Wireless System



v Profi

Usable even in welding environments

Noise resistance

Uses the 2.4 GHz ISM frequency band Frequency hopping: Every 5 ms

High-speed connection

From power supply ON to start of communication: Min. 250 ms*1

*1 For remote

Wireless communication signal

Communication response

Response time: 5 ms

Communication cables not required

Reduced wiring work, space, and cost Minimized disconnection risk

Number of I/O points

Max. 1280 inputs/1280 outputs (Max. 128 inputs/128 outputs per module)

Compatible protocol

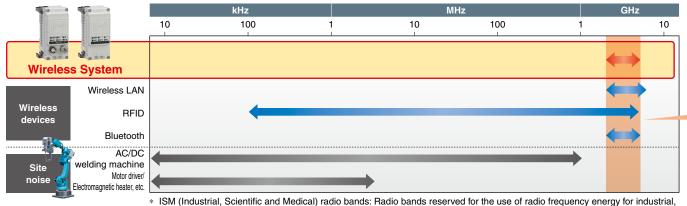
EtherNet/IP



CAT.E02-28B ®

Provide safe and reliable communication

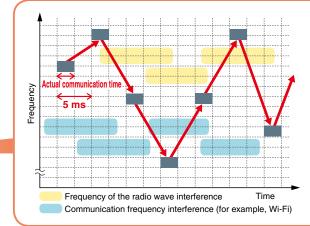
Uses the 2.4 GHz ISM frequency band



ISM (Industrial, Scientific and Medical) radio bands: Radio bands reserved for the use of radio frequency energy for industrial, scientific and medical purposes.

Provide stable communication Communications using various forms of radio wave propagation Automatic restoration PLC of communication If the number of retries exceeds the stipulated value (32 times), a disconnection flag will Power be output. The system will enter resync mode supply Communication possible in a 10 m radius and synchronization will be established. Once completed, the normal operating conditions will be restored, the disconnection flag will be canceled, and control will resume. Base Reflected wave Noise in electronic circuits nsmitted wave Direct wave Interference from other wireless equipment Remote

SMC



Frequency hopping: Every 5 ms

A stable wireless environment is established using an original protocol which is not affected by interference. Interference from other wireless equipment is prevented.

Frequency Hopping

The communication technology rapidly changes frequency (hopping), to prevent interference from other wireless equipment. When the frequency of Wi-Fi and other wireless communications compete, or radio wave interference is present, then other frequencies are used for communication. For details, refer to technical data on page 23.

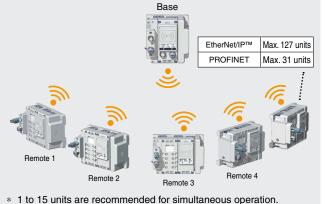
High security using encryption

Unauthorized access from outside is prevented by using data encryption.



Point-to-Multipoint communication

Registration and communication of up to 127 remote modules is possible.



It is possible to install multiple bases in the same area.

Wireless communication status can be monitored.

The wireless system connection can be monitored during operation

according to the diagnostic data. The installation location can be ascertained according to the intensity level of the radio wave received by the unit display.

[Diagnostic data]

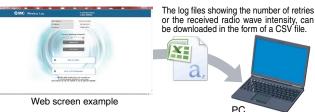
- * When communication from the remote cannot be received
- * When communication retry has exceeded the upper limit (32 times) [Unit display]

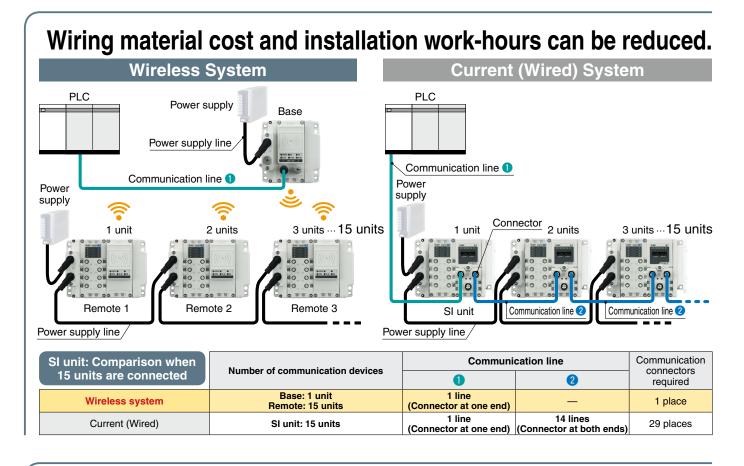
For Base W-SS (Radio wave receiving intensity (For communication from remote to base)) EtherNet/IP™ Green LED is ON Received power level of all remotes is 3 OMS Green LED flashes. (1 Hz) There are connected remotes with OW-SS OW-NS ⊖w-ms received power level 2 1 🌒 LINK/ACT 🌒 2 Green LED flashes. (2 Hz) There are connected remotes with received power level 1 PROFINET ⊖PWR ⊖SF OBF Red LED flashes No remotes connected. ⊖w-ss ⊖w-ns ⊖w-ms 1 🌢 LINK/ACT 🌢 2 OFF Remote module is not registered. W-SS (Radio wave receiving intensity (For communication from base to remote)) For remote Received power level is 3. Green LED is ON Green LED flashes. (1 Hz) Received power level is 2. \cap Green LED flashes. (2 Hz) ∩ms ⊖w-ss ⊖w-ns Received power level is 1. Red LED flashes Wireless communication is not connected. Base module is not registered. OFF

* A received radio wave intensity level of 1 means the intensity is weak. Add a base so that the wave intensity becomes level 3 or 2. Alternatively remove the obstacle between the base and remote, or reduce the distance between the base and remote.

