionRate	Communication speed NOT_DETECTED、COM1、COM2、COM3
MasterCycleTime	Port cycle time
InputDataLength	Process input data length of connected IO-Link device
OutputDataLength	Process Output data length of connected IO-Link device
Vendor ID	Vendor ID of connected IO-Link device
Device ID	Device ID of connected IO-Link device
NumberOfDiags	Event quantity
EventQualifier 1	EventQualifier1
EventCode	Event code of IO-Link master or device
EventQualifier 2	EventQualifier2
EventCode	Event code of IO-Link master or device

4. SMI_DeviceRead (Acquires IO-Link device parameters)

Name	Description
On request data	Refer to the manual of IO-Link Device

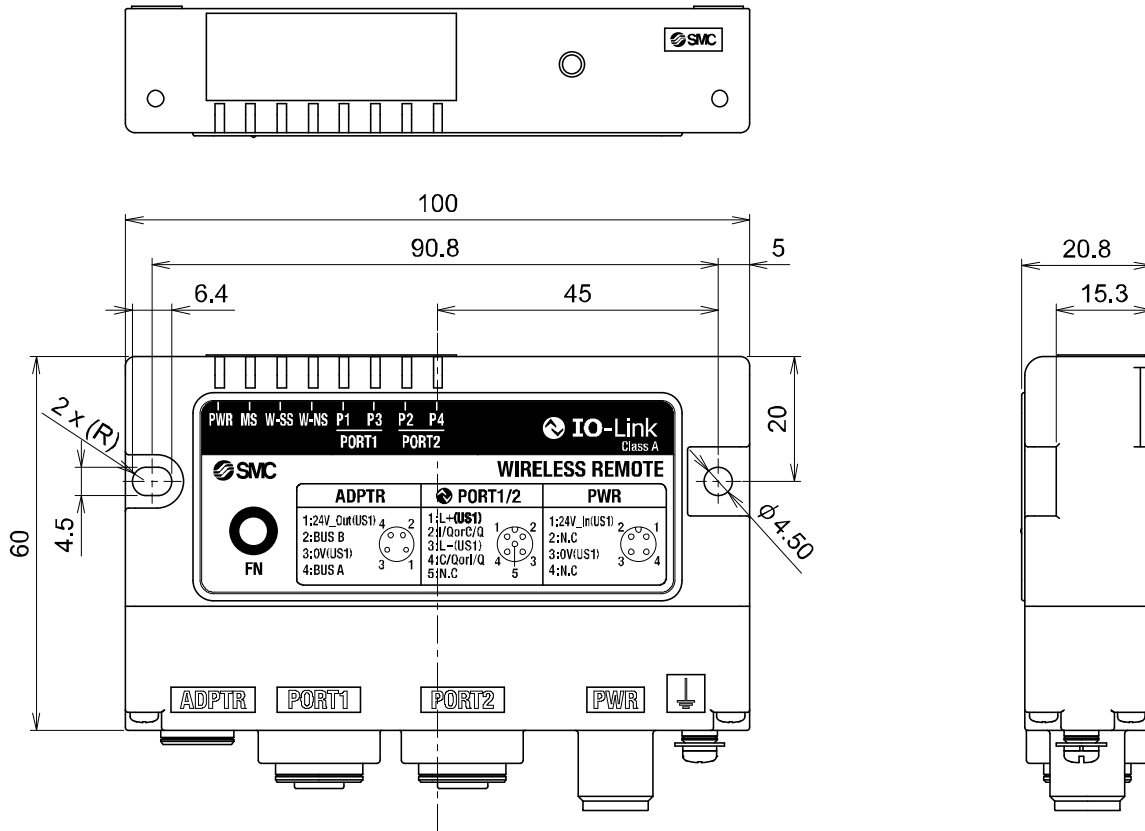
5. SMI_DeviceRead (IO-Link device parameter setting)

Name	Description
Index[0](MSB)	Refer to the manual of IO-Link Device
Index[1](LSB)	
Subindex	Refer to the manual of IO-Link Device
On request data	Refer to the manual of IO-Link Device

