



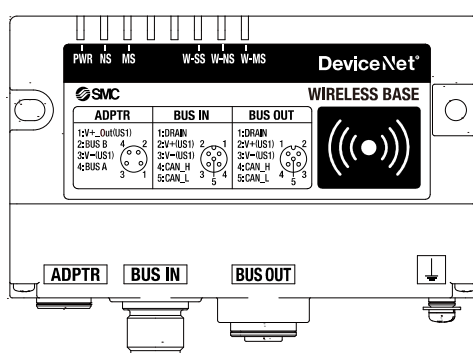
Operation Manual

PRODUCT NAME

Compact Wireless Base
DeviceNet[®]

MODEL / Series / Product Number

EXW1-BDNAC



SMC Corporation

Table of Contents

Safety Instructions	3
Precautions regarding the Radio Law	8
EXW1-A11#	8
Precautions for Handling	10
Important Instructions concerning the Wireless System	12
SMC Wireless System	13
Features and Summary	13
System Configuration	14
System compatibility	15
How to Order	21
Summary of Product parts	22
EXW1-BDNAC	22
EXW1-A11* (Option)	26
Setting and Adjustment	27
Flow chart for operating the wireless system	27
I/O Configurator (NFC version)	28
Preparation	29
Installation of the software	29
Before starting the software	30
Download the I/O Configurator (NFC version)	33
Start the I/O Configurator (NFC version)	34
Screen Layouts of the I/O Configurator (NFC Version)	35
Setting up	37
Setting/Adjustment of the Wireless Unit	38
Parameter settings of the Base	38
DeviceNet setting	38
System setting	40
Events	43
Wireless	45
Parameter	47
Pairing and Unpairing Procedures	48
Pairing Procedure	48
Unpairing Procedure	56
Mounting and Installation of Units	58
EXW1-BDNAC	58
Troubleshooting	62
Technical Information	68
I/O Map	68
I/O Mapping	70
I/O mapping order of base/remote	71
Diagnostics map details	77
Frequency channel select function (F.C.S.)	85
Number of pairing remotes	87
Detail of Parameters	88
Hardware Configuration	102
DeviceNet® Object (CIP)	105
Specifications	131
Dimensions	131
specification	133
Accessories	135
Accessory List	135



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.

Caution

SMC products are not intended for use as instruments for legal metrology.

Products that SMC manufactures or sells are not measurement instruments that are qualified by pattern approval tests relating to the measurement laws of each country.

Therefore, SMC products cannot be used for business or certification ordained by the measurement laws of each country.

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.

Fieldbus system/Industrial IoT Security Measures

With the introduction of Industrial IoT, various devices in a factory are connected to the network, and it is necessary to respond to new threats such as cyber-attacks. To protect Industrial IoT, it is important to take multilayered countermeasures (multilayer defense) that include IoT devices, networks, and cloud computing. SMC recommends that the following countermeasures be considered. For details on the measures listed, please refer to the security measures documents and other documents issued by each country and organization.

(1) Do not connect devices to public networks such as the Internet.

If it is necessary to access equipment or the cloud through a public network, use a secure line such as a VPN or leased line.

Do not connect information networks such as offices to industrial IoT networks in factories.

(2) Install firewalls to prevent external threats from entering devices and systems.

Install routers and firewalls at network boundaries and set them to allow only the minimum necessary communication.

If a permanent connection is not required, disconnect the line by turning off communication devices when not in use.

(3) Make unused communication ports physically inaccessible or disable them in the configuration.

Check each port regularly to see if there are any unnecessary devices connected to the network equipment.

For various services (SSH, FTP, SFTP, etc.) of network devices, configure them to run only the necessary services.

Wireless LAN and other devices that use radio waves should be configured to have an appropriate propagation range and use appropriate devices that have been certified by the radio wave laws of the country in which they are installed.

Install equipment that outputs radio waves in a location where there is no interference from outside or inside the building.

(4) Set up a communication method with security measures such as data encryption.

Implement security measures with cryptographic functions in each environment, such as IoT networks and connections via secure gateways.

(5) Grant access privileges to each account and limit the number of users who can use the account.

Periodically review accounts and delete unused accounts and privileges.

If the number of login errors exceeds a certain threshold, set up an account lock mechanism, such as prohibiting the use of the account for a certain period of time.

(6) Protect passwords.

The initial passwords should be changed at the time of installation.

Change passwords on a regular basis.

The password should be a combination of characters that is difficult to guess and highly secure (e.g., 8 or more characters, including letters and special characters).

(7) Use the latest security software.

Install antivirus software on all PCs to detect and eliminate virus infection.

Anti-virus software should always be kept up-to-date.

(8) Keep the latest versions of equipment and system software.

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

(9) Monitor and detect abnormalities in the network.

In the event of an abnormality, monitor communications within the network and notify an alert when an abnormality is detected in order to promptly respond to the problem. Install devices such as intrusion detection/protection systems (IDS/IPS).

(10) Delete data when disposing of or relinquishing equipment.

When disposing of IoT devices, data deletion or physical destruction should be performed to prevent unauthorized use of data left on the devices.

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-A11*).

● 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 the host (PLC) control device, one base including paired remote groups appears as one system, and the maximum number of input/output points per system is 4096/4096 points (512 bytes/512 bytes).

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 transmits and receive data is encrypted. It is therefore difficult to manipulate the data.

The SMC wireless system has the following features:

- High-speed start up. The minimum connection time to the system after supplying power to the Remote is 0.25 seconds.*1
- Parameter setting by Near Field Communication (NFC) using a PC (no HW setting).
- The number of input/output points of the system can be from a minimum of 16/16 points to a maximum of 4096/4096 points *2, 3
- Up to 31 remotes can be registered to one base. *4
For details, please refer to the section on registered units in the technical documentation.

*1: The base should be in the start upstate. The connection time varies depending on the timing of the power supply to the remote, the number of connected EX600 I/O units and other external influences.

*2: The maximum number of I/O point is 4096 for input and output. When exceeding 4096 points, the unit I/O is not recognized. There might be a communication delay depending on the communication load status.

*3: The total number of I/O points of the base and the registered I/O points of the remote.

*4: The maximum number of units that can be connected is 31. If 31 units is exceeded, the unit I/O will not be recognized. There might be a communication delay depending on the communication load status.

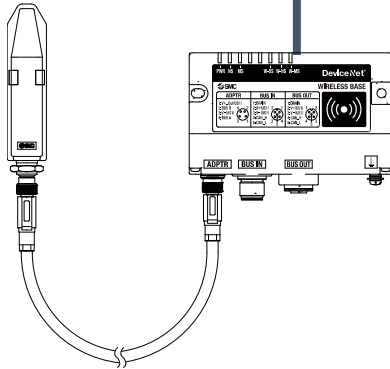
System Configuration



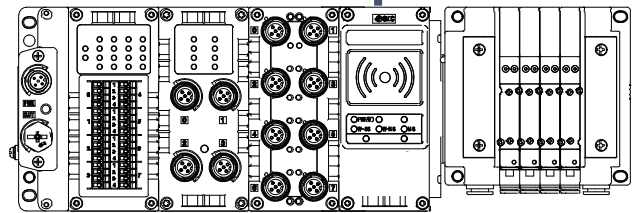
PLC compatible with EX600-W and EXW1 series communication protocols.

<Base>

EXW1 series



EX600-W Series

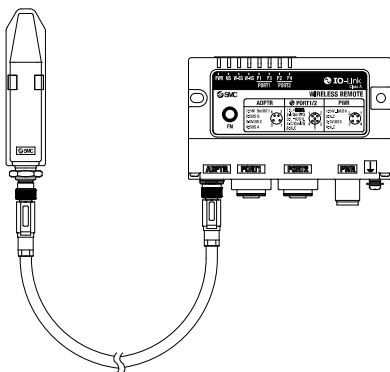


For settings and other information, refer to the operation manual for EX600-WEN/WPN*.

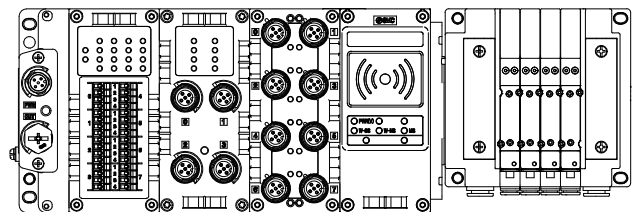


<Remote>

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. The Power Transmission Level function allows the communication distance to be shortened in three steps.

- Protocol

This refers to the wireless communication version. For more details, check the system settings of the Base.se

- 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.

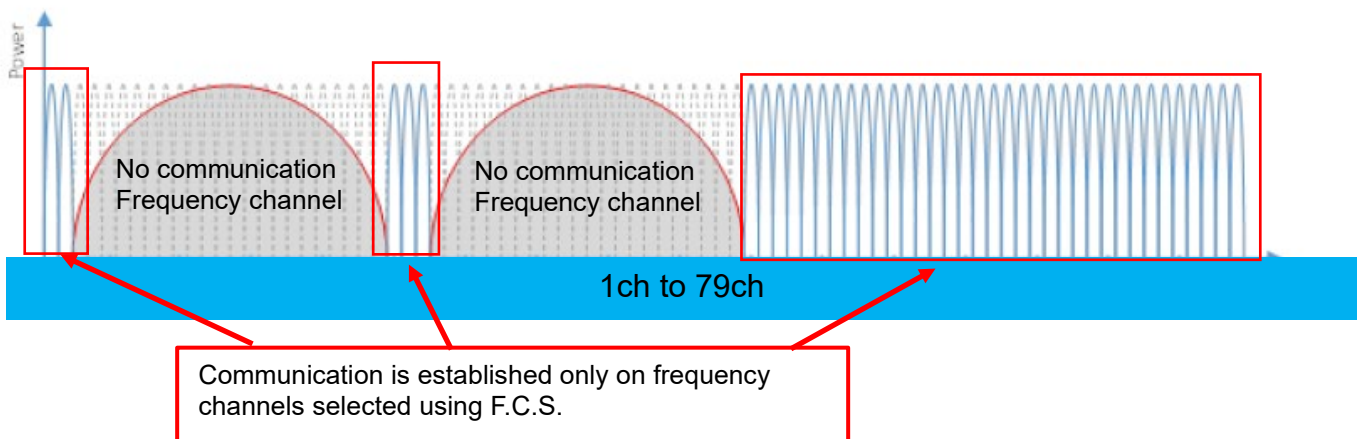
* If this function is changed, pairing must be set again.

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. 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.



- Radio output level setting function

This function reduces the radio output level to reduce the impact of SMC radio equipment on other radio equipment.

This setting is reflected in the base and in the remote of the paired wireless adapter connection.

Only the base and remote supporting the wireless adapter are valid for setting.

See the base system settings for details.

- Wireless communication timeout period

When wireless communication (including retries) is not successful due to obstacles or other factors, this function (setting) determines that communication has failed and disconnects and reconnects wireless communication after a set period of time.

Refer to the system configuration example below.
 For details, please refer to the instruction manual of each product.

System configuration example			Communication distance	Applicable function			
No.	Wireless Base	Wireless Remote		Protocol	F.C.S.	Radio output level setting	WEB
1	EXW1	EXW1+EXA1	Up to 100 m	V.2.0*1	○*2	○*2	○
	EXW1	EXW1	Up to 100 m	V.1.0/V.2.0*1	○*2	○*2	○
2	EXW1	EXW1+EX600	*3	V.1.0	×	×	○
3	EXW1	EX600	Up to 10 m	V.1.0	×	×	○
4	EX600	EXW1	Up to 10 m	V.1.0	×	×	○*4
5	EX600	EXW1+EX600	Up to 10 m	V.1.0	×	×	○*4
6*5	EX600	EX600	Up to 10 m	V.1.0	×	×	○

*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: EXW1-R has limited setting/monitoring capabilities.

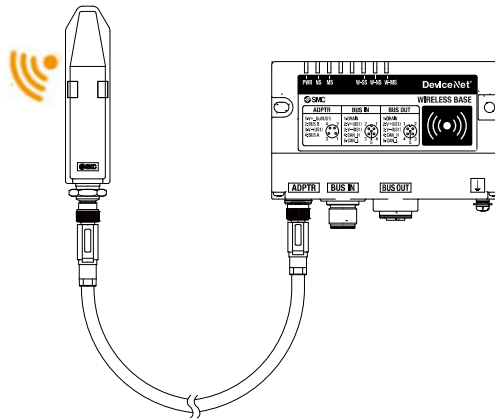
*5: This configuration consists solely of EX600-W series units; refer to the operation manual of the product in use for the further details.

○ System configuration example 1

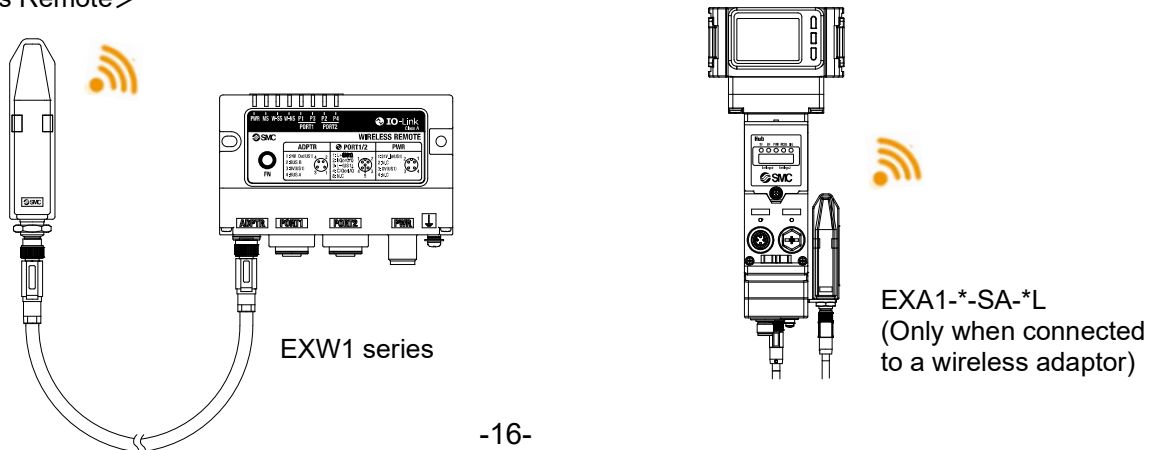
Wireless Base : EXW1-BDNAC

Wireless Remote: EXW1 series, EXA1 series (EXA1-*-SA-*L only)

<Wireless Base>



<Wireless Remote>

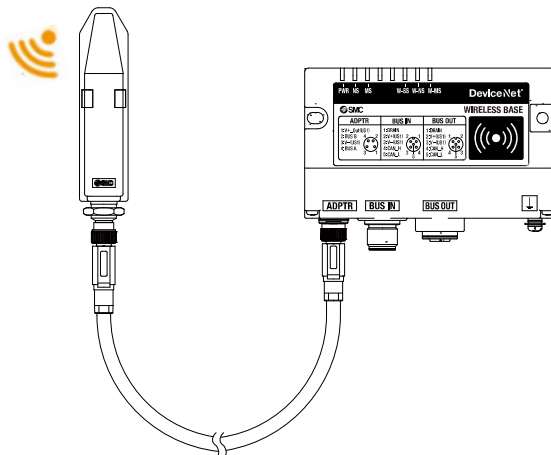


○System configuration 2

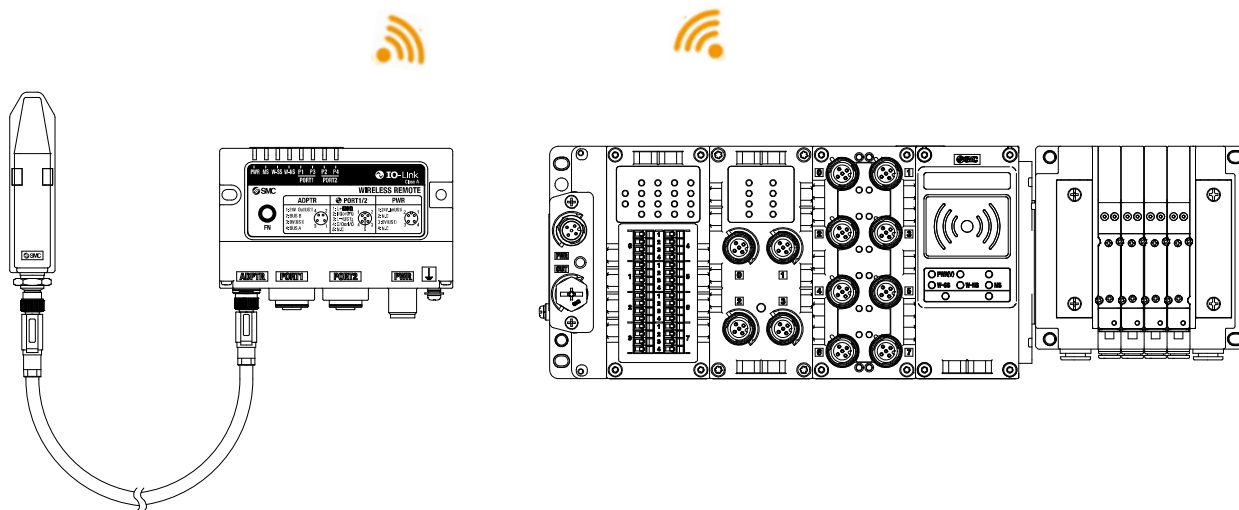
Wireless Base : EXW1-BDNAC

Wireless Remote: EXW1 series, EX600-W series

<Wireless Base>



<Wireless Remote>



EXW1 series

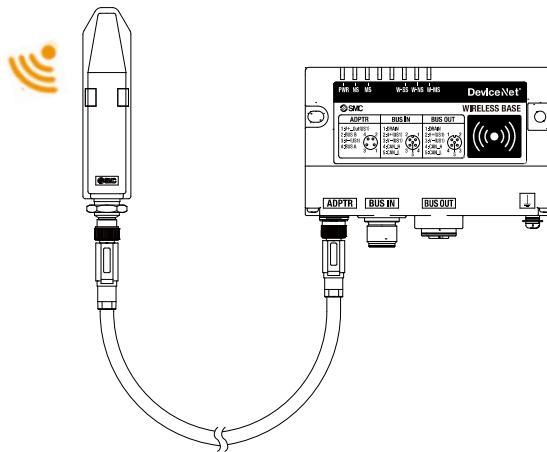
EX600-W series

○System configuration 3

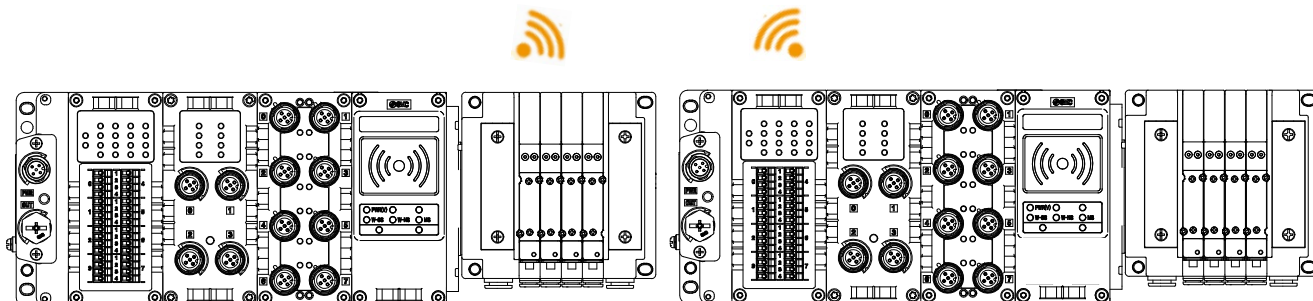
Wireless Base : EXW1-BDNAC

Wireless Remote: EX600-W Series

<Wireless Base>



<Wireless Remote>



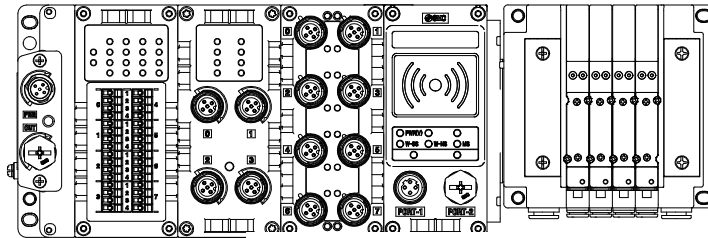
EX600-W Series

○System configuration 4

Wireless Base : EX600-W Series

Wireless Remote: EXW1 Series

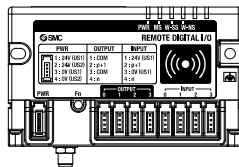
<Wireless Base>



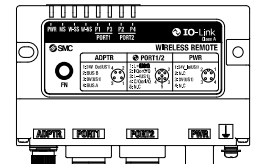
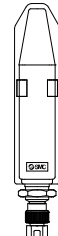
EX600-W series



<Wireless Remote>



EXW1-RD*



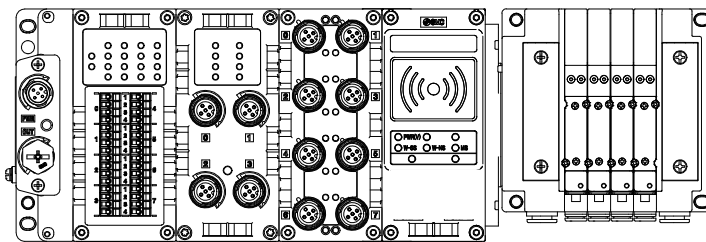
EXW1-RL*

○System configuration 5

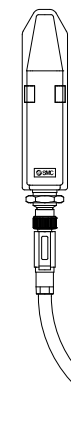
Wireless Base : EX600-W Series

Wireless Remote: EXW1 Series, EX600-W Series

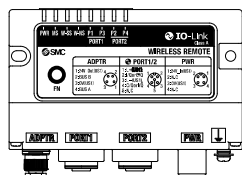
<Wireless Base>



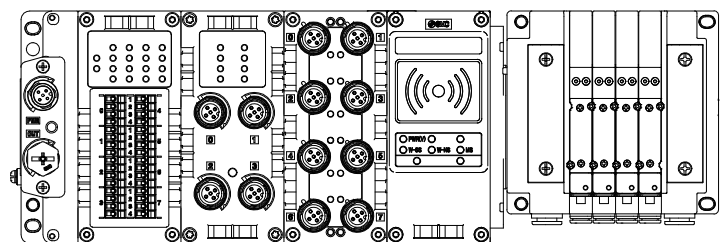
EX600-W Series



<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.

How to Order

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

<Compact wireless Base>

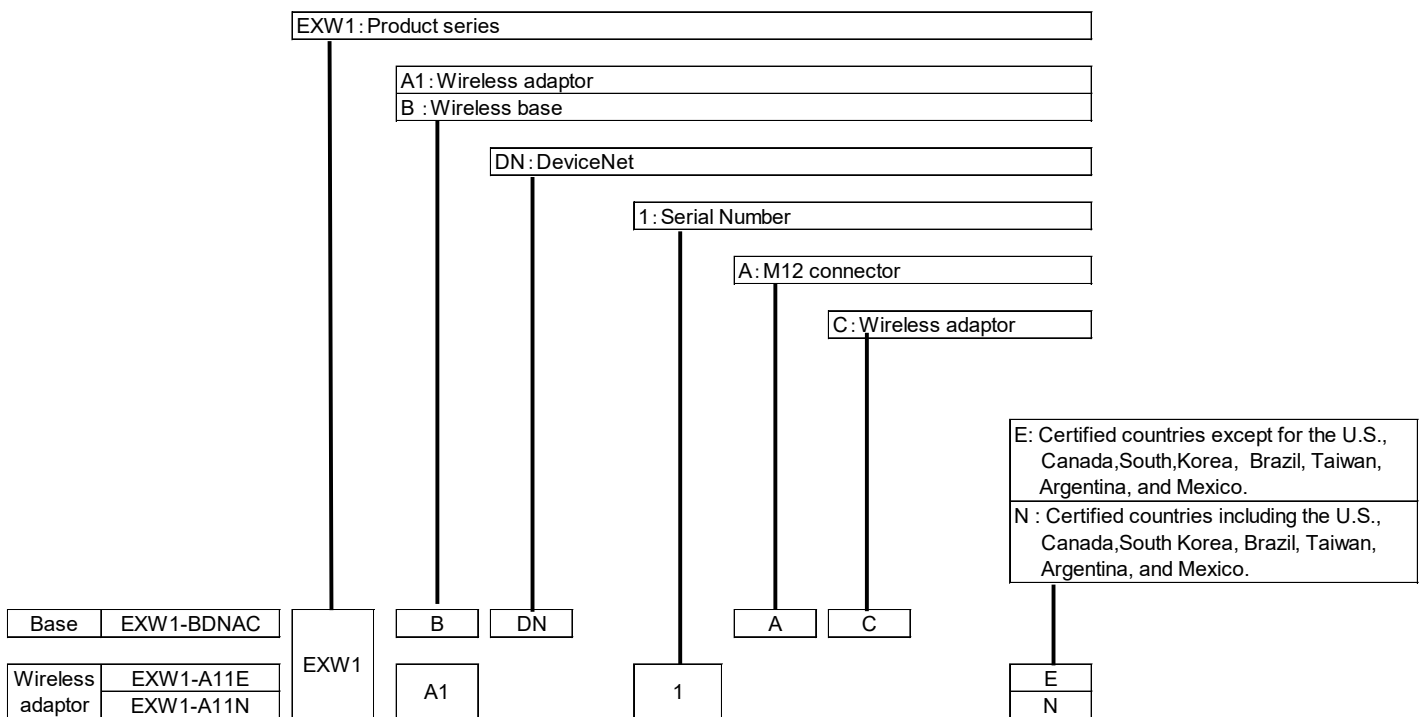
The lineup consists of one model, EXW1-BDNAC.

The compact wireless base is a wireless system base used in combination with a wireless adaptor that has wireless communication capabilities.

When using this product, it is necessary to order the wireless adaptor and wireless adaptor cable separately.

<Wireless Adaptor>

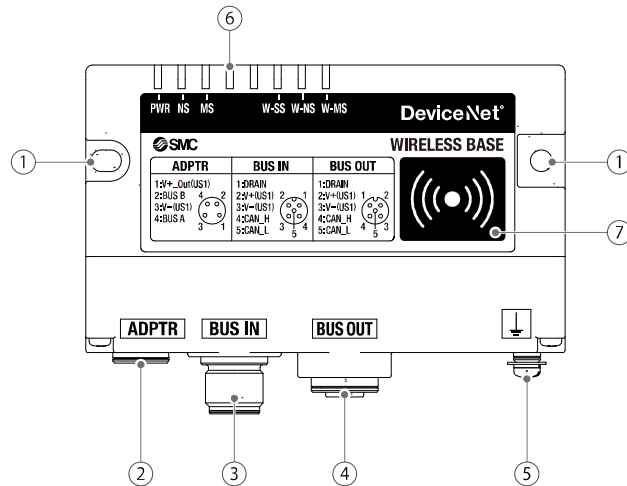
This product line-up consists of two models, namely EXW1-A11E and EXW1-A11N.



Summary of Product parts

EXW1-BDNAC

■ Appearance

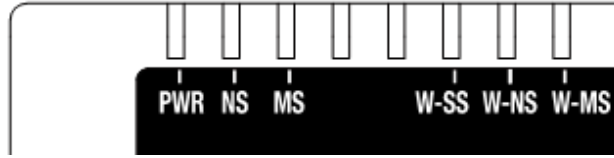


No.	Name	Application
1	Screw hole for mounting (2 x M4)	Mounting the compact wireless Base.
2	Connector for wireless adaptor (ADPTR)	Connect the cable for wireless adaptor.
3	BUS IN Connector	DeviceNet® connection.
4	BUS OUT Connector	DeviceNet® connection.
5	FE terminal	To be connected to Ground (for improved noise immunity).
6	LED	Indicates the status of the compact wireless Base or Remote.
7	NFC antenna approach area	This area is in close contact with the NFC reader / writer. "○" is the center of the NFC antenna.

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

■ LED

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



LED indicators of the compact wireless Base

LED name	Function	LED status		Description
		Colour of LED	ON/Flashing	
PWR	V+(US1) power supply status indication	Green	ON	V+(US1) power supply is ON
		-	OFF	V+(US1) power supply is OFF
NS	DeviceNet® connection status	Green	ON	Communication is normal
		Green	Flashing	Connection is not established
		Red	Flashing	Minor communication error • I/O connection timeout
		Red	ON	Fatal communication error. • MAC ID duplicate error • BUS OFF error
		-	OFF	• Checking for MAC ID duplication • V+(US1) power supply is OFF
MS	Base system status indication	Green	ON	Compact Wireless Base operating normally
		Green	Flashing	DeviceNet® communication is not connected
		Red	Flashing	Recoverable error is detected (LED flashes when more than one diagnostic information item is detected) ·V+(US1) power supply voltage level is abnormal ·Number of system inputs / outputs setting error ·Abnormal number of registered Remotes ·Internal communication error between wireless adaptors ·Memory read / write error
		Red	ON	Unrecoverable error is detected
		-	OFF	V+(US1) power supply is OFF
W-SS	Radio wave receiving intensity indication	Green	ON	The level of received radio wave power of all the connected Remotes is 3
		Green	Flashing (1 Hz)	The level of received radio wave power of some connected Remotes is 2
		Green	Flashing (2 Hz)	The level of received radio wave power of some connected Remotes is 1
		Red	Flashing	All the Remotes that support protocol V.1.0 are not connected
		Orange	Flashing	All the Remotes that support protocol V.2.0 are not connected
		-	OFF	Remote not registered

LED name	Function	LED status		Description
		Colour of LED	ON/Flashing	
W-NS	Wireless communication connection status indication	Green	ON	All the Remote connections are normal
		Green	Flashing	Some Remotes are not connected
		Red	Flashing	No Remotes are connected
		Red	ON	No Remotes are connected (Unrecoverable error in wireless communication)
		Red Green	Alternate Flashing	Wireless communication connection is being configured (Pairing)
		Orange	ON	Force output mode
		-	OFF	Remote not registered
W-NS	Remote system status indication	Green	ON	Wireless Remote is normal Protocol V.1.0 (Pairing)
		Orange	ON	Protocol V.2.0 (Pairing)
		Red	Flashing	Recoverable error is detected. (LED flashes when more than one diagnostic information item is detected.) <ul style="list-style-type: none"> •US1 (for control / input) power supply voltage level is abnormal •US2 (for output) power supply voltage level is abnormal •Excessive I/O setting inputs/outputs •Analog I/O upper setting limit exceeded •Analog input range upper and lower limits exceeded •Error in communication between units •EX600 I/O unit detects diagnostic information •Valve diagnostic information detected
		Red	ON	Unrecoverable error is detected.
		-	OFF	Remote not registered

■ Connectors

- Connector pin numbers and circuit diagram

DeviceNet® connector (BUS IN / BUS OUT)

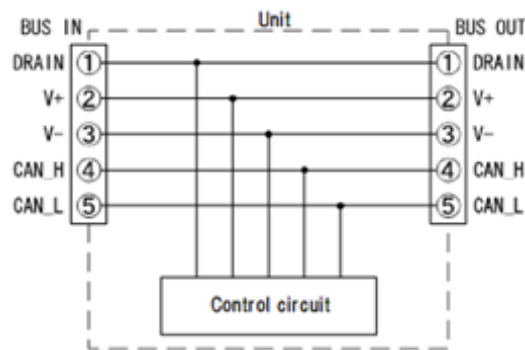
No.	Signal	BUS IN	BUS OUT
		M12, 5-pin, plug, A-coded	M12, 5-pin, socket, A-coded
1	DRAIN		
2	V+(US1)		
3	V-(US1)		
4	CAN_H		
5	CAN_L		

*1 : A BUS OUT connector is available for this unit.

The BUS OUT connector enables cross-wiring, but the DeviceNet® specification recommends the use of DeviceNet® taps.(Connect using the BUS IN connector only)

- Circuit diagram

The product is T-branched inside the unit as shown in the circuit diagram below.



- Connector for wireless adaptor*1

No.	Signal	Description	M8, 4-pin, socket, A-coded
1	V+_Out(US1)	V+(US1) : Output*2	
2	Internal BUS B	For wireless adaptor communication	
3	V-(US1)	V-(US1)	
4	Internal BUS A	For wireless adaptor communication	

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

*2 : Do not input power.

● Handling instructions

- Always attach waterproof caps to unused connectors.
By properly using this waterproof cap, the protective structure IP67 can be achieved
- Always connect a terminator to both ends of the DeviceNet® trunk line.