<Communication status can be downloaded by a PC>

By connecting the base to a PC, it is possible to view log files which show the number of retries or the received radio wave intensity. Log files are accessed by using a web browser to connect to the built-in web server. The wireless environment and installation location can be optimized by checking the number of retries and received radio wave intensity.





Interchangeability maintained Connection interchangeability between EX600 series SI units is maintained.

Replacement of wireless and wired systems is possible.

* Maximum I/O of base/remote module is limited to 128 points.



SMC

NFC contactless communication

(NFC: Near Field Communication)

Settings are possible using an NFC reader/writer and setting software. (Some items can be set even when there is no power supplied.)

- Write IP address to the base
- Set the I/O points for the system and unit
- Pairing of the base and remote
- I/O monitoring





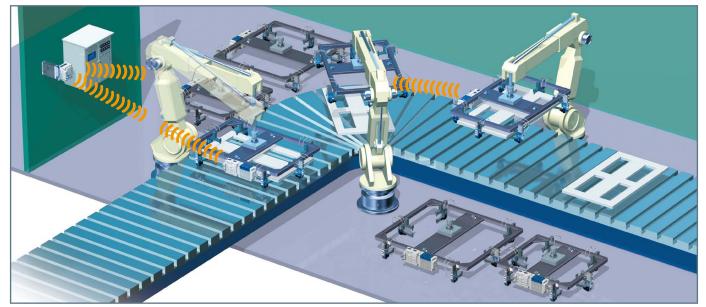
Configuration File



Application Examples

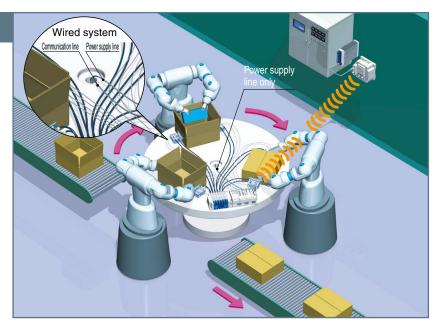
Tool change

- Communication cable is not necessary for moving parts.
- Minimized disconnection risk
- Shorter time for establishing communication (startup time)



Rotary table

- Minimized disconnection risk
- Smaller diameter communication cable/tubing

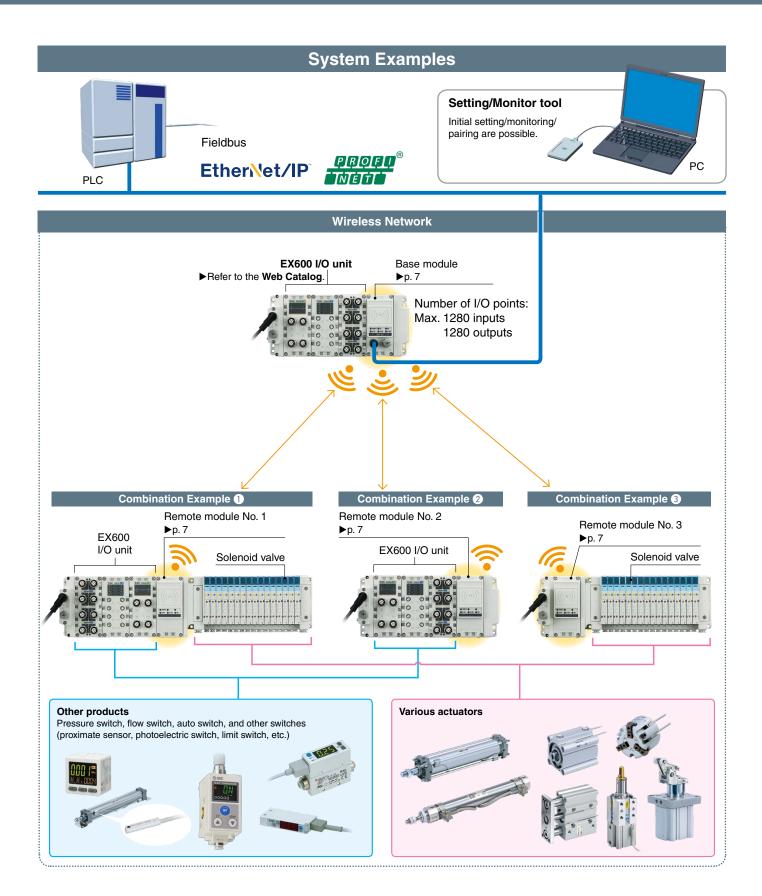




Blocking of radio waves

* The radio waves must not be blocked by nearby conductive objects such as metal enclosures or covers.





Applicable Manifold Solenoid Valves							
SY Series	1P67 ((SV Series	(1967) (C. 1986) (D. 1986)	S0700 Series	1P40 ((VQC Series	1P67 ((

CONTENTS

Wireless System **EX600-W** Series









Base module

Remote module



Accessories

End Plate Bracket p. 18
2 Valve Plate p. 18
Seinforcing Brace p. 18
Seal Cap p. 18
S Marker (1 sheet, 88 pcs.) p. 19
Communication Cable with Connector/ Communication Connector
Power Supply Cable with M12 Connector (A-coded) p. 20
Power Supply Cable with M12 Connector (B-coded) p. 21
Power Supply Cable with 7/8 Inch Connector/ Power Supply Connector

