SMC

Operation Manual

PRODUCT NAME

Wireless auto switch

MODEL / Series / Product Number

IN574-147
IN574-138-1

SMC Corporation

Table of Contents

No. DOC1109497

⚠ 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.

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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.

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Precautions regarding 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.   FCC ID : 2AJE7SMC-WEX08

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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 nedoit 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.

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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-A1*).
　•Differential type analog sensors cannot be used.

●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.

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□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.

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□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

●The wireless adapter must be attached to this product. A wireless adapter must be arranged separately.
●The wireless adapter (EXW1-A11*) has received construction design certification as a wireless device based on the Radio Law (no license application or other procedures are required of the customer for use).
 - Do not disassemble or modify the product. Disassembly or modification is prohibited by law.
 - The wireless adapter connected to this product is compliant with the radio laws of each country. Please check the catalog at the website below for the latest certification countries. For use in other countries, please contact us separately.
　　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.

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SMC Wireless System

Features and Summary

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

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

Bases and Remotes are designed to be identifiable by registering their uniquely assigned PIDs (Product IDs) with each other and operate therefore function without conflicts even when several Bases and Remotes operate in the same area.
The packet of the wireless transmit and receive data is encrypted. It is therefore difficult to manipulate the data.

Reference materials

No.	Document No.	Content	Supplementary information
1	EX**-OMA1031	Operation Manual EXW1-BECAC	It can be downloaded from the SMC website. URL: https://www.smcworld.com
2	DOC1069997	Operation Manual EXW1-BENAC1	
3	DOC1069999	Operation Manual EXW1-BPNAC1	
4	EX**-OMV0017	Operation Manual I/O Configurator (NFC edition)	

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Wireless auto switch

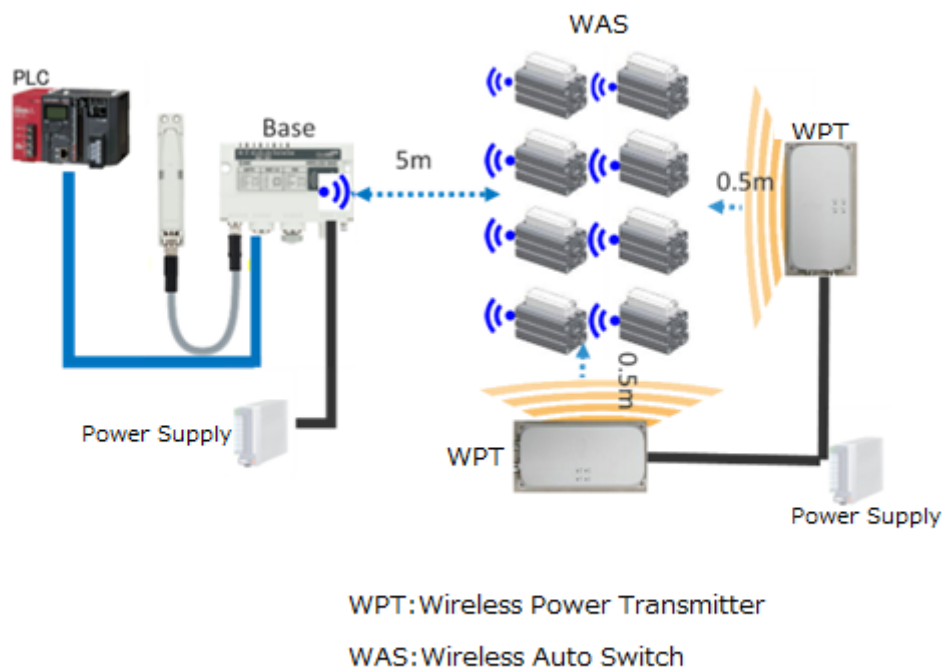## What is a wireless auto switch?

Wireless powered auto switch.

It not only transmits sensor information (data) wirelessly, but also supplies power wirelessly.

Wireless communication of data uses the SMC protocol (proprietary standard).

Completely cable-free.

System Configuration

WPT: Wireless Power Transmitter
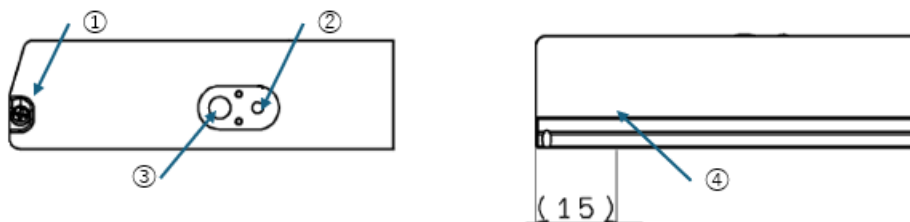
WAS: Wireless Auto Switch

System Compatibility

Wireless auto switch dedicated base used

Use the dedicated base for the wireless auto switch.

Summary of Product parts

Wireless Auto Switch (IN574-147)

■appearance

No.	name	use
①	Mounting Screws	Fix the wireless auto switch.
②	LED for status indication	Displays the operating status.
③	Function button	Used for pairing.
④	Most sensitivity position	Built-in reed switch. The 15 mm position from the front edge is the most sensitivity position.