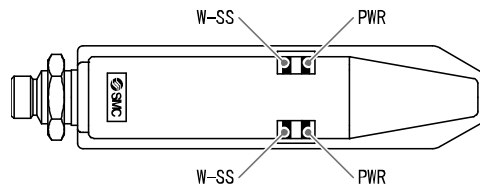
EXW1-A11* (Option)

■ 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



LED name	Function	LED status		Description
		Colour 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 strength of all the connected Remotes is 3
		Green	Flashing (1 Hz)	The level of received radio wave strength of some connected Remotes is 2
		Green	Flashing (2 Hz)	The level of received radio wave strength of some connected Remotes is 1
		Red	Flashing	Protocol V.1.0 all remote is not established
		Orange	Flashing	Protocol V.2.0 all remote is not established
		-	OFF	Remote not registered

■ Connector

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

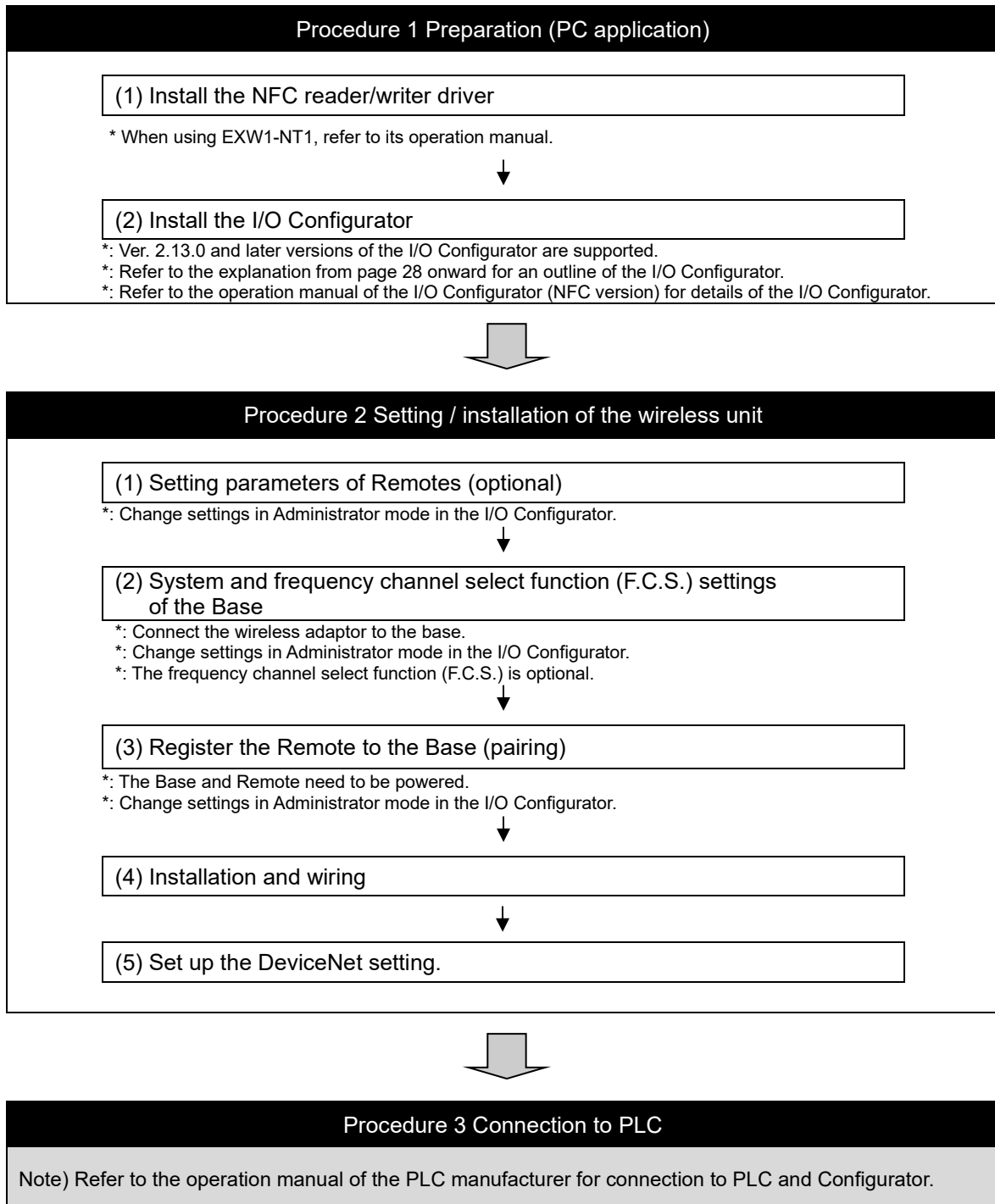
*Use the wireless adaptor cable specified to connect to the wireless adaptor. (Refer to page135)

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. A setup procedure using NFC is shown below.
Refer to the operation manual for each manufacturer for how to set the controller and the PLC.



I/O Configurator (NFC version)

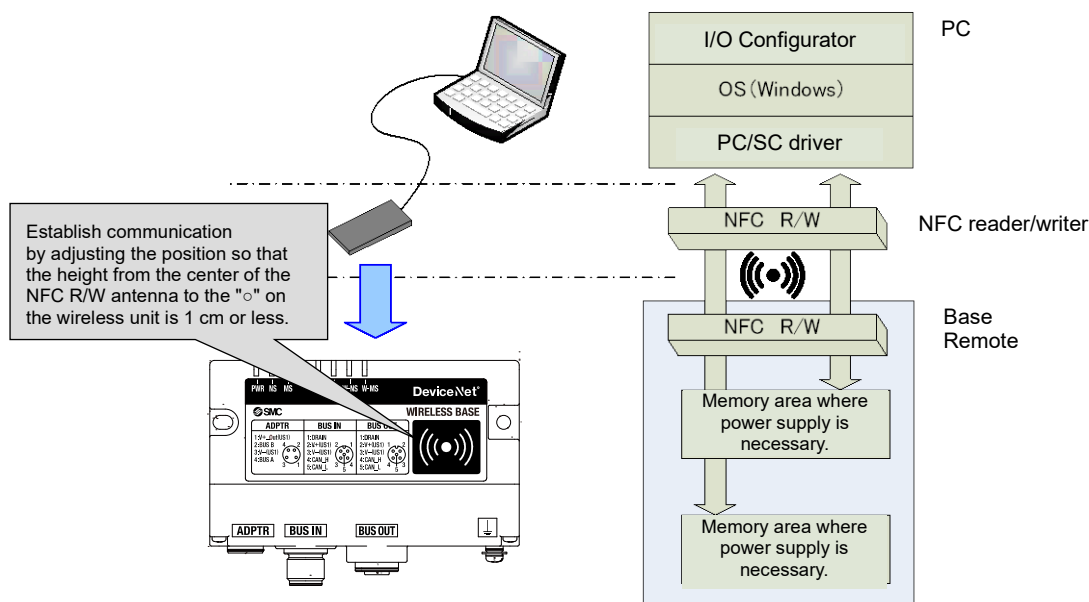
EXW1 series supports Ver. 2.13.0 and later versions of the I/O Configurator. In order to use the I/O Configurator (NFC version) it is necessary to install a driver etc. in advance and set the NFC reader/writer on the computer.

This section describes the installation, screen layouts and operations of the I/O Configurator (NFC version). The I/O Configurator (NFC version) can be used to check the parameter setting of the wireless unit and the contents and status of the constructed wireless system, using an NFC reader/writer and a PC. Refer to the operation manual for the I/O Configurator (NFC version) for details of the I/O Configurator (NFC version).

■ SMC Wireless Communication System I/O Configurator (NFC version)

The I/O Configurator (NFC version) can be used to check the parameter setting of the wireless unit and the contents and status of the constructed wireless system, using an NFC reader/writer and a PC. There are two types of settable parameters which can be read or written **when no power is supplied to the product** and the parameters which can be read or written **only when power is supplied to the product**.

The figure below shows the image of connected I/O Configurator (NFC version) and wireless unit.



Connected I/O Configurator (NFC version) and wireless unit.



•Communication timing

The NFC communication is not accessed all the time. Therefore, **it is necessary to update the contents displayed on the screen by clicking the "Refresh button" when reading the parameters.**

The changed parameters are enabled after the product is powered on or by pressing the reset button on the I/O Configurator screen. As the parameter setting requires time for settlement, do not turn off the power supply for two seconds.

•To change the unit to be set

As the settings between the Base and Remote are different, it is necessary to update the displayed parameter by clicking the "Refresh button" on the screen of the I/O Configurator after changing the unit in which the parameters are to be set.

Preparation

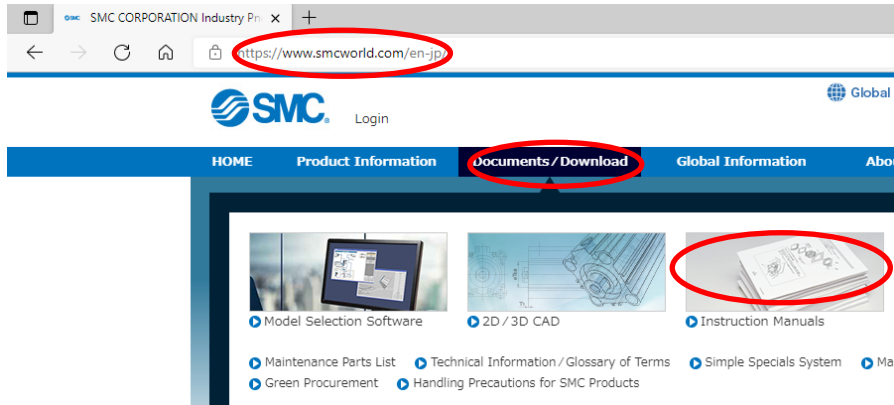
Installation of the software

Driver: The following drivers should be installed before using this software.

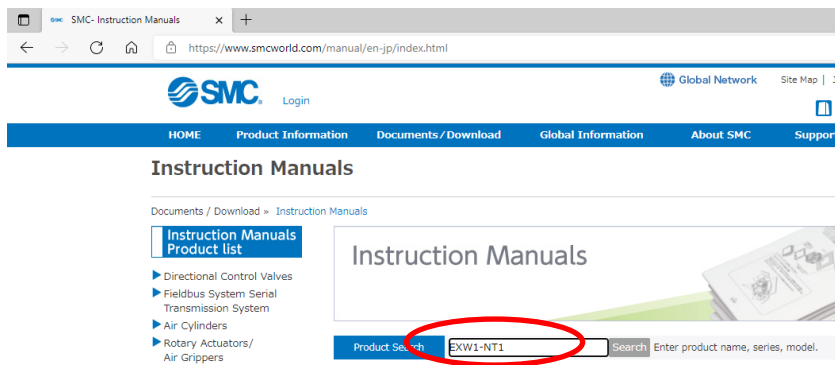
•When EXW1-NT1 (NFC reader/writer) is used

Obtain the driver software for the NFC reader/writer from the SMC website (<https://www.smcworld.com>).

On the SMC website, select [Documents/Download] and click [Instruction Manuals].



On the product search form of [Instruction Manuals], type "EXW1-NT1" to search.



When the NFC reader / writer is held over the product, an error message may appear, such as "Device driver software was not successfully installed" or "Smart card was not identified" depending on the version of Windows OS. The reader / writer can be continuously used.

Refer to the Microsoft website (<https://support.microsoft.com/kb/976832/>).

Before starting the software

<When EXW1-NT1 is used>

Follow the steps below to install the driver software. Refer to the operation manual of EXW1-NT1 for details.

●Installation of the driver software

When the PC is connected to the Internet, the driver software is automatically installed.

Install the driver software again following the steps below.

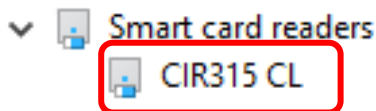
The Windows OS starts installation of the driver by connecting the EXW1-NT1 to the USB port of the PC.

(1) Windows 8.1 / 10 displays the identified devices in the task bar at the bottom of the screen.

The icon in the red circle automatically disappears when the installation of the driver software is complete.



(2) The display below appears in the Device Manager while the EXW1-NT1 is connected to the PC and is operating correctly.



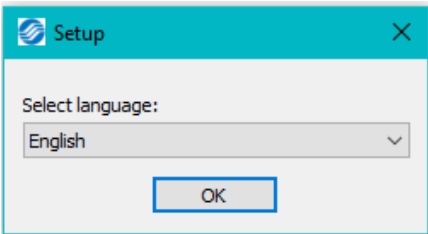
[Display of the Device Manager is incorrect]

When an exclamation mark (!) is attached to the CIR315 CL is displayed in “other device in the Device Manager”, follow the steps below.

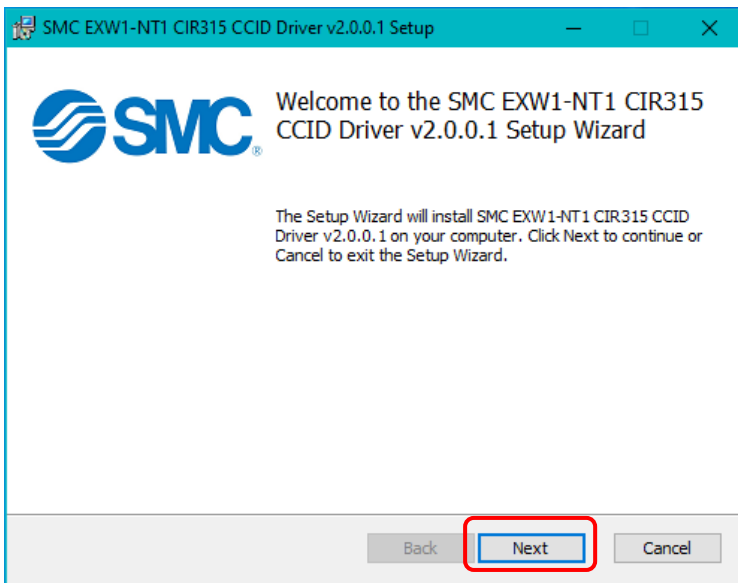
- Right-click on the CIR315 CL, and then left-click on “driver update”.
 - When the screen “start hardware update wizard ” appears, select “yes, connect only this time”, and then click “Next”.
- (3) Click “automatic search for the latest driver software” for “how to search the driver software?”.
- (4) When the installation does not complete successfully, take the following steps.

●Installation does not start automatically.

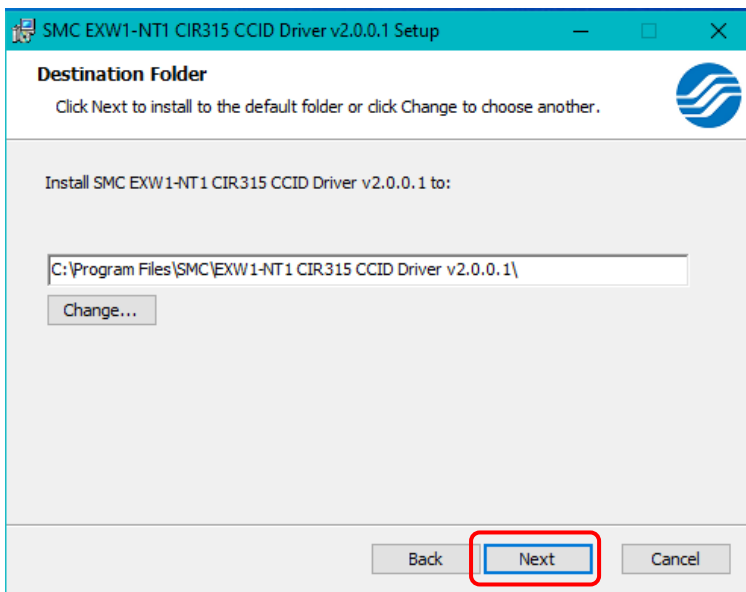
- (1) Download the driver software and manual referring to “Downloading of the driver software”.
- (2) Select language and press the “OK” button.



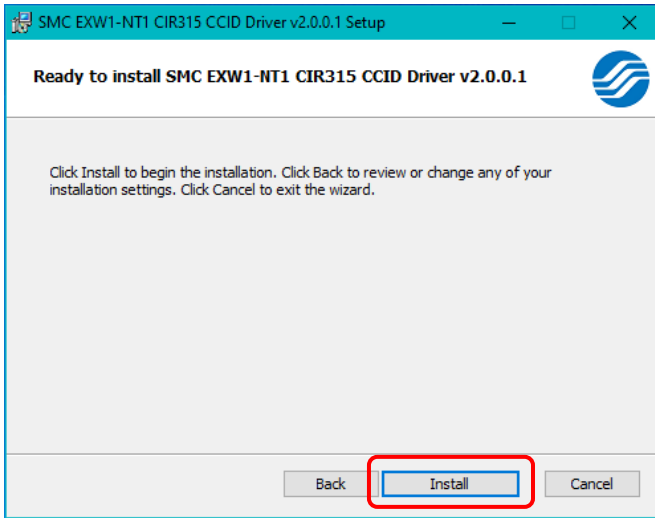
(3) Screen below appears. Press the “Next (N)” button.



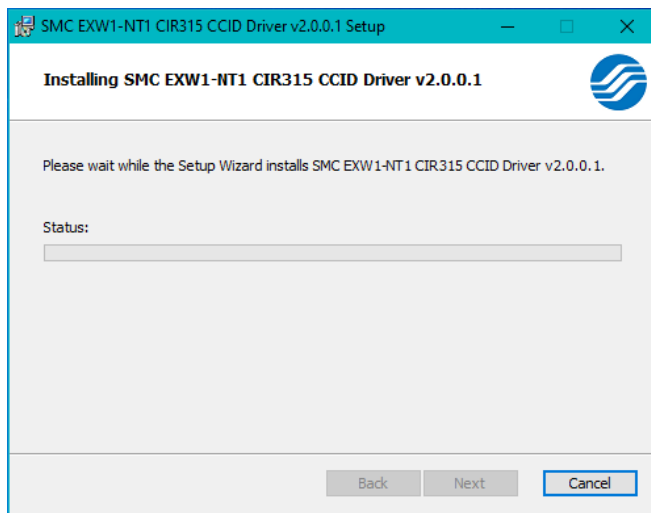
(4) Screen below appears. Press the “Next (N)” button.



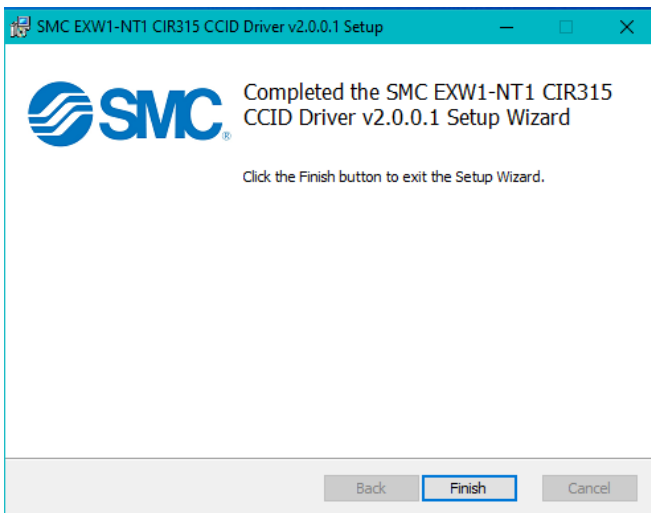
(5) Screen below appears. Press the “Install (I)” button.



(6) The screen below appears and installation starts. Please wait.



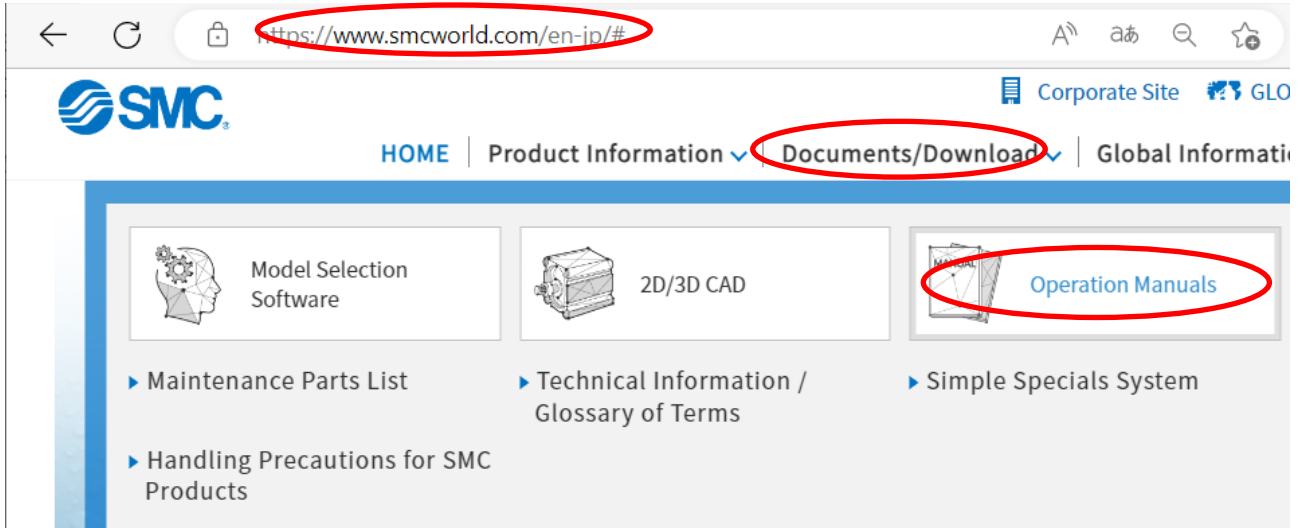
(7) The screen below appears when the installation is complete. Press the 「Finish (F)」 button.



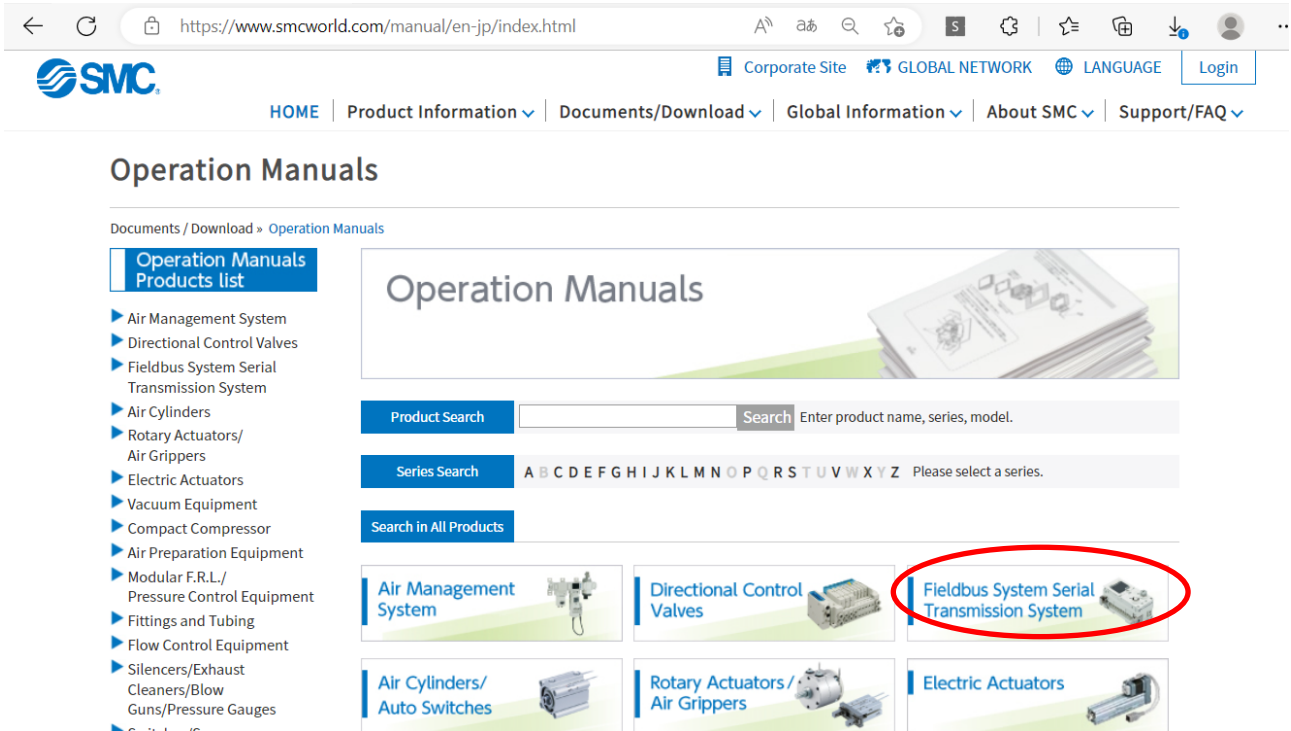
* When the screen requires restarting of the PC, restart the PC.

Download the I/O Configurator (NFC version)

(1) On the SMC website (<https://www.smcworld.com>), select [Documents/Download] and click [Instruction Manuals].



(2) Select [Fieldbus System Serial Transmission System].



(3) Select the protocol that the product supports. (Example: "DeivceNet compatible" product)

Operation Manuals

Documents / Download > Operation Manuals

- Operation Manuals Products list
- Air Management System
- Directional Control Valves
- Fieldbus System Serial Transmission System
- CompoNet™ Compatible**
- DeviceNet™ Compatible
- PROFIBUS-DP Compatible
- CC-Link Compatible
- CC-Link IE Compatible
- CANopen Compatible
- EtherNet/IP™ Compatible
- EtherCAT Compatible
- PROFINET Compatible
- AS-Interface (AS-i) Compatible

Product Search Search Enter product name, series, model.

Series Search A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Please select a series.

Fieldbus System Serial Transmission System

CompoNet™ Compatible

Product name	Series/Model	Download	Replacement Procedure	Note
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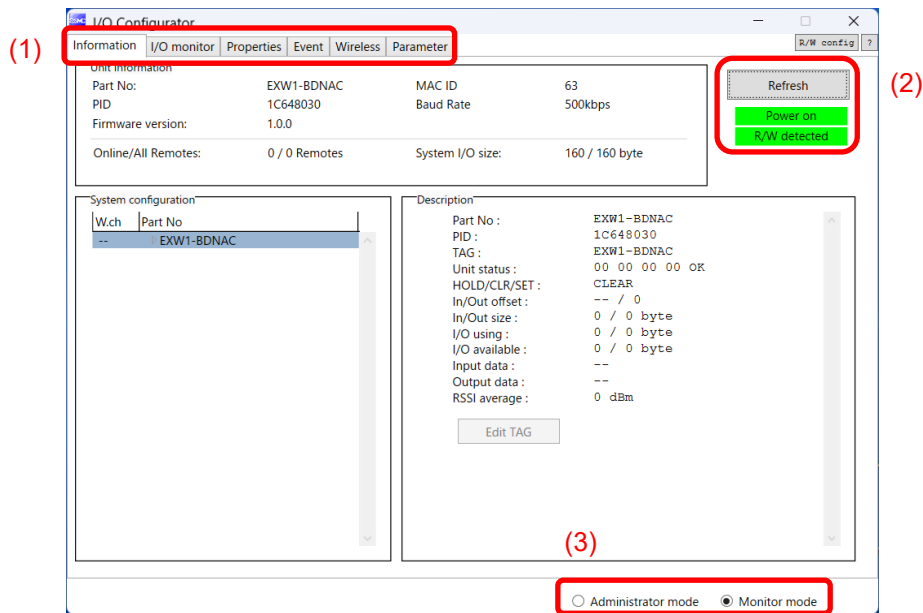
(4) Scroll down the page of the Fieldbus System Serial Transmission System and click the Configuration File of I/O Configurator for NFC. Downloading will begin.

Start the I/O Configurator (NFC version)

Name	Date modified	Type	Size
ini	10/19/2021 8:05 PM	File folder	
IOConfigurator.exe	10/1/2021 8:39 AM	Application	1,216 KB
Sna.NoWire.dll	10/1/2021 8:39 AM	Application exten...	27 KB

Open the downloaded file and double click the IOConfigurator.exe to start the I/O Configurator for NFC. To move IOConfigurator.exe to the desktop or another location, move the folder of the configurator, or create a shortcut of IOConfigurator.exe and invoke and use the program through it.

Screen Layouts of the I/O Configurator (NFC Version)



(1) Function selecting tab

I/O Configurator (NFC version) consists of three function selecting tabs.

[Information]

- Module information: Displays information on the wireless unit
- System configuration: Displays the configuration information of the Base and Remotes (connected units)
Only the system configuration of the Base is shown in tree format.
- Detailed information: Shows detailed information about the unit selected in the system configuration.

[I/O monitor]

- Input tab shows the input map information of the wireless unit.
- Output tab shows the output map information of the wireless unit.

[Properties]

- Set item: Set the parameters required to operate the Base/ Remote.

[Events]

- Displays radio-based or remote event information (e.g., error information)

[Wireless]

- Displays and saves radio log data.

[parameter]

- Set parameters for wireless remotes connected (paired) to the wireless base.

(2) Refresh, status indicators, NFC reader/writer configuration

Use these components to refresh the display of the configurator, display the power status of the module, check the connection status of the NFC reader/writer and configure the NFC reader/writer.

[Refresh]

- Clicking the refresh button while holding the NFC reader/writer to the NFC antenna approach area causes updates set in the wireless unit to be loaded. To load updates, click [Refresh].

Power status indication

- "Power supply ON" is displayed when power is supplied to the Base/Remote, and "Power supply OFF" is displayed when power is not supplied.

Connection status of the NFC reader/writer

- When the PC detects the NFC reader/writer connected to its USB port, "R/W detected" is displayed. Otherwise, "R/W not-detected" or "No driver" is displayed.

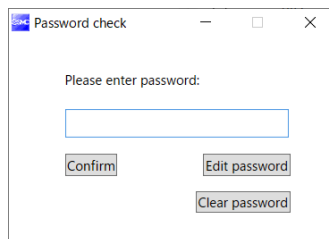
(3) Mode switching button

"I/O Configurator (NFC version)" has Administrator mode and Monitor mode.
To change parameters, operate the configurator in Administrator mode.

Administrator mode: available to change the parameters

Monitor mode: available to only read the parameters (for confirmation)

To enter Administrator mode, type a password while holding the NFC reader/writer near the NFC antenna approach area and click [Confirm].



Default password: admin

Any password can be set for supervisor mode. To prevent unauthorized use, it is advisable to change the default password when you first use the I/O Configurator.



- This password is not a password for the I/O Configurator (NFC version), but a password to access each unit. As such, be sure to perform a password authentication operation with an NFC reader/writer held near the NFC antenna approach area.

•Troubleshooting

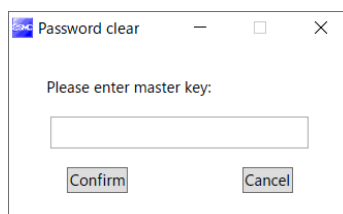
Read error: Confirm that the NFC reader/writer is connected to the PC.

Confirm that the NFC reader/writer is held near the NFC antenna approach area.

When frozen: Remove the NFC reader/writer from the PC and connect it again.

After taking the actions above, click Refresh.

If the password is forgotten, clear the password. The password will be cleared when the master factory key is entered in the [Password clear] dialog box that appears by clicking [Clear password]. Then it is possible to enter administrator mode without inputting the password.]



Master key: ADMIN

Setting up

To change settings, switch to Administrator mode to operate the configurator.

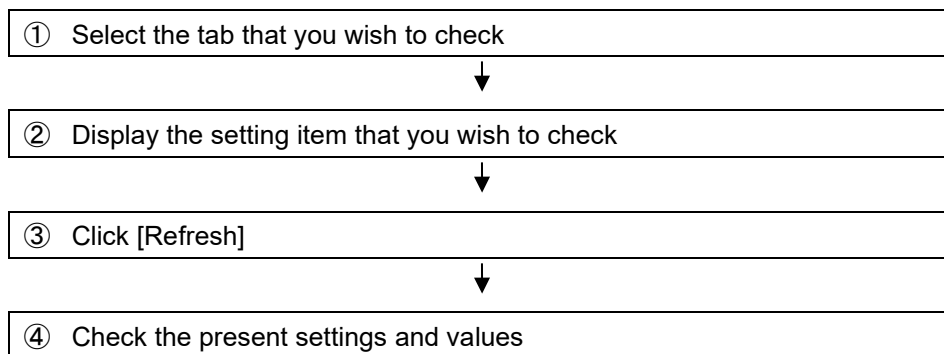
In Administrator mode, a timeout occurs after 300 seconds of inactivity and the application returns to Monitor mode.

In Administrator mode, a timeout countdown is displayed to the right of the "Administrator mode" label.