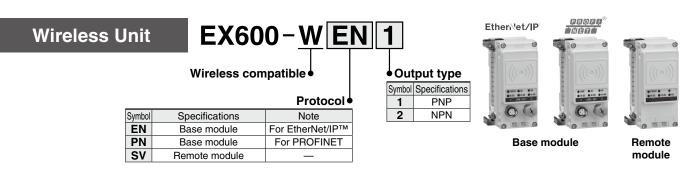
How to Order

Wireless Unit p. 7
Digital Input Unit p. 7
Digital Output Unit p. 7
Digital Input/Output Unit p. 7
Analog Input Unit p. 8
Analog Output Unit p. 8
Analog Input/Output Unit p. 8
End Plate (D side) p. 8
End Plate (U side) p. 8
Ordering Example of the Base Module p. 9
Ordering Example of the Remote Module p. 9
Specifications
Base Module p. 10
Remote Module p. 12
End Plate (D side) p. 12
Dimensions p. 13
LED Display p. 15

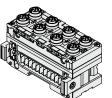
Technical Data	p. 2	23
Important	p. 2	23
Safety Instructions Back	cove	eı

Wireless System CE EX600-W Series RoHS

How to Order



Digital Input Unit



X600-	-DX	P	D
	Input two		

	mpartype
Symbol	Description
Ρ	PNP
Ν	NPN

* For specifications, refer to the Fieldbus system EX600 series in the Web Catalog.

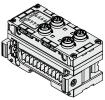
Ε

Number of inputs and Connector

Symbol Number of inputs		Connector
B 8 inputs C 8 inputs C1 8 inputs D 16 inputs E 16 inputs		M12 connector (5 pins) 4 pcs.
		M8 connector (3 pins) 8 pcs.
		M8 connector (3 pins) 8 pcs., With open-circuit detection
		M12 connector (5 pins) 8 pcs.
		D-sub connector (25 pins)
F	16 inputs	Spring type terminal block (32 pins)



Digital Output Unit



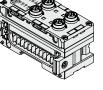
EX600-DYPB				
		Output type		• N
	Symbol	Description		Symb
	Ρ	PNP		В

NPN

Ν

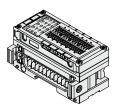
Number of outputs and Connector

[SymbolNumber of outputsB8 outputs		Connector
			M12 connector (5 pins) 4 pcs.
	Е	16 outputs	D-sub connector (25 pins)
	F	16 outputs	Spring type terminal block (32 pins)



*	For specifications, refer to the Fieldbus
	system EX600 series in the Web
	Catalog.

Digital Input/Output Unit EX600-DM P



A 7

Input/Output type

Symbol

PNP

NPN

Output type	•Number of inputs/outputs and Connector			
Description	Symbol Number of inputs Number of outputs	Connector		

F

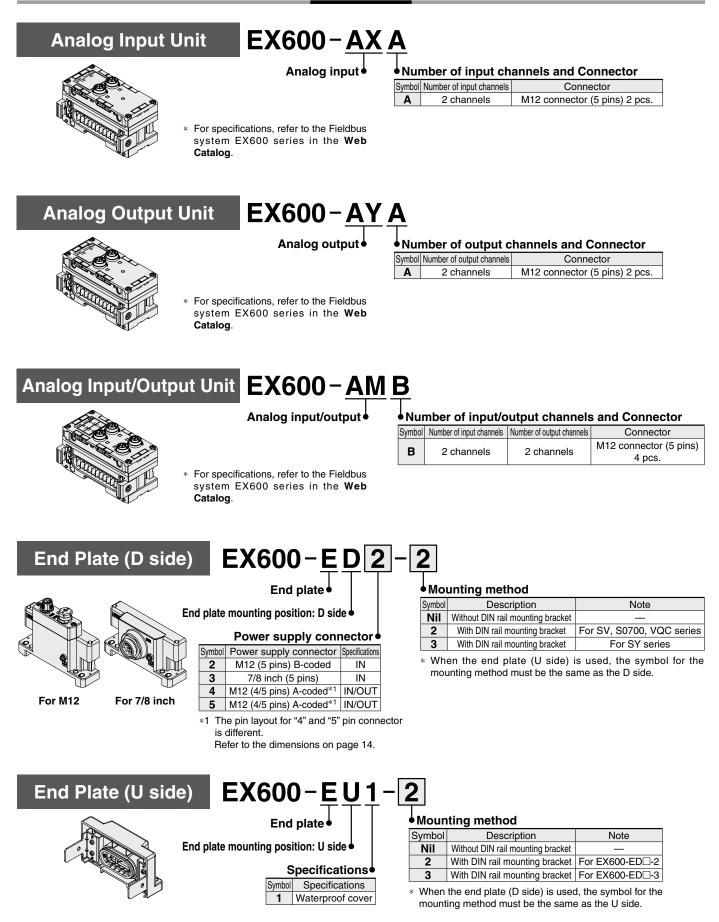
Symbol	Number of inputs	Number of outputs	Connector
Е	8 inputs	8 outputs	D-sub connector (25 pins)
F	8 inputs	8 outputs	Spring type terminal block (32 pins)

For specifications, refer to the Fieldbus
system EX600 series in the Web
Catalog.