■LED indication

condition	mode	sensor state	LED Status		Contents
			LED Color	Lighting/Flashing	
standby	-	-	red	Flashing (8 sec.)	Standby. cold start Including standby with weak power supply
usual	Asynchronous	ON	red	Flashing	Wireless connection not established: Sensor ON
		OFF	-	OFF	No wireless connection: Sensor OFF
	Synchronization	ON	green	Flashing	Wireless connection status: Sensor ON
		OFF	-	OFF	Wireless connection status: Sensor OFF
pairing	Switching mode	-	red green	Both ON	Switching between normal/pairing mode
	In pairing mode	-	red green	Alternating flashing	In pairing mode

Wireless Power transmitter (IN574-138)

Transmitter for wireless auto switch.
There is no power switch. Power transmission starts 10 seconds after power-on.
It is designed to stop once every 4 seconds.

※ An application for a radio station is required for use.

■appearance

No.	fanction	name	use
①	Connector for power supply (24V) IN	PWR-IN	Power supply cable connection
②	Connector for power supply (24V) OUT	PWR-OUT	Power supply cable connection For Daisy Chain
③	LED for status indication	PWR	Power Supply state
④		W-PS	Wireless Power state
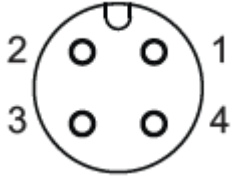
■LED indication

LED Name	Feature	LED Status		Contents
		LED Color	Lighting/Flashing	
PWR	Power supply status indication	green	Lighting	Power ON state
		-	OFF	Power OFF state
		red	Lighting	Power Failure
W-PS	Wireless power state indication	green	Lighting	Lights up for 0.5 seconds immediately after power-on
		green	Lighting	During power transmission
		-	OFF	currently closed (e.g. store)
		red	Lighting	Power Failure

■Connector

Power supply connector (PWR-IN)

No.	signal	Contents	M12, 4-pin, Plug
			A code
1	24V	24V: Input	
2	N.C.	unused	
3	0V	0V	
4	N.C.	unused	

Power supply connector (PWR-OUT)

No.	signal	Contents	M12, 4 Pin, Socket
			A code
1	24V	24V: Output	
2	NC	unused	
3	0V	0V	
4	NC	unused	
5	NC	unused	

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Setting and Adjustment

Advance Preparation

■Process of using the wireless system

① IO configurator
  Please refer to the instruction manual of the IO configurator.

  Japanese version: https://www.smcworld.com/upfiles/manual/ja-jp/files/EXxx-OMV0016-I.pdf
  English version: https://www.smcworld.com/upfiles/manual/en-jp/files/EXxx-OMV0017-H.pdf

② Base: Network connection setup
  Please refer to the instruction manual for the EXW1 series.

  EtherNet/IP™.
    Japanese version: https://www.smcworld.com/upfiles/manual/ja-jp/files/DOC1069995.pdf
    English version: https://www.smcworld.com/upfiles/manual/en-jp/files/DOC1069997.pdf

  PROFINET
    Japanese version: https://www.smcworld.com/upfiles/manual/ja-jp/files/DOC1069998.pdf
    English version: https://www.smcworld.com/upfiles/manual/en-jp/files/DOC1069999.pdf

  EtherCAT
    Japanese version: https://www.smcworld.com/upfiles/manual/ja-jp/files/EXxx-OMA1030.pdf
    English version: https://www.smcworld.com/upfiles/manual/en-jp/files/EXxx-OMA1031.pdf

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How to set/unset up pairing

How to set up pairing

Pairing of base and wireless auto switch

Pairing is required for wireless communication between the base and the wireless auto switch.

Pairing between the base and wireless auto switch is done by switching the base and wireless auto switch to pairing-enabled mode.

Pairing and registration between the base and the wireless auto switch enables wireless communication.
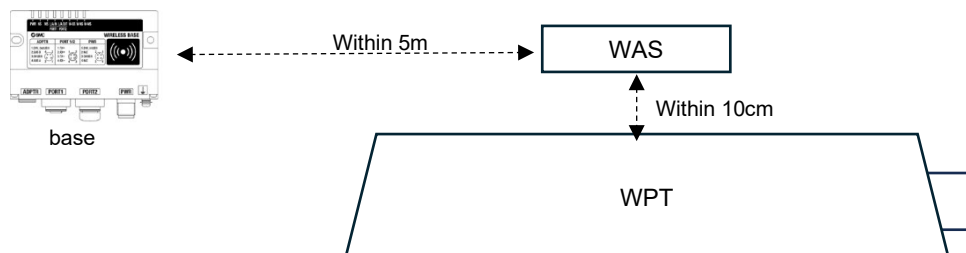
The settings at the base are configured using NFC and the IO configurator.

*Auto switch installation is recommended after pairing.

Restrictions

  Only protocol version V2 is supported.

  The power transmitter and wireless auto switch should operate within 10 cm.

  The base and wireless auto switch should operate within 5m.