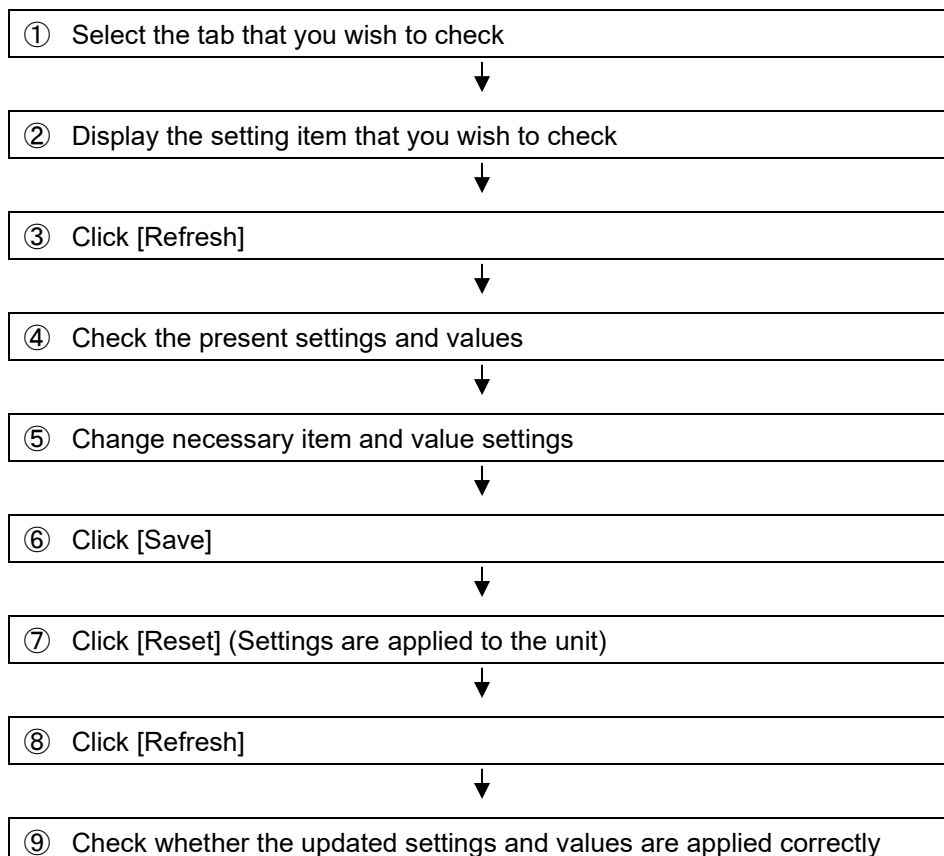
Operational flow during monitoring

A rough operational flow during monitoring is shown below (operations in Monitor mode).



Operational flow when changing settings

A rough operational flow during setting changing operations is shown below (operations performed in Administrator mode).



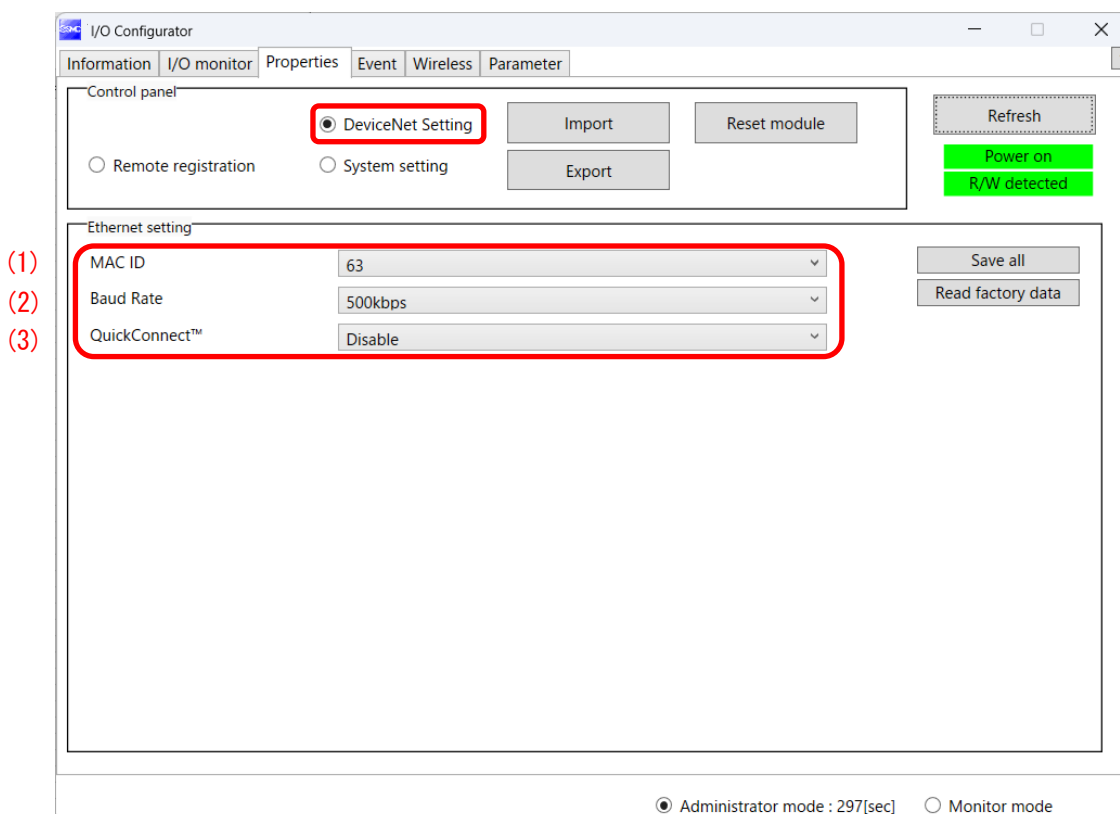
Setting/Adjustment of the Wireless Unit

Parameter settings of the Base

Change the settings of each parameter as necessary.

DeviceNet setting

Change the settings of each parameter as necessary.



DeviceNet Configuration Parameters

Classification	Parameter name	Set value	Default	Note
DeviceNet setting	(1) MAC ID	0 to 63、 PGM	63	
	(2) Baud Rate	125/250/500kbps、 Auto、 PGM	500kbps	
	(3) QuickConnect™	Enable/Disable	Disable	

(1) MAC ID

Set MAC ID

Setting range: 0 to 63/PGM

Note: MAC ID is set via the DeviceNet® communication in PGM mode.

This value is stored in the memory even though the power supply is turned off.

(2) Baud Rate

Set Baud Rate

Setting range: 125 kbps/250 kbps/500 kbps/Auto/ PGM

Note: In case of the AUTO mode, the Baud Rate is set automatically when the DeviceNet® connection with PLC is established.

Baud Rate is set via the DeviceNet® communication in PGM mode.

This value is stored in the memory even though the power supply is turned off.

(3) QuickConnect™.

Set QuickConnect™

Setting range: Enable : QuickConnect™ is enabled regardless of the setting by the software.

Disable : QuickConnect™ is depending on the software setting.

oHow to set the parameters via DeviceNet communication

It is possible to set the parameters which are MAC ID, Baud Rate and QuickConnect in accordance with the following procedure.

• MAC ID and Baud Rate

1) Set the parameter value for MAC ID or Baud Rate to “PGM” in the DeviceNet settings tab by the IO Configurator.

2) Change the following instance attributes values via the DevcieNet® communication.

Class	Instance	Attributes	Title	Value
03h DeviceNet®	01h	01h	MAC ID (node address)	0 to 63
	01h	02h	Baud Rate (communication speed)	0 : 125kbps 1 : 250kbps 2 : 500kbps



- When the MAC ID and/or Baud Rate setting is changed to PGM mode, the system operates previous setting values until each value is modified via the DeviceNet communication.
- Setting change for MAC ID changes via DeviceNet® communication is reflected immediately.
- Setting change for Baud Rate via DeviceNet® communication is reflected after the Reset which is send the RESET command or the power supply is turned off and on.

• QuickConnect™ Configuration.

1) Set the parameter value for QuickConnect™ to “PGM” in the DeviceNet settings tab by the IO Configurator.

2) Change the following instance attributes values via the DevcieNet® communication.

Class	Instance	Attributes	Title	Value
03h DeviceNet®	01h	0Ah	QuickConnect™	0 : Disable 1 : Enable

System setting

Change the settings of each parameter as necessary.

The screenshot shows the 'I/O Configurator' window with the 'System setting' tab selected. The 'System setting' radio button is circled in red. A red box highlights the dropdown menus for I/O mapping, System input size, System output size, Diagnostic allocation, Max. Remote units, Time of Wireless Communication Timeout, Power Transmission Level, Wireless signal, and Protocol. A 'Synchronize time' button is also circled in red and labeled (11). The interface includes buttons for 'Import', 'Export', 'Reset module', 'Refresh', 'Power on', 'R/W detected', 'Save all', 'Read factory data', and 'Product initialization'. The status bar at the bottom indicates 'Administrator mode : 299[sec]' and 'Monitor mode'.

System setting parameters

Classification	Parameter	Set value	Initial value	Note
System Setting	(1) I/O mapping	Fixed/Auto	Fixed	
	(2) System input size	16 to 4096points (2bytes to 512bytes)	1280 points 160 bytes	System input size for fixed
	(3) System output size	16 to 4096 points (2bytes to 512bytes)	1280 points 160 bytes	System output size for fixed
	(4) Diagnostic allocation	None/Simple/ Advanced	Advanced	
	(5) Max. Remote units	15/31 Remotes	15 Remotes	
	(6) Time of Wireless communication timeout	100/200/500/1,000 msec /2,000/5,000 msec	500 msec	Activated only when protocol V.2.0 is used
	(7) Power Transmission Level	High/Middle/Low	High	Activated only when protocol V.2.0 is used
	(8) Wireless signal	Active/Idle	Active	
	(9) Protocol	V.1.0/V.2.0	V.2.0	
	(10) Time Information	-	-	Activated only when protocol V.2.0 is used
	(11) Synchronize time	-	-	



•The protocol version is set to V.2.0 by default; to use EX600-W series Remote devices, change the protocol version to V.1.0 before pairing them.

1) I/O mapping

Define the I/O mapping of the entire wireless system including the remote registered to the base.

Auto mapping : All I/O points mapped to the base and remote are identified and mapped automatically.
(The total number of connected I/O points is the total number of I/O points connected to the diagnostic information, base and remote.)

Fixed mapping: Fixed at the number of I/O points set in the System input size and System output size.

2) System input size

Set the number of inputs which can be controlled by the entire wireless system.

Setting range: 16 to 4096 points (2 to 512 bytes).

3) System output size

Set the number of outputs which can be controlled by the entire wireless system.

Setting range: 16 to 4096 points (2 to 512 bytes)

4) Diagnostic allocation

Set the diagnostic information allocated to the I/O map. (Refer to the section "Diagnostic allocation" for details.)

None : No diagnostic data

Simple : System diagnosis

Advanced : System diagnosis + Remote connection/diagnosis/registration information

5) Max remote

Set the number of remote which are registered to the base.

Wireless channels for the number of the set units are valid.

Setting range: 15/31 Remotes

6) Time of Wireless communication timeout

Only available in protocol V.2.0. (EXW1 series wireless adapter compatible models only)

If wireless communication (including retries) does not succeed due to obstacles or for other reasons, it is judged to have failed after a set amount of time and disconnected. Then, the Base and the Remote are reconnected.

Setting range: 100/200/500/1,000/2,000/5,000 msec

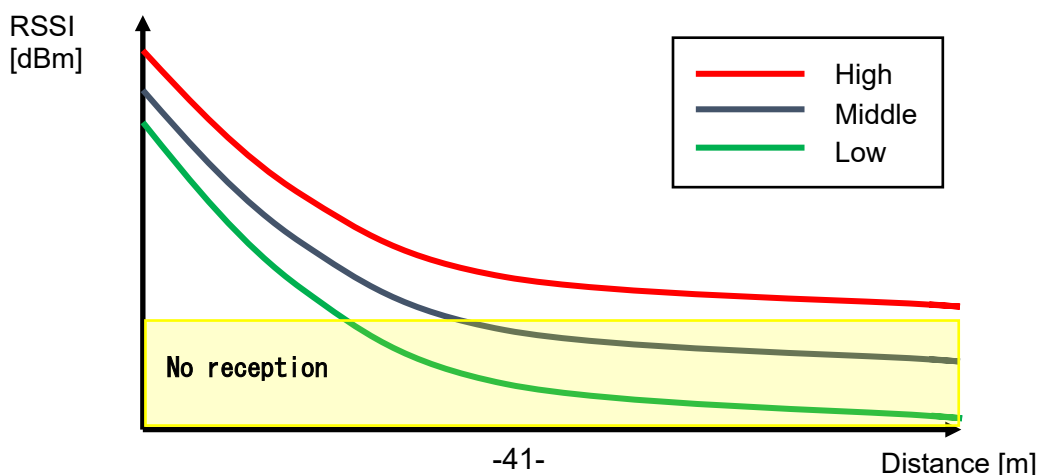
7) Power Transmission Level

Only available in protocol V.2.0. (EXW1 series wireless adapter compatible models only)

It is possible to decrease interference with other wireless products by reducing the output power level. This setting is made in the base and will be applied to any paired Remotes with wireless adaptor via wireless communication.

Setting range: High/Middle/Low (Power Transmission: High > Middle > Low)

Lowering the setting by one step reduces the maximum communication distance by approximately one-fourth. However, it varies depending on the communication environment.



8) Wireless communication

Sets the operation status of wireless communication.

Active: Wireless communication output is active

Idle : Wireless communication output is idle

9) Protocol

Sets the wireless communication protocol.

* To pair with an EX600-W series unit, V.1.0 must be set.

This also applies when building a wireless system consisting of both EXW1 and EX600-W series.

•V.1.0: The same wireless communication method as EX600-W is used.

The communication speed is 250 kbps.

•V.2.0: This can be applied to a wireless system consisting solely of EXW1 series units.

The communication speed is 1 Mbps.

See the table of combinations provided below.

Combination*4		Communication distance	Applicable function			
Wireless Base	Wireless Remote		Protocol	F.C.S.	Radio output level setting	WEB
EXW1	EXW1+EXA1	Up to 100 m	V.2.0*1	○*1	○*1	×
EXW1	EXW1	Up to 100 m	V.1.0/V.2.0*1	○*1	○*1	×
EXW1	EXW1+EX600	*2	V.1.0	×	×	×
EXW1	EX600	Up to 10 m	V.1.0	×	×	×
EX600	EXW1	Up to 10 m	V.1.0	×	×	○*3
EX600	EXW1+EX600	Up to 10 m	V.1.0	×	×	○*3
EX600	EX600	Up to 10 m	V.1.0	×	×	○

*1: Only available in protocol V.2.0.

*2: 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.

3: The settings and monitor function are restricted when EXW1-R are used.

*4: For combinations involving EX600-W series, refer to the operation manual for the product in use.



•The protocol can be changed only when no Remote is registered in the Base.

Make changes only after unregistering any registered Remotes.

Note that an unregistration pop-up window will appear in the I/O Configurator.

10) Time Information

The time information is the time that the product recognizes. It is used for a timestamping event and other logs.

11) Synchronize time

The time information of the PC is sent to the product and is synchronized. If the time information of the PC is required for timestamping event and other logs, perform time synchronization.

Events

This makes it possible to check the event information of the wireless Base or wireless Remotes. The list is sorted from newest to oldest.

Information | I/O monitor | Properties | **Event** | Wireless

(1) REMOTE Ch1 (2) CLEAR (3) EXPORT Refresh

Power on
R/W detected

TAG : EXW1-RDYNE4AE

(4) Timestamp	(5) Unit	(6) Channel	(7) Error Code
10/18/2021 4:15:47 PM	0	0	17
10/18/2021 4:15:47 PM	0	0	16
0days 00:00:30	0	0	17
0days 00:00:30	0	0	16
0days 00:00:00	0	0	17

Administrator mode Monitor mode

• Event Tab

No.	Item	Content
(1)	Model selection	Select the wireless Base or a Remote registered in the wireless Base.
(2)	Clear Event Data	Clear the event data from the selected unit in "Model selection".
(3)	Event data export	Event data can be exported to text files.
(4)	Time stamp	The time when the event was obtained is displayed. Time-synchronized time is displayed only in the case of protocol V.2.0. *Time synchronization needs to be performed by System setting tab. If time is not synchronized, the time elapsed since the product is turned on is displayed.
(5)	Unit	The unit No. is displayed.
(6)	Channel	The channel No. of the wireless Remote is displayed.
(7)	Error Code	The error code is displayed.

● Error Code

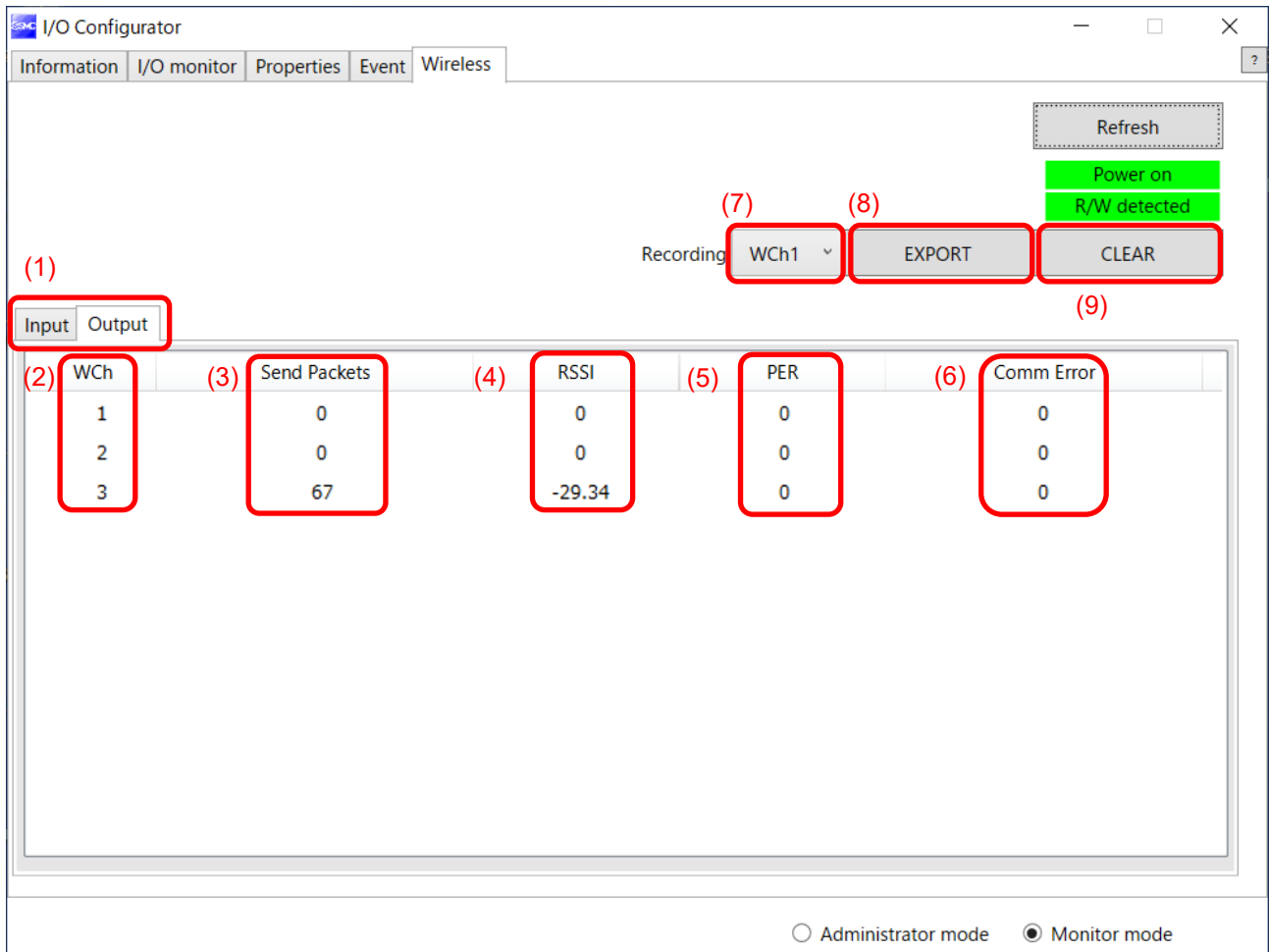
The error code is displayed.

The table below shows error codes and corresponding details and diagnostics maps.

Error Code	Description	Diagnostics map		
		Item	Bit No.	
1	Detection of a short circuit of US1 or US2	System diagnostic 1	6 or 7	
2	Detection of the range lower limit		2	
3	Detection of the range upper limit		3	
6	Detection of unconnected load		5	
7	User setting upper limit detection		1	
8	User setting lower level detection		0	
9	Detection of the upper limit of the ON/OFF cycles		4	
16	Detection of US1 power supply voltage drop		System diagnosis 2	1
17	Detection of US2 power supply voltage drop			0
19	Connection failure between units (during operation)	3		
20	Connection failure between units (when power is supplied)	4		
22	Detection of system error (when power is supplied)	6		
23	Detection of hardware error (during operation)	7		
64	Abnormal number of input / output points setting error	System diagnosis 3	0	
67	Wireless adaptor internal connection error		3	
70	Detection of system error		6	
71	Detection of hardware error		7	
72	Number of system input / output points setting error	System diagnosis 4	0	
73	Number of registered Remotes setting error (Outside of the wireless channel setting range)		1	
78	Wireless registration data corrupted		6	
79	Detection of wireless hardware error		7	
80	IO-Link Device Error	None	None	
81	IO-Link Device Warning	None	None	
82	IO-Link Master port Error	None	None	
83	IO-Link Master port Warning	None	None	

Wireless

This screen displays wireless log data.








• Wireless Tab

No.	Item	Content
(1)	Input/ Output Tabs	Wireless-Based received data is displayed on the Input tab, and transmission data is displayed on the Output tab.
(2)	WCh	The wireless channel is displayed.
(3)	Send Packets (or Received Packets on the Input tab)	The number of transmitted/received packets is displayed.
(4)	RSSI (Received Signal Strength Indicator)	The radio wave receiving intensity is displayed.
(5)	PER (Packets Error Rate)	The packet error rate is displayed.
(6)	Comm Error (Communication Error)	The number of communication disconnections is displayed.
(7)	Selection of wireless channel	Select the wireless channel to obtain wireless log data.
(8)	Export of wireless log data	The wireless log data of the selected wireless channel is exported. Wireless log data is divided into four csv files.
(9)	Clear wireless log	Clear all wireless log data.

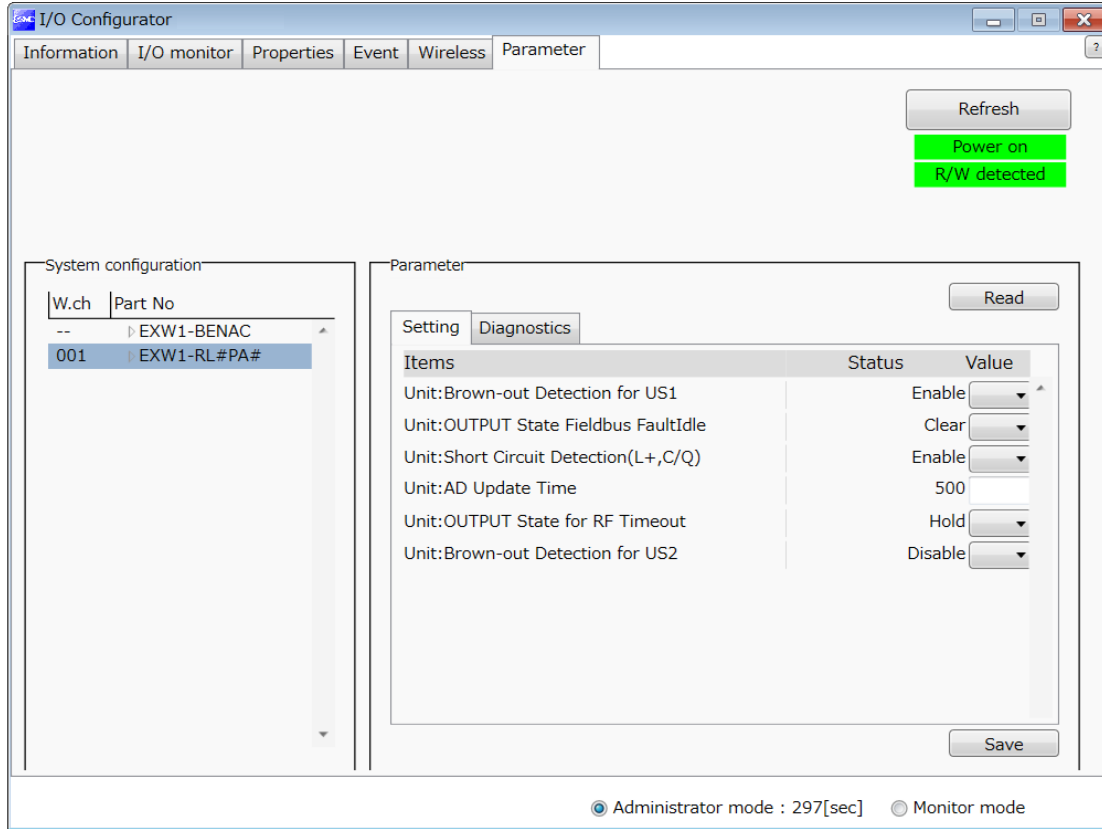
●Wireless log data file

Wireless log data is divided into four csv files and one pdf files as below.

Name	Date modified	Type	Size
 AllInfo	2024/07/09 11:18	Microsoft Excel CS...	1 KB
 RcvRSSI	2024/07/09 11:18	Microsoft Excel CS...	4 KB
 Retries	2024/07/09 11:18	Microsoft Excel CS...	1 KB
 SndRSSI	2024/07/09 11:18	Microsoft Excel CS...	5 KB
 Summary	2024/07/09 11:18	Adobe Acroba 文書	80 KB

Parameter

This makes changing parameters on the remotes which are paired to Base.
Please refer to the Parameter under Technical Information.



Pairing and Unpairing Procedures

Pairing Procedure

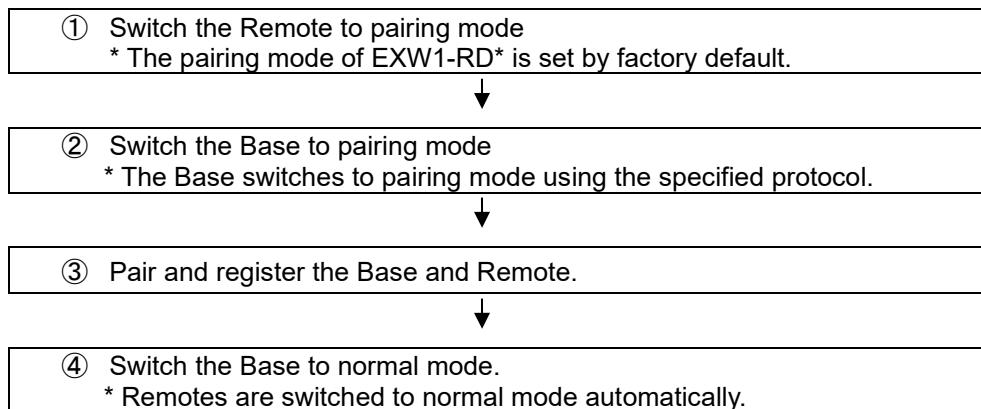
Pairing a Base with a Remote

Pairing is required for communication between a Base and Remote.

A Base is paired with a Remote after they are switched to pairing mode.

Pairing and registration between a Base and Remote enables wireless communication.

○Operational flow during pairing



- After changing the operation mode for pairing, the mode is changed by clicking the [Reset] button or re-supplying power so that the mode will be changed to the Remote registration or listing for connection.
- If the FCS function is to be used, please perform the FCS setting prior to pairing. After pairing the advertising channels are fixed which limits the channels available for FCS setting.



- Ensure the power supply for both the base and remote is on when they are paired
- Exchange of I/O data is not possible during pairing
Do not change the pairing mode during the operation.
- Module unit size of the remote is transferred to the base unit during the pairing procedure.
When this size is changed after the pairing, please re-configure the system.

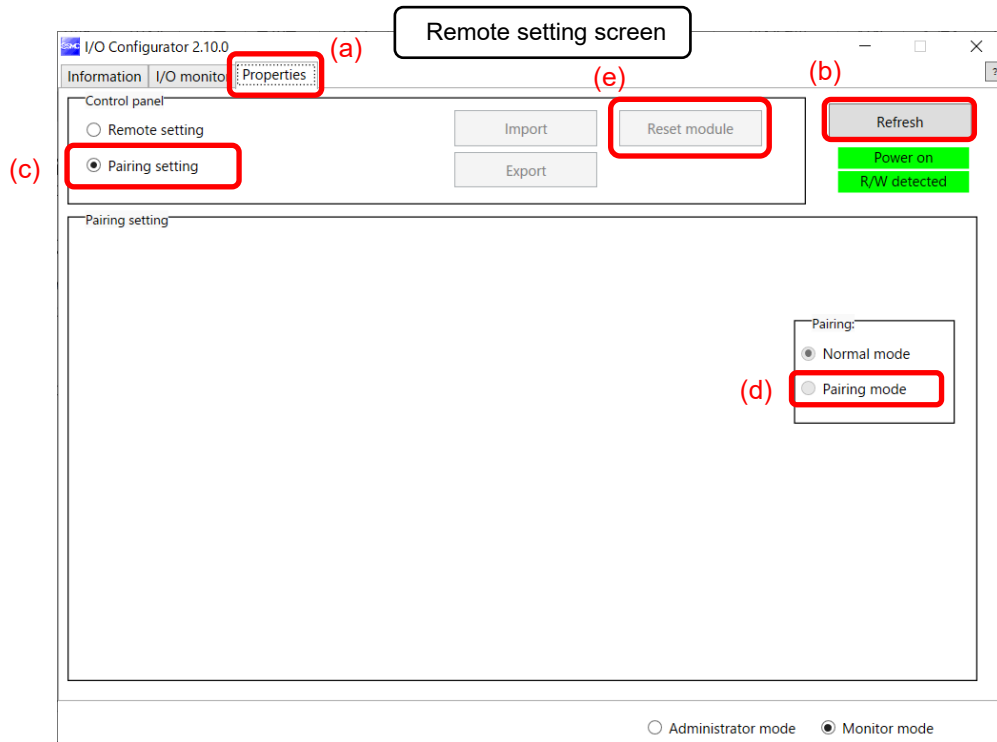
Any parameter changes are enabled after the product is powered on or by pressing the "Reset module" button.

(1) Switch the Remote to pairing mode

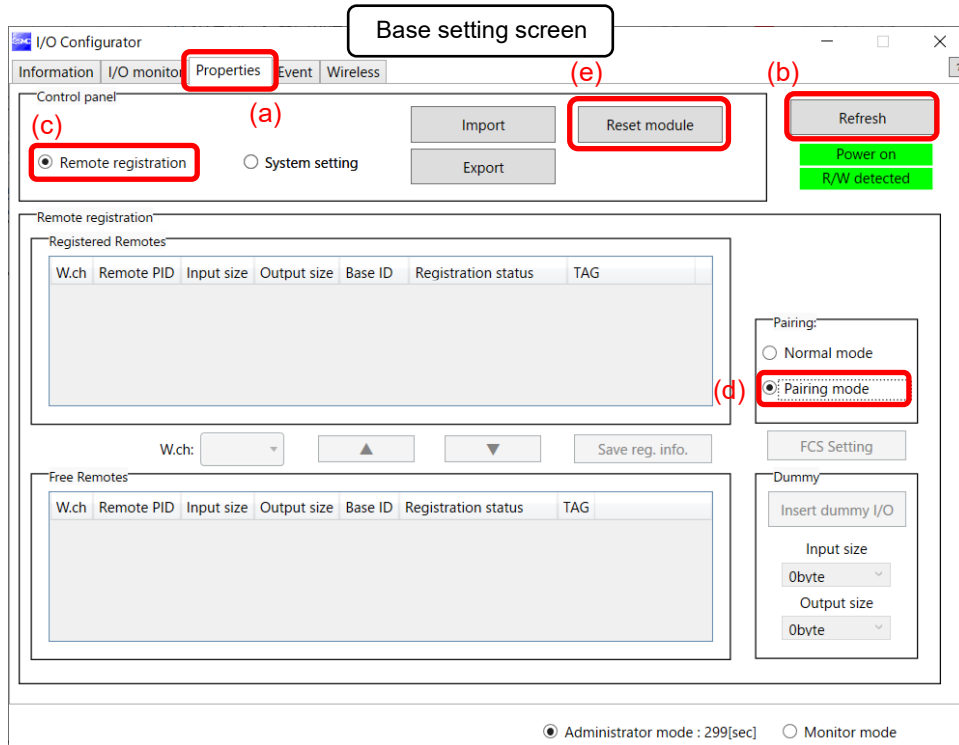
Connect to the Remote using NFC, select the (a) [Properties] tab and then click (b) [Refresh].

Select (d) [Pairing mode] from [Pairing setting] on the (a) [Properties] tab and then click (e) [Reset module].

Once in pairing mode, the MS LED on the unit flashes alternately in red and green.