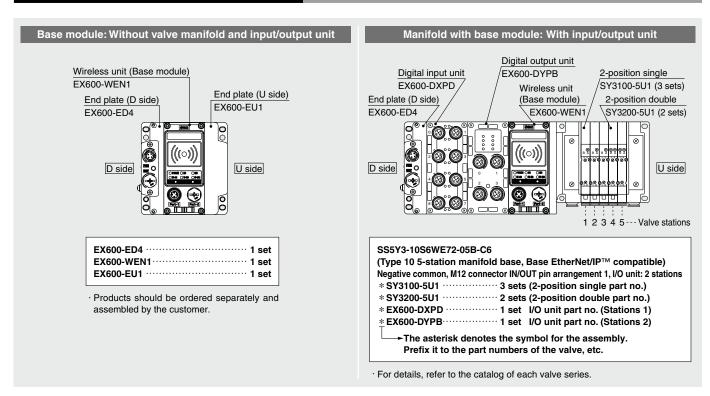
Ρ Ν

Wireless System **EX600-W** Series

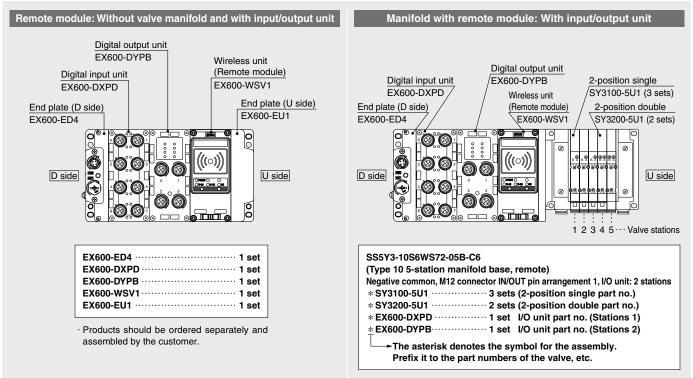
How to Order



Ordering Example of the Base Module



Ordering Example of the Remote Module



Specifications

Base Module: EX600-WEN

base module.	EX600-WEN Item		Specifications	
	Communication	protocol	EtherNet/IP™ (Conformance test version: Composit 12)	
	Transmission m	•	Standard Ethernet cable (CAT5 or higher, 100BASE-TX)	
	Communication	i	10 Mbps/100 Mbps	
	Communication method		Full duplex/Half duplex	
	Configuration file		EDS file*1	
	IP address settir		Manual/BOOTP, DHCP	
EtherNet/IP™	ii address settii	'9	Vendor ID: 7 (SMC Corp.)	
communication	Device informati	ion	Device type: 12 (Communication Adaptor)	
	Device informati		Product code: 186	
	Topology		Star, Bus, Ring (DLR), Line, Tree	
	QuickConnect™	function	Applicable	
	DLR function		Applicable	
	Web server func	tion	Applicable	
	Protocol		SMC original protocol (SMC encryption)	
	Radio wave type	(spread)	Frequency Hopping Spread Spectrum (FHSS)	
	Frequency	(oproud)	2.4 GHz (2403 to 2481 MHz)	
	Number of frequ	ency channels	79 ch (Bandwidth: 1.0 MHz)	
Wireless	Communication	•	250 kbps	
communication	Communication		10 m (Depending on the operating environment)	
			Japanese radio law (Japan), RE (EU ^{*2}), FCC (USA), ANATEL (Brazil), ETA (India),	
	Radio Law certif	icate	NOM (Mexico), IC (Canada), SRRC (China), NBTC (Thailand), ACMA (Australia),	
			ACMA (New Zealand), IMDA (Singapore), NCC (Taiwan), KC (South Korea)	
	For control/input	Power supply voltage	24 VDC ±10%	
	(US1)	Current consumption	150 mA or less	
Electrical	For output	Power supply voltage	24 VDC ±10%	
	(US2)	Max. supply current	4 A	
	Number of	System input size	Max. 1280 points together with the registered remote modules	
	inputs	Input size	Max. 128 points (increase or decrease by 16 points)	
	Number of	System output size	Max. 1280 points together with the registered remote modules	
	outputs	Output size	Max. 128 points (increase or decrease by 16 points)	
	Analog input/output		10 ms or less (the input connected to the base module)	
		AD refresh time	0.1/0.2/0.5/1/2/5/10/30/60 s	
			(the input connected to the remote module)*3	
Input/Output			10 ms or less (the output connected to the base module)	
mputoutput		DA refresh time	0.1/0.2/0.5/1/2/5/10/30/60 s	
			(the output connected to the remote module)*3	
		Output type	EX600-WEN1: Source/PNP (-COM)	
	Valve output	Number of cutouts	EX600-WEN2: Sink/NPN (+COM)	
	-	Number of outputs	Max. 32 points (0/8/16/24/32 points)	
	Number of some	Connected load	Solenoid valve with surge voltage suppressor of 24 VDC and 1.5 W or less (manufactured by SMC) Max. 127 units (0/15/31/63/127 units)	
	Number of remote modules connected Number of connected EX600 I/O units		Max. 9 EX600 series I/O units (I/O = 128 . I/O above 128 cannot be recognized.)	
		ected EX600 I/O units	$\frac{1}{1}$	
	Enclosure Ambient temperature (Operating temperature)		-10 to +50°C	
	•	ture (Storage temperature)	-10 10 +30 C	
	Ambient tempera	· · · /	35 to 85% RH (No condensation)	
	Withstand voltad		500 VAC for 1 minute between external terminals and metallic parts	
	Insulation resist		$10 \text{ M}\Omega$ or more (500 VDC between external terminals and metallic parts)	
			Conforms to EN61131-2	
General			$5 \le f < 8.4 \text{ Hz} 3.5 \text{ mm}$	
	Vibration resista	ince	$8.4 \le f < 150 \text{ Hz } 9.8 \text{ m/s}^2$	
			(Excludes valve manifold)	
			Conforms to EN61131-2	
	Impact resistance	e	147 m/s², 11 ms	
	-		(Excludes valve manifold)	
	Standards		CE marking (EMC directive/RoHS directive)	
	Weight		300 g	
	Communication	standard	ISO/IEC 14443B (Type-B)	
NFC	Frequency		13.56 MHz	
communication*4	Communication		20 to 100 kHz (I2C)	
	Communication	distance	Up to 1 cm	