Specifications

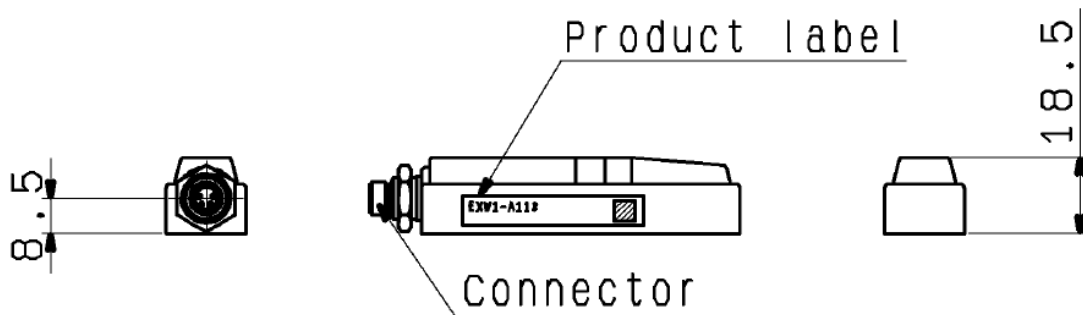
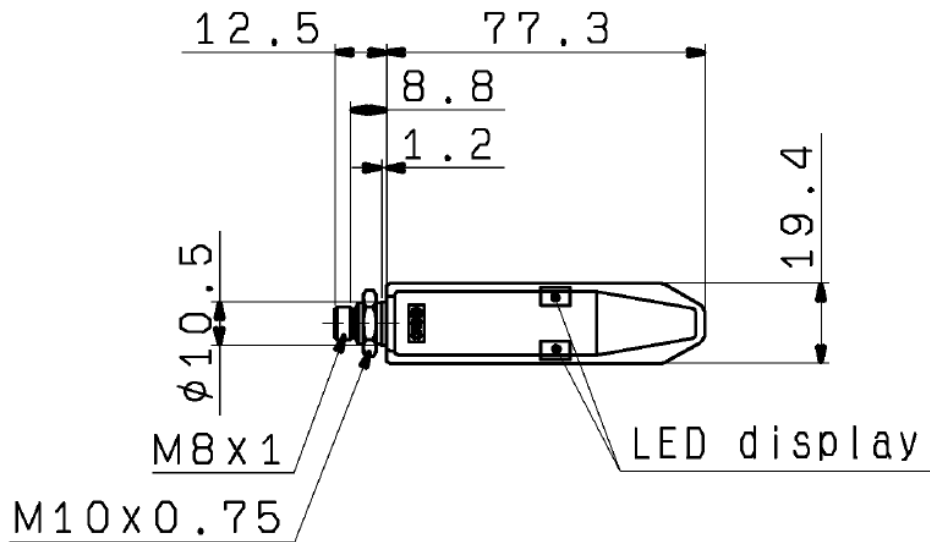
Dimensions

- EXW1-RL*

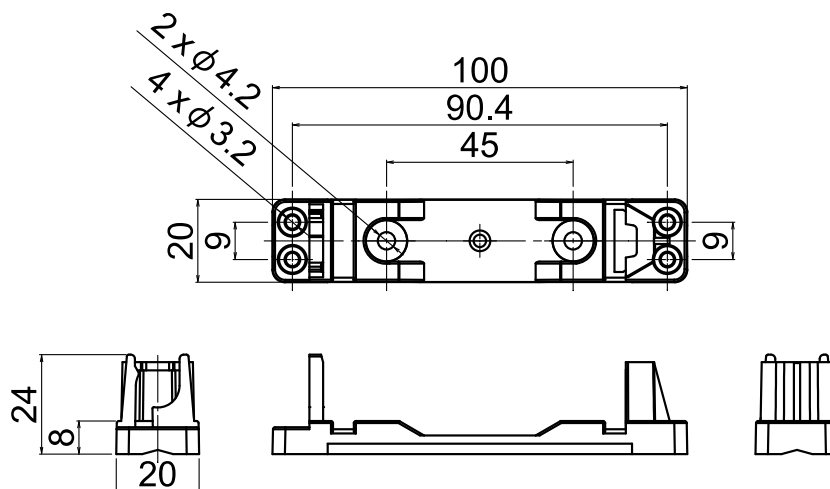


- EXW1-A11* (Sold separately)

• Wireless Adaptor



• Installation Plate



Specifications Table

- EXW1-RL*

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 the device connected		
IO-Link version		Version 1.1		
Number of ports		Max.4		Max.2
Power supply for US1 Max. supply current (between L+ and L-)		0.5 A / connector (1 A / unit)		0.3 A / connector (0.6 A / unit)
Power supply for US2 (between P24 and N24)		—		1.6 A / connector 2 A ^{*1} / unit
Digital input	Pin No.	2	4	4
	Input polarity	PNP		
	Protection	Short circuit protection		
	ON input current	Typ. 2.5 mA	Typ. 5.8 mA	Typ. 5.8 mA
	ON voltage	13 V or more		
	OFF voltage	8 V or less		
Digital output	Pin No.	2,4		4
	Output type	PNP		
	Max. load current (C/Q line)	0.25 A / output (Supplied from the power supply for control / input)		
	Over current protection	Built-in short circuit prevention		

*1: At an ambient operating temperature of 50°C, the maximum current is 1.6A.