Operation flow when setting up a wireless auto-switch pair link

①   [Base] Configure 「system setting」
↓
②   [Base] Switch to pairing enabled mode
↓
③   [wireless auto switch] Switch to pairing mode
↓
④   [Base] Update remote information:
↓
⑤   [Base] Register remote
↓
⑥   [Base] Switch to non-pairing mode Wireless auto switch automatically switches to normal mode
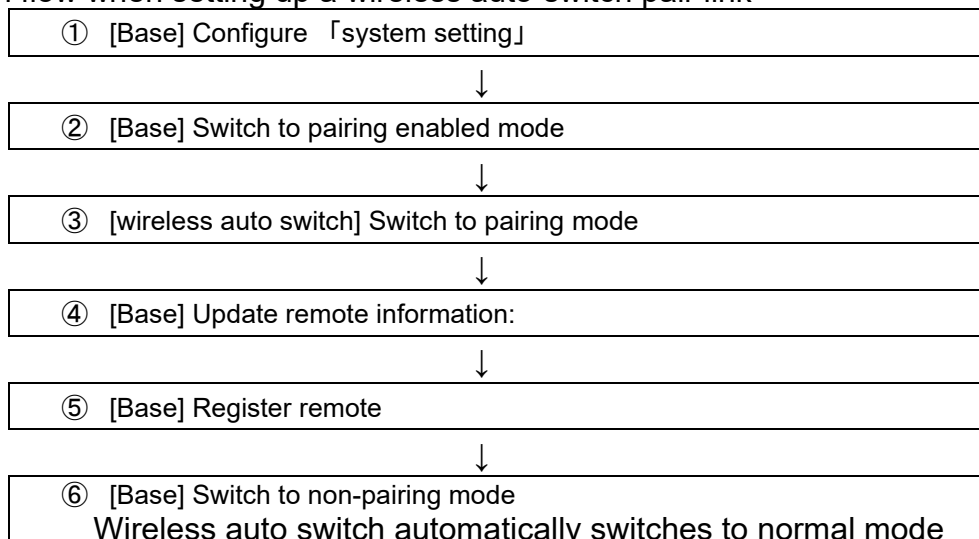
*All base processing is operated by the IO configurator.

Refer to the IO Configurator User's Manual for pairing details.

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① Configure 「system setting」

Setting items in wireless auto switch

item	set value	remarks
Time of Wireless Communication Timeout	Set to "500ms" or more	
Protocal	Set to "V.2.0"	If there are already remotes paired with "V.1.0", it is necessary to deactivate all registered remotes.

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② Switch to pairing-enabled mode

Switch the base to pairable mode. [Select the "Properties" tab and click "Refresh". From the " Properties " tab, under "Remote registration," select "Pairing mode" then click "Reset module".
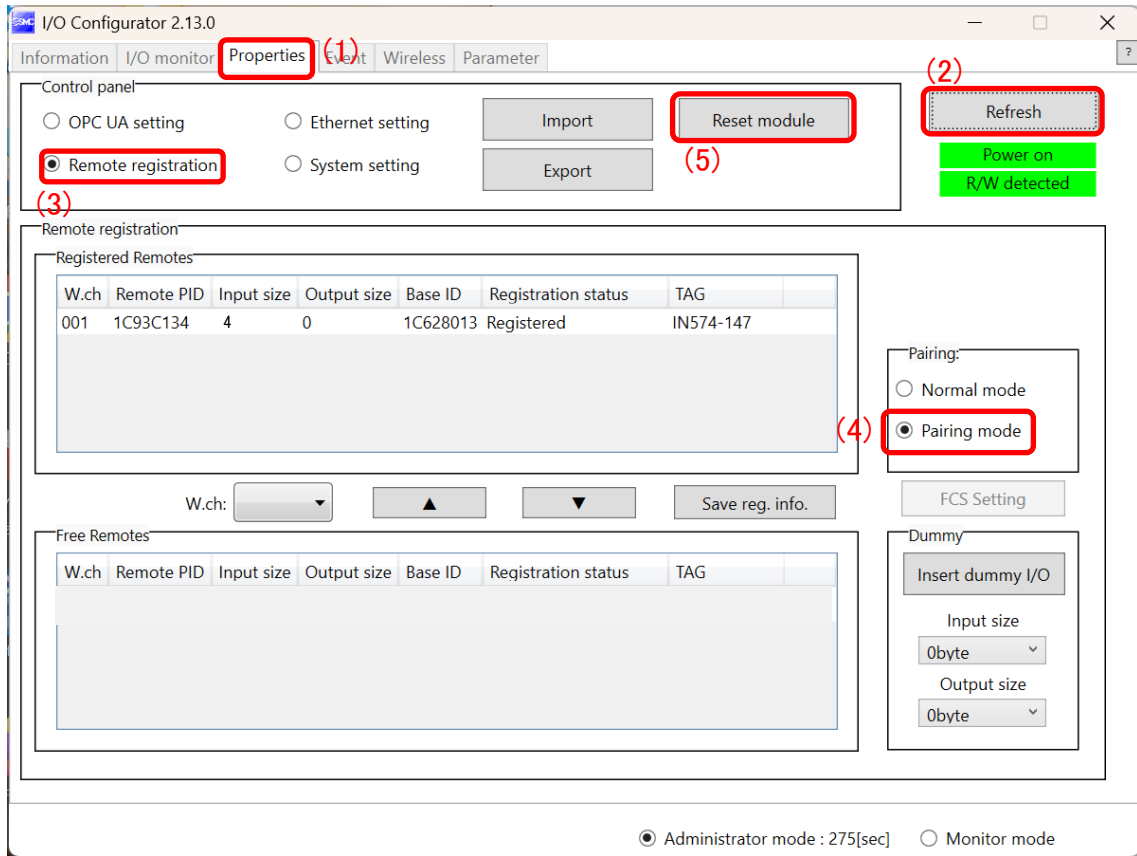
③ Switch wireless auto switch to pairing mode

(1) Place the transmitter within 10 cm of the wireless auto switch
(2) Press and hold the function button (2 to 8 seconds) (red/green light turns on simultaneously)
(3) Short press the function button while red/green light is on (red/green light alternates)
 When the light turns red/green alternately, it is pairing mode.