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

*2 Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, U.K., Turkey

*3 Varies depending on the wireless communication status and the surrounding environment

*4 The NFC communication RFID tag of the 13.56 MHz passive type

Trademark

 $\label{eq:EtherNet/IP^m} \mbox{ is a trademark of ODVA}.$



Specifications

Base Module: EX600-WPN□

	Item		Specifications	
	Communication protocol		PROFINET IO	
	Conformance class		Class C (Only for IRT switch function)	
	Transmission medium (cable)		Standard Ethernet cable (CAT5 or higher, 100BASE-TX)	
PROFINET	Transmission speed		100 Mbps	
communication	Configuration file		GSDML file*1	
	FSU (Fast Start L		Applicable	
·	•	undancy Protocol)	Applicable	
	Web server funct		Applicable	
	Protocol		SMC original protocol (SMC encryption)	
	Radio wave type	(aproad)	Frequency Hopping Spread Spectrum (FHSS)	
		(spread)		
	Frequency		2.4 GHz (2403 to 2481 MHz)	
Wireless	Number of freque		79 ch (Bandwidth: 1.0 MHz)	
communication	Communication	•	250 kbps	
	Communication	distance	10 m (Depending on the operating environment)	
	Radio Law certif	icate	Japanese radio law (Japan), RE (EU ^{*2}), FCC (USA), ANATEL (Brazil), ETA (India), NOM (Mexico), IC (Canada), SRRC (China), NBTC (Thailand), ACMA (Australia), ACMA (New Zealand), IMDA (Singapore), NCC (Taiwan), KC (South Korea)	
	For control/input	Power supply voltage	24 VDC ±10%	
Electrical	(US1)	Current consumption	150 mA or less	
Liectifical	For output	Power supply voltage	24 VDC ±10%	
	(US2)	Max. supply current	4 A	
	Number of	System input size	Max. 1280 points together with the registered remote modules	
	inputs	Input size	Max. 128 points (increase or decrease by 16 points)	
	Number of	System output size	Max. 1280 points together with the registered remote modules	
	outputs	Output size	Max. 128 points (increase or decrease by 16 points)	
	Analog input/output	AD refresh time	10 ms or less (the input connected to the base module) 0.1/0.2/0.5/1/2/5/10/30/60 s (the input connected to the remote module)*3	
Input/Output		DA refresh time	10 ms or less (the output connected to the base module) 0.1/0.2/0.5/1/2/5/10/30/60 s (the output connected to the remote module)* ³	
	Valve output	Output type	EX600-WPN1: Source/PNP (-COM) EX600-WPN2: Sink/NPN (+COM)	
		Number of outputs	Max. 32 points (0/8/16/24/32 points)	
		Connected load	Solenoid valve with surge voltage suppressor of 24 VDC and 1.5 W or less (manufactured by SMC)	
	Number of remote modules connected		Max. 31 units (0/15/31 units)	
	Number of conne	ected EX600 I/O units	Max. 9 EX600 series I/O units (I/O = 128. I/O above 128 cannot be recognized.)	
	Enclosure		Conforms to IP67 (with manifold assembled)	
	Ambient temperature (Operating temperature)		-10 to +50°C	
	Ambient tempera	ature (Storage temperature)	−20 to +60°C	
	Ambient humidit	y	35 to 85% RH (No condensation)	
	Withstand voltag	e	500 VAC for 1 minute between external terminals and metallic parts	
	Insulation resista	ance	10 M Ω or more (500 VDC between external terminals and metallic parts)	
General	Vibration resistance		Conforms to EN61131-2 $5 \le f < 8.4$ Hz 3.5 mm $8.4 \le f < 150$ Hz 9.8 m/s ² (Excludes valve manifold)	
	Impact resistanc	e	Conforms to EN61131-2 147 m/s ² , 11 ms (Excludes valve manifold)	
	Standards		CE marking (EMC directive/RoHS directive)	
	Weight		300 g	
	Communication	standard	ISO/IEC 14443B (Type-B)	
NFC	Frequency		13.56 MHz	
communication*4	Communication	speed	20 to 100 kHz (I2C)	
	Communication distance		Up to 1 cm	
		adad from the SMC website: h	L ·	

 *1 The configuration file can be downloaded from the SMC website: http://www.smcworld.com
 *2 Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, U.K., Turkey

*3 Varies depending on the wireless communication status and the surrounding environment