Regarding the 2 types of power supply

- Power supply for US1: Supplying power for control of IO-Link master unit power supply for control and also for IO-Link device connected to IO-Link port via L+ and L- pins.
- Power supply for US2: Supplying power for IO-Link device connected to IO-Link port via P24 and N24 pins. (EXW1-RLBPA7C only)

Electrical specifications

Item	Specification
US1 (for control) power supply voltage range	24 VDC+/-10 %
US2 (for output) power supply voltage range*1	24 VDC+/-10 %
Current consumption	100 mA or less

*1: EXW1-RLBPA7C only

General specifications

Item	Specification
Enclosure	IP67*1
Ambient operating temperature	-10 to +50°C
Ambient storage temperature	-20 to +60°C
Ambient humidity	35 to 85% RH (no condensation)
Withstand voltage	500 VAC 1.0 min. External terminals (including the FE terminal) and enclosure screws
Insulation resistance	10 MΩ or more 500 VDC External terminals (including the FE terminal) and enclosure screws
Vibration resistance	EN61131-2 compliant $5 \leq f < 8.4$ Hz 3.5 mm $8.4 \leq f < 150$ Hz 9.8 m/s ²
Impact resistance	EN61131-2 compliant, 147 m/s ² , 11 ms
Mounting	Through hole for M4 screw (2 pcs.)
Standards	CE/UKCA marked, UL (CSA)
Weight	150 g (body),

*1: All unused connectors must have a seal cap fitted.

- EXW1-A11*

Electrical specifications

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

General specifications

Item	Specification
Enclosure	IP67
Ambient operating temperature	-10 to +50°C
Ambient storage temperature	-20 to +60°C
Ambient humidity	35 to 85% RH (no condensation)
Vibration resistance	EN61131-2 compliant $5 \leq f < 8.4$ Hz 3.5 mm $8.4 \leq f < 150$ Hz 9.8 m/s ²
Impact resistance	EN61131-2 compliant, 147 m/s ² , 11 ms
Standards	CE/UKCA marked, UL (CSA) ^{*1}
Weight	40 g (body), 20 g (installation plate)

*1: When connect to the air management system and EXW1-BECAC, UL (CSA) standards applies.

Wireless communication specifications

Item	Specification
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	Max. 79 ch (Bandwidth: 1.0 MHz)
Communication speed	250 kbps(V.1.0) / 1 Mbps(V.2.0) ^{*2}
Frequency hopping cycle	5ms(V.1.0) / 2ms(V.2.0)
Communication distance	Up to 100 m line of sight (depending on the environment)
Radio Law certificate	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 (V.2.0: 1 Mbps, V.1.0: 250 kbps). Different communication speeds are mutually incompatible.

Accessories

Accessory List

For the selection of accessories, refer to the catalog.

(1) Power supply cables

EX500-AP010-S: Cable with M12 connector, A code, Socket, Straight 1 m

EX500-AP050-S: Cable with M12 connector, A code, Socket, Straight 5 m

EX500-AP010-A: Cable with M12 connector, A code, Socket, Angle 1 m

EX500-AP050-A: Cable with M12 connector, A code, Socket, Angle 5 m

(2) IO-Link communication cable

EX9-AC005-SSPS: Cable with M12 connector, Socket, Plug, Straight 0.5 m

EX9-AC010-SSPS: Cable with M12 connector, Socket, Plug, Straight 1.0 m

EX9-AC020-SSPS: Cable with M12 connector, Socket, Plug, Straight 2.0 m

EX9-AC030-SSPS: Cable with M12 connector, Socket, Plug, Straight 3.0 m

EX9-AC050-SSPS: Cable with M12 connector, Socket, Plug, Straight 5.0 m

EX9-AC100-SSPS: Cable with M12 connector, Socket, Plug, Straight 10.0 m

(3) Y connector

EXW1-ACY1

(3) Seal cap (10 pcs.)

EX9-AWTS: For M12

(4) Wireless adaptor cable

EXW1-AC1-X1: 300mm cable with M8 connector on both sides

Revision history

- 1: Y connector and SMI service
[February 2024]
- 2: Contents are revised
[April 2024]
- 3: Contents are revised
[June 2024]

SMC Corporation

Tel: + 81 3 5207 8249 Fax: +81 3 5298 5362
URL <https://www.smcworld.com>

Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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