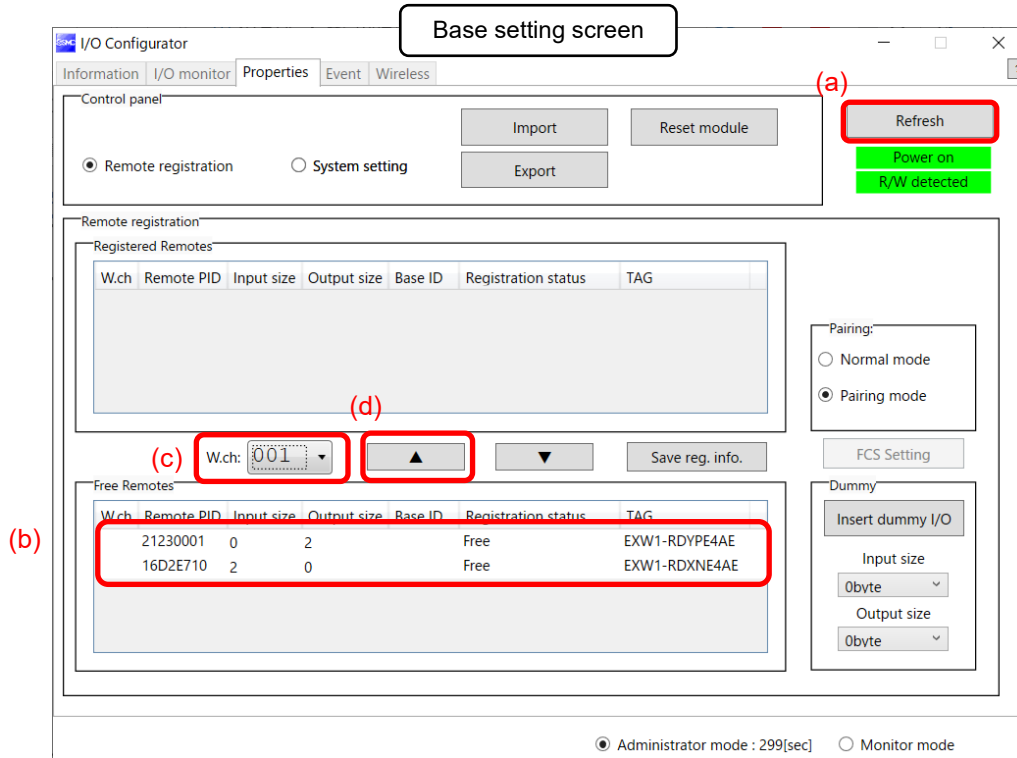
- (2) Switch the Base to pairing mode
 Connect to the Base using NFC, select the (a) [Properties] tab and then click (b) [Refresh].
 Select (d) [Pairing mode], (c) [Remote registration] on the (a) [Properties] tab and then click (e) [Reset module].



- A Base unit will change to pairing mode using the protocol set in "System setting".
 First set the protocol according to the Remote to be paired before switching to pairing mode.
- If the FCS function is to be used, please perform the FCS setting prior to pairing. After pairing the advertising channels are fixed which limits the channels available for FCS setting.

(3) Pair and register the Base and Remote

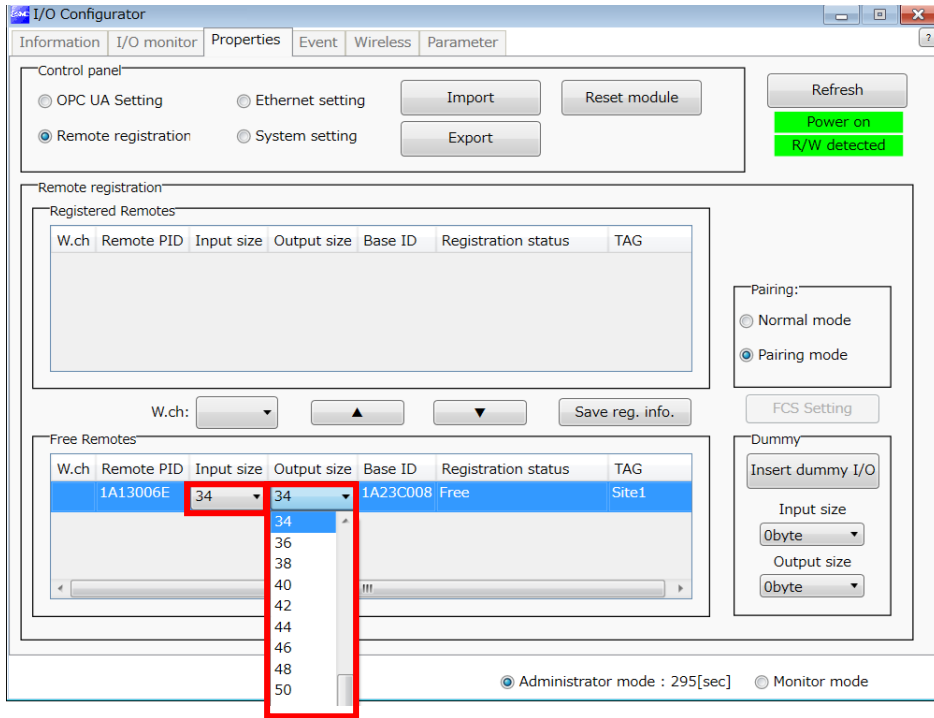
- (a) Clicking [Refresh] causes Remotes in pairing mode to be listed in the Free Remotes area.
- (b) Select the Remote that is to be registered,
- (c) specify a wireless channel and then
- (d) click ▲.



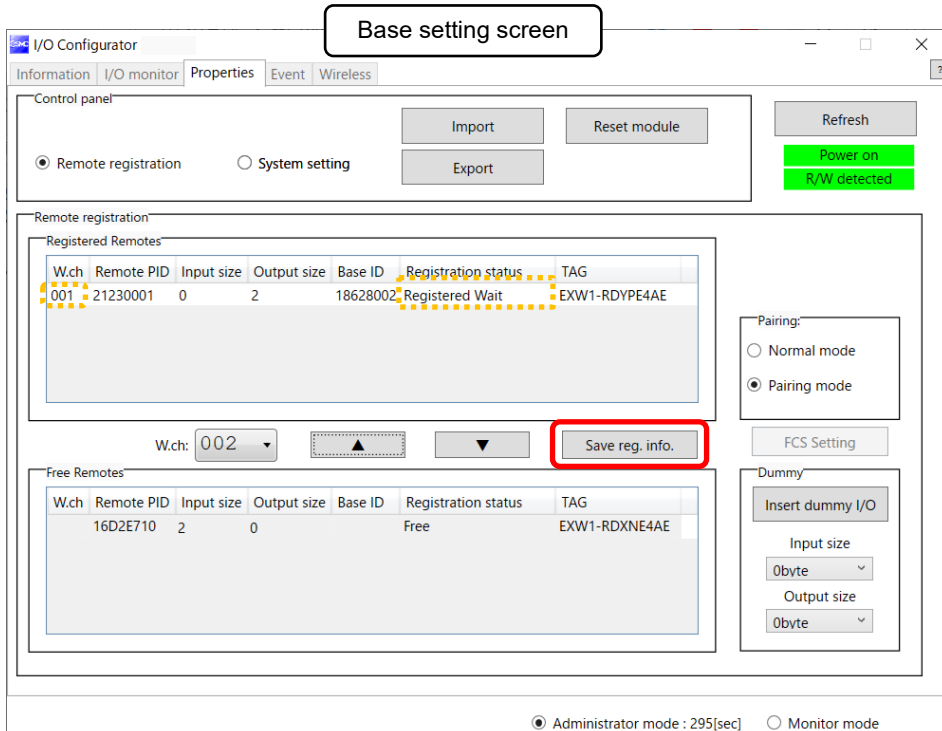
- If the Remote that you wish to pair with does not appear, click (a) [Refresh] again. If it still does not appear, check the following:
 1. The Remote is not switched to pairing mode
 2. The Remote is not turned on
 3. The Remote is registered or waiting to be registered to another Base

Input/Output Size Setting

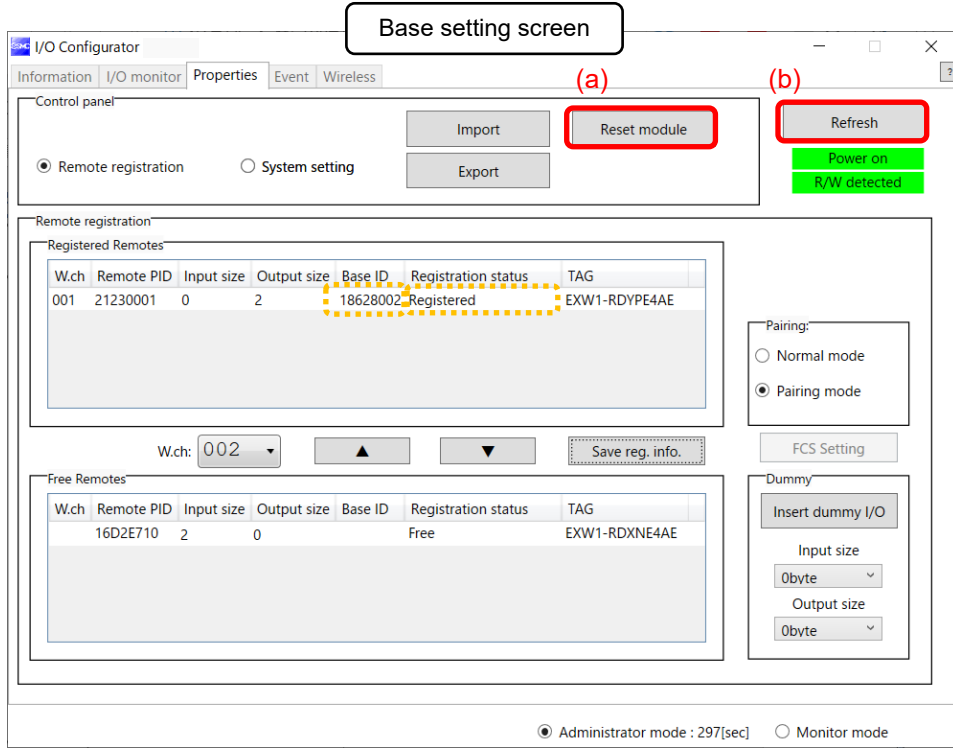
In protocol V.2.0, it is possible to set the remote (EXW1-RL*PA*C, etc.) with variable input/output occupied byte. Please refer to each product's instruction manual for the input/output size range to be set.



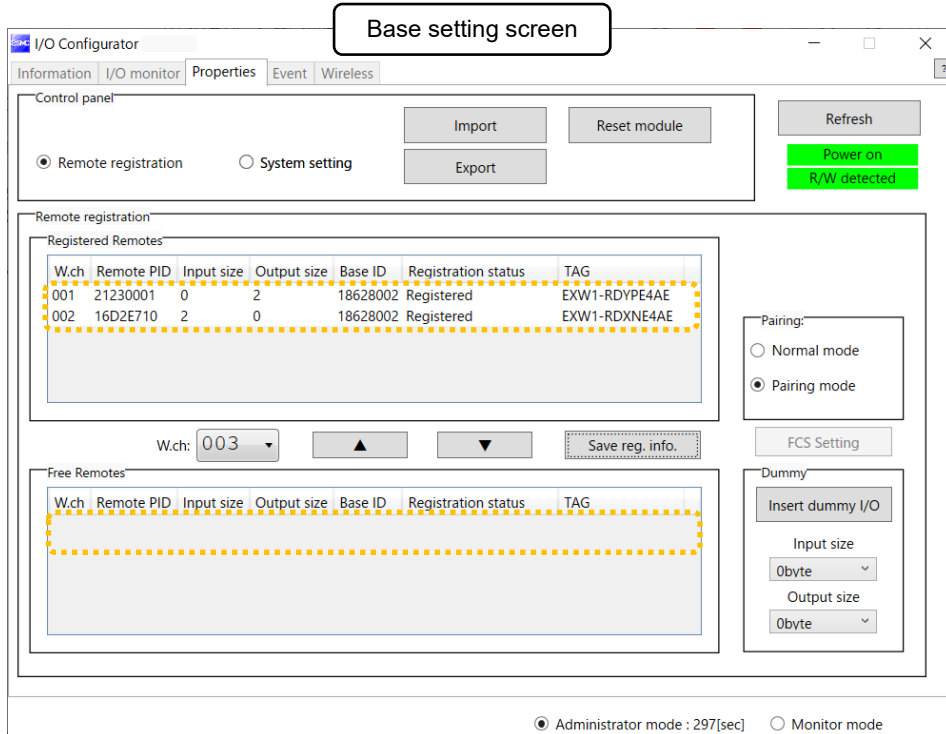
The Remote that is to be registered on the specified wireless channel moves to the Registered Remotes area. Make sure that the registration status is Registered Wait, and click [Save reg. info.].



Click (a) [Reset module] and (b) [Refresh] and check that the registration status changes to Registered.

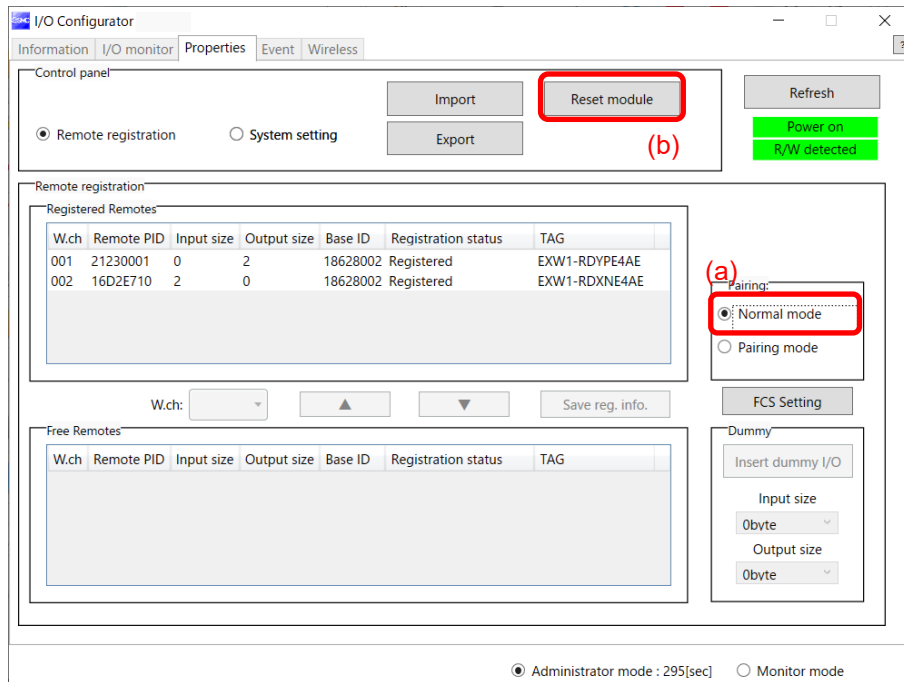


* The example below shows two Remote modules registered on CH1 and CH2.



Configure the registration of the dummy Remote as necessary. (Refer to page 55)

- (4) Disable the Pairing mode of the Base (Normal mode)
 Connect to the Base using NFC,
 (a) Select [Normal mode]
 (b) Click [Reset module] to reset the Base.
 (c) Check connection with registered Remotes.



•Dummy Remote

A dummy remote can be added to the input/output map without changing the input/output map by registering a remote in the "dummy area" even after the system is built.

The order in which remotes are assigned to the input/output map is determined by the radio channel set at the time of remote registration. In this case, radio channels to which no remotes are registered are ignored.

When adding a new remote, the input/output map may need to be changed depending on the radio channel number.

Note that dummy remotes can be registered only at the base.



- To register a dummy Remote, it is necessary to set the number of inputs / outputs beforehand. If a Remote with inputs / outputs which are different from the set numbers is registered, the I/O map must be changed. Care should be taken.

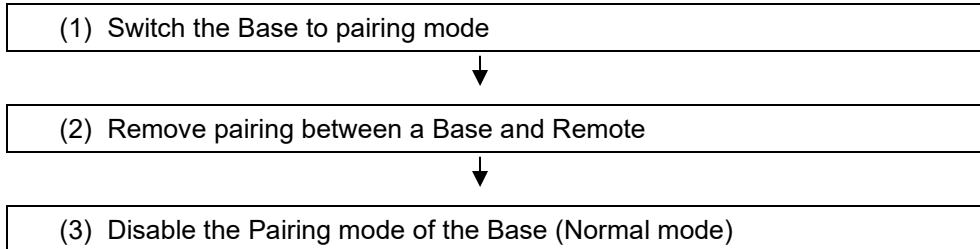
Unpairing Procedure

Removing Pairing between a Base and Remote

Pairing between a Base and Remote will be removed.

When you wish to reconfigure the wireless system, such as changing the I/O sizes of a registered Remote, pairing needs to be removed and registered again.

○Operational flow during unpairing

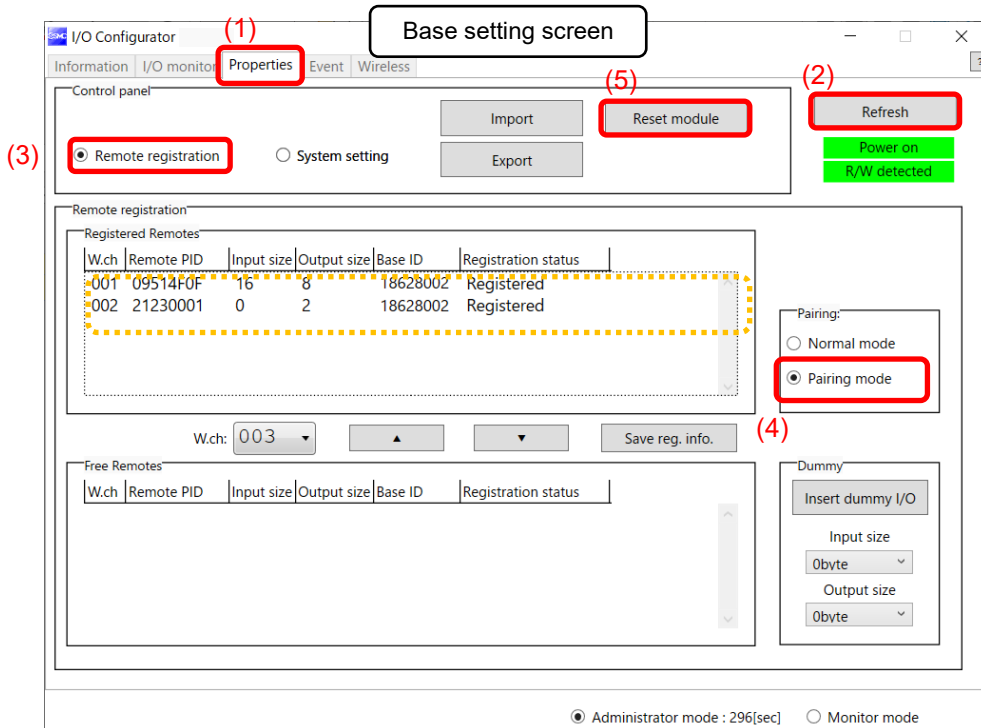


(1) Switch the Base to pairing mode

Switch the Base to pairing mode. Select the [Properties] tab and then click [Refresh].

Select [Pairing mode] from [Remote registration] on the [Properties] tab and then click [Reset module].

* The example below shows two Remote modules registered on CH1 and CH2.

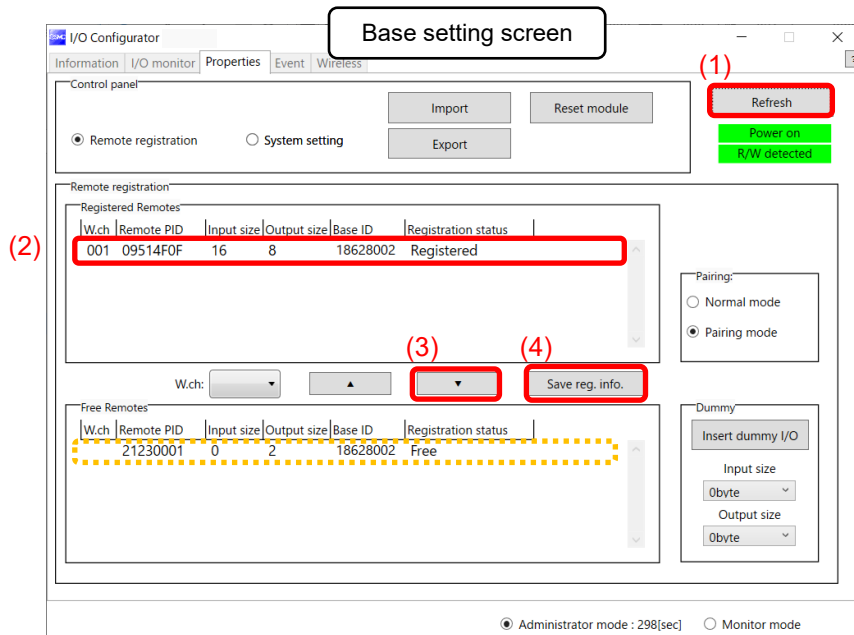


(2) Removing the pairing between the Base and Remote

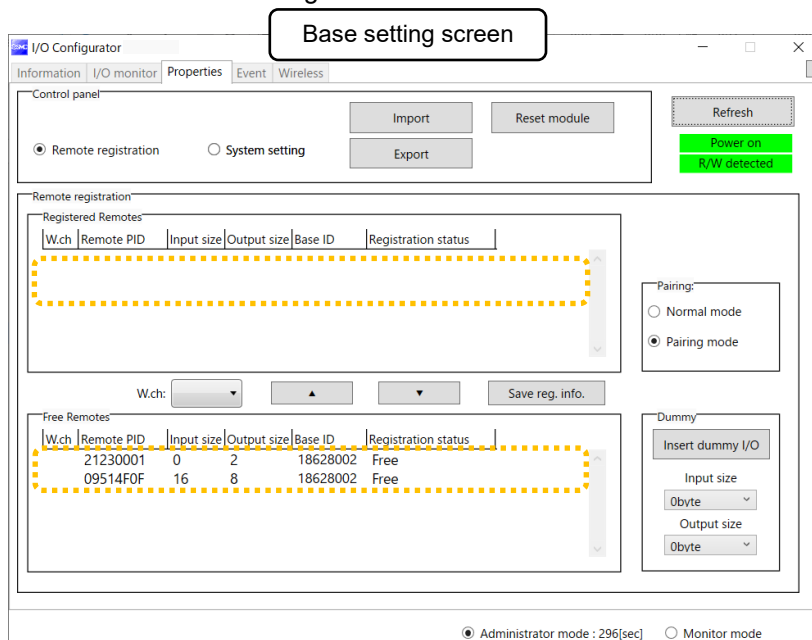
Pairing between the Base and Remote will be removed.

Click [Refresh]. Select the Remote that you wish to unpair from the registered Remotes and click ▼, which in turn causes the selected Remote to move to the Free Remotes area. Clicking [Save reg. info.] finalizes the unregistration of the Remote.

! •If a Remote moved to the Free Remotes area is not in Pairing mode, clicking [Refresh] after finalizing the unregistration of the Remote causes the Remote moved to the Free Remotes area to be hidden.



* The example below shows two Remotes unregistered.



(3) Disable the Pairing mode of the Base (Normal mode)

Set the Base to [Normal mode] and click [Reset].

Mounting and Installation of Units

EXW1-BDNAC

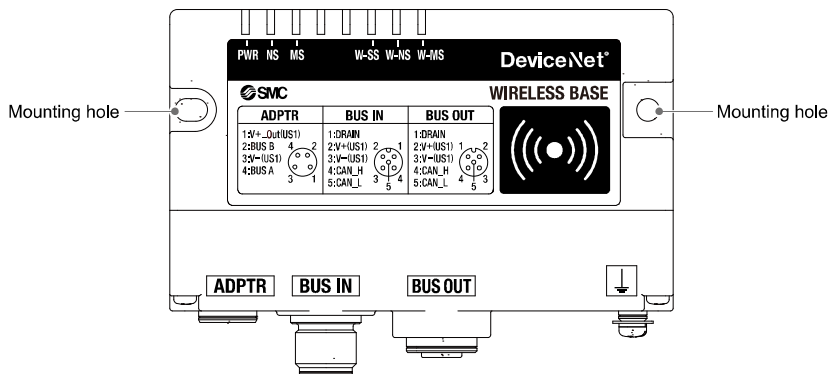
■ Installation

Compact wireless Base

⚠ 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).



■ Handling Precautions

Always attach waterproof caps to unused connectors.
By properly using this waterproof cap, the protective structure IP67 can be achieved.

■ Wireless adaptor

Caution

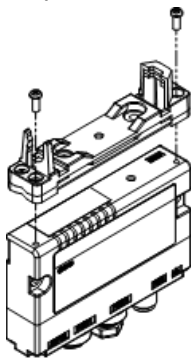
To avoid damage to parts, apply the recommended tightening torque.

Refer to the operation manual of the Wireless Adaptor for details.

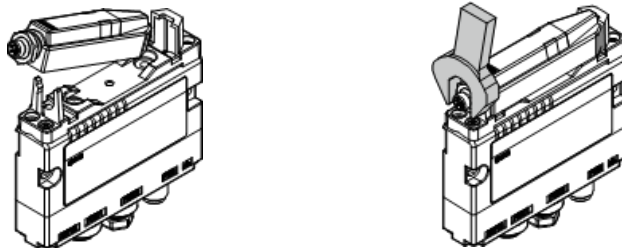
This product is sold separately. The installation plate is included with the wireless adapter.

● Integrated type (installation)

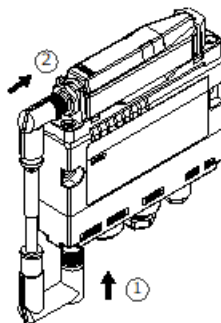
- (1) Connection of the base and installation plate.
Secure the installation plate to the base using the two self-tapping screws (M3 x 8) included with the wireless adaptor. The tightening torque should be $0.4 \text{ N}\cdot\text{m} \pm 10\%$.



- (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 recommended tightening torque is $0.9 \text{ N}\cdot\text{m} \pm 10\%$.



- (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 to the base.
 - 2) Connect the S-side connector of the cable to the adaptor.



■ Handling Instructions

Please pay attention to the installation order of the cable for the wireless adapter.

●Mounting on a flat surface

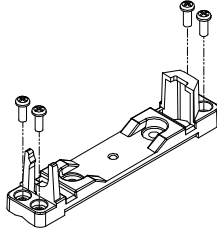
(1) Attachment of installation plate

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 $0.4 \text{ N}\cdot\text{m}\pm 10\%$.

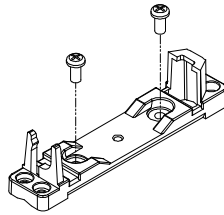
(Mounting screws are not included.)



Installation with M4 x 2 positions

The tightening torque should be $0.6 \text{ N}\cdot\text{m}\pm 10\%$.

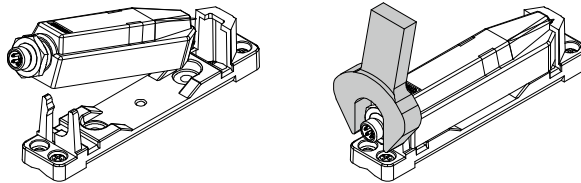
(Mounting screws are not included.)



(2) Installation of wireless adaptor

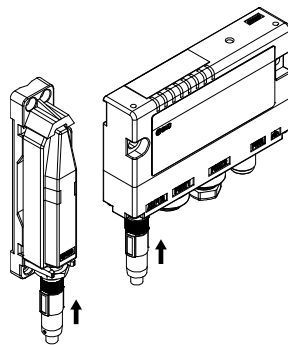
Clip the wireless adaptor onto the installation plate as shown below and secure the adaptor in place using the M10 nut already fitted to the wireless adaptor.

The tightening torque should be $0.9 \text{ N}\cdot\text{m}\pm 10\%$.



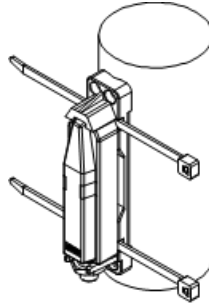
(3) Connection of the cable for wireless adaptor

Connect the cable to the base and the wireless adaptor.

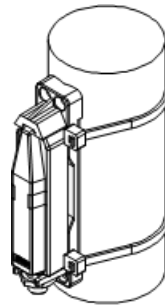


● Mounting on a curved surface

(1) Thread 2 x cable ties through the installation plate at the top and bottom.



(2) Secure the wireless adaptor to the installation plate and then secure in the required position by tightening the cable ties.



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.

• Base troubleshooting items

LED	Description	LED status		No.	
		Color of LED	ON/Flashing		
-	All LEDs are OFF.	-	-	Problem 1	
PWR	PWR is OFF	-	OFF	Problem 2	
NS	NS LED does not turn on green.	Green	Flashing	Problem 3	
		Red	Flashing		
		Red	ON		
		-	OFF		
MS	MS LED does not turn on green.	Green	Flashing	Problem 4	
		Red	Flashing		
		Red	ON		
		-	OFF		
W-SS	W-SS LED flashes red or orange or is off.	Red	Flashing	Problem 5	
		Orange	Flashing		
		-	OFF		
W-NS	W-NS LED does not turn on green	Green	Flashing	Problem 6	
		Red	Flashing		
		Red	ON		
		Red	Green		Alternate Flashing
		-	OFF		
W-MS	W-MS LED does not turn on green.	Red	Flashing	Problem 7	
		Red	ON		
		-	OFF		
Problems related to the NFC				Problem 8	

• Base troubleshooting

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures
		Color of LED	ON/Flashing		
1	All	-	OFF	The V+(US1) power supply is OFF	Supply 11 to 25VDC for V+(US1) power source.
2	PWR	-	OFF	The V+(US1) power supply is OFF	Supply 11 to 25VDC for V+(US1) power source.
3	NS	Green	Flashing	Waiting for a connection	Signal line from PLC is connected correctly.. (For more information, refer to the instruction manual of your PLC). If a scanlist is used in the network, check that the remote are correctly registered in the scanlist
		Red	Flashing ON	DeviceNet® communication error	Check the following and restart. (1)Check for duplicate node addresses. (2)The communication speed of the PLC and SI Unit are appropriate. (3)Check the length of the cable. (4)Check for broken or loose cables. (5)Connect terminating resistors to both ends of the network. (6)Wire the communication line away from noise sources.
		-	OFF	(1)MAC ID has beenDuplicated (2)The V+(US1) power supply is OFF	(1)Check for duplicate node addresses and restart. (2)Supply 11 to 25 VDC for V+(US1) power source.

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures
		Color of LED	ON/Flashing		
4	MS	Green	Flashing	DeviceNet® not registered	Signal line from PLC is connected correctly.. (For more information, refer to the instruction manual of your PLC). If a scanlist is used in the network, check that the remote are correctly registered in the scanlist
		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) V+(US1) power supply voltage level is abnormal. (when the setting is enabled)	(1) V+(US1) power supply is low. Supply 11 to 25VDC for V+(US1) power source.
				(2) Number of system inputs/outputs setting error	(2) The number of system input/output has exceeded the set value. Set the number of input/output assigned to the wireless system (base/remote) to less than the number of input/output set in the base operating mode. Change the base operating mode or the number of input/output assigned to the wireless system (base/remote).
Red	ON	(3) Number of registered Remotes setting error	(3) The number of registered remotes exceeds the set value. Change the base operating mode. Delete the remote (wireless channel) registration that is out of the setting range or change to a valid wireless channel.		
		(4) Memory read/write error	(4) Internal memory read/write operations are not performed normally. Initialize the product.		
				(5) Wireless adaptor internal connection error	(5) Internal communication with the wireless adaptor is not performed normally. Check for loose connectors and broken wires.
		Red	ON	Base malfunction	Replace the Base If the error persists after replacement, stop using the equipment and contact your SMC sales representative.
		-	OFF	The V+(US1) power supply is OFF	Supply 11 to 25VDC for V+(US1) power source.

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures
		Color of LED	ON/Flashing		
5	W-SS	Red	Flashing	When Protocol V.1.0 is used (1) Remote power supply is OFF (2) Outside the wireless coverage area	(1) Supply 24 VDC +/-10% to the US1 (for control / input) power source of the Remote. (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) Remote power supply is OFF (2) Outside the wireless coverage area	(1) Supply 24 VDC +/-10% to the US1 (for control / input) power source of the Remote. (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. (3) Check the Power Transmission Level, If the Power Transmission Level is low, change the setting.
		-	OFF	Remote not registered	Check the registration status of the Remote and perform pairing correctly.
6	W-NS	Green	Flashing	(1) Some Remotes are not connected (2) Some registered Remotes have no wireless signal	(1) Supply 24 VDC +/-10% to the US1 (for control / input) power source of the Remote. (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	Flashing	(1) Power supply to all registered Remotes is OFF (2) All registered Remotes have no wireless signal	(1) Supply 24 VDC +/-10% to the US1 (for control / input) power source of the Remote. (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	No Remotes are connected due to a failure of the Base	Replace the Base. If the error persists after replacement, stop using the equipment and contact your SMC sales representative.
		Red	Alternate Flashing	In pairing mode.	The system has been set to "Pairing enable". Change the setting to "Pairing disable" when pairing is not conducted.
		-	OFF	Remote not registered	Check the registration status of the wireless unit and conduct pairing with the Remote correctly.