*4 The NFC communication RFID tag of the 13.56 MHz passive type



Specifications

Remote	Module:	EX600-	-WSV□
---------------	---------	--------	-------

Item			Specifications	
	For control/input	Power supply voltage	24 VDC ±10%	
Electrical	(US1)	Current consumption	70 mA or less	
Electrical	For output	Power supply voltage	24 VDC ±10%	
	(US2)	Max. supply current	4 A	
	Number of inputs	Input size	Max. 128 points (increase or decrease by 16 points)	
	Number of outputs	Output size	Max. 128 points (increase or decrease by 16 points)	
	AD/DA refresh ti	me	0.1/0.2/0.5/1/2/5/10/30/60 s*1	
Input/Output	Number of conne	ected EX600 I/O units	Max. 9 EX600 I/O units (I/O = 128. I/O above 128 cannot be recognized.)	
inputoutput	Valve output	Output type	EX600-WSV1: Source/PNP (-COM) EX600-WSV2: Sink/NPN (+COM)	
	valve output	Number of outputs	Max. 32 points (0/8/16/24/32 points)	
		Connected load	Solenoid valve with surge voltage suppressor of 24 VDC and 1.5 W or less (manufactured by SMC)	
	Protocol		SMC original protocol (SMC encryption)	
	Radio wave type	(spread)	Frequency Hopping Spread Spectrum (FHSS)	
	Frequency		2.4 GHz (2403 to 2481 MHz)	
Wireless	Number of freque	ency channels	79 ch (Bandwidth: 1.0 MHz)	
communication	Communication speed		250 kbps	
Communication	Communication distance		10 m (Depending on the operating environment)	
	Radio Law certificate		Japanese radio law (Japan), RE (EU*2), FCC (USA), ANATEL (Brazil), ETA (India), NOM (Mexico), IC (Canada), SRRC (China), NBTC (Thailand), ACMA (Australia), ACMA (New Zealand), IMDA (Singapore), NCC (Taiwan), KC (South Korea)	
	Enclosure		Conforms to IP67 (with manifold assembled)	
	Ambient tempera	ture (Operating temperature)	-10 to +50°C	
	Ambient tempera	ture (Storage temperature)	–20 to +60°C	
	Ambient humidit	у	35 to 85% RH (No condensation)	
	Withstand voltage		500 VAC for 1 minute between external terminals and metallic parts	
	Insulation resistance		10 M Ω or more (500 VDC between external terminals and metallic parts)	
General	Vibration resistance		Conforms to EN61131-2 $5 \le f < 8.4$ Hz 3.5 mm $8.4 \le f < 150$ Hz 9.8 m/s ² (Excludes valve manifold)	
	Impact resistance		Conforms to EN61131-2 147 m/s², 11 ms (Excludes valve manifold)	
	Standards		CE marking (EMC directive/RoHS directive)	
	Weight		280 g	
	Communication	standard	ISO/IEC 14443B (Type-B)	
NFC	Frequency		13.56 MHz	
communication*3	Communication	speed	20 to 100 kHz (I2C)	
	Communication distance		Up to 1 cm	

*1 Varies depending on the wireless communication status and the surrounding environment

*2 Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, U.K., Turkey

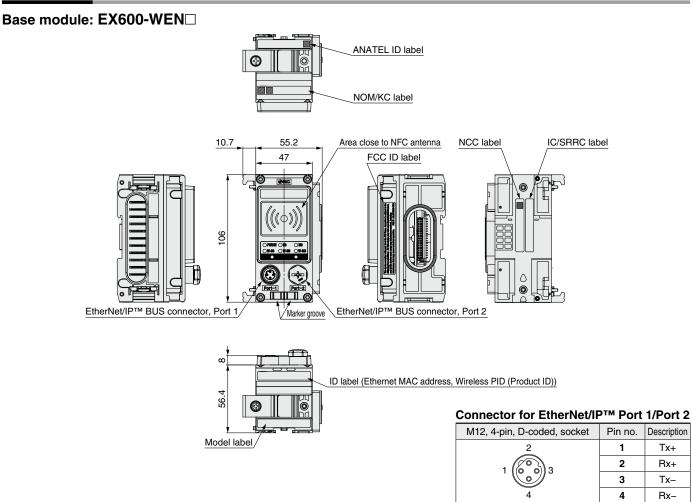
*3 The NFC communication RFID tag of the 13.56 MHz passive type

End Plate (D side): EX600-ED4/5-

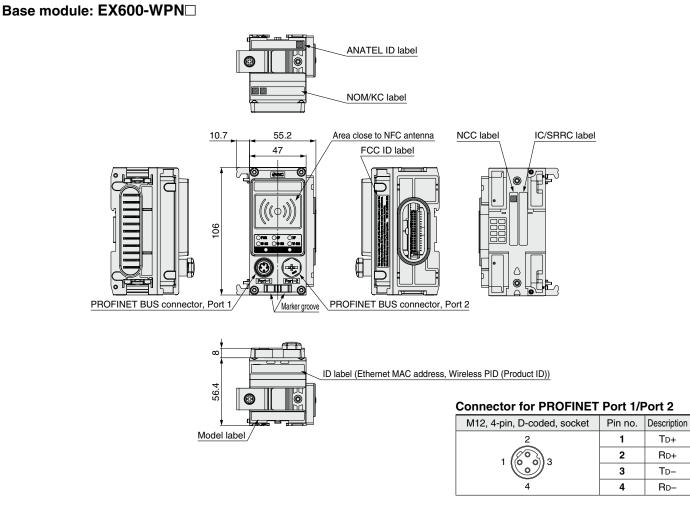
	Item		Specifications
	Connector type	PWR IN	M12 plug, 4-pin
	Connector type	PWR OUT	M12 socket, 5-pin
Electrical	Dated valtage	Power supply for output	24 VDC +10%/-5%
Electrical	Rated voltage	Power supply for control/input	24 VDC ±10%
	Rated current	Power supply for output	Max. 4 A
		Power supply for control/input	Max. 4 A
	Enclosure		Conforms to IP67 (with manifold assembled)
	Withstand voltag	e	500 VAC for 1 minute (between FE and external terminals)
	Insulation resistance		10 $M\Omega$ or more (500 VDC between FE and external terminals)
General	Ambient	Operating	-10 to +50°C
	temperature	Stored/Transported	–20 to +60°C
	Ambient humidity		35% to 85% RH (No condensation)
	Standards		CE marking (EMC directive/RoHS directive)

* For the EX600-ED2/3-□, refer to the Fieldbus system EX600 series in the Web Catalog.