20
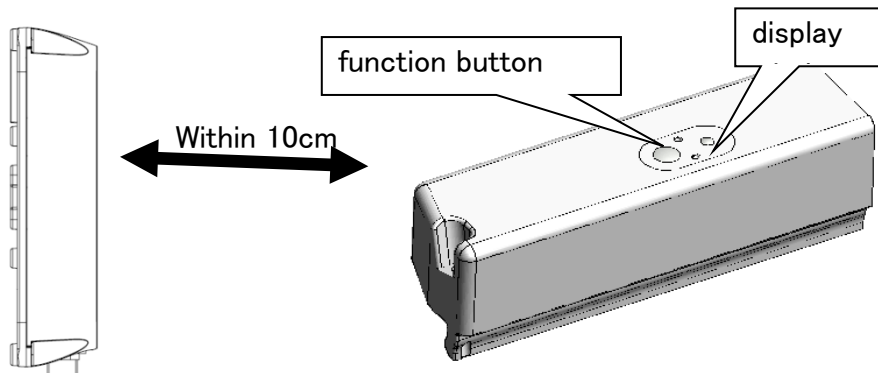
If the power supply is weak, mode switching may fail.
Perform it again by changing the distance and angle between the wireless auto switch and the transmitter.

④ Update remote information
Press the "Refresh" button and confirm that the [Free Remotes] appears.
Wireless auto switch is shown as remote.
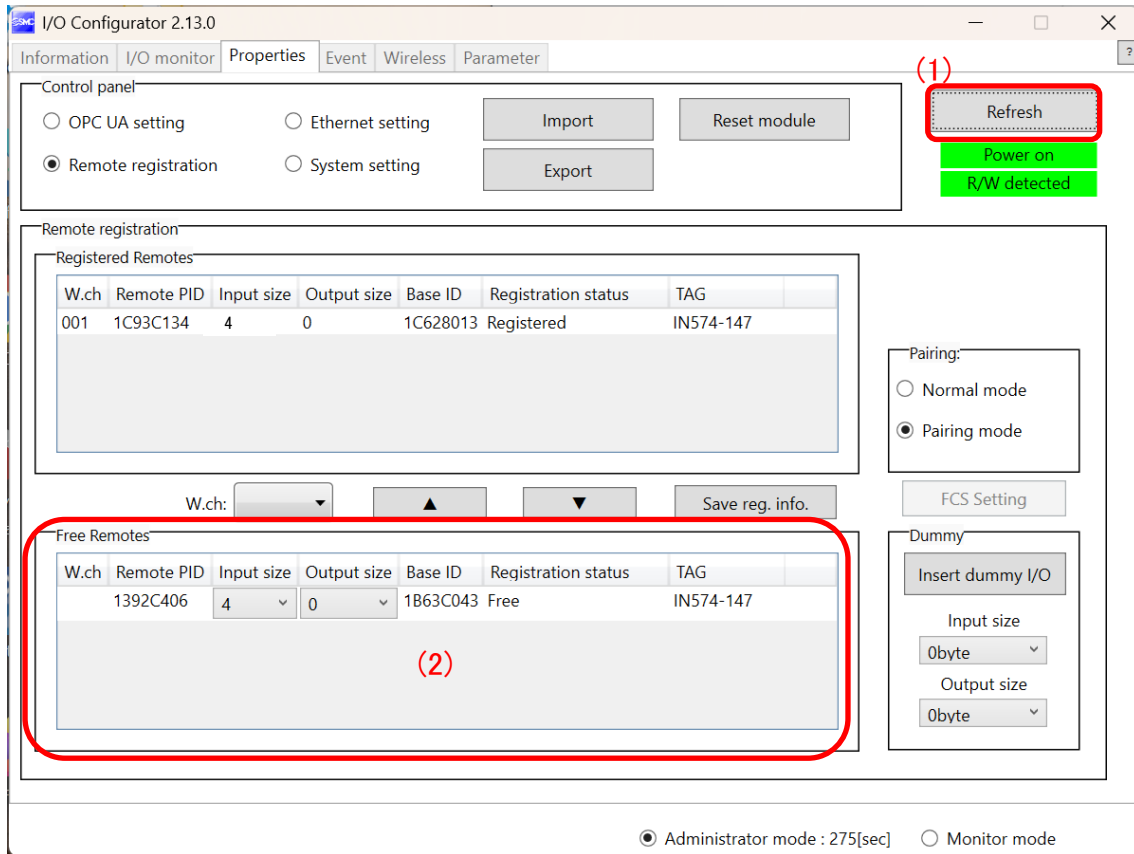
It may be difficult to display depending on the wireless and power supply conditions. If it does not appear, make sure the LED on the wireless auto switch is lit alternately red/green, then press the "Refresh" button several times.

⑤ Register wireless auto switch
  Register as well as remote.
  (1) Select the auto switch you wish to register with the free remote.
  (2) Select a registered channel.
  (3) Press the "▲" button to move to the registered remote.
  (4) Press the "Save reg. info." button to confirm.
  (5) When the registration status becomes "Registered", you are done.
  *The wireless auto switch automatically returns to the normal state.