Problem No.	LED name	LED status		Possible causes	Investigation and countermeasures
		Color of LED	ON/Flashing		
7	W-MS	Red	Flashing	<p>The following Remote diagnostic information is detected.</p> <p>(1) US1 (for control) power supply voltage level is abnormal</p> <p>(2) US2 (for output) power supply voltage level is abnormal</p> <p>(3) Excessive I/O setting for inputs/outputs</p> <p>(4) Error in communication between units (4)-1 Abnormal input unit (4)-2 Abnormal output unit (4)-3 Abnormal input / output unit</p> <p>(5) EX600 I/O unit detects diagnostic information (5)-1 Short-circuited US1 (for control / input) power supply voltage (5)-2 Short-circuited US2 (for output) power supply voltage (5)-3 Short-circuited output load (5)-4 User set upper or lower limit of the analog unit exceeded (5)-5 I/O range upper or lower limit of the analog unit exceeded</p> <p>(6) Valve diagnostic information detected (6)-1 Valve short-circuited (6)-2 Valve with broken line</p>	<p>After checking the error contents while referring to the system diagnostic information and LED indication, refer to the following countermeasures.</p> <p>As this LED indicates the system status of the Remote, the following diagnoses can be conducted only when the "Diagnostic allocation" is set to "Advanced".</p> <p>(1) Supply 24 VDC +/-10% to the US1 (for control / input) power source of the Remote.</p> <p>(2) Supply 24 VDC +/-10% to the US2 (for output) power source of the Remote</p> <p>(3) The number of the station's input / output points has exceeded the set value. Check the occupied byte of the EX600 I/O unit and valve manifold connected to the Remote.</p> <p>(4) Confirm that there is no loose connection between the units and connect them correctly.</p> <p>(5) Check the part where the error occurs by checking the LED indication and information of the system diagnostics, and refer to the operation manual for the digital and analog units.</p> <p>(6) Replace the valve and check the operation.</p>
		Red	ON	Remote malfunction	Replace the Remote If the error persists after replacement, stop using the equipment and contact your SMC sales representative.

Problem No.	Phenomenon	Possible causes	Investigation and countermeasures
8	NFC communication error	NFC communication is not established (communication failure)	<p>Check the following items and check the operation again.</p> <ul style="list-style-type: none"> •Confirm that the settings of the NFC port and PaSoRi of the PC are correct. •Check that the specifications of the NFC reader / writer to be used are appropriate. •Confirm that the NFC reader / writer are connected correctly. •The communication distance is outside of the NFC range. Place the body (NFC antenna approach area) close to the NFC reader / writer.
		NFC reader/writer broken	<p>Replace the NFC reader / writer and check the operation. If the error persists after replacement, stop using the equipment and contact your SMC sales representative.</p>

Technical Information

I/O Map

The table below shows the effective number of occupied bits for each input/output unit (including EX600 series) which can be connected to the Base and Remotes.

The allocated input/output sizes can be changed depending on the occupied bytes of the diagnostic mapping and the I/O unit connected to the wireless unit.

Refer to the table below for the number of input/output bits for each unit.

EXW1-BDNAC

Unit name	Diagnostic allocation	Max. Remote units	Allocated bytes	
			Input	Output
Compact wireless Base DeviceNet	None	15/31	0	0
	Simple	15/31	4	0
	Advanced	15	10	0
		31	16	0

EXW1 series

Unit name	Model	Unit product no.	Allocated bytes	
			Input	Output
Compact wireless Remote e-CON Type	RDX	EXW1-RDX*E4** (16 points)	2	0
	RDY	EXW1-RDY*E4** (16 points)	0	2
	RDM	EXW1-RDM*E3** (8 points)	2* ¹	2* ¹
Compact wireless Remote IO-Link Master	RLA	EXW1-RLAPA8C Protocol V.1.0	16* ²	16* ²
	RLA	EXW1-RLAPA8C Protocol V.2.0	2 to 130* ²	2 to 130* ²
	RLB	EXW1-RLBPA7C Protocol V.1.0	16* ³	16* ³
	RLB	EXW1-RLBPA7C protocol V.2.0	2 to 66* ³	2 to 66* ³

*1: The number of inputs/outputs is fixed at 16points (2bytes), and only the lower 8 bits are valid.

*2: The number of bytes occupied by EXW1-RLAPA8C is as follows.

For details, please refer to the product instruction manual.

Protocol V.1.0 : 16bytes(fixture 2bytes + IO-Link Process data 14bytes)

Protocol V.2.0 : fixture 2bytes + IO-Link Process data 128bytes (1Port 32bytes MAX)

*3: The number of bytes occupied by EXW1-RLBPA7C is as follows.

For details, please refer to the product instruction manual.

Protocol V.1.0 : 16bytes (fixture 2bytes + IO-Link Process data 14bytes)

Protocol V.2.0 : fixture 2bytes + IO-Link Process data 64bytes (1Port 32bytes MAX)

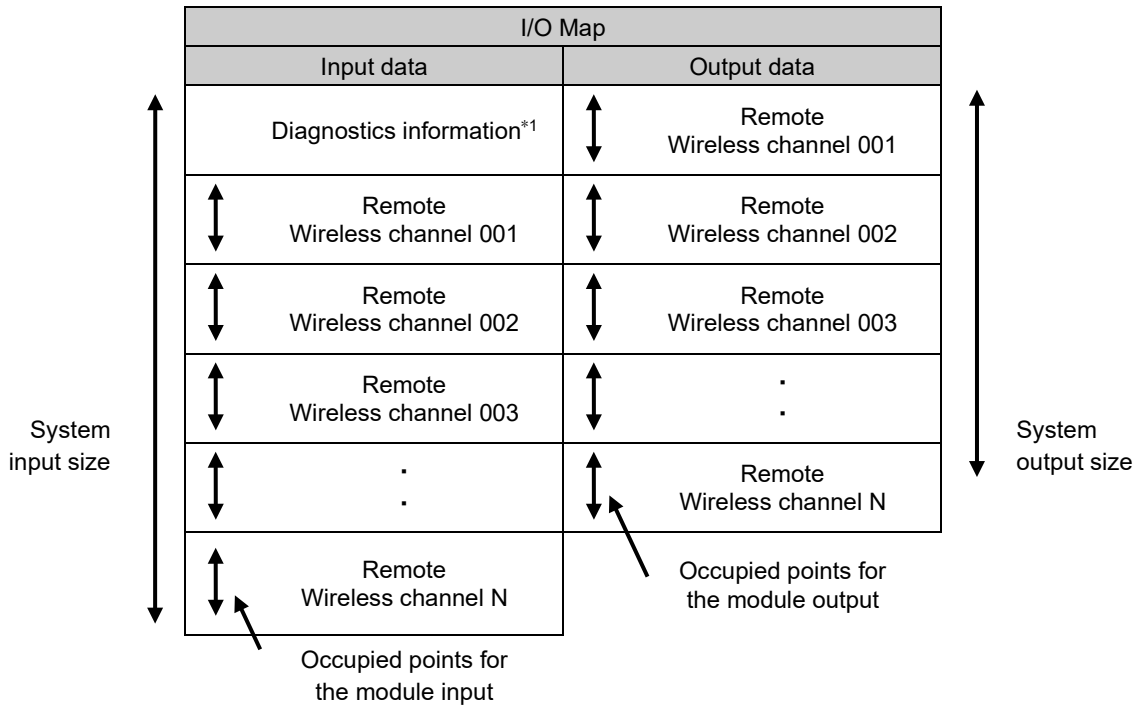
EX600-W Series

Unit name	Model	Unit product no.	Allocated bytes	
			Input	Output
Wireless Remote	WSV	EX600-WSV* (32 points)	0	4
		EX600-WSV* (24 points)	0	3
		EX600-WSV* (16 points)	0	2
		EX600-WSV* (8 points)	0	1
		EX600-WSV* (0 points)	0	0
Digital input unit (EX600 Series)	DX	EX600-DX*B (8 points)	1	0
		EX600-DX*C (8 points)	1	0
		EX600-DX *C1 (8 points) (with broken line detection)	1	0
		EX600-DX*D (16 points)	2	0
		EX600-DX*E (16 points)	2	0
		EX600-DX*F (16 points)	2	0
Digital output unit (EX600 Series)	DY	EX600-DY*B (8 points)	0	1
		EX600-DY*E (16 points)	0	2
		EX600-DY*F (16 points)	0	2
Digital I/O unit (EX600 Series)	DM	EX600-DM*E (8/8 points)	1	1
		EX600-DM*F (8/8 points)	1	1
Analog input unit	AX	EX600-AXA*1 (2 points)	4 (2 bytes per channel)	0
Analog output unit	AY	EX600-AYA*1 (2 points)	0	4 (2 bytes per channel)
Analog I/O unit	AM	EX600-AMB*1 (2/2 points)	4 (2 bytes per channel)	4 (2 bytes per channel)

*1: User set minus ranges are not supported.

I/O Mapping

The I/O map is assigned in order of diagnostic information and remote. The remote allocation order to the I/O map is decided by the wireless channel at the remote registration. As they are allocated from the smallest registered channel number, the channel in which no remote is registered will be ignored. (Refer to the figure below.)



*1: This is selected according to the diagnostic allocation parameter setting of the base. Refer to the section "Diagnostics Mapping" for details.

I/O mapping order of base/remote

Below is an example of I/O map and diagnostic map assignment.

<Example 1> Wireless Protocol V.2.0 System Configuration (EXW1 series only)

- Compact wireless base

System configuration

IO allocation : Fixed (640 system input/output points/80bytes)
 Diagnostic allocation : detailed(10bytes In case of 15 remote registered units)
 Number of remotely registered units : 15
 Protocol : V.2.0

- Compact wireless remote

Wch1 : EXW1-RLAPA8C(Compact wireless remote IO-Link master ClassA)

Wch2 : EXW1-RLBPA7C(Compact wireless remote IO-Link master ClassB)

Wch3 : EXW1-RDMPE3AE(Compact wireless remote e-CON type input/output)

Wch1

EXW1-RLAPA8C		
Unit	Input	Output
Fixed	2	2
IO-Link Port P1	4	4
IO-Link Port P2	4	4
IO-Link Port P3	2	2
IO-LinkPort P4	0	0
Total	12bytes	12bytes

P1 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 4bytes
 P2 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 4bytes
 P3 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 2bytes
 P4 PortMode : DI_C/Q
 Port Input/Output IO-Link Size : 0byte

*Each IO-Link port is selectable in the range 0 to 32 bytes.

Wch2

EXW1-RLBPA7C		
Unit	Input	Output
Fixed	2	2
IO-Link Port P1	16	16
IO-Link Port P2	0	0
Total	18bytes	18bytes

P1 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 16bytes
 P2 PortMode : DO_C/Q
 Port Input/Output IO-Link Size : 0byte

*Each IO-Link port is selectable in the range 0 to 32 bytes.

Wch3

EXW1-RDMPE3AE	
Input	Output
2	2
2bytes	2bytes

*Only the lower 1 byte (8 bits) of the 2 bytes can be used.

<Example 1>I/O mapping

		Input data		
		Module name	Unit name	
Byte	0	System diagnosis 1		
Byte	1	System diagnosis 2		
Byte	2	System diagnosis 3		
Byte	3	System diagnosis 4		
Byte	4	Remote connection information	Wch1~7	
Byte	5		Wch8~15	
Byte	6	Remote diagnostic information	Wch0~7	
Byte	7		Wch8~15	
Byte	8	Remote registration information	Wch1~7	
Byte	9		Wch8~15	
Byte	10	Remote Wch1 EXW1-RLAPA8C	Fixed	
Byte	11		IO-Link Port P1	
Byte	12			
Byte	13			
Byte	14			
Byte	15		IO-Link Port P2	
Byte	16			
Byte	17			
Byte	18			
Byte	19		IO-Link Port P3	
Byte	20			
Byte	21	Remote Wch2 EXW1-RLAPA7C	Fixed	
Byte	22		IO-Link Port P1	
Byte	23			
Byte	24			
Byte	25			
Byte	26			
Byte	27			
Byte	28			
Byte	29			
Byte	30			Remote Wch3 EXW1-RDMPE3AE
Byte	31	Reserved		
Byte	32	Reserved		
Byte	33	Reserved		
Byte	34	Reserved		
Byte	35	Reserved		
Byte	36	Reserved		
Byte	37	Reserved		
Byte	38	Reserved		
Byte	39	Reserved		
Byte	40	Reserved		
Byte	41	Reserved		
Byte	42	Reserved		
Byte	78	Reserved		
Byte	79	Reserved		
Total		80 bytes		

		Output data	
		Module name	Unit name
Byte	0	Remote Wch1 EXW1-RLAPA8C	Fixed
Byte	1		IO-Link Port P1
Byte	2		
Byte	3		
Byte	4		
Byte	5		IO-Link Port P2
Byte	6		
Byte	7		
Byte	8		IO-Link Port P3
Byte	9		
Byte	10	Remote Wch2 EXW1-RLAPA7C	Fixed
Byte	11		IO-Link Port P1
Byte	12		
Byte	13		
Byte	14		
Byte	15		
Byte	16		
Byte	17		
Byte	18		
Byte	19		
Byte	20		
Byte	21		
Byte	22		
Byte	23		
Byte	24		
Byte	25		
Byte	26		
Byte	27		
Byte	28		
Byte	29		
Byte	30	Remote Wch3 EXW1-RDMPE3AE	EXW1-RDM#
Byte	31		Reserved
Byte	32	Reserved	
Byte	33	Reserved	
Byte	34	Reserved	
Byte	35	Reserved	
Byte	36	Reserved	
Byte	37	Reserved	
Byte	38	Reserved	
Byte	39	Reserved	
Byte	40	Reserved	
Byte	41	Reserved	
Byte	42	Reserved	
Byte	78	Reserved	
Byte	79	Reserved	
Total		80 bytes	

* : When the setting of diagnostic allocation is "Detailed", areas of the number of remote set at the Number of remote connection are occupied. (The occupied area also occupies the area for remote which has not been registered.)

<Example 2> Wireless Protocol V.2.0 System Configuration (EXW1 series only)

- Compact wireless base

System configuration

IO allocation : Auto
 (Diagnostic information, total number of remote IO points)
 Diagnostic allocation : detailed(10bytes In case of 15 remote registered units)
 Number of remotely registered units : 15
 Protocol : V.2.0

- Compact wireless remote

Wch1 : EXW1-RLAPA8C(Compact wireless remote IO-Link master ClassA)

Wch2 : EXW1-RLBPA7C(Compact wireless remote IO-Link master ClassB)

Wch3 : EXW1-RDMPE3AE(Compact wireless remote e-CON type input/output)

Wch1

EXW1-RLAPA8C		
Unit	Input	Output
Fixed	2	2
IO-Link Port P1	4	4
IO-Link Port P2	4	4
IO-Link Port P3	2	2
IO-LinkPort P4	0	0
Total	12bytes	12bytes

P1 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 4bytes
 P2 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 4bytes
 P3 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 2bytes
 P4 PortMode : DI_C/Q
 Port Input/Output IO-Link Size : 0byte

*Each IO-Link port is selectable in the range 0 to 32 bytes.

Wch2

EXW1-RLBPA7C		
Unit	Input	Output
Fixed	2	2
IO-Link Port P1	16	16
IO-Link Port P2	0	0
Total	18bytes	18bytes

P1 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 16bytes
 P2 PortMode : DO_C/Q
 Port Input/Output IO-Link Size : 0byte

*Each IO-Link port is selectable in the range 0 to 32 bytes.

Wch3

EXW1-RDMPE3AE	
Input	Output
2	2
2bytes	2bytes

*Only the lower 1 byte (8 bits) of the 2 bytes can be used.

<Example 2>I/O mapping

		Input data		
		Module name	Unit name	
Byte	0	System diagnosis 1		
Byte	1	System diagnosis 2		
Byte	2	System diagnosis 3		
Byte	3	System diagnosis 4		
Byte	4	Remote connection information	Wch1~7	
Byte	5		Wch8~15	
Byte	6	Remote diagnostic information	Wch0~7	
Byte	7		Wch8~15	
Byte	8	Remote registration information	Wch1~7	
Byte	9		Wch8~15	
Byte	10	Remote Wch1 EXW1-RLAPA8C	Fixed	
Byte	11		IO-Link Port P1	
Byte	12			
Byte	13			
Byte	14			
Byte	15		IO-Link Port P2	
Byte	16			
Byte	17			
Byte	18		IO-Link Port P3	
Byte	19			
Byte	20			
Byte	21	Remote Wch2 EXW1-RLAPA7C	Fixed	
Byte	22		IO-Link Port P1	
Byte	23			
Byte	24			
Byte	25			
Byte	26			
Byte	27			
Byte	28			
Byte	29			
Byte	30			Remote Wch3 EXW1-RDMPE3AE
Byte	31	Reserved		
Total		42 bytes		

		Output data	
		Module name	Unit name
Byte	0	Remote Wch1 EXW1-RLAPA8C	Fixed
Byte	1		IO-Link Port P1
Byte	2		
Byte	3		
Byte	4		
Byte	5		
Byte	6		
Byte	7		IO-Link Port P2
Byte	8		
Byte	9		
Byte	10		IO-Link Port P3
Byte	11		
Byte	12		
Byte	13	Remote Wch2 EXW1-RLAPA7C	Fixed
Byte	14		IO-Link Port P1
Byte	15		
Byte	16		
Byte	17		
Byte	18		
Byte	19		
Byte	20		
Byte	21		
Byte	22		
Byte	23		
Byte	24		
Byte	25		
Byte	26		
Byte	27		
Byte	28		
Byte	29		
Byte	30	Remote Wch3 EXW1-RDMPE3AE	EXW1-RDM#
Byte	31		Reserved
Total		32 bytes	

*: When the setting of diagnostic allocation is "Detailed", areas of the number of remote set at the Number of remote connection are occupied. (The occupied area also occupies the area for remote which has not been registered.)

<Example 3> Wireless Protocol V.2.0 System Configuration (EXW1, EX600 series mixed loading)

- Compact wireless base

System configuration

IO allocation : Fixed (640 system input/output points/80bytes)
 Diagnostic allocation : detailed(10bytes In case of 15 remote registered units)
 Number of remotely registered units : 15
 Protocol : V.1.0

- Compact wireless remote

Wch1 : EXW1-RLAPA8C(Compact wireless remote IO-Link master ClassA)

Wch2 : EX600-WSV#(Wireless remote Modular type)

Wch3 : EXW1-RDMPE3AE(Wireless remote e-CON type Mixed input/output)

Wch1

EXW1-RLAPA8C		
Unit	Input	Output
Fixed	2	2
IO-Link Port P1	8	8
IO-Link Port P2	6	6
IO-Link Port P3	0	0
IO-LinkPort P4	0	0
Total	16bytes	16bytes

P1 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 8bytes
 P2 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 6bytes
 P3 PortMode:IOL_Autostart
 Port Input/Output IO-Link Size : 0bytes
 P4 PortMode : DI_C/Q
 Port Input/Output IO-Link Size : 0byte

*In case of wireless protocol V.1.0, occupied bytes are fixed at 16 bytes for input/output.
 Excluding the fixed part (2 bytes), 14 bytes can be allocated from P1 to P4.

Wch2

EX600-WSV#			
No	Unit	Input	Output
Unit 0	DY#B	0	1
Unit 1	AXA	4	0
Unit 2	DX#D	2	0
Unit 3	Valve output	0	4
Total	validity	6bytes	5bytes
	Free	2bytes	1bytes

Number of module input points : 8 bytes/64Points
 Number of module Output points : 8 bytes/64Points
 Number of valve manifold output points : 4 bytes/32 points
 I/O allocation direction : Mode 1

Wch3

EXW1-RDMPE3AE	
Input	Output
2	2
2bytes	2bytes

*Only the lower 1 byte (8 bits) of the 2 bytes can be used.

*When EX600-WSV# is paired, the allocation order of EX600 I/O units and valve manifolds connected to the remote depends on the I/O unit allocation direction setting in the remote setting parameters.
 For details, see the EX600-W series instruction manual.

<Example 3>I/O mapping

		Input data		
		Module name	Unit name	
Byte	0	System diagnosis 1		
Byte	1	System diagnosis 2		
Byte	2	System diagnosis 3		
Byte	3	System diagnosis 4		
Byte	4	Remote connection information	Wch1~7	
Byte	5		Wch8~15	
Byte	6	Remote diagnostic information	Wch0~7	
Byte	7		Wch8~15	
Byte	8	Remote registration information	Wch1~7	
Byte	9		Wch8~15	
Byte	10	Remote Wch1 EXW1-RLAPA8C	Fixed	
Byte	11		IO-Link Port P1	
Byte	12			
Byte	13			
Byte	14			
Byte	15			
Byte	16			
Byte	17			
Byte	18			
Byte	19			
Byte	20			
Byte	21		IO-Link Port P2	
Byte	22			
Byte	23			
Byte	24			
Byte	25	Remote Wch2 EX600-WSV#	AXA(Unit1)	
Byte	26		DX#D(Unit2)	
Byte	27			
Byte	28		Reserved	
Byte	29			
Byte	30		Remote Wch3 EXW1-RDMPE3AE	EXW1-RDM#
Byte	31			Reserved
Byte	32		Reserved	
Byte	33			
Byte	34	Reserved		
Byte	35			
Byte	36	Reserved		
Byte	37	Reserved		
Byte	38	Reserved		
Byte	39	Reserved		
Byte	40	Reserved		
Byte	41	Reserved		
Byte	42	Reserved		
Byte	78	Reserved		
Byte	79	Reserved		
Total		80 bytes		

		Output data	
		Module name	Unit name
Byte	0	Remote Wch1 EXW1-RLAPA8C	Fixed
Byte	1		IO-Link Port P1
Byte	2		
Byte	3		
Byte	4		
Byte	5		
Byte	6		
Byte	7		
Byte	8		
Byte	9		
Byte	10		
Byte	11		
Byte	12		
Byte	13		
Byte	14		
Byte	15		
Byte	16	Remote Wch2 EX600-WSV#	DY#B(Unit0)
Byte	17		EX600-WSV#
Byte	18		(Unit3)
Byte	19		Valve output
Byte	20		32 Points
Byte	21	Reserved	
Byte	22	Remote Wch3 EXW1-RDMPE3AE	EXW1-RDM#
Byte	23		Reserved
Byte	24	Reserved	
Byte	25	Reserved	
Byte	26	Reserved	
Byte	27	Reserved	
Byte	28	Reserved	
Byte	29	Reserved	
Byte	30	Reserved	
Byte	31	Reserved	
Byte	32	Reserved	
Byte	33	Reserved	
Byte	34	Reserved	
Byte	35	Reserved	
Byte	36	Reserved	
Byte	37	Reserved	
Byte	38	Reserved	
Byte	39	Reserved	
Byte	40	Reserved	
Byte	41	Reserved	
Byte	42	Reserved	
Byte	78	Reserved	
Byte	79	Reserved	
Total		80 bytes	

*: When the setting of diagnostic allocation is "Detailed", areas of the number of remote set at the Number of remote connection are occupied. (The occupied area also occupies the area for remote which has not been registered.)

Diagnostics map details

When an error occurs in the Base or Remote, a flag will be set in a Bit corresponding to each item of diagnostic information.

The errors for the system diagnostics 1 to 4 are for the entire system. Therefore, even if there is only one unit which has an error in the constructed system, a flag will be set in a Bit corresponding to the error content.

It is possible to identify the abnormal Remote using the Remote diagnostic information. (It is necessary to set the "Diagnostic allocation" to "Advanced".)

Regardless of the setting of the "Diagnostic allocation", the abnormal module and unit can be identified using the I/O Configurator provided by SMC.

Item	Byte	Bit No.	Content of diagnostics		Diagnosed area and processing upon error		How to reset	Reset conditions	Remarks (LED indications, etc.)
			Item	Details	Effective diagnostic coverage	I/O processing upon diagnosis			
System diagnosis 1	0	0	User setting lower level detection	Detected that the analog setting has exceeded the lower limit of the user set value.	Unit	Continue	Automatic reset	Select an appropriate range so that they are within the user set value range. Or disable the diagnostics.	Base W-MS: Flashes red ^{*1} Remote MS: Flashes red
		1	User setting upper limit detection	Detected that the analog setting has exceeded the upper limit of the user set value.	Unit	Continue	Automatic reset	Select an appropriate range so that they are within the user set value range. Or disable the diagnostics.	
		2	Detection of the range lower limit	Detected that the analog setting has exceeded the lower limit of the setting range.	Unit	Continue	Automatic reset	Select an appropriate range so that the input value is within the set range.	
		3	Detection of the range upper limit	Detected that the analog setting has exceeded the upper limit of the setting range.	Unit	Continue	Automatic reset	Select an appropriate range so that the input value is within the set range.	
		4	Detection of upper limit of ON/OFF operation cycle	The number of ON/OFF operating cycles has exceeded the upper limit of the setting value.	Unit	Continue	Automatic reset	Reset the ON/OFF cycles to zero. Or disable the diagnostics.	
		5	Detection of unconnected load	Detects the broken wire.	Unit	Continue	Manual/automatic reset	(1) Replace the valve or the input/output equipment, and check the operation. (2) Replace the valve or the output equipment, and check the operation.	

Item	Byte	Bit No.	Content of diagnostics		Diagnosed area and processing upon error		How to reset	Reset conditions	Remarks (LED indications, etc.)
			Item	Details	Effective diagnostic coverage	I/O processing upon diagnosis			
System diagnosis 1	0	6	Short-circuit detection of output load	A short-circuit of the valve or the output equipment has been detected.	Unit	Continue	Manual/automatic reset	(1) Replace the valve or the output equipment, and check the operation. (2) Replace the valve or the output equipment, and check the operation.	W-MS: Flashes red*1 Remote MS: Flashes red
		7	Short-circuit detection of power supply for control / input	A short-circuit of the input equipment power supply has been detected.	Unit	Continue	Automatic reset	Check the part which has been causing the error and review the wiring or check if the input equipment is normal.	

Item	Byte	Bit No.	Content of diagnostics		Diagnosed area and processing upon error		How to reset	Reset conditions	Remarks (LED indications, etc.)	
			Item	Details	Effective diagnostic coverage	I/O processing upon diagnosis				
System diagnosis 2	1	0	Detection of a reduction in the US2 (for output) power voltage	A voltage drop of the US2 (for output) power supply voltage has been detected.	Unit	Continue	Automatic reset	Supply 24 VDC +/-10% for the US2 (for output) power supply voltage.	Base W-MS: Flashes red Remote (EXW1) PWR: Flashes red Remote (EX600-W) PWR(V): Flashes red	
		1	Detection of a reduction in the US1 (for control / input) power voltage	A voltage drop of the US1 (for control / input) power supply voltage has been detected.	Unit	Continue	Automatic reset	Base : Supply 11 to 25VDC for V+(US1) power source. Remote : Supply 24 VDC +/-10% for the US1 (for control / input) power supply voltage.	Base MS: Flashes red or W-MS: Flashes red Remote MS: Flashes red	
		2	Reserved	-	-	-	-	-	-	-
		3	Connection failure between units (during operation)	An error has occurred in the communication between the wireless unit and EX600 I/O units.	Unit	Stop (HOLD)	Turn the power on again.	Confirm that there is no loose connection between the EX600 I/O units, and connect them correctly.	Base W-MS: Flashes red Remote (EX600-W) MS: Flashes red	
		4	Connection failure between units (when power is supplied)	An error has occurred in the communication between the wireless unit and EX600 I/O units.	Unit	Stop (HOLD)	Turn the power on again.	Confirm that there is no loose connection between the EX600 I/O units, and connect them correctly.	Base W-MS: Flashes red Remote (EX600-W) MS: Flashes red	
		5	Reserved	-	-	-	-	-	-	-
		6	Detection of system error (when power is supplied)	An unrecoverable error has occurred in the system.	Unit	Stop (HOLD)	Manual reset	Supply power again. If the error persists after resupplying power, contact your SMC sales representative.	Base MS: Lights up red Remote MS: Lights up red	
		7	Detection of hardware error (during operation)	An unrecoverable error has occurred in the hardware.	Unit	Stop (HOLD)	Manual reset	Supply power again. If the error is not restored after resupplying power, contact your SMC sales representative.	Base MS: Lights up red or W-MS: Lights up red Remote MS: Lights up red	

Item	Byte	Bit No.	Content of diagnostics		Diagnosed area and processing upon error		How to reset	Reset conditions	Remarks (LED indications, etc.)
			Item	Details	Effective diagnostic coverage	I/O processing upon diagnosis			
System diagnosis 3	2	0	Number of inputs/outputs setting error	The number of occupied inputs/outputs of the Remote has exceeded the set value.	System	Continue	Manual reset	Change the user set value. Or, adjust the unit configuration so that the number of occupied points is within the set value.	Base W-MS: Flashes red Remote MS: Flashes red
		1	Reserved	-	-	-	-	-	-
		2	Reserved	-	-	-	-	-	-
		3	Wireless adaptor internal connection error	Internal communication with the wireless adaptor is not performed normally.	System	Stop (Hold)	Automatic reset	Check for loose connectors and broken wires.	Base MS: Flashes red
		4	Reserved	-	-	-	-	-	-
		5	Reserved	-	-	-	-	-	-
		6	System Error detected	Memory read/write error	System	Continue	Manual reset	Initialize the product. If the error persists after resupplying power, contact your SMC sales representative.	Base, Remote MS: Flashes red
		7	Detection of hardware error	Memory write error	System	Continue	Manual reset	Initialize the product. If the error persists after resupplying power, contact your SMC sales representative.	Base, Remote MS: Flashes red

Item	Byte	Bit No.	Content of diagnostics		Diagnosed area and processing upon error		How to reset	Reset conditions	Remarks (LED indications, etc.)	
			Item	Details	Effective diagnostic coverage	I/O processing upon diagnosis				
System diagnosis 4	3	0	Number of system inputs/outputs setting error	The number of occupied system inputs/outputs has exceeded the set value.	System	Stop (Hold)	Manual reset	Change the user set value. Or, adjust the unit configuration so that the number of occupied points is within the set value.	Base MS: Flashes red	
		1	Number of registered Remotes setting error (Outside of the wireless channel setting range)	More wireless channels than specified in the number of registered Remotes setting are registered.	System	Continue	Manual reset	Change the set value of the number of registered Remotes. Or, delete the registered Remotes (wireless channels) outside of the set range.	Base MS: Flashes red	
		2	Enforce mode	Active the enforce mode	System	Continue	Manual reset	Exit from enforce mode.	Base, Remote W-NS: Lights up orange	
		3	Reserved	-	-	-	-	-	-	-
		4	Reserved	-	-	-	-	-	-	-
		5	Reserved	-	-	-	-	-	-	-
		6	Wireless registration data corrupted	An error has occurred in the wireless registration information.	System	Stop (HOLD)	Manual reset	Supply power again. If the error persists after resupplying power, contact your SMC sales representative.	Base MS: Lights up red or W-NS: Lights up red	
7	Detection of wireless hardware error	An unrecoverable error has occurred in the hardware of the wireless units.	System	Stop (HOLD)	Manual reset	Supply power again. If the error persists after resupplying power, contact your SMC sales representative.	Base MS: Lights up red or W-NS: Lights up red			

Item	Byte	Bit No.	Content of diagnostics		Diagnosed area and processing upon error		How to reset	Reset conditions	Remarks (LED indications, etc.)
			Item	Details	Effective diagnostic coverage	I/O processing upon diagnosis			
Remote connection information Wireless channels 1-7 (Bit 0 is fixed at "0".)	4	0	-	-	-	-	-	When the connection data is "0", the wireless communication with the Remote is not connected.	
		1	Connection condition of the Remote communication (Wireless channel 1)	-	-	-	-		
		2	Connection condition of the Remote communication (Wireless channel 2)	-	-	-	-		
		3	Connection condition of the Remote communication (Wireless channel 3)	-	-	-	-		
		4	Connection condition of the Remote communication (Wireless channel 4)	-	-	-	-		
		5	Connection condition of the Remote communication (Wireless channel 5)	-	-	-	-		
		6	Connection condition of the Remote communication (Wireless channel 6)	-	-	-	-		
		7	Connection condition of the Remote communication (Wireless channel 7)	-	-	-	-		
Remote connection information Wireless channels 8-15	5	0	Connection condition of the Remote communication (Wireless channel 8)	-	-	-	-	When the connection data is "1", the wireless communication with the Remote is connected normally.	
		1	Connection condition of the Remote communication (Wireless channel 9)	-	-	-	-		
		2	Connection condition of the Remote communication (Wireless channel 10)	-	-	-	-		
		3	Connection condition of the Remote communication (Wireless channel 11)	-	-	-	-		
		4	Connection condition of the Remote communication (Wireless channel 12)	-	-	-	-		
		5	Connection condition of the Remote communication (Wireless channel 13)	-	-	-	-		
		6	Connection condition of the Remote communication (Wireless channel 14)	-	-	-	-		
		7	Connection condition of the Remote communication (Wireless channel 15)	-	-	-	-		

Item	Resister area	Bit No.	Content of diagnostics		Diagnosed area and processing upon error		How to reset	Reset conditions	Remarks (LED indications, etc.)
			Item	Details	Effective diagnostic coverage	I/O processing upon diagnosis			
Remote diagnostic information Wireless channels 1-7 (Bit 0 is for Base)	6	0	Presence / absence of system information error of Base		-	-	-	-	No error in the Base / Remote when the diagnostic data is "0".
		1	Presence / absence of system information error of Remote (Wireless channel 1)		-	-	-	-	
		2	Presence / absence of system information error of Remote (Wireless channel 2)		-	-	-	-	
		3	Presence / absence of system information error of Remote (Wireless channel 3)		-	-	-	-	
		4	Presence / absence of system information error of Remote (Wireless channel 4)		-	-	-	-	
		5	Presence / absence of system information error of Remote (Wireless channel 5)		-	-	-	-	
		6	Presence / absence of system information error of Remote (Wireless channel 6)		-	-	-	-	
		7	Presence / absence of system information error of Remote (Wireless channel 7)		-	-	-	-	
Remote diagnostic information Wireless channels 8-15	7	0	Presence / absence of system information error of Remote (Wireless channel 8)		-	-	-	-	Error in the Base / Remote when the diagnostic data is "1".
		1	Presence / absence of system information error of Remote (Wireless channel 9)		-	-	-	-	
		2	Presence / absence of system information error of Remote (Wireless channel 10)		-	-	-	-	
		3	Presence / absence of system information error of Remote (Wireless channel 11)		-	-	-	-	
		4	Presence / absence of system information error of Remote (Wireless channel 12)		-	-	-	-	
		5	Presence / absence of system information error of Remote (Wireless channel 13)		-	-	-	-	
		6	Presence / absence of system information error of Remote (Wireless channel 14)		-	-	-	-	
		7	Presence / absence of system information error of Remote (Wireless channel 15)		-	-	-	-	

Item	Byte	Bit No.	Content of diagnostics		Diagnosed area and processing upon error		How to reset	Reset conditions	Remarks (LED indications, etc.)
			Item	Details	Effective diagnostic coverage	I/O processing upon diagnosis			
Remote registration information Wireless channels 1-7 (Bit 0 is fixed at "0".)	8	0	-		-	-	-	-	When the registration data is "0", no Remote has been registered.
		1	Registration of Remote (Wireless channel 1)		-	-	-	-	
		2	Registration of Remote (Wireless channel 2)		-	-	-	-	
		3	Registration of Remote (Wireless channel 3)		-	-	-	-	
		4	Registration of Remote (Wireless channel 4)		-	-	-	-	
		5	Registration of Remote (Wireless channel 5)		-	-	-	-	
		6	Registration of Remote (Wireless channel 6)		-	-	-	-	
		7	Registration of Remote (Wireless channel 7)		-	-	-	-	
Remote registration information Wireless channels 8-15	9	0	Registration of Remote (Wireless channel 8)		-	-	-	-	When the registration data is "1", a Remote has been registered.
		1	Registration of Remote (Wireless channel 9)		-	-	-	-	
		2	Registration of Remote (Wireless channel 10)		-	-	-	-	
		3	Registration of Remote (Wireless channel 11)		-	-	-	-	
		4	Registration of Remote (Wireless channel 12)		-	-	-	-	
		5	Registration of Remote (Wireless channel 13)		-	-	-	-	
		6	Registration of Remote (Wireless channel 14)		-	-	-	-	
		7	Registration of Remote (Wireless channel 15)		-	-	-	-	

*1: The LED indicator W-MS indicates the system status of the Remote.