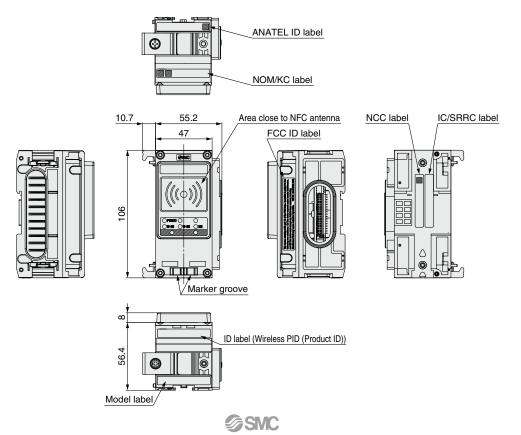
Dimensions



Dimensions

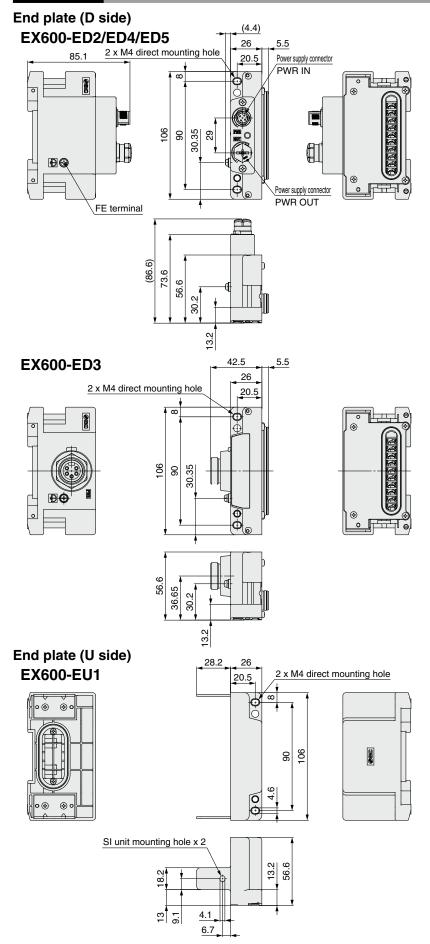


Remote module: EX600-WSV



SMC

Dimensions



EX600-ED2

Power supply connector PWR IN: M12 5-pin plug, B-coded

Configuration	Pin no.	Description
	1	24 V (for output)
2	2	0 V (for output)
5(00)	3	24 V (for control/input)
3 4	4	0 V (for control/input)
	5	FE

Power supply connector PWR IN: M12 4-pin plug, A-coded					
Configuration	EX600-E	D4 (Pin arrangement 1)	EX600-E	D5 (Pin arrangement 2)	
Configuration	Pin no.	Description	Pin no.	Description	
$3 \sim 2$	1	24 V (for control/input)	1	24 V (for output)	
60	2	24 V (for output)	2	0 V (for output)	
0 9 3		0 V (for control/input)	3	24 V (for control/input)	
4 1	4	0 V (for output)	4	0 V (for control/input)	

Power supply connector PWR OUT: M12 5-pin socket, A-coded

Configuration	EX600-ED4 (Pin arrangement 1)		EX600-ED5 (Pin arrangement 2)	
Configuration	Pin no. Description		Pin no.	Description
1 2	1	24 V (for control/input)	1	24 V (for output)
്ഹ്	2	24 V (for output)	2	0 V (for output)
	3	0 V (for control/input)	3	24 V (for control/input)
4 5 3	4	0 V (for output)	4	0 V (for control/input)
. 5 0	5	Unused	5	Unused

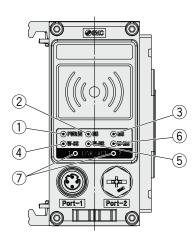
Power supply connector PWR: 7/8 inch 5-pin plug

Configuration	Pin no.	Description
(1	0 V (for output)
	2	0 V (for control/input)
	3	FE
	4	24 V (for control/input)
	5	24 V (for output)