Input size/output size is fixed. Cannot be changed.
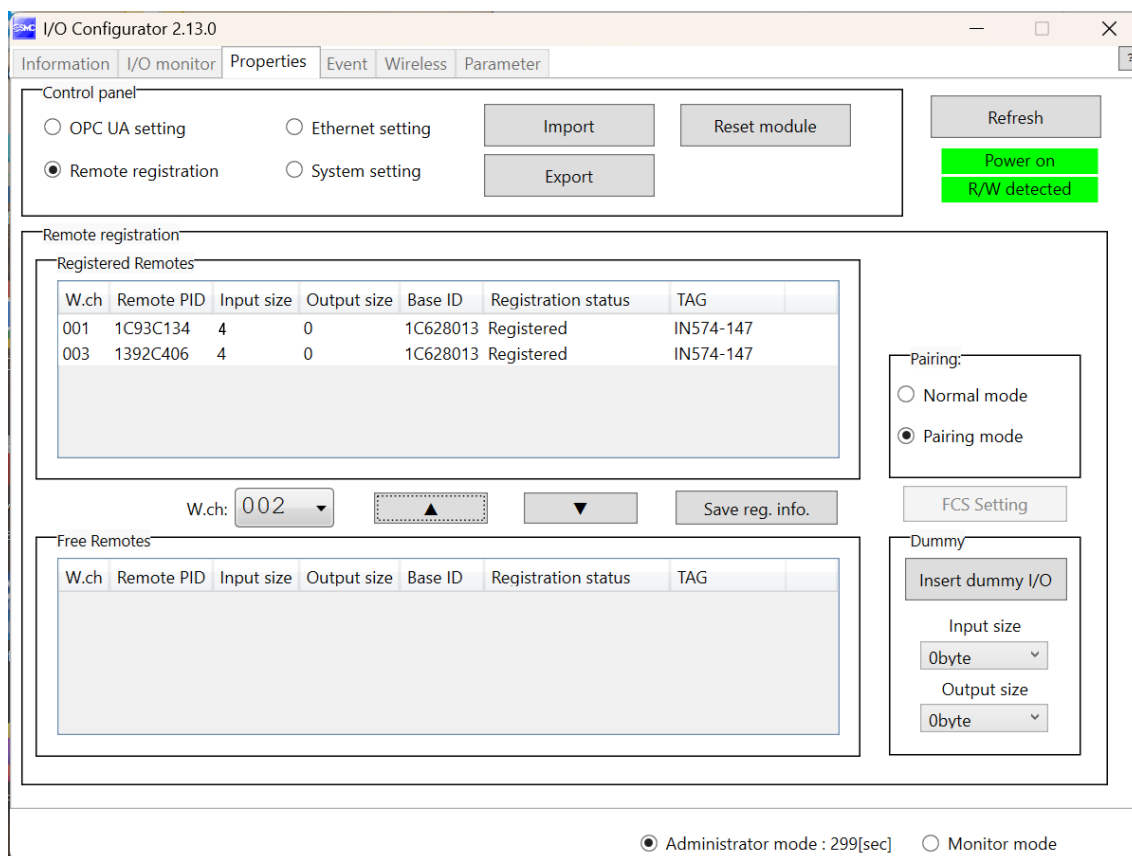
It may fail depending on the wireless and power supply conditions.
In case of "Registration Failed", please click the "Save reg. info." button again.
If this does not succeed, press the wireless auto switch "Reset module" or "Refresh" and go down.
The following is a brief summary of the results of the study.

How to cancel pairing mode

Wireless auto switch unpairing

① Registration Success
   Automatically exits pairing mode.

② End of pairing mode
   If you want to stop the pairing mode in the middle, perform the following operations with the function switch.
   (1) Place the transmitter within 10 cm from the wireless auto switch.
   (2) Press and hold the function button (2 to 8 seconds) (red/green light up simultaneously)
   (3) Short press the function button while the red/green light is on (the red/green light is no longer alternating)   .

Input-Output map

\<INPUT Data\>.

○ Whole

Byte	Contents	remarks
:	Diagnostic information, etc.	according to (depending on) the setting
0 to 3	Wireless auto switch ①	
4-7	Wireless auto switch ②	
:	:	

○ Wireless auto switch stand-alone

Byte	Bit	Contents	remarks
0	0	Sensor information (1:ON, 0:OFF)	
	1	Reserved	
	2	Reserved	
	3	Function switch status (1:ON, 0:OFF)	
	4	Reserved	
	5		
	6	Reserved	
	7		
1		Reserved	
2		Charge status	
3		Power supply Status	

\<OUTPUT Data\>.

N/A

○Power supply status

value	condition	Contents
67h～	High power	Sufficiently powered.
48h～66h	Middle power	The power supply is weak, but operation is possible.
33h～47h	Low power	If this condition persists, the radio will turn off in a few minutes.
～32h	Not power supply	Power is not being supplied.

○Charging status

value	condition	Contents
9Fh～	High charge	It is fully charged.
8Fh～9Eh	Medium charge	If this condition persists, the radio may turn off in a few minutes. Please recharge the battery as soon as possible.
7Bh～8Eh	Weak charge	There is not much charge left. Please recharge the battery as soon as possible. Radio response may be slow.
～7Ah	Warning	It could stop at any time.