If it is ON or flashes, errors have occurred in the registered Remote.

*: When the diagnostic data of the system diagnostics 1-4 is "0", no error has occurred. When it is "1", errors have occurred.

*: This table is for when the number of registered Remotes is set to 15 in the Base settings.

The diagnostic sizes of Remote connection information, diagnostic information and registration information vary depending on the setting for the number of registered wireless units.

*: The bit0 of connection/registration information is fixed at "0".

*: The bit0 of diagnostic information indicates the diagnostic information of the Base.

Frequency channel select function (F.C.S.)

The frequency channel can be selected using this function. Since only protocol V.2.0 supports it, specify protocol V.2.0 in the system settings when using it.

* The number of selectable frequency channels varies depending on the country in 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>

Follow the steps below to configure the function on the Remote registration screen on the Properties tab.

(1) Set [Pairing] to [Normal mode].

For details on pairing settings, refer to Pairing and Unpairing Procedures.

(2) Click FCS Setting.

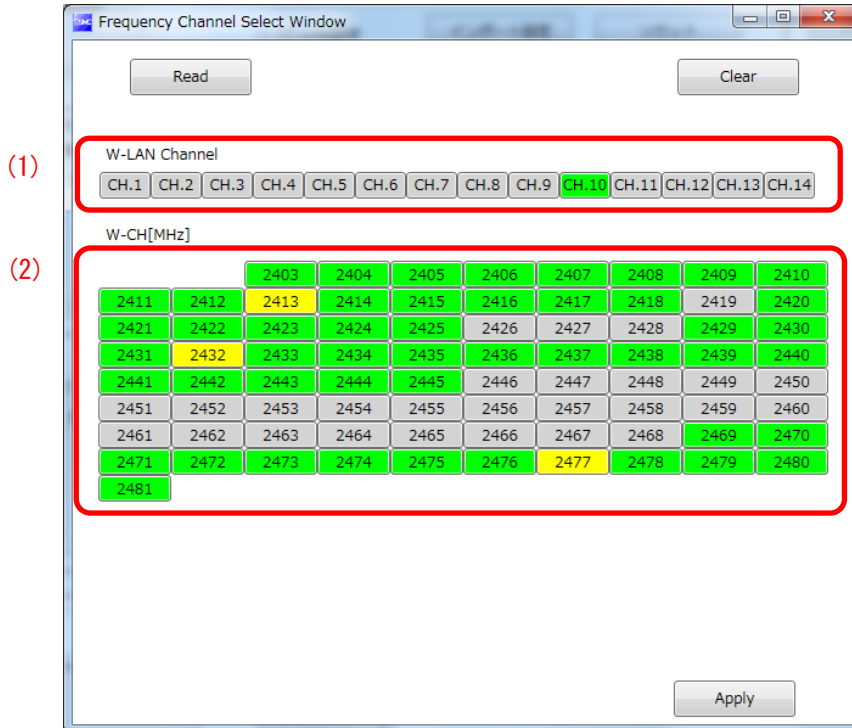
The screenshot shows the I/O Configurator software interface. The 'Properties' tab is selected, and the 'Remote registration' section is active. The 'Pairing' mode is set to 'Normal mode'. The 'FCS Setting' button is highlighted with a red box and labeled (2). The 'Registered Remotes' table is visible, showing one registered remote with the following details:

W.ch	Remote PID	Input size	Output size	Base ID	Registration status	TAG
001	16D2E710	2	0	18628002	Registered	EXW1-RDXNE4AE

The 'Free Remotes' table is also visible, but it is empty. The 'Dummy' section shows 'Input size' and 'Output size' both set to '0byte'. The 'Administrator mode' is set to '296[sec]' and 'Monitor mode' is selected.

Click FCS Settings to display the following screen.

- (3) Select the frequency channel to be used for communication from W-LAN channel or W-CH and click "Apply".
The setting is applied by resetting the unit or turning the power back on by pressing the "Reset" button.



(1) W-LAN Channel indicators

The W-LAN indicators make it possible to select frequency channels corresponding to W-LAN channel at one time.

* In the example above, W-LAN Channel: CH.10 is selected.

(2) W-CH indicators

The W-CH indicators make it possible to select frequencies for each CH.

* In the example above, frequencies 2419, 2426-2428, and 2446-2468 [MHz] are unused Channels.

Note that frequencies 2446-2468 [MHz] correspond to (1) W-LAN Channel: CH.10 above.

• Indicator colors

Color	Description	Remarks
Green	Selected frequency channel (W-CH area) W-LAN channel that does not conflict with Active frequency channels (W-LAN Channel area)	
Yellow	Advertise channel	Cannot be set for inactive frequency channels
Grey	Inactive frequency channel	



- If advertise channels are included in the CH at the time of selecting a W-LAN Channel, they cannot be selected. To select them, initialize the product or remove all the registered Remotes and then configure F.C.S. before performing pairing.
- To use 5-7 frequency channels, neighboring frequencies need to be separated by 3 MHz.
- To use 8-14 frequency channels, neighboring frequencies need to be separated by 2 MHz.
- To use 15 frequency channels or more, neighboring frequencies can be selected.

Number of pairing remotes

Up to 31 remotes can be registered to one base. However, number of remotes will be limited based on the following conditions.

Condition1: Setting of Max Remote 15/31

Condition2: The total IO size is as follows, and the maximum value varies depending on the settings.
Max.4096points (512bytes)

Input: Diagnosis of Base (default: 10bytes) + total of all remotes input size.

Output: Total of all remotes output size.

Please refer to IO size section(P.68) for size of each remote.

Detail of Parameters

The parameter of paired Remotes can be configurable by configurations tools.

Base	Remote		Protocol	Configuration tool		
	Name	Type		I/O Configurator (NFC)	CIP / Configuration Assembly	IO-Link Device tool
EXW1-BDNAC	e-CON Type	EXW1-RD#	V.2.0	○	○	-
		EXW1-RD#	V.1.0	○	-	-
	IO-Link Master	EXW1-RL#	V.2.0	○	○	×
		EXW1-RL#	V.1.0	○	×	×
	IO-Link device which is connected to IO-Link Master Remote		V.2.0	×	○	×
			V.1.0	×	○	×

*Please refer to P.105 how to access by CIP (Common Industrial Protocol).

● Compact Wireless Base Parameter

- Setting Parameter

No	Target	Parameter	Definition	Item	Default setting	Content
1	Base	Brown-out Detection for US1	Error occurs due to low power supply voltage	Enable	○	
				Disable		
2		Output State Fieldbus FaultIdle	Output while upper communication is not established	Clear	○	
				Hold		
				Individual		
3		Input State for RF Timeout	Input information while wireless communication is not established.	Clear		
	Hold			○		

- Diagnostic Parameter

None.

● Compact Wireless Remote IO-Link Master Parameter EXW1-RLAPA8C(ClassA)

- Setting Parameter

No	Target	Parameter	Definition	Item	Default setting	Content	
1	Remote	Brown-out Detection for US1	Generated error when US1 power supply voltage goes under approx. 19 V.	Disable			
				Enable	○		
2		Output State Fieldbus Fault/Idle	Sets output status when Fieldbus Communication Fault/Idle is occurred.	Clear	○	This function is valid only when "Unit: Output State Fieldbus Fault/Idle" for the Wireless Base is set to "Individual"	
				Hold			
				Individual			
3		Short circuit Monitor for IOL (L+, C/Q)	Either of the following detects the short-circuit, diagnostics is generated. •L+ power supply •C/Q signal •P24 power supply	Disable			
				Enable	○		
4		AD Update time	Update Time of IO-Link input Process data.	20-60000	500ms		
5		Output State for RF Timeout	Sets output status when Wireless Communication Timeout is occurred.	Clear			
				Hold	○		
				Individual			
6		Unit(SIO)	Hold State for Fieldbus Fault	Hold State for Fieldbus Fault	Hold(0)		
					Individual(1)	○	
7			Output State for Fieldbus Fault	Sets output status when Fieldbus Communication error is occurred.	OFF(0)	○	Enable when Hold State for Fieldbus Fault is set Individual.
					ON(1)		
8			Hold State for Fieldbus Idle	Sets hold status when Fieldbus Communication idle is occurred.	Hold(0)		
	Individual(1)				○		
9	Output state for Fieldbus Idle		Sets output status when Fieldbus Communication idle is occurred.	OFF(0)	○	Enable when Hold State for Fieldbus Idle is set Individual.	
				ON(1)			
10	Hold State for RF Timeout		Sets hold status when Wireless Communication timeout is occurred.	Hold(0)			
				Individual(1)	○		
11	Output state for RF Timeout		Sets output status when Wireless Communication timeout is occurred.	OFF(0)	○	Enable when Hold state for RF Timeout is set Individual	
				ON(1)			
12	Pd Byte Swap	Swap the byte order of the process data, which is exchanged between fieldbus communication and IO-Link master.	Direct	○			
			Swap 16 bit				
			Swap 16 bit				
			Swap All				
13	L+ Power ON	Control L+.	Power ON	○	Only for IO-Link P1/P2		
			Power OFF				
14	Port Input IO-Link Size	Setting the IO-Link input Process data size.	0 to 32bytes	P1,P2:16bytes P3,P4: 0byte	Wireless protocol V.2.0		
			0 to 14bytes	P1:8bytes P2:6bytes P3,P4: 0byte	Wireless protocol V.1.0		
15	Port Output IO-Link Size	Setting the IO-Link output Process data size.	0 to 32bytes	P1,P2:16bytes P3,P4: 0byte	Wireless protocol V.2.0		
			0 to 14bytes	P1:8bytes P2:6bytes P3,P4:0byte	Wireless protocol V.1.0		
16	Port Mode	Setting the IO-Link Port mode.	Deactivated				
			IOL_Manual				
			IOL_Autostart	○			
			DI_C/Q	○			
			DO_C/Q				

● Compact Wireless Remote IO-Link Master Parameter EXW1-RLAPA8C(ClassA)

- Setting Parameter (continued)

No	Target	Parameter	Definition	Item	Default setting	Content
17		Validation & Backup	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
				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)
18		PortCycleTime	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)	As fast as possible	○	Automatically set as a minimum cycle time of IO-Link device.
				0.6ms to 132.8ms		
19		VendorID	Setting for vendor ID which is compared when the IO-Link device comparison function is valid.	0 to 65535	0	
20		DeviceID	Setting for device ID which is compared when the IO-Link device comparison function is valid.	0 to 16777215	0	
21		IO-Link State For FieldbusFault	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.
				Hold		Process data outputs remain valid. IO-link master holds the last process data it received.
				Clear/PD Outinvalid	○	All outputs are turned OFF and Process data outputs become invalid.
22		IO-Link State for Fieldbus Idle	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.
				Hold		Process data outputs remain valid. IO-link master holds the last process data it received.
				Clear/PD Outinvalid	○	All outputs are turned OFF and Process data outputs become invalid.

No	Target	Parameter	Definition	Item	Default setting	Content
23	IO-LINKP1 to P4	IO-Link State for RF Timeout	Sets Process data status when Wireless Communication timeout is occurred.	Clear/PD Outvalid		All outputs are turned OFF and process data outputs remain valid.
				Hold		Process data outputs remain valid. IO-link master holds the last process data it received.
				Clear/PD Outinvalid	○	All outputs are turned OFF and Process data outputs become invalid.

- Diagnostic Parameter

No	Target	Parameter	Definition	Item	Remarks
1	IO-LINKP1 to P4	PortStatusInfo	PortStatusInfo	NO_DEVICE, DEACTIVATED, PORT_DIAG PREOPERATE, OPERATE, DI_C/Q, DO_C/Q	
2		PortQualityInfo	PortQualityInfo	0x00-0xFF	0: Process data valid 1: Process data invalid Bit0 : input Bit1 : output Bit2-7 : Reserved
3		RevisionID	IO-Link version of Connected IO-Link device	0x00-0xFF	
4		TransmissionRate	Transmission Rate	NOT_DETECTED, COM1,COM2,COM3	
5		MasterCycleTime	Auctual cycle time	0-255	0 : As fast as possible 1 to 3 : 0.4ms 4 to 63 : 0.4 to 6.3 ms(by 0.1ms) 64 to 127 : 6.4 to 31.6 ms (by 0.4ms) 128 to 191 : 32 to 132.8ms (by 1.6ms) 192 to 255 : 132.8 ms
6		InputDataLength	Input Data Length	0-32	
7		OutputDataLength	Output Data Length	0-32	
8		VendorID	Vendor ID of Connected IO-Link device	0 to 65535	
9		DeviceID	Deveice ID of Connected IO-Link device	0 to 16777215	

● Compact Wireless Remote IO-Link Master Parameter EXW1-RLBPA7C(ClassB)

- Setting Parameter

No	Target	Parameter	Definition	Item	Default setting	Content
1	Remote	Brown-out Detection for US1	Generated error when US1 power supply voltage goes under approx. 19 V.	Enable	○	
				Disable		
2		Output State Fieldbus FaultIdle※1	Sets output status when Fieldbus Communication Fault/Idle is occurred.	Clear	○	This function is valid only when "Unit: Output State Fieldbus FaultIdle" for the Wireless Base is set to "Individual"
				Hold		
				Individual		
3		Short circuit Monitor for IOL (L+, C/Q)	Either of the following detects the short-circuit, diagnostics is generated. •L+ power supply •C/Q signal •P24 power supply	Enable	○	
				Disable		
4		AD Update time	Update Time of IO-Link input Process data.	20-60000	500ms	
5		Output State for RF Timeout	Sets output status when Wireless Communication Timeout is occurred.	Clear		
				Hold	○	
				Individual		
6		Brown-out Detection for US2	Generated error when US2 power supply voltage goes under approx. 19 V.	Enable		
	Disable			○		
7	Unit(SIO)	Hold State for Fieldbus Fault	Hold State for Fieldbus Fault	Hold(0)		
				Individual(1)	○	
8		Output State for Fieldbus Fault	Sets output status when Fieldbus Communication error is occurred.	OFF(0)	○	Enable when Hold State for Fieldbus Fault is set Individual.
				ON(1)		
9		Hold State for Fieldbus Idle	Sets hold status when Fieldbus Communication idle is occurred.	Hold(0)		
				Individual(1)	○	
10		Output State for Fieldbus Idle	Sets output status when Fieldbus Communication idle is occurred.	OFF(0)	○	Enable when Hold State for Fieldbus Idle is set Individual.
				ON(1)		
11		Hold State for RF Timeout	Sets hold status when Wireless Communication timeout is occurred.	Hold(0)		
				Individual(1)	○	
12		Output State for RF Timeout	Sets output status when Wireless Communication timeout is occurred.	OFF(0)	○	Enable when Hold state for RF Timeout is set Individual
				ON(1)		

● Compact Wireless Remote IO-Link Master Parameter EXW1-RLBPA7C(ClassB)

- Setting Parameter (continued)

No	Target	Parameter	Definition	Item	Default setting	Content
13	IO-LINKP1 to P4	Pd Byte Swap	Swap the byte order of the process data, which is exchanged between fieldbus communication and IO-Link master.	Direct	○	
				Swap 16 bit		
				Swap 16 bit		
				Swap All		
14		L+ Power ON	Control L+.	Power ON	○	Only for IO-Link P1/P2
				Power OFF		
15		Port Input IO-Link Size	Setting the IO-Link input Process data size.	0 to 32bytes	P1,P2: 16bytes	Wireless protocol V.2.0
				0 to 14bytes	P1:8bytes P2:6bytes	Wireless protocol V.1.0
16		Port Output IO-Link Size	Setting the IO-Link output Process data size.	0 to 32bytes	P1,P2: 16bytes	Wireless protocol V.2.0
				0 to 14bytes	P1:8bytes P2:6bytes	Wireless protocol V.1.0
17		Port Mode	Setting the IO-Link Port mode.	Deactivated		4 th pin of PORT1/2
				IOL_Manual		
				IOL_Autostart	○	
				DI_C/Q		
				DO_C/Q		
18		Validation & Backup	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
				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)	
19	PortCycleTime	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)	As fast as possible	○	Automatically set as a minimum cycle time of IO-Link device.	

● Compact Wireless Remote IO-Link Master Parameter EXW1-RLBPA7C(ClassB)

- Setting Parameter (continued)

No	Target	Parameter	Definition	Item	Default setting	Content	
20	IO-LINKP1 to P4	VendorID	Setting for vendor ID which is compared when the IO-Link device comparison function is valid.	0 to 65535	0		
21		DeviceID	Setting for device ID which is compared when the IO-Link device comparison function is valid.	0 to 16777215	0		
22		IO-Link State For FieldbusFault	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.
				Hold			Process data outputs remain valid. IO-link master holds the last process data it received.
				Clear/PD Outinvalid	○		All outputs are turned OFF and Process data outputs become invalid.
23		IO-Link State for Fieldbus Idle	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.
				Hold			Process data outputs remain valid. IO-link master holds the last process data it received.
				Clear/PD Outinvalid	○		All outputs are turned OFF and Process data outputs become invalid.
24		IO-Link State for RF Timeout	Sets Process data status when Wireless Communication timeout is occurred.	Clear/PD Outvalid			All outputs are turned OFF and process data outputs remain valid.
				Hold			Process data outputs remain valid. IO-link master holds the last process data it received.
				Clear/PD Outinvalid	○		All outputs are turned OFF and Process data outputs become invalid.

● Compact Wireless Remote IO-Link Master Parameter EXW1-RLBPA7C(ClassB)

- Diagnostic Parameter

No	Target	Parameter	Definition	Item	Remarks
1	IO-LINKP1 to P4	PortStatusInfo	PortStatusInfo	NO_DEVICE, DEACTIVATED, PORT_DIAG PREOPERATE, OPERATE, DI_C/Q, DO_C/Q	
2		PortQualityInfo	PortQualityInfo	0x00-0xFF	0: Process data valid 1: Process data invalid Bit0 : input Bit1 : output Bit2-7 : Reserved
3		RevisionID	IO-Link version of Connected IO-Link device	0x00-0xFF	
4		TransmissionRate	Transmission Rate	NOT_DETECTED, COM1,COM2,COM3	
5		MasterCycleTime	Actual cycle time	0-255	0 : As fast as possible 1 to 3 : 0.4ms 4 to 63 : 0.4 to 6.3 ms(by 0.1ms) 64 to 127 : 6.4 to 31.6 ms (by 0.4ms) 128 to 191 : 32 to 132.8 ms (by 1.6ms) 192 to 255 : 132.8 ms
6		InputDataLength	Input Data Length	0-32	
7		OutputDataLength	Output Data Length	0-32	
8		VendorID	Vendor ID of Connected IO-Link device	0 to 65535	
9		DeviceID	Deveice ID of Connected IO-Link device	0 to 16777215	

● Compact Wireless Remote e-CON Type Parameter EXW1-RDX#E4##

- Setting Parameter

No.	Target	Parameter	Definition	Item	Default setting	Content
1	Remote	Power supply for Control and Input Voltage monitor	Generated error when power supply voltage goes under approx. 19 V.	Enable	○	
				Disable		
2	DIGITAL INPUT	Short Circuit Detection(Power)	Generates error when the short circuit of the power supply for the input device is detected.	Enable	○	
				Disable		
3		Input Filtering Time	Sets the time to ignore the input signal change.	0.1/1.0/10/20ms	1.0ms	Selects the time for filtering.
4		Input Hold Time	Sets the time to hold the input signal.	1.0/15/100/200ms	15ms	
5		ON/OFF Counter Limit Detection	Generates error when the operation count exceeds the set value.	Enable	-	ON/OFF operation count for each bit Ch0-15.
				Disable	-	
6		Counter Limit Value(1k-65000k)	Counter Limit Value	1k-65000k	65000	Times for setting is set value x1000 times

- Diagnostic Parameter

No.	Target	Parameter	Definition	Item	Content
1	DIGITAL INPUT	Ch #:ON/OFF Counter Value	ON/OFF count value. Clears the Input ON/OFF counter to 0.	0 - 4294967295 (0 to 0xFFFFFFFF)	ON/OFF times for each channel.
				Clr(Clear)	Set ON/OFF operation count of input devices to 0.
2		Ch7-0:Exceeded ON/OFF Counter Limit	ON/OFF count of the valve has exceeded the set value. Channel diagnosis Ch0 to Ch7.	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
3		Ch15-8: Exceeded ON/OFF Counter Limit	ON/OFF count of the valve has exceeded the set value. Channel diagnosis Ch8 to Ch15.	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
4		Ch 7-0: Short Circuit Detection(Input)	The short circuit of the power supply for the input device has been detected. Channel diagnosis Ch0 to Ch7.	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
5		Ch 15-8: Short Circuit Detection(Input)	The short circuit of the power supply for the input device has been detected. Channel diagnosis Ch8 to Ch15.	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.

● Compact Wireless Remote e-CON Type Parameter

EXW1-RDY#E4## / EXW1-RDM#E3##

- Setting Parameter

No	Target	Parameter	Definition	Item	Default setting	Content	
1	Remote	Brown-out Detection for US1	Generated error when power supply voltage(US1) goes under approx. 19 V.	Enable	<input type="radio"/>		
				Disable			
2		Brown-out Detection for US2	Generated error when power supply voltage(US2) goes under approx. 19 V.	Enable		<input type="radio"/>	
				Disable			
3		Output State Fieldbus Fault/Idle	Sets output status when Fieldbus Communication Fault/Idle is occurred.	Clear	<input type="radio"/>	In protocol V.1.0, the "Settings" tab > "Remote Settings" frame > "Output operation when upper communication is disconnected" setting takes precedence.	
				Hold			
				Individual			
4		Output State for RF Timeout	Sets output status when Wireless Communication Timeout is occurred.	Clear		<input type="radio"/>	In protocol V.1.0, the "Settings" tab > "Remote Settings" frame > "Output operation when wireless communication is disconnected" setting takes precedence.
				Hold			
				Individual			
5		DIGITAL OUTPUT	Short Circuit Detection(Output)	Generates error when the short circuit of the output device is detected.	Disable		
					Enable	<input type="radio"/>	
6			Restart After Short Circuit	Restore the setting of short circuit detection error after the output device short circuit is cleared.	Auto	<input type="radio"/>	Automatic recovery by short circuit release.
					Manual		After the short circuit is cleared, the error is cleared by turning the power back on.
7			ON/OFF Counter Limit Detection	Generates error when the operation count exceeds the set value.	Disable	<input type="radio"/>	ON/OFF operation count for each bit Ch0-15.
	Enable						
8	Open Circuit Detection		Generates error when the disconnection of the output device is detected.	Disable	<input type="radio"/>	Disconnection detection for each bit Ch0-15.	
				Enable			
9	Hold State for Fieldbus Fault		Sets hold status when Fieldbus Communication error is occurred.	Hold			
				Individual			
10	Output State for Fieldbus Fault		Sets output status when Fieldbus Communication error is occurred.	Clear		Enabled when the Hold State for Fieldbus Fault setting is set to "Individual".	
				ForceON			
11	Hold State for Fieldbus Idle		Sets hold status when Fieldbus Communication idle is occurred.	Hold			
				Individual			
12	Output State for Fieldbus Idle		Sets output status when Fieldbus Communication idle is occurred.	Clear		Enabled when the Hold State for Fieldbus Idle setting is set to "Individual".	
		ForceON					
13	Hold State for RF Timeout	Sets hold status when Wireless Communication timeout is occurred.	Hold				
			Individual				
14	Output State for RF Timeout	Sets output status when Wireless Communication timeout is occurred.	Clear		Enabled when the Hold State for Fieldbus Fault setting is set to "Individual" and wireless protocol V2.0.		
			ForceON				
15	Counter Limit Value (1-65000k)	ON/OFF Counter Limit Value.	1k-65000k	65000	The times to be set is the set value x 1000.		

- Diagnostic Parameter

No	Target	Parameter	Definition	Item	Content
1	DIGITAL OUTPUT	Ch #:ON/OFF Counter Value	ON/OFF count value. Clears the Input ON/OFF counter to 0.	0 - 4294967295 (0 to 0xFFFFFFFF)	ON/OFF times for each channel.
				Clr(Clear)	Set ON/OFF operation count of input devices to 0.
2		Ch 7-0: Exceeded ON/OFF Counter Limit	ON/OFF count of the valve has exceeded the set value. Channel diagnosis Ch0 to Ch7	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
3		Ch 15-8: Exceeded ON/OFF Counter Limit	ON/OFF count of the valve has exceeded the set value. Channel diagnosis Ch8 to Ch15	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
4		Ch 7-0: Open Circuit Detection	The output device wiring is disconnected. Channel diagnosis Ch0 to Ch7	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
5		Ch 15-8: Open Circuit Detection	The output device wiring is disconnected. Channel diagnosis Ch8 to Ch15	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
6		Ch 7-0:Short Circuit Detection(Output)	The short circuit of the power supply for the output device has been detected. Channel diagnosis Ch0 to Ch7	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
7		Ch 15-8: Short Circuit Detection(Output)	The short circuit of the power supply for the output device has been detected. Channel diagnosis Ch8 to Ch15	0x00-0xFF	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.

●Wireless Remote (AMS Remote) Parameter EXA1-##-SA

- Setting Parameter

No	Target	Parameter	Definition	Item	Default setting	Content
1	Remote	Brown-out Detection for US1	Generated error when power supply voltage(US1) goes under approx. 19 V.	Enable	○	
				Disable		
2		Output State Fieldbus Fault/Idle Communication failure	Sets output status when Fieldbus Communication Fault/Idle is occurred.	Clear		
				Hold	○	
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	○		
			Disable			
4		AD Update time	date Time of IOLink input Process data.	20-60000	500ms	

- Setting Parameter

No	Target	Parameter	Definition	Item	Default setting	Content
1	HUB	ParameterEnable/Disable	Priority is given to settings held by wireless base.	Disable		
				Enable	○	
2		OperationPressure	Sets the pressure in the operation mode.	0-1050	400	
3		StandbyPressure	Sets the pressure in the standby mode.	0-1050	200	
4		SoftStartTime	Sets the pressure in the standby mode	0-1500	0	
5		StandbyFlowRate(Threshold)(20)	Sets the standby flow rate(threshold value).	5-525	25	
		StandbyFlowRate(Threshold)(30)		10-1050	50	
		StandbyFlowRate(Threshold)(40)		20-2100	100	
		StandbyFlowRate(Threshold)(60)		40-4200	200	
6		StandbyFlowRate(Hysteresis)(20)	Sets the standby flow rate (hysteresis).	0-520	50	
		StandbyFlowRate(Hysteresis)(30)		0-1040	100	
		StandbyFlowRate(Hysteresis)(40)		0-2080	200	
		StandbyFlowRate(Hysteresis)(60)		0-4100	400	
7		StandbyOnDelay	Sets the standby ON delay.	0-9999	600	
8		StandbyOffDelay	Sets the standby OFF delay.	0-9999	0	
9		IsolationEnable/Disable	Sets enabling/disabling of automatic isolation.	Disable	○	
				Enable		
10	IsolationDelay	Sets isolation delay.	0-9999	3600		
11	EnergySavingMode	Forces the operating mode to be set.	AMS	○		
			Operation			
			Standby			
12	Pin(SecurityCodeUsed/NotUsed)	Sets whether it is necessary to input the security code or not.	Unused	○		
			Used			
13	Pin(SecurityCodeUsed/NotUsed)	Allows you to change the security code setting.	0-999	0		
14	DeviceAccessLockForPF3A	Sets enabling/disabling of button operation and enabling/disabling of data storage for PF3A.	Key lock release, DS unlock	○		
			Key lock, DS unlock			
15	L+ Power ON AMS ITV	Turns ON/OFF the power supply for ITV.	Power ON	○		
			Power Off			
16	L+ Power ON AMS Standby/VP	Turns ON/OFF the power supply for input signal.	Power ON	○		
			Power Off			
17	DeviceAccessLockForITV	Sets enabling/disabling of button operation and enabling/disabling of data storage for ITV.	Key lock release, DS unlock	○		
			Key lock, DS unlock			

- Diagnostic Parameter

No	Target	Parameter	Definition	Item	Content
1	HUB	Accumulated Flow Reset	Accumulated Flow Reset.	-	Reset by 190 writes.
2		AR/ITV Active Mode	AR/ITV Active Mode.	0-1	0 : AR 1 : ITV

• IO-Link Unit (EXA1-20-SA / EXA1-30-SA / EXA1-40-SA / EXA1-60-SA)
 - Setting Parameter

No	Target	Parameter	Definition	Item	Default setting	Content	
1	IO-LINKP1	Pd Byte Swap	Swaps the byte order of the process data, which is sent and received in the fieldbus communication and IO-Link communication.	Direct	○		
				Swap 16 bit			
				Swap 16 bit			
				Swap All			
2		L+ Power ON	L+ power control	L+ power control	Power ON	○	Possible to be set only for IO-Link P1/P2.
					Power OFF		
3		Port Mode	Configures IO-Link port operation mode setting.	Configures IO-Link port operation mode setting.	Deactivated		
					IOL_Manual		
					IOL_Autostart	○	
					DI_C/Q		
4	Validation & Backup	Sets the function of the collation function (collation between vendor ID and device ID) of the connected device and the data storage (DS) function.	Sets the function of the collation function (collation between vendor ID and device ID) of the connected device and the data storage (DS) function.	DO_C/Q			
				No Device Check	○		Collation function: Disabled DS function: Disabled
				Type compatible Device V1.0			Connected device: V1.0 Collation function: Enabled DS function: Disabled
				Type compatible Device V1.1			Connected device: V1.1 Collation function: Enabled DS function: disabled
				Type compatible Device V1.1, Backup+Restore			Connected device: V1.1 Collation function: Enabled DS function: Enabled (Backup & Restore)
5	PortCycleTime	Setting for communication cycle time with IOLink 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)	Setting for communication cycle time with IOLink 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)	As fast as possible	○	Based min cycle time on device.	
				0.6ms to 132.8ms			
6	IO-LINKP1	VendorID	Sets the vendor ID which is collated when the IO-Link device collation function is enabled.	0 to 65535	0		
7		DeviceID	Sets the device ID which is collated when the IO-Link device collation function is enabled.	0 to 16777215	0		

- Diagnostic Parameter

None.

Hardware Configuration

The following instruction is for the configuration in normal mode. For the configuration in EXW1-BDNAC

■ EDS file and Icon

The EDS file can be used to configure the EXW1. Furthermore, it is necessary to use the dedicated icon for EXW1 to represent in your configuration. These data can be downloaded from the SMC website.