LED Display

Base module

EtherNet/IP™ communication specifications



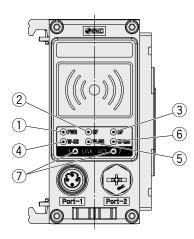
No.	LED name	Function	Color of LED	Operation		
			Green LED is ON.	Power supply voltage for output (US2) is normal.		
1	PWR (V) PWR (V) PWR (V)		Red LED flashes.	Power supply voltage for output (US2) is abnormal. (Indication only. The product can be operated. Applicable whe the output power supply voltage monitoring setting is enabled		
			OFF	Power supply for control and input (US1) is not supplied.		
			Green LED is ON.	EtherNet/IP [™] communication is established.		
		EtherNet/IP™	Green LED flashes.	EtherNet/IP [™] communication is not established.		
2	NS	connection	Red LED flashes.	EtherNet/IP™ communication time out		
		status	Red LED is ON.	Duplicated IP addresses are detected.		
			OFF	IP address not set		
			Green LED is ON.	Base module is normal.		
			Green LED flashes.	EtherNet/IP™ communication is not connected.		
3	MS	MS	MS	Base module system status	Red LED flashes.	Restorable error is detected. (LED flashes when one diagnostic information item or more is detected.) · Abnormal power supply voltage level for control and input (US1 (Applicable when the control and input power supply voltage monitoring setting is enable · Excessive I/O setting inputs/outputs · Analog I/O upper set limit exceeded · Analog input range upper and lower limit exceeded · Abnormal number of remote connections · Error in communication between units · EX600 I/O unit detects diagnostic information · Valve diagnostic information detected
			Red LED is ON.	Non-restorable error is detected. (e.g. Hardware failure)		
			OFF	Power supply for control and input (US1) is not supplied		
		N-SS Radio wave receiving intensity (For communication from remote to base)	Green LED is ON.	Received power level of all remotes is 3.		
			Green LED flashes. (1 Hz)	There are connected remotes with received power level 2		
4	W-SS		Green LED flashes. (2 Hz)	There are connected remotes with received power level		
			Red LED flashes.	No remotes connected.		
			OFF	Remote module is not registered.		
			Green LED is ON.	All remote modules are connected correctly.		
			Green LED flashes.	There are unconnected remote modules.		
		Wireless	Red LED flashes.	All remote modules are unconnected.		
5	W-NS	connection	Red LED is ON.	All remote modules are unconnected. (Non-restorable error in wireless communication)		
		status	Red/Green	Wireless communication connection is under construction. (Pairin		
			Orange LED is ON.	Forced output mode		
				OFF	Remote module is not registered.	
			Green LED is ON.	Remote module is normal.		
6	W-MS	Remote module connection system status	Red LED flashes.	Restorable error is detected. (LED flashes when one diagnostic information item or more is detected.) · Abnormal power supply voltage level for control and input (US ⁻ · Abnormal power supply voltage level for output (US2) · Excessive I/O setting inputs/outputs · Analog I/O upper set limit exceeded · Analog input range upper and lower limit exceeded · Error in communication between units · EX600 I/O unit detects diagnostic information · Valve diagnostic information detected		
			Red LED is ON.	Non-restorable error is detected. (e.g. Hardware failure)		
			OFF	No remote module connected.		
		Communication	Green LED is ON.	Link, No Activity (100 Mbps)		
		status of EtherNet/IP™	Green LED flashes.	Link, Activity (100 Mbps)		
7	LINK/ACT1	ports 1 and 2	Orange LED is ON.	Link, No Activity (10 Mbps)		
	LINK/ACT2		Orange LED flashes.	Link, Activity (10 Mbps)		
		100 Mbps: Green	Red LED is ON.	IP address has been duplicated.		
		10 Mbps: Orange	OFF	EtherNet/IP™ is not connected.		

Wireless System **EX600-W** Series

LED Display

Base module

PROFINET communication specifications

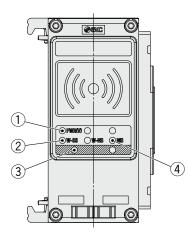


No.	LED name	Function	Color of LED	Operation
			Green LED is ON.	Power supply voltage for control and input (US1) is normal, and power supply voltage for output (US2) is normal.
1	PWR	Power supply voltage (US1/US2)	Green LED flashes.	Power supply voltage for control and input (US1) is normal, and power supply voltage for output (US2) is abnormal. (Applicable when the output power supply voltage monitoring setting is enabled)
		(00 002)	Red LED flashes.	Abnormal power supply voltage level for control and input (US1) (Applicable when the control and input power supply voltage monitoring setting is enabled)
			OFF	Power supply for control and input (US1) is not supplied.
			OFF	Normal operation
			Green LED flashes.	Node flashing test command has been received.
2	SF	Base module system status	Red LED flashes.	 Restorable error is detected. (LED flashes when one diagnostic information item or more is detected.) Abnormal power supply voltage level for control and input (US1) (Applicable when the control and input power supply voltage monitoring setting is enabled) Abnormal power supply voltage level for output (US2) (Applicable when the output power supply voltage monitoring setting is enabled) Excessive I/O setting inputs/outputs Analog input range upper and lower limit exceeded Abnormal number of remote connections Error in communication between units EX600 I/O unit detects diagnostic information Valve diagnostic information detected
			Red LED is ON.	Non-restorable error is detected. (e.g. Hardware failure)
			OFF	PROFINET communication is established.
			Red LED flashes.	The PROFINET controller setting and the EX600 configu- ration data are mismatched.
3	BF	PROFINET connection status	Red LED is ON.	 PROFINET communication is not established. The power supply of the PROFINET controller is OFF. There is a defective connection in the communication cable between the PROFINET controller and the base module. The PROFINET controller or the base module has broken down. The PROFINET controller setting and the device name of the base module are mismatched.
			Green LED is ON.	Received power level of all remotes is 3.
		Radio wave	Green LED flashes. (1 Hz)	There are connected remotes with received power level 2.
4	W-SS	receiving intensity (For communication	Green LED flashes. (2 Hz)	There are connected remotes with received power level 1.
		from remote to base)	Red LED flashes.	No remotes connected.
			OFF	Remote module is not registered.
			Green LED is ON.	All remote modules are connected correctly.
			Green LED flashes. Red LED flashes.	There are unconnected remote modules. All remote modules are unconnected.
		Wireless	Red LED	All remote modules are unconnected.
5	W-NS communication connection		is ON.	(Non-restorable error in wireless communication)
		status	Red/Green	Wireless communication connection is under construction. (Pairing)
			Orange LED is ON.	Forced output mode
			OFF	Remote module is not registered.
			Green LED is ON.	Remote module is normal.
6	W-MS	Remote module connection system status	Red LED flashes.	Restorable error is detected. (LED flashes when one diagnostic information item or more is detected.) · Abnormal power supply voltage level for control and input (US1) · Abnormal power supply voltage level for output (US2) · Excessive I/O setting inputs/outputs · Analog I/O upper set limit exceeded · Analog input range upper and lower limit exceeded · Error in