Wireless auto switch installation

Wireless auto switch/transmitter
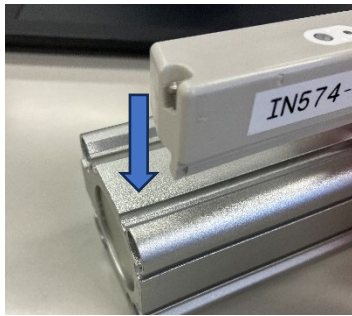
■Wireless auto switch & power transmitter installation method

① Installation
Place the transmitter and wireless auto switch so that they are within 50 cm of each other.
The transmitter and wireless auto switch also have angular characteristics. Please refer to the following diagram for installation.

<Mounting
    ① Insert the switch from the top of the switch mounting groove on the cylinder/actuator.
    ② Stand up auto switch.
    ③ Close and secure the screws.
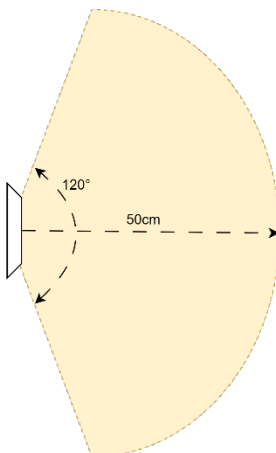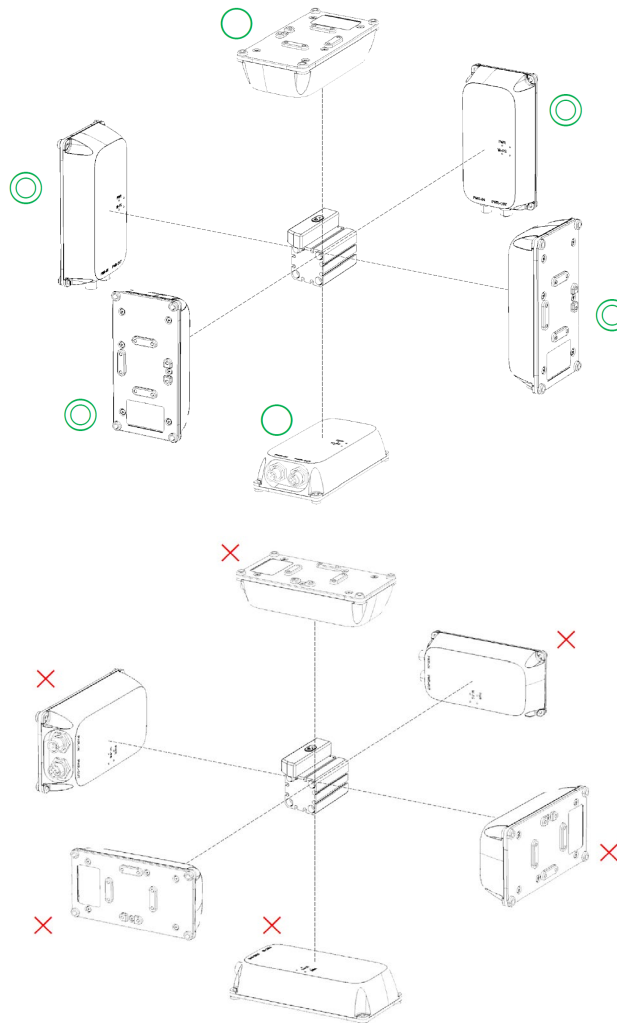

⚠attention
Phillips screwdriver for switch mounting screws (#0) and tighten and secure.
(Recommended tightening torque: 0.1 N-m)

<Placement
  Place wireless auto switch within 50 cm from the power transmitter

120°

50cm

<Transmitter/auto switch angle characteristics

<Attention.
  If it is difficult to receive the power from one unit, place multiple transmitters.
  Ensure that there is no obstruction between the transmitter and the wireless auto switch by anything (metal material, etc.) that would block the radio wave.

② Sensor position adjustment (when LED is visible)
Power is supplied from the power transmitter.
The LED blinks red in the ON position, so adjust the position and secure with screws.
*When wireless communication is already in progress, it blinks green.

display
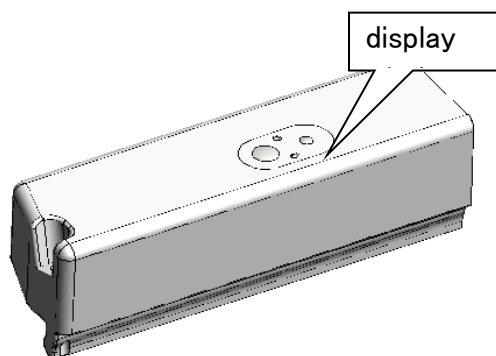
If it is difficult to visually see the LEDs due to the mounting position, temporarily fix the LEDs and perform step (4).

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③ Power feed adjustment (stop position)
Moves the system to the starting position.
Check the power supply status with wireless connection.
Set the Input map with the PLC value status.
Adjust the location of the power transmitter and position it so that the power supply condition is greater than or equal to the following value.

Power supply condition: 67h or more

*If the position where the system operation starts is not determined, check in the position where the wireless auto switch and the transmitter are farthest away from each other.
*If the power supply is not sufficient, it may not be displayed.