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

EDS file: exw1_bdnac_v10.eds

Icon: exw1.ico

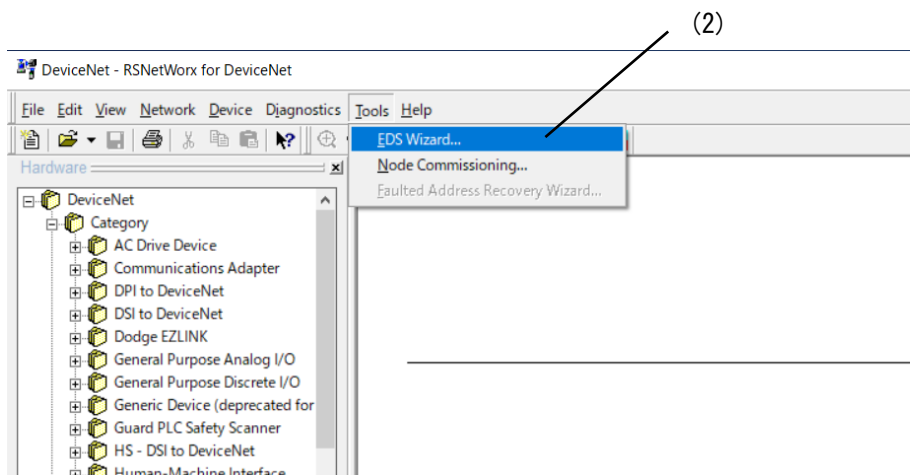
■ Setting using RSNetWorx for DeviceNet®

Following procedure is shown as example to configure the EXW1 series by Rockwell Automation DeviceNet® module software.

Refer to the manual of RSNetWorx for DeviceNet® regarding the detail operation.

1. EDS file installation

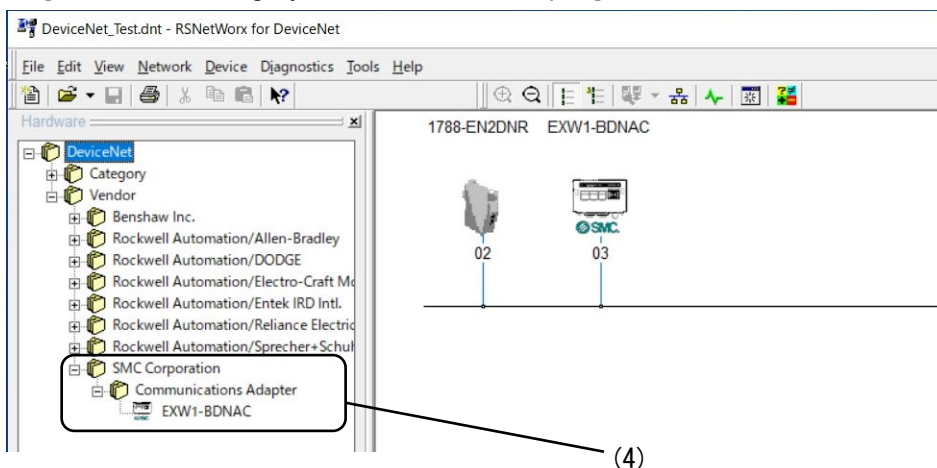
- (1) Start up RSNetWorx for DeviceNet®
- (2) Select [EDS Wizard] from the [Tools] menu.
- (3) Install the EDS file and icon according to the installation screen.



- (4) When the installation is completed, EXW1-BDNAC is registered in the following directory

[Hardware screen DeviceNet®\Vendor\SMCCorporation\CommunicationAdapter]

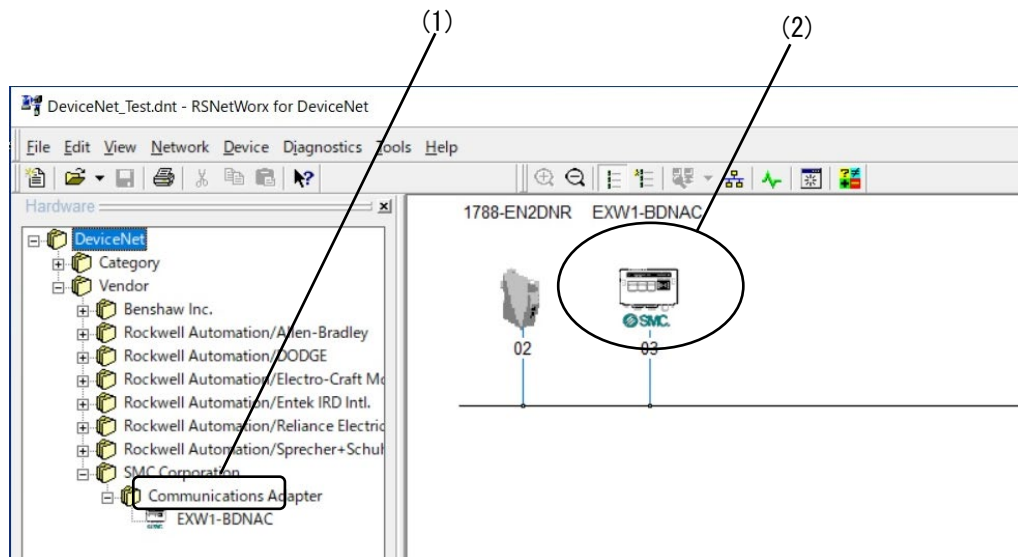
Or [DeviceNet®\Category\Communication Adapter]



• Register to the network.

(1) Double-click EXW1-BDNAC on the Hardware screen.

(2) The EXW1-BDNAC icon will appear on the [Network screen].

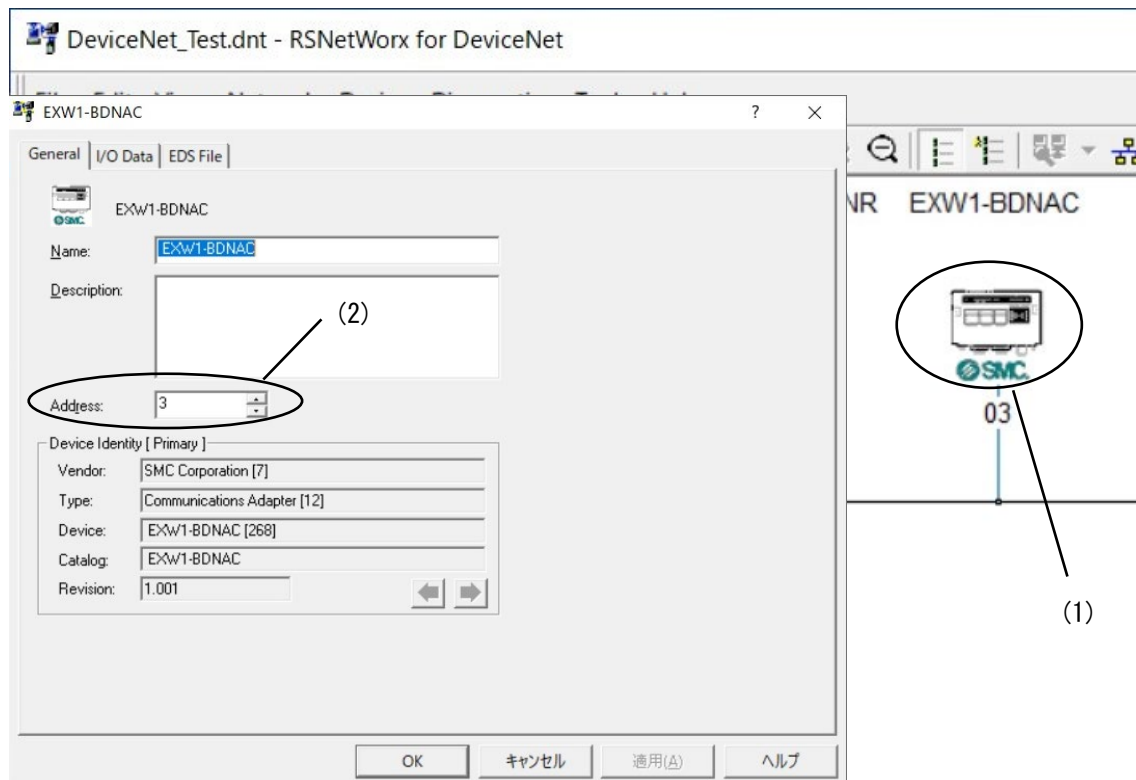


• Configure the MAC ID (Address) of EXW1.

(1) Double-click EXW1-BDNAC on the [NetWork screen].

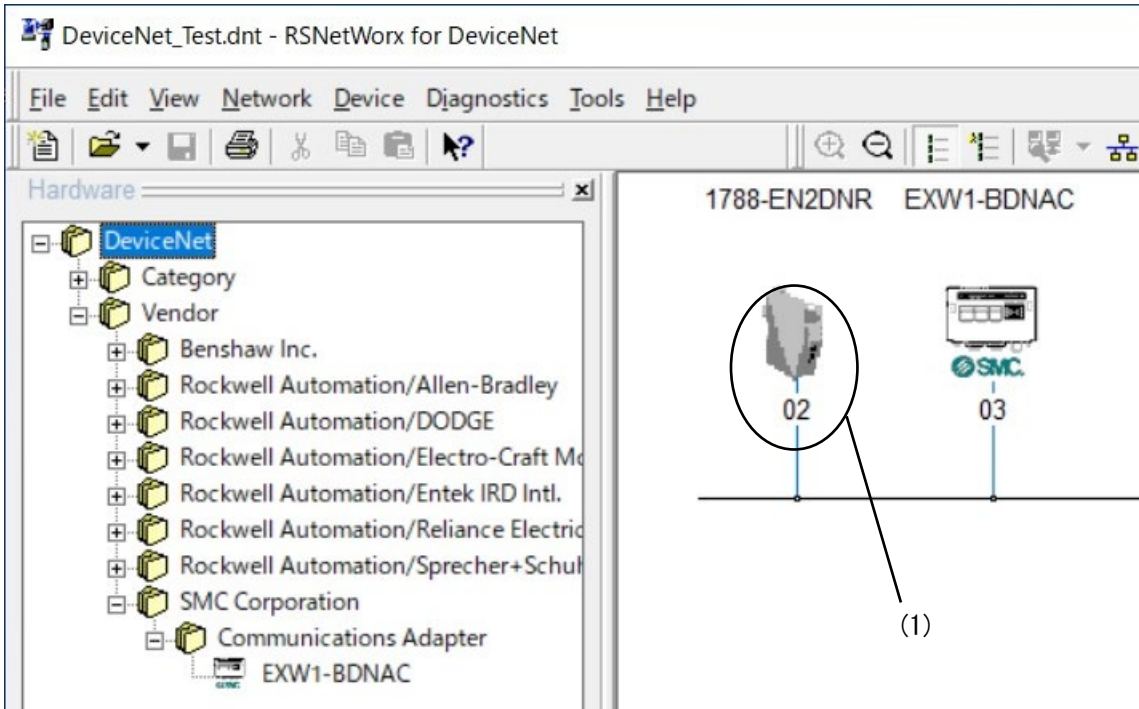
(2) The [EXW1-BDCAC properties screen] is displayed.

Enter the DeviceNet® address you wish to set and press [OK].



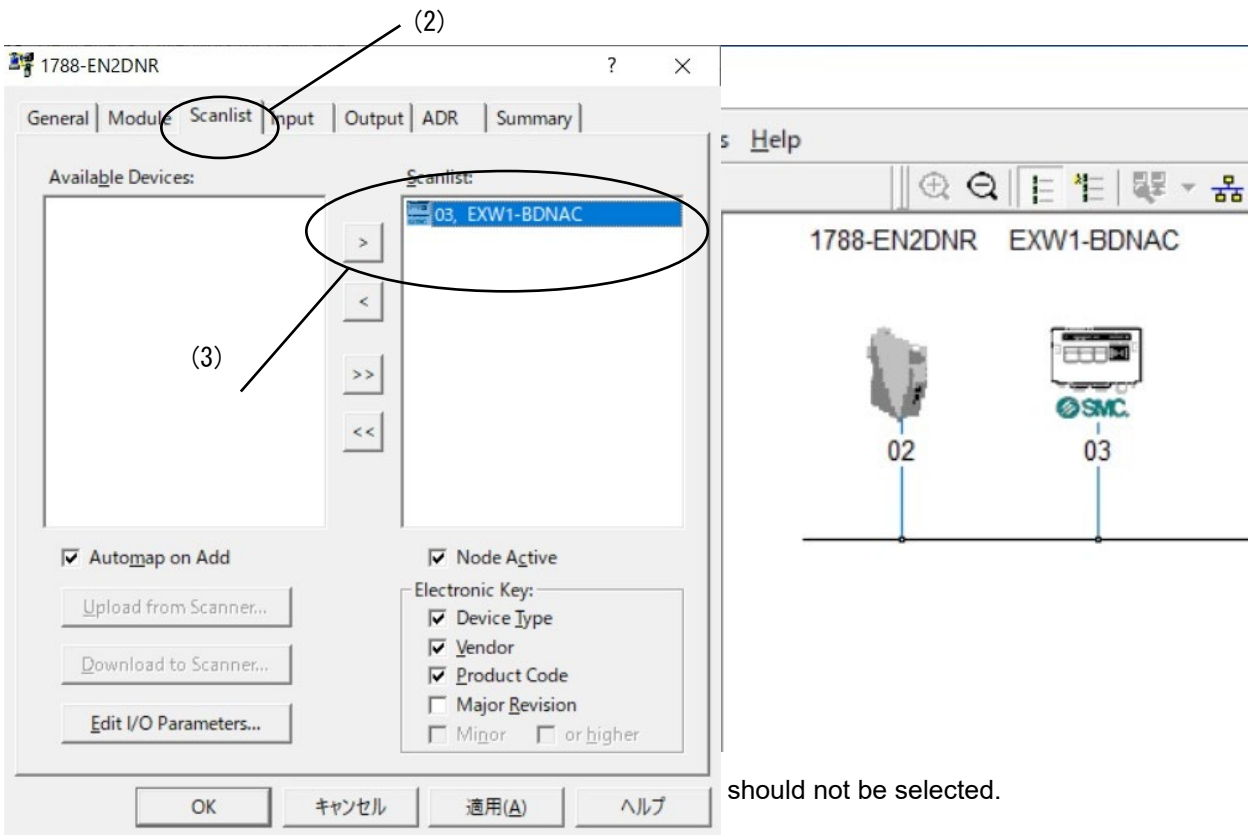
- Configure the MAC ID (Address) of EXW1.

(1) Double-click 1788-EN2DNR on the [NetWork screen].



(2) The [1788-EN2DNR properties screen] is displayed. Select the tab 'Scanlist'

(3) Select EXW1-BDNAC in [Available Devices;] and press the [>] button.



should not be selected.

DeviceNet® Object (CIP)

DeviceNet® Explicit Message can be used to check diagnostic data and read and write various parameters. and read and write various parameters using DeviceNet® Explicit Message. The data format is shown below.

Classification	Object	Class	Instance
DeviceNet® Object	Identity	01h	01h
	Message Router	02h	01h
	DeviceNet®	03h	01h
	Assembly	04h	64h
			96h
	Connection	05h	03h
	Acknowledge Handler	2Bh	01h

• System Diagnostic Object(Class : 66h)

Instance	Attribute	Access	Name	Type	Value
01h	64h	Get	Input data range	UINT	Input data range(byte)
	65h		Output data range	UINT	Output data range (byte)
	6Dh		Number of registered remotes	USIN	Number of registered remotes
	7Ah	Get	System diagnosis 1	BYTE	See diagnostic map details P77
	7Bh		System diagnosis 2	BYTE	See diagnostic map details P77
	7Ch		System diagnosis 3	BYTE	See diagnostic map details P77
	7Dh		System diagnosis 4	BYTE	See diagnostic map details P77
	7Eh	Get	Remote connection information (Wireless channels 1-7)	BYTE	See diagnostic map details P77
	7Fh	Get	Remote connection information (Wireless channels 8-15)	BYTE	
	80h	Get	Remote connection information (Wireless channels 16-23)	BYTE	
	81h	Get	Remote connection information (Wireless channels 24-31)	BYTE	
	8Eh	Get	Remote connection information (Wireless channels 1-7)	BYTE	
	8Fh	Get	Remote connection information (Wireless channels 8-15)	BYTE	
	90h	Get	Remote connection information (Wireless channels 16-23)	BYTE	
	91h	Get	Remote connection information (Wireless channels 24-31)	BYTE	
	9Eh	Get	Remote connection information (Wireless channels 1-7)	BYTE	
	9Fh	Get	Remote connection information (Wireless channels 8-15)	BYTE	
	A0h	Get	Remote connection information (Wireless channels 16-23)	BYTE	
A1h	Get	Remote connection information (Wireless channels 24-31)	BYTE		

■ Unit Parameters

The Explicite Message service code is different for read and write.

- Write : 32h
- Read : 33h

Please use the following format to access.

[Request]

Data	Value	Remarks
Service code	0x32/0x33	• Read : 0x32 • Write : 0x33
Class	0x301~3FE	Unit ID *1
Instance	0x80or0x01~1F	0x80:Base、0x01-1F:Wireless channels
Attribute	0x64~7F	ParameterNo *1
Data[0]	0x00~09	Unit No *1
Data[1]	0x00~20	Channel No Please specify Channel
Data[2]~[n]	*	*Writeing only Write data

[Response]

Data	Value	Remarks
Ack[0]~[3]	0xB2000000/0xB3000000	Successfully read : 0xB2000000、 Successfully write : 0xB3000000 CIP repy code
Data[0]~[n]	*	*Reading only Reading data

*1 : Refer to the table for each unit below for the value to be specified.

Each item is abbreviated as follows.

Class: Cla, Instance: Ins, Attribute: Att, Data[0]: D[0], Data[1]: D[1]

Plase refer to P.88 for the default values of each parameter.

● Compact Wireless Base Parameter

- Base parameter (Class : 308h)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	308h	80h	64h	00h	00h	Brown-out Detection for US1	Detection of a drop in the V+(US1) power voltage	BYTE	(1)Enable (0)Disable
2			65h	00h	00h	Output State Fieldbus FaultIdle	Output while upper communication is not established	BYTE	(0)Clear (1)Hold (2)Individual
3			66h	00h	00h	Input State for RF Timeout	Input information while wireless communication is not established	BYTE	(0)Clear (1)Hold

● Compact Wireless Remote IO-Link Master Parameter EXW1-RLAPA8C(ClassA)

• Remote parameter (Class : 311h)

No.	Cl	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	311h	01h-7Fh (Wireless channel)	64h	00h	00h	Brown-out Detection for US1	Detection of a drop in the US1 (for control) power voltage	BYTE	(1)Enable (0)Disable
2			65h	00h	00h	Output State Fieldbus FaultIdle	Output while upper communication is not established	BYTE	(0)Clear (1)Hold (2)Individual
3			66h	00h	00h	Short circuit Monitor for IOL (L+, C/Q)	Short Circuit Detection • L+ power supply(US1) • C/Q Signal(US1)	BYTE	(1)Enable (0)Disable
4			67h	00h	00h	AD Update time	Update Time of IO-Link Process data	USHORT	20 to 60000
5			68h	00h	00h	Output State for RF Timeout	Sets output status when Wireless Communication Timeout is occurred	BYTE	(0)Clear (1)Hold (2)Individual

• Unit parameter SIO(Class : 38Ch)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	38Ch	01h-1Fh (Wireless channel)	64h	01h	00h	Hold State for Fieldbus Fault	Sets hold status when Fieldbus Communication fault is occurred SIO Setting	BYTE	0: Hold 1: Depend on output state Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
2			65h	01h	00h	Output State for Fieldbus Fault	Sets output status when Fieldbus Communication error is occurred Setting (Setting Individual)	BYTE	0: Off 1: Turn on output forcefully Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
3			66h	01h	00h	Hold State for Fieldbus Idle	Sets hold status when Fieldbus Communication idle is occurred SIO Setting	BYTE	0: Hold 1: Depend on output state Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
4			67h	01h	00h	Output state for Fieldbus Idle	Sets digital output value when Fieldbus Communication idle is occurred (Setting Individual)	BYTE	0: Off 1: Turn on output forcefully Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
5			68h	01h	00h	Hold State for RF Timeout	Sets digital output value when Wireless Communication timeout is occurred (Setting Individual)	BYTE	0: Hold 1: Depend on output state Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
6			69h	01h	00h	Output state for RF Timeout	Sets digital output value when Wireless Communication timeout is occurred	BYTE	0: Off 1: Turn on output forcefully Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved

• Unit parameter IO-Link P1/P2 (Class : 38Bh) ,P3/P4 (Class : 38Dh)

No.	Clas	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	P1/P2: 38Bh P3/P4: 38Dh	01h- 1Fh (Wireless channel)	64h	P1:04h P2:05h P3:06h P4:07h	00h	Pd Byte Swap	Swap the byte order of the process data, which is exchanged between fieldbus communication and IO-Link master.	BYTE	(0) direct (1) 16 bit (2) 32 bit (3) all
2			65h			L+ Power ON	Control L+.	BYTE	(0) Power ON (1) Power OFF
3			66h			Port Input IO-Link Size	Setting the IO-Link input Process data size.	BYTE	0-32(Protocol V.2.0) 0-14(Protocol V.1.0)
4			67h			Port Output IO-Link Size	Setting the IO-Link output Process data size.	BYTE	0-32(Protocol V.2.0) 0-14(Protocol V.1.0)
5			68h			Port Mode	Setting the IO-Link Port mode	BYTE	(0)Deactivated (1)IOL_Manual (2)IOL_Autostart (3)DI_C/Q (4)DQ_C/Q
6			69h			Validation & Backup	Set the function of the comparison function (comparison of vendor ID and device ID) of the connected device and data storage (DS).	BYTE	(0)No Device Check (1)Type compatible Device V1.0 (2)Type compatible Device V1.1 (3)Type compatible Device V1.1, Backup+Restore (4)Type compatible Device V1.1,Restore
7			6Ah			PortCycleTime	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)	BYTE	0 to 191
8			6Bh			VendorID	Setting for vendor ID which is compared when the IO-Link device comparison function is valid.	USHORT	0 to 65535
9			6Ch			DeviceID	Setting for device ID which is compared when the IO-Link device comparison function is valid.	6bytes	0 to 16777215
10			6Dh			IO-Link State For FieldbusFault	Sets Process data status when Fieldbus Communication error is occurred	BYTE	0: Clear/PD Out valid 1: Clear/PD Out invalid 2: Hold
11			6Eh			IO-Link State for Fieldbus Idle	Sets Process data status when Fieldbus Communication Idle is occurred.	BYTE	0: Clear/PD Out valid 1: Clear/PD Out invalid 2: Hold
12			6Fh			IO-Link State for RF Timeout	Sets Process data status when Wireless Communication timeout is occurred	BYTE	0: Clear/PD Out valid 1: Clear/PD Out invalid 2: Hold

• Diagnostic parameter

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	P1/P2: 38Bh P3/P4: 38Dh	01h- 1Fh (Wireless channel)	70h	P1:04h P2:05h P3:06h P4:07h	00h	PortStatusInfo	Port status	BYTE	(0)NO_DEVICE (1)DEACTIVATED (2)PORT_DIAG (3)PREOPERATE (4)OPERATE (5)DI_C/Q (6)DO_C/Q
2			71h			PortQualityInfo	Sets Process data status	BYTE	0:Process data valid 1:Process data invalid Bit0 : input Bit1 : output Bit2-7 : Reserved
3			72h			RevisionID	IO-Link devices IO-Link version	BYTE	00h-FFh
4			73h			TransmissionRate	Communication speed	BYTE	(0)NOD_DETECTED (1)COM1 (2)COM2 (3)COM3
5			74h			MasterCycleTime	Actual cycle time value	BYTE	0 : As fast as possible 1~3 : 0.4ms 4~63 : 0.4~6.3 ms (by 0.1 ms) 64~127 : 6.4~31.6ms (by 0.4 ms) 128~191 : 32~132.8 ms (by 1.6 ms) 192~255 : 132.8 ms
6			75h			InputDataLength	InputDataLength	BYTE	0 to 32
7			76h			OutputDataLength	OutputDataLength	BYTE	0 to 32
8			77h			VendorID	Set the vendor ID of the device to be connected.	USHORT	0 to 65535
9			78h			DeviceID	Set device ID of the device to be connected.	6bytes	0 to 16777215

● Compact Wireless Remote IO-Link Master Parameter EXW1-RLBPA7C(ClassB)

• Remote parameter (Class : 312h)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	312h	01h-1Fh (Wireless channel)	64h	00h	00h	Brown-out Detection for US1	Detection of a drop in the US1 (for control)power voltage	BYTE	(1)Enable (0)Disable
2			65h	00h	00h	Output State Fieldbus FaultIdle	Output while upper communication is not established	BYTE	(0)Clear (1)Hold (2)Individual
3			66h	00h	00h	Short circuit Monitor for IOL(L+, C/Q)	Short Circuit Detection • L+ power supply(US1) • C/Q Signal(US1)	BYTE	(1)Enable (0)Disable
4			67h	00h	00h	AD Update time	Update Time of IO-Link Process data	USHO RT	20 to 60000
5			68h	00h	00h	Output State for RF Timeout	Sets output status when Wireless Communication Timeout is occurred	BYTE	(0)Clear (1)Hold (2)Individual
6			69h	00h	00h	Brown-out Detection for US2	Detection of a drop in the US2 (for output)power voltage	BYTE	(1)Enable (0)Disable

• Unit parameter SIO(Class : 38Ch)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	38Ch	01h-1Fh (Wireless channel)	64h	01h	00h	Hold State for Fieldbus Fault	Sets hold status when Fieldbus Communication fault is occurred SIO Setting	BYTE	0: Hold 1: Depend on output state Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
2			65h	01h	00h	Output State for Fieldbus Fault	Sets output status when Fieldbus Communication error is occurred Setting (Setting Individual)	BYTE	0: Off 1: Turn on output forcefully Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
3			66h	01h	00h	Hold State for Fieldbus Idle	Sets hold status when Fieldbus Communication idle is occurred SIO Setting	BYTE	0: Hold 1: Depend on output state Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
4			67h	01h	00h	Output state for Fieldbus Idle	Sets digital output value when Fieldbus Communication idle is occurred (Setting Individual)	BYTE	0: Off 1: Turn on output forcefully Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
5			68h	01h	00h	Hold State for RF Timeout	Sets digital output value when Wireless Communication timeout is occurred (Setting Individual)	BYTE	0: Hold 1: Depend on output state Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved
6			69h	01h	00h	Output state for RF Timeout	Sets digital output value when Wireless Communication timeout is occurred	BYTE	0: Off 1: Turn on output forcefully Bit0 : P1 Bit1 : P2 Bit2 : P3 Bit3 : P4 Bit4-7 : Reserved

• Unit parameter IO-Link P1/P2 (Class : 38Bh)

No.	Clas	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	38Bh	01h-1Fh (Wireless channel)	64h	P1:04h P2:05h	00h	Pd Byte Swap	Swap the byte order of the process data, which is exchanged between fieldbus communication and IO-Link master.	BYTE	(0) direct (1) 16 bit (2) 32 bit (3) all
2			65h			L+ Power ON	Control L+.	BYTE	(0) Power ON (1) Power OFF
3			66h			Port Input IO-Link Size	Setting the IO-Link input Process data size.	BYTE	0-32(Protocol V.2.0) 0-14(Protocol V.1.0)
4			67h			Port Output IO-Link Size	Setting the IO-Link output Process data size.	BYTE	0-32(Protocol V.2.0) 0-14(Protocol V.1.0)
5			68h			Port Mode	Setting the IO-Link Port mode	BYTE	(0)Deactivated (1)IOL_Manual (2)IOL_Autostart (3)DI_C/Q (4)DQ_C/Q
6			69h			Validation & Backup	Set the function of the comparison function (comparison of vendor ID and device ID) of the connected device and data storage (DS).	BYTE	(0)No Device Check (1)Type compatible Device V1.0 (2)Type compatible Device V1.1 (3)Type compatible Device V1.1, Backup+Restore (4)Type compatible Device V1.1,Restore
7			6Ah			PortCycleTime	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)	BYTE	0 to 191
8			6Bh			VendorID	Setting for vendor ID which is compared when the IO-Link device comparison function is valid.	USHORT	0 to 65535
9			6Ch			DeviceID	Setting for device ID which is compared when the IO-Link device comparison function is valid.	6bytes	0 to 16777215
10			6Dh			IO-Link State For FieldbusFault	Sets Process data status when Fieldbus Communication error is occurred	BYTE	0: Clear/PD Out valid 1: Clear/PD Out invalid 2: Hold
11			6Eh			IO-Link State for Fieldbus Idle	Sets Process data status when Fieldbus Communication Idle is occurred.	BYTE	0: Clear/PD Out valid 1: Clear/PD Out invalid 2: Hold
12			6Fh			IO-Link State for RF Timeout	Sets Process data status when Wireless Communication timeout is occurred	BYTE	0: Clear/PD Out valid 1: Clear/PD Out invalid 2: Hold

• Diagnostic parameter

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	38Bh	01h-1Fh (Wireless channel)	70h	P1:04h P2:05h	00h	PortStatusInfo	Port status	BYTE	(0)NO_DEVICE (1)DEACTIVATED (2)PORT_DIAG (3)PREOPERATE (4)OPERATE (5)DI_C/Q (6)DO_C/Q
2			71h			PortQualityInfo	Sets Process data status	BYTE	0:Process data valid 1:Process data invalid Bit0 : input Bit1 : output Bit2-7 : Reserved
3			72h			RevisionID	IO-Link devices IO-Link version	BYTE	00h-FFh
4			73h			TransmissionRate	Communication speed	BYTE	(0)NOD_DETECTED (1)COM1 (2)COM2 (3)COM3
5			74h			MasterCycleTime	Actual cycle time value	BYTE	0 : As fast as possible 1~3 : 0.4ms 4~63 : 0.4~6.3 ms (by 0.1 ms) 64~127 : 6.4~31.6ms (by 0.4 ms) 128~191 : 32~132.8 ms (by 1.6 ms) 192~255 : 132.8 ms
6			75h			InputDataLength	InputDataLength	BYTE	0 to 32
7			76h			OutputDataLength	OutputDataLength	BYTE	0 to 32
8			77h			VendorID	Set the vendor ID of the device to be connected.	USHORT	0 to 65535
9			78h			DeviceID	Set device ID of the device to be connected.	6bytes	0 to 16777215

● Compact Wireless Remote e-CON type parameter EXW1-RDX#E4##

• Remote parameter (Class : 30Ah)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	30Ah	01h-1Fh (Wireless channel)	64h	00h	00h	Brown-out Detection for US1	Detection of a drop in the US1 (for control) power voltage	BYTE	(1)Enable (0)Disable

• DIGITAL INPUT Unit parameter(Class : 301h)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	301h	01h-1Fh (Wireless channel)	64h	01h	00h-0Fh	Short Circuit Detection(Power)	Generates error when the short circuit of the power supply for the input device is detected.	BYTE	(1)Enable (0)Disable
2			66h	01h	00h-0Fh	Input Filtering Time	Sets the time to ignore the input signal change.	BYTE	(0) 0.1 ms (1) 1 ms (2) 10 ms (3) 20 ms
3			67h	01h	00h-0Fh	Input Hold Time	Sets the time to hold the input signal.	BYTE	(0) 1 ms (1) 15 ms (2) 100 ms (3) 200 ms
4			01h	00h	Ch 7-0: ON/OFF Counter Limit Detection	The output device wiring is disconnected. Channel diagnosis Ch0 to Ch7	BYTE	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.	
5			69h	01h	08h	Ch 15-8: ON/OFF Counter Limit Detection	The output device wiring is disconnected. Channel diagnosis Ch8 to Ch15	BYTE	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
6			6Ah	01h	00h-0Fh	Counter Limit Value (1k-65000k)	ON/OFF Counter Limit Value.	4Bytes	1 to 65000

• Diagnosis Parameter(Class : 301h)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	301h	01h-1Fh (Wireless channel)	6Bh	01h	00h-0Fh	ON/OFF Counter Value	ON/OFF times for each channel.	BYTE	0-4294967295
2			6Ch	01h	00h-0Fh	ON/OFF Counter Value Reset	Set ON/OFF operation count of input devices to 0.	BYTE	Clr by written any (any value).
3			6Dh	01h	00h	Ch 7-0:Exceeded ON/OFF Counter Limit	ON/OFF count of the valve has exceeded the set value.	BYTE	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
4				01h	08h	Ch 15-8:Exceeded ON/OFF Counter Limit	ON/OFF count of the valve has exceeded the set value.	BYTE	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
5			6Fh	01h	00h	Ch 7-0:Short Circuit Detection(Input)	Short-circuit detection	BYTE	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
6				01h	08h	Ch 15-8: Short Circuit Detection(Input)	Short-circuit detection	BYTE	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.

● **Compact Wireless Remote e-CON type parameter**

EXW1-RDY#E4## / EXW1-RDM#E3##

Please refer to the EXW1-RDX parameter table for the parameters of DIGITAL INPUT(Class : 301h)

• Remote parameter (Class : 30Bh)

No.	Cl	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	30Bh	01h-1Fh (Wireless channel)	64h	00h	00h	Brown-out Detection for US1	Detection of a drop in the US1 (for control) power voltage	BYTE	(1)Enable (0)Disable
2			65h	00h	00h	Brown-out Detection for US2	Detection of a drop in the US2 (for output) power voltage	BYTE	(1)Enable (0)Disable
3			66h	00h	00h	Output State Fieldbus FaultIdle	Output while upper communication is not established	BYTE	(0)Clear (1)Hold (2)Individual
4			67h	00h	00h	Output State for RF Timeout	Output while RF Timeout	BYTE	(0)Clear (1)Hold (2)Individual

• DIGITAL OUTPUT Unit parameter(Class : 302h)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	302h	01h-1Fh (Wireless channel)	64h	RDY: 01h RDM: 02h	00h-0Fh	Short Circuit Detection(Output)	Generates error when the short circuit of the output device is detected.	BYTE	(1)Enable (0)Disable
2			65h		00h-0Fh	Restart After Short Circuit	Restore the setting of short circuit detection error after the output device short circuit is cleared.	BYTE	(1) Auto (0) Manual
3			6Dh		00h	Ch 7-0: ON/OFF Counter Limit Detection	Generates error when the operation count exceeds the set value.	BYTE	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
4					08h	*Only for RDY Ch 15-8: ON/OFF Counter Limit Detection	Generates error when the operation count exceeds the set value.	BYTE	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
5			6Ch		00h	Ch 7-0: Open Circuit Detection	Generates error when the disconnection of the output device is detected.	BYTE	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
6					08h	*Only for RDY Ch 15-8: Open Circuit Limit Detection	Generates error when the disconnection of the output device is detected.	BYTE	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
7			66h		00h	Ch 7-0: Hold State for Fieldbus Fault	Sets hold status when Fieldbus Communication error is occurred.	BYTE	0: Hold 1: Individual Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
8					08h	*Only for RDY Ch 15-8: Hold State for Fieldbus Fault	Sets hold status when Fieldbus Communication error is occurred.	BYTE	0: Hold 1: Individual Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.

No.	Clas	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
9			67h		00h	Ch 7-0: Output State for Fieldbus Fault	Sets output status when Fieldbus Communication error is occurred.	BYTE	0: Clear 1: Force On Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
10					08h	*Only for RDY Ch 15-8: Output State for Fieldbus Fault	Sets output status when Fieldbus Communication error is occurred.	BYTE	0: Clear 1: Force On Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.

• DIGITAL OUTPUT Unit parameter(Class : 302h)

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value	
11	302h	01h-1Fh (Wireless Channel)	68h		00h	Ch 7-0: Hold State for Fieldbus Idel	Sets hold status when Fieldbus Communication idle is occurred.	BYTE	0: Holds output. 1: Depends on output setting. Bit0 : Channel 0 : Bit7 : Channel 7	
12					08h	*Only RDY Ch 15-8: Hold State for Fieldbus Idel	Sets hold status when Fieldbus Communication idle is occurred.	BYTE	0: Holds output. 1: Depends on output setting. Bit0 : Channel 8 : Bit7 : Channel 15	
13			69h		00h	Ch 7-0: Output State for Fieldbus Idel	Sets output status when Fieldbus Communication idle is occurred.	BYTE	0: Turns the output OFF. 1: The output is forced ON. Bit0 : Channel 0 : Bit7 : Channel 7	
14					08h	*Only RDY Ch 15-8: Output State for Fieldbus Idel	Sets output status when Fieldbus Communication idle is occurred.	BYTE	0: Turns the output OFF. 1: The output is forced ON. Bit0 : Channel 8 : Bit7 : Channel 15	
15			6Ah		00h	Ch 7-0: Hold State for Fieldbus RF TimeOut	Sets hold status when Wireless Communication timeout is occurred.	BYTE	0: Holds output. 1: Depends on output setting. Bit0 : Channel 0 : Bit7 : Channel 7	
16					08h	* Only RDY Ch 15-8: Hold State for Fieldbus RF TimeOut	Sets hold status when Wireless Communication timeout is occurred.	BYTE	0: Holds output. 1: Depends on output setting. Bit0 : Channel 8 : Bit7 : Channel 15	
17					6Bh	00h	Ch 7-0: Output State for Fieldbus RF TimeOut	Sets output status when Wireless Communication timeout is occurred.	BYTE	0: Turns the output OFF. 1: The output is forced ON.Bit0 : Channel 0 : Bit7 : Channel 7
18						08h	*Only RDY Ch 15-8: Output State for Fieldbus RF TimeOut	Sets output status when Wireless Communication timeout is occurred.	BYTE	0: Turns the output OFF. 1: The output is forced ON. Bit0 : Channel 8 : Bit7 : Channel 15
19					6Eh	00h-0Fh	Counter Limit Value(1k-65000k)	ON/OFF Counter Limit Value.	4Bytes	1-65000

• Diagnostics Parameter(Class : 302h)

No.	Clas	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	302h	01h-1Fh (Wireless Channel)	6Fh	RDY: 01h RDM: 02h	00h-0Fh	ON/OFF Counter Value	ON/OFF count value for each channel.	BYTE	0-4294967295
2			70h		00h-0Fh	ON/OFF Counter Value Reset	Clear ON/OFF count for each channel.	BYTE	Reset by write (any value).
3			71h		00h	Ch 7-0:Exceeded ON/OFF Counter Limit	ON/OFF count of the valve has exceeded the set value. Channel diagnosis Ch0 to Ch7.	BYTE	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
4					08h	Ch 15-8:Exceeded ON/OFF Counter Limit	ON/OFF count of the valve has exceeded the set value. Channel diagnosis Ch8 to Ch15.	BYTE	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
5			72h		00h	Ch 7-0:Open Circuit Detection	The output device wiring is disconnected. Channel diagnosis Ch0 to Ch7	BYTE	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
6					08h	Ch 15-8: Open Circuit Detection	The output device wiring is disconnected. Channel diagnosis Ch8 to Ch15	BYTE	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
7			73h		00h	Ch 7-0:Short Circuit Detection(Output)	The short circuit of the power supply for the input device has been detected. Channel diagnosis Ch0 to Ch7.	BYTE	0: No error 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
8					08h	Ch 15-8: Short Circuit Detection(Output)	The short circuit of the power supply for the input device has been detected. Channel diagnosis Ch8 to Ch15.	BYTE	0: No error 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.

●Wireless Remote AMS Remote Parameter EXA1-##-SA

• Remote Parameter(Class : 310h)

No.	Cl	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	310h	01h-1Fh (Wireless Channel)	64h	00h	00h	Brown-out Detection for US1	Generated error when power supply voltage(US1) goes under approx. 19 V.	BYTE	(1)Enable (0)Disable
2			65h	00h	00h	Output State Fieldbus Fault/Idle Communication failure	Sets output status when Fieldbus Communication Fault/Idle is occurred.	BYTE	(0)Clear (1)Hold
3			66h	00h	00h	Short circuit Monitor for IOL (L+, C/Q)	Either of the following detects the short-circuit, diagnostics is generated. •L+ power supply •C/Q signal •P24 power supply	BYTE	(1)Enable (0)Disable
4			67h	00h	00h	AD Update time	date Time of IOLink input Process data.	USHO RT	20-60000

• HUB Unit (EXA1-20-SA / EXA1-30-SA / EXA1-40-SA / EXA1-60-SA)
 - Setting Parameter

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	386h 387h 388h 389h*1	01h-1Fh (Wireless Channel)	65h	01h	00h	OperationPressure	Sets the pressure in the operation mode.	USHORT	0-1050
2			66h	01h	00h	StandbyPressure	Sets the pressure in the standby mode.	USHORT	0-1050
3			67h	01h	00h	SoftStartTime	Sets the pressure in the standby mode.	USHORT	0-1500
4			68h	01h	00h	StandbyFlowRate (Threshold)(20)	Sets the standby flow rate (threshold value).	USHORT	5-525
5				01h	00h	StandbyFlowRate (Threshold)(30)		USHORT	10-1050
6				01h	00h	StandbyFlowRate (Threshold)(40)		USHORT	20-2100
7				01h	00h	StandbyFlowRate (Threshold)(60)		USHORT	40-4200
8			69h	01h	00h	StandbyFlowRate (Hysteresis)(20)	Sets the standby flow rate (hysteresis).	USHORT	0-520
9				01h	00h	StandbyFlowRate (Hysteresis)(30)		USHORT	0-1040
10				01h	00h	StandbyFlowRate (Hysteresis)(40)		USHORT	0-2080
11				01h	00h	StandbyFlowRate (Hysteresis)(60)		USHORT	0-4100
12			6Ah	01h	00h	StandbyOnDelay	Sets the standby ON delay.	USHORT	0-9999
13			6Bh	01h	00h	StandbyOffDelay	Sets the standby OFF delay.	USHORT	0-9999
14			6Ch	01h	00h	Isolation Enable/Disable	Sets enable/disable of automatic isolation.	BYTE	(1)Enable (0)Disable
15			6Dh	01h	00h	IsolationDelay	Sets isolation delay.	USHORT	0-9999
16			74h	01h	00h	L+ Power ON AMS ITV	Turns ON/OFF the power supply for ITV.	BYTE	(0) Power ON (1) Power OFF
17			75h	01h	00h	L+ Power ON AMS Standby/VP	Turns ON/OFF the power supply for input signal.	BYTE	(0) Power ON (1) Power OFF

*1: 386h : EXA1-20-SA
 387h : EXA1-30-SA
 388h : EXA1-40-SA
 389h : EXA1-60-SA

• HUB Unit (EXA1-20-SA / EXA1-30-SA / EXA1-40-SA / EXA1-60-SA)
 - Diagnostic Parameter

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	386h 387h 388h 389h*1	01h-1Fh (Wireless Channel)	72h	01h	00h	Accumulated Flow Reset	Accumulated Flow Reset.	BYTE	Reset by 190 writes.
2			73h	01h	00h	AR/ITV Active Mode	AR/ITV Active Mode.	BYTE	(0)AR (1)ITV

*1: 386h : EXA1-20-SA
 387h : EXA1-30-SA
 388h : EXA1-40-SA
 389h : EXA1-60-SA

• IO-Link Unit (EXA1-20-SA / EXA1-30-SA / EXA1-40-SA / EXA1-60-SA)
 - Setting Parameter

No.	Cla	Ins	Att	D[0]	D[1]	Name	Define	Size	Value
1	38Ah	01h-1Fh (Wireless Channel)	64h	02h	00h	Pd Byte Swap	Swaps the byte order of the process data, which is sent and received in the fieldbus communication and IO-Link communication.	BYTE	(0) direct (1) 16 bit (2) 32 bit (3) all
2			65h			L+ Power ON	L+ power control	BYTE	(0) Power ON (1) Power OFF
3			68h			Port Mode	Configures IO-Link port operation mode setting.	BYTE	(0)Deactivated (1)IOL_Manual (2)IOL_Autostart (3)DI_C/Q (4)DQ_C/Q
4			69h			Validation & Backup	Sets the function of the collation function (collation between vendor ID and device ID) of the connected device and the data storage (DS) function.	BYTE	(0)No Device Check (1)Type compatible Device V1.0 (2)Type compatible Device V1.1 (3)Type compatible Device V1.1, Backup+Restore (4)Type compatible Device V1.1,Restore
5			6Bh			PortCycleTime	Setting for communication cycle time with IOLink 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)	USHORT	0-191
6			6Ch			VendorID	Sets the vendor ID which is collated when the IO-Link device collation function is enabled.	USHORT	0~65535
7			6Dh			DeviceID	Sets the device ID which is collated when the IO-Link device collation function is enabled.	6bytes	0~16777215

• IO-Link Unit (EXA1-20-SA / EXA1-30-SA / EXA1-40-SA / EXA1-60-SA)
 - Diagnostic Parameter
 None.

■IO-Link SMI service

Reading and writing of the IO-Link master and device parameter using DeviceNet® Explicite Message.
The service code of the Explicit Message varies in reading and writing.

- Read: 32h
- Write: 33h

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: Read)

[Request]

Data	Value	Notes
Service code	0x32	
Class	0x90	
Instance	0x01 to 1F	Wch
Attribute	0x64	IO-Link Master
Data[0] to [2]	0x00	Fixed value
Data[3]	0x01	Fixed value

[Response]

Data	Value	Notes
Ack[0] to [3]	0xB2000000	When read is successful:0xB2000000
Data[0] to [1]	Reserved	Fixed 0x00
Data[2] to [3]	Vendor ID	Vendor ID for the IO-Link master (SMC: 0x0083)
Data[4] to [7]	Master ID	IO-Link Master ID EXW1-RLAPA8C : 0x0000003B EXW1-RLBPA7C : 0x0000003C
Data[8]	Master type	IO-Link master type(0x02)
Data[9] to [10]	Feature	Functions that IO-Link master supports (0x0400)
Data[11]	Max number of ports	Maximum IO-Link port quantity of the IO-Link master (0x04)
Data[12]	Port 1 type	Port type 0 : Class A(EXW1-RLAPA8C) 2 : Class B(EXW1-RLBPA7C)
Data[13]	Port 2 type	
Data[14]	Port 3 type	
Data[15]	Port 4 type	

1-1. PDIn(Read)

ExpArgBlockID 0x1001

[Request]

Data	Value	Notes
Service code	0x32	
Class	0x90	
Instance	0x01 to 1F	Wch
Attribute	0x65 to 68	Number of Port 1 to 4
Data[0]	0x00	Fixed value
Data[1]	0x00	Fixed value
Data[2]	0x10	Fixed value
Data[3]	0x01	Fixed value

[Response]

Data	Value	Notes
Ack[0] to [3]	0xB2000000	When read is successful:0xB2000000
Data[0]	PQI	
Data[1]	InputDaraLength	
Data[2]	PDIO	
.	
Data[2+n]	PDIn	

1-2. PDOOut(Read)

ExpArgBlockID 0x1002

[Request]

Data	Value	Notes
Service code	0x32	
Class	0x90	
Instance	0x01 to 1F	Wch
Attribute	0x65 to 68	Number of Port 1 to 4
Data[0]	0x00	Fixed value
Data[1]	0x00	Fixed value
Data[2]	0x10	Fixed value
Data[3]	0x02	Fixed value

[Response]

Data	Value	Notes
Ack[0] to [3]	0xB2000000	When read is successful:0xB2000000
Data[0]	Reserved	
Data[1]	OutputDaraLength	
Data[2]	PDO0	
.	
Data[2+n]	PDO _n	

1-3. PDInOut(Read)

ExpArgBlockID 0x1003

[Request]

Data	Value	Notes
Service code	0x32	
Class	0x90	
Instance	0x01 to 1F	Wch
Attribute	0x65 to 68	Number of Port 1 to 4
Data[0]	0x00	Fixed value
Data[1]	0x00	Fixed value
Data[2]	0x10	Fixed value
Data[3]	0x03	Fixed value

[Response]

Data	Value	Notes
Ack[0] to [3]	0xB2000000	When read is successful:0xB2000000
Data[0]	PQI	
Data[1]	Reserved	
Data[2]	InputDaraLength	
Data[3]	PDI0	
.	
Data[3+m]	PDI _m	
Data[3+m+1]	OutputDaraLength	
Data[3+m+2]	PDO0	
.	
Data[3+m+2+n]	PDO _n	

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

ExpArgBlockID 0x8000

[Request]

Data	Value	Notes
Service code	0x32	
Class	0x90	
Instance	0x01 to 1F	Wch
Attribute	0x65 to 68	Number of Port 1 to 4
Data[0]	0x00	Fixed value
Data[1]	0x00	Fixed value
Data[2]	0x80	Fixed value
Data[3]	0x00	Fixed value

[Response]

Data	Value	Notes
Ack[0] to [3]	0xB2000000	When read is successful:0xB2000000
Data[0]	Port mode	0 : Deactivated 1 : IOL_Manual 2 : IOL_Autostart 3 : DI_C/Q 4 : DQ_C/Q
Data[1]	Validation&Backup	0 : No Device Check 1 : Type compatible Device V1.0 2 : Type compatible Device V1.1 3 : Type compatible Device V1.1、 Backup+Restore 4 : Type compatible Device V1.1、 Restore
Data[2]	I/Q behavior (Pin2 at M12 Connector)	1 : Digital input(For EXW1-RLAPA8C) 5 : Power2(For EXW1-RLBPA7C)
Data[3]	Port Cycle time	Port cycle type (Refer to Manual of EXW1-RL*)
Data[4]	Max number of ports	Maximum IO-Link port quantity of the IO-Link master (0x04)
Data[5] to [6]	Vendor ID	Vendor ID for device comparison function
Data[7] to [10]	Device ID	Device ID for device comparison function

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

ExpArgBlockID 0x9000

[Request]

Data	Value	Notes
Service code	0x32	
Class	0x90	
Instance	0x01 to 1F	Wch
Attribute	0x65 to 68	Number of Port 1 to 4
Data[0]	0x00	Fixed value
Data[1]	0x00	Fixed value
Data[2]	0x90	Fixed value
Data[3]	0x00	Fixed value

[Response]

Data	Value	Notes
Ack[0] to [3]	0xB2000000	When reading is successful:0xB2000000
Data[0]	PortStatusInfo	0 : NO_DEVICE、 1 : DEACTIVATED、 2 : PORT_DIAG 3 : PREOPERATE、 4 : OPERATE、 5 : DI_C/Q、 6 : DO_C/Q
Data[1].bit0	PortQualityInfo input	0 : Input process data valid 1 : Input process data invalid
Data[1].bit1	PortQualityInfo output	0 : Output process data valid 1 : Output process data invalid
Data[2]	RevisionID	IO-Link device revision ID
Data[3]	TransmissionRate	Communication speed 0: NOT_DETECTED, 1: COM1, 2: COM2, 3: COM3
Data[4]	MasterCycleTime	Port cycle time
Data[5]	InputDataLength	Process input data length
Data[6]	OutputDataLength	Process output data length
Data[7] to [8]	Vendor ID	Vendor ID for device comparison function
Data[9] to [12]	Device ID	Device ID for device comparison function
Data[13]	NumberOfDiags	Event quantity*1
Data[14]	EventQualifier 1	EventQualifier1*2
Data[15] to [16]	EventCode	Event code of IO-Link master or device**3
Data[17]	EventQualifier 2	EventQualifier2*2
Data[18] to [19]	EventCode	Event code of IO-Link master or device**3
...

*1: When the event quantity is "0", the data for Data[14] and later is not added.

When the event quantity is "1", the total amount of EventQualifier and event code 2 bytes (total bytes: 3) will be added. Data will be added by 3 bytes according to the event quantity.

*2: The specifications of EventQualifier# are described below.

Bit							
7	6	5	4	3	2	1	0
Mode		Type		Source	Instance		
0: Reserved 1: Event single shot 2: Event disappears 3: Event appears		0: Reserved 1: Notification 2: Warning 3: Error		0: Device 1: Master	0: Unknown 1-3: Reserved 4: Application 5-7: Reserved		

3 Refer to EXW1-RL manual for details of the event code of the IO-Link master.

Refer to Operation Manual of IO-Link Device for details of the event code of the IO-Link device.

4. SMI_DeviceRead(Acquires IO-Link device parameters: Read)

ExpArgBlockID 0x3000

[Request]

Data	Value	Notes
Service code	0x32	
Class	0x90	
Instance	0x01 to 1F	Wch
Attribute	0x65 to 68	Number of Port 1 to 4
Data[0]	0x00	Fixed value
Data[1]	0x00	Fixed value
Data[2]	0x30	Fixed value
Data[3]	0x00	Fixed value
Data[4]	Index[0](MSB)	Refer to Operation Manual of IO-Link Device
Data[5]	Index[1](LSB)	
Data[6]	Subindex	Refer to Operation Manual of IO-Link Device

From Data[4] is under SMI protocol, its to be Big endian.

[Response]

Data	Value	Notes
Ack[0] to [3]	0xB2000000	When reading is successful:0xB2000000
Data[0] to [#]	On request data	Refer to Operation Manual of IO-Link Device

From Data[#] is under SMI protocol, its to be Big endian.

5. SMI_DeviceRead(IO-Link device parameter setting: Write)

ExpArgBlockID 0x3000

[Request]

Data	Value	Notes
Service code	0x33	
Class	0x90	
Instance	0x01 to 1F	Wch
Attribute	0x65 to 68	Number of Port 1 to 4
Data[0]	0x00	Fixed value
Data[1]	0x00	Fixed value
Data[2]	0x30	Fixed value
Data[3]	0x00	Fixed value
Data[4]	Index[0](MSB)	Refer to Operation Manual of IO-Link Device
Data[5]	Index[1](LSB)	
Data[6]	Subindex	Refer to Operation Manual of IO-Link Device
Data[7] to [#]	On request data	Refer to Operation Manual of IO-Link Device

From Data[4] is under SMI protocol, its to be Big endian.

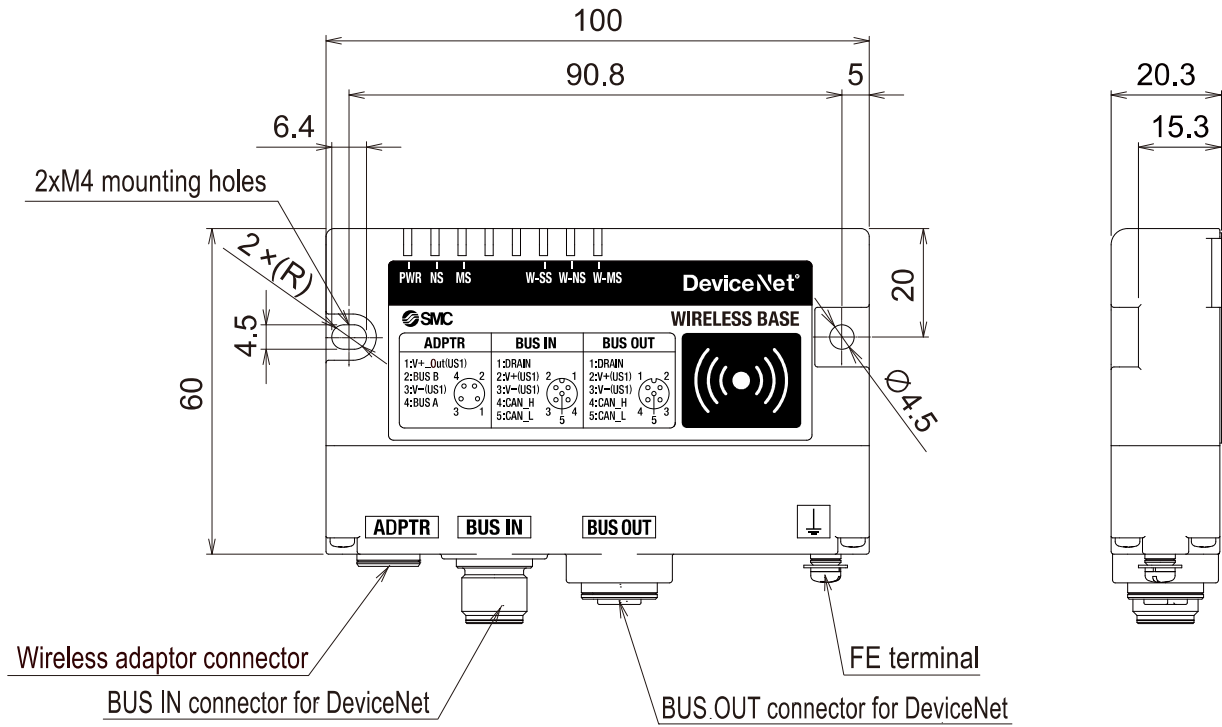
[Response]

Data	Value	Notes
Ack[0] to [3]	0xB3000000	When read is successful:0xB3000000

Specifications

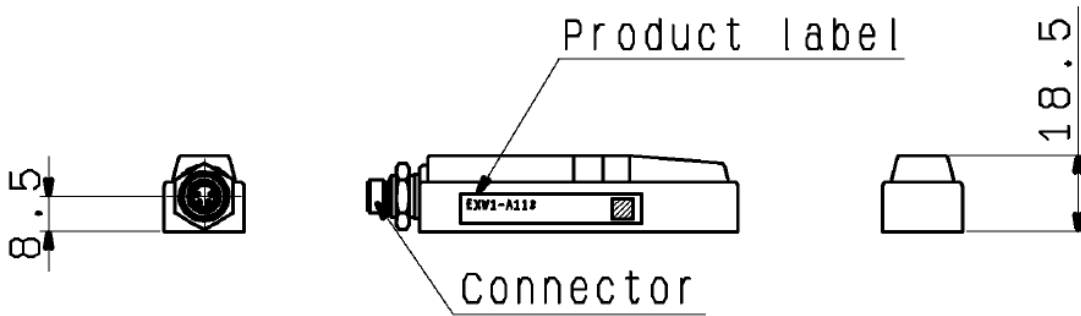
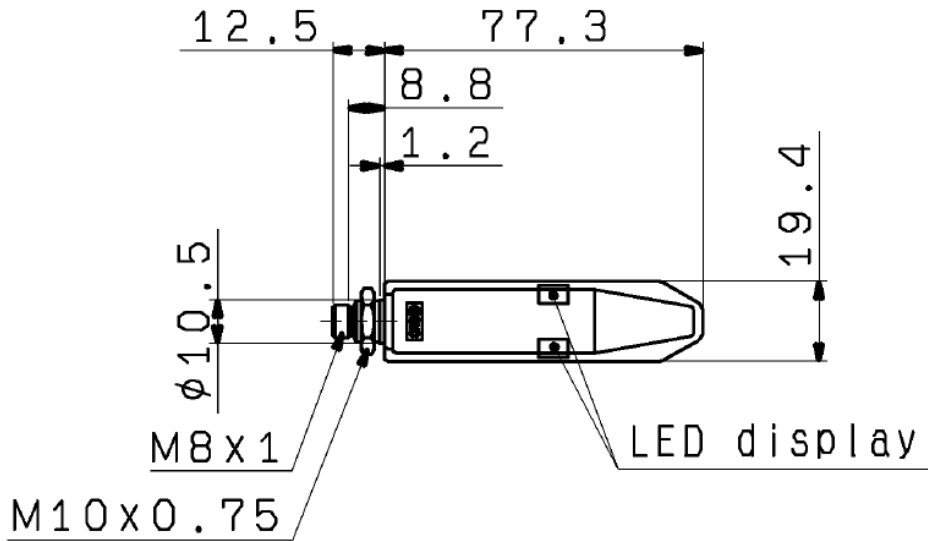
Dimensions

OEXW1-BDNAC

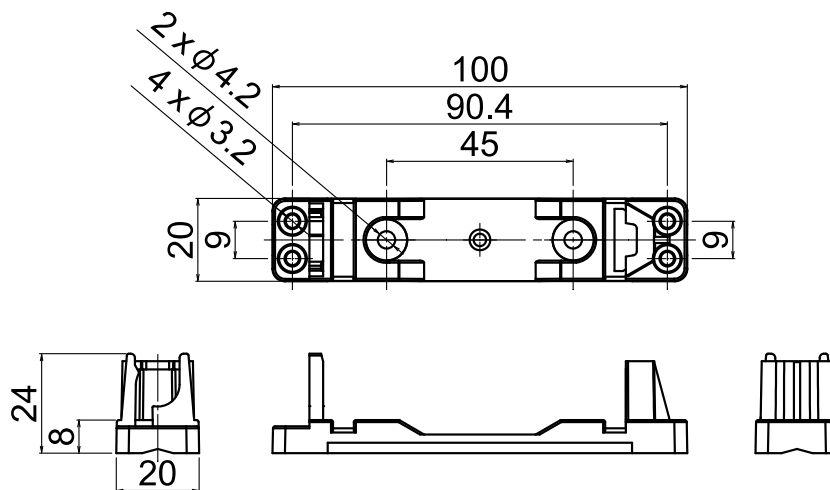


oEXW1-A11* (Option)

• Wireless Adaptor



• Installation Plate (Wireless adaptor included)



Specification

OEXW1-BDNAC

DeviceNet® Communication Specifications

item	specification
Communication protocol	DeviceNet® Volume 1 (Edition 2.1) Volume 3 (Edition 1.1)
Device type	12 (communication adapter)
Slave type	Group 2 only server
Product code	268
Vender ID	7h (SMC Corporation)
Transmission speed	125/250/500kbps
Configuration file	EDS file *1
Input/Output specifications	Max. 4096points/4096points*2 (512 bytes/512 bytes)
Supported messages	Duplicate MAC ID Check Message Group 2 Only Unconnected Explicit Message Explicit Message (Group 2) Poll I/O Message (Predefined M/S Connection set)

*1: The configuration file can be downloaded from the SMC website: <https://www.smcworld.com>

*2 : Variable by setting

Electrical Specifications

item	specification
V+(US1) supply voltage range	DC 11 to 25V(DeviceNet® compliant) 24V operation is recommended
Current consumption	100 mA or less

General Specifications

item	specification
Enclosure	IP67
Ambient temperature (Operating temperature)	-10 to +50°C
Ambient temperature (storage temperature)	-20 to +60°C
Ambient humidity	35 to 85% RH (no condensation)
Withstand voltage	500 VAC-1 minute between external terminals and metallic parts
Insulation resistance	10 MΩ or more (500 VDC between external terminals and metallic parts)
Vibration resistance	Conforms to EN61131-2 $5 \leq f < 8.4 \text{ Hz}$ 3.5 mm $8.4 \leq f < 150 \text{ Hz}$ 9.8m/s ²
Impact resistance	Conforms to EN61131-2 147m/s ² , 11ms
Standard	CE/UKCA marked
Weight	150g

*1 : Always attach prevention caps to unused connectors

○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)
Weight	40 g (body), 20 g (installation plate)

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 (2403~2481 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) DeviceNet® communication cable

PCA-1557633	Cable with M12 connector, A code, Socket, Straight 5 m
PCA-1557646	Cable with M12 connector, A code, Plug, Straight 5 m
EX9-AC005DN-SSPS	Dual-side cable with M12 connector, Socket, Plug, Straight 0.5 m
EX9-AC010DN-SSPS	Dual-side cable with M12 connector, Socket, Plug, Straight 1 m
EX9-AC020DN-SSPS	Dual-side cable with M12 connector, Socket, Plug, Straight 2 m
EX9-AC030DN-SSPS	Dual-side cable with M12 connector, Socket, Plug, Straight 3 m
EX9-AC050DN-SSPS	Dual-side cable with M12 connector, Socket, Plug, Straight 5 m
EX9-AC100DN-SSPS	Dual-side cable with M12 connector, Socket, Plug, Straight 10 m
EX9-AC005DN-SAPA	Dual-side cable with M12 connector, Socket, Plug, Angle 0.5 m
EX9-AC010DN-SAPA	Dual-side cable with M12 connector, Socket, Plug, Angle 1 m
EX9-AC020DN-SAPA	Dual-side cable with M12 connector, Socket, Plug, Angle 2 m
EX9-AC030DN-SAPA	Dual-side cable with M12 connector, Socket, Plug, Angle 3 m
EX9-AC050DN-SAPA	Dual-side cable with M12 connector, Socket, Plug, Angle 5 m
EX9-AC100DN-SAPA	Dual-side cable with M12 connector, Socket, Plug, Angle 10 m

(2) Assembled type connector

PCA-1075528	Foe DeviceNet® communication, Plug
PCA-1075529	Foe DeviceNet® communication, Socket

(3) For DeviceNet® terminator

PCA-1557675	For DeviceNet® terminator, Plug, A code
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(4) Seal cap (M12)

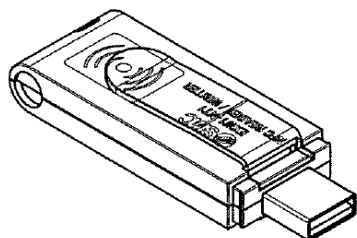
EX9-AWTS

(5) Wireless adaptor cable

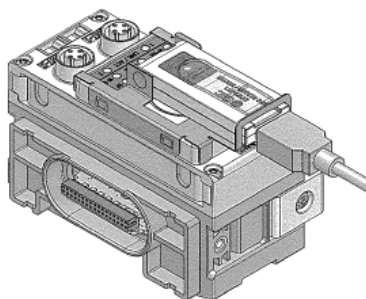
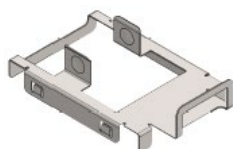
EXW1-AC001-SAPU	100mm U-shaped, Angle cable with M8 connector on both sides
EXW1-AC030-SSPS	3000mm straight cable with M8 connector on both sides
EXW1-AC1-X1	300mm straight cable with M8 connector on both sides

(8) NFC reader/writer
EXW1-NT1

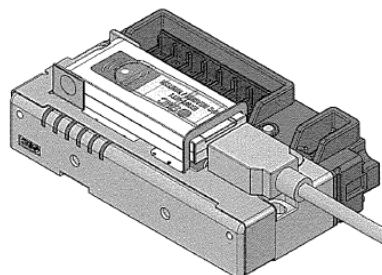
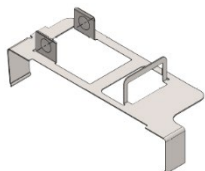
This set includes an NFC reader/writer and a USB extension cable (2.95 m).



(9) NFC reader/writer holder
EXW1-AB1 (for EX600-W)



EXW1-AB2 (for EXW1)



Revision history

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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