④ Sensor position adjustment (when LED is not visible)
Please adjust the PLC's map while viewing the PLC's map in state (3).

⑤ Power feed adjustment (operating status)
Check the power supply/charge status of the system in continuous operation.
Please adjust the map with the PLC.

State of charge: more than 9Fh

※ Since WPT, wireless power transmit method, a straight line feeding is not necessarily the most efficient.
Some power is supplied by radio waves due to reflections.

Restrictions

The wireless auto switch is treated as a remote, but the following functions are disabled.

Parameter name	Contents	remarks
Protocol	V.2.0 only	V.1.0 is not supported.
Diagnostic allocation	validity	Allocated to the input/output map. However, the diagnostic information itself is unsupported.
Time of Wireless Communication Timeout	Set to 500msec or longer	Please set 500msec or more. However, the number of retries is fixed at 32, regardless of the set time.
Power Transmission Level	invalid	Transmitted at an output level even lower than Low (fixed)

Troubleshooting

○Wireless auto switch

| Operation Mode	phenomenon	counter-measure
pairing	Not shown on free remote	Confirm that the wireless auto switch is in the pairing state (LED: red-green alternately lit and extinguished).
		Make sure the base is in pairing status (W-NS: red-green alternating flashing).
		Press the "Refresh" button again.
		Make sure you are not in the process of pairing elsewhere. Multiple simultaneous pairings are not supported.
		Use the wireless auto switch to exit pairing mode once and then re-enter the pairing state.
	Pairing fails.	Make sure that the base is dedicated to wireless auto switch.
		The power supply may be weak. Change the distance and direction between the power transmitter and the wireless auto switch, and perform it again.
		Possible wireless congestion, possibly due to Wi-Fi, etc. Pairing should be performed in a location with a good signal environment.
		Make sure you are not in the process of pairing elsewhere. Multiple simultaneous pairings are not supported.
normal state (condition)	The wireless connection is not working.	Make sure the power to the transmitter is on.
		Check to see if the LED is blinking red once every 8 seconds. If this condition persists for more than 1 minute, the power supply is weak. Locate the power transmission value nearby.
		Make sure they are paired on the base side.
		Make sure the protocol is set at "V.2.0".
		Make sure the adapter has not been replaced after pairing. When replacing the adapter, it is also necessary to replace it with a dedicated wireless auto switch adapter.
	Wireless is easily disconnected.	Make sure that the wireless timeout period is set to "500msec" or longer.
		The power supply may be weak. Please check the power feed/charge status by looking at the input map. If it is weak, review the mounting position of the transmitter.
		There is a possibility of wireless congestion. May not be available depending on congestion.
		Check the distance to the base. Even a straight line of 5 m may shorten the distance if visibility is poor.

○Transmitter

| operation	phenomenon	counter-measure
Power Supply failure	LED: PWR lights up red	Power failure. Make sure that the power supply is within 24V±10%.
Wireless power failure	LED: W-PS lights up red	Possible temperature anomaly. Use in an environment of -10°C to 60°C.
		When used in an enclosed space, it may be overcharged. It cannot be used in this environment.

Technical Information

Wireless auto switch
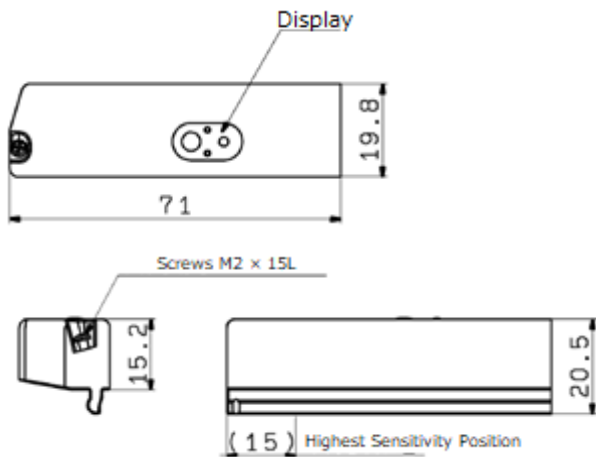
Power transmitter
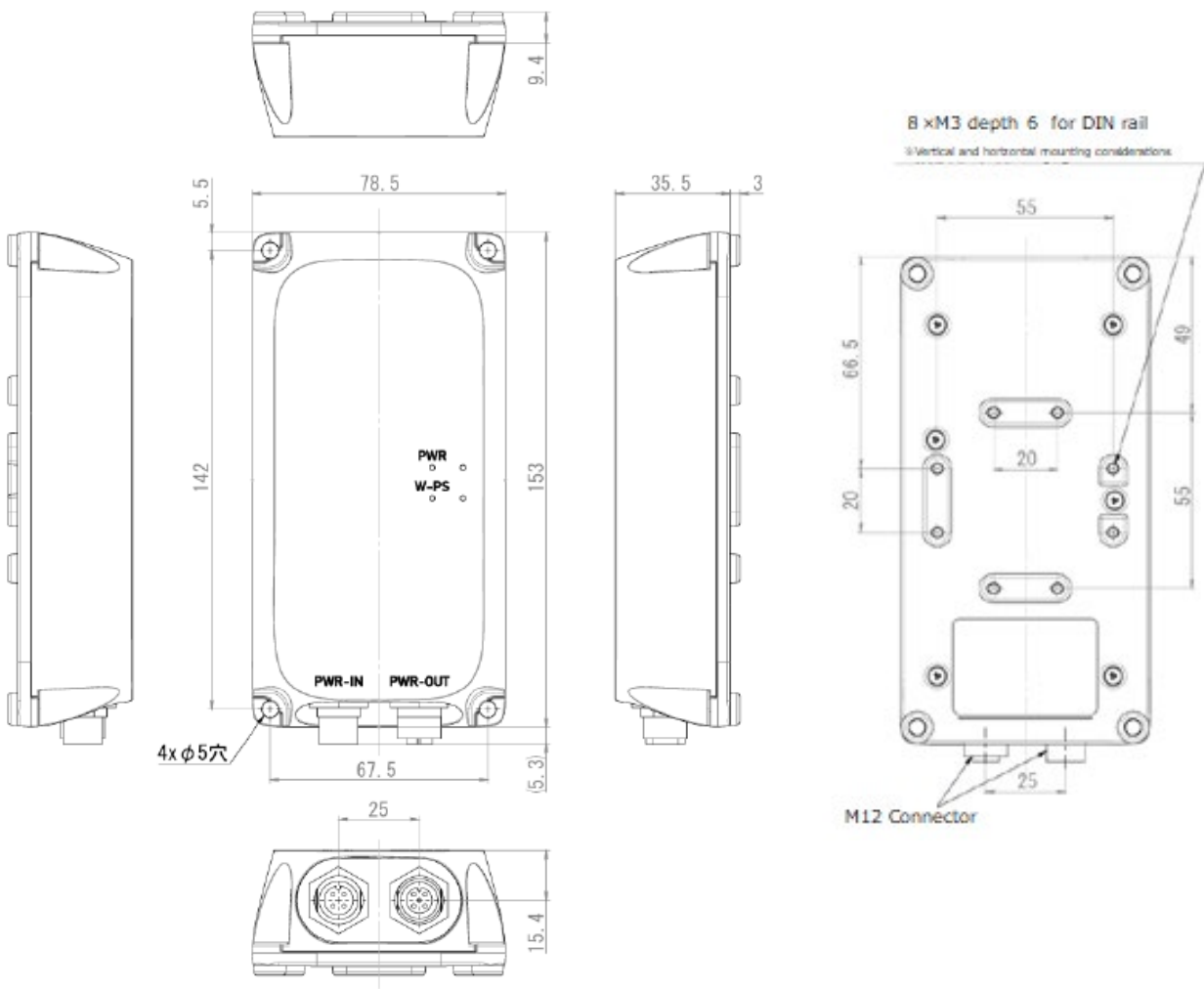
Specifications

Wireless auto switch (IN574-147)

General Specifications

(data) item	(technical) specification
power (button on TV, etc.)	Wireless power supply (details are described separately)
Protective structure	IP67
Ambient temperature (operating temperature)	-10 to +60 °C
Ambient temperature (storage temperature)	-20 to +70 °C
Ambient humidity	35 to 85%RH (no condensation)
Vibration Resistance	TBD
shockproof	300 m/s2(11ms)
installation	M2 x 15 screw hole 1 place
standard	CE/UKCA marking, UL(CSA)
mass	25g

Wireless: Power supply specification

(data) item	(technical) specification
Power supply method	Microwave method (920 MHz band)
power supply unit	Within 50 cm from the dedicated power transmitter
cold start	20s (at 20cm from the transmitter)
powerless operating time	30s (full charge: when there is no radio interference and ON/OFF changes in 1 second)
transceiver (send and receive)	incoming only

No power supply is required due to wireless power supply.

Wireless: Data communication specifications

(data) item	(technical) specification
protocol	SMC proprietary protocol (SMC encryption) V.2.0 fixed
Radio wave method (diffusion)	Frequency hopping (FHSS method)
frequency band	2.4 GHz (2403 to 2481 MHz)
Frequency channel selection function (F.C.S.)	support
frequency channel	MAX79ch (bandwidth: 1.0 MHz)
communication speed	1Mbps
FH cycle	2ms
communication distance	Visibility up to 5 m (depending on environment)

Wireless: Authentication

(data) item	(technical) specification
Radio Law Certification	Construction Design Certification (Japan) Certification No.: 001-A21546 ISED: 21344-WEX10 FCC ID: 2AJE7SMC-WEX10

Software Version

(data) item	version
Application	1.0
wireless	1.0

Transmitter (IN574-138)

Electrical Specifications

(data) item	(technical) specification
Supply voltage range	24V DC ±10% (±10%)
maximum ratings	5A

General Specifications

(data) item	(technical) specification
Protective structure	IP67
Ambient temperature (operating temperature)	-10 to +60 °C
Ambient temperature (storage temperature)	-20 to +70 °C
Vibration Resistance	Compliant with EN61131-2
shockproof	Compliant with EN61131-2
standard	-
mass	300g

Wireless: Power transmission specifications

(data) item	(technical) specification
modulation method	unmodulated
frequency (esp. of waveforms)	918MHz
Frequency Deviation	±20ppm
air power	1.0±0.2W
Continuous transmission	50ms stop every 4 seconds

Wireless: Authentication

(data) item	(technical) specification
Radio Law Certification	Construction Design Certification (Japan) Certification No.: 001-A21379 ISED: 21344-WEX09 FCC ID: 2AJE7SMC-WEX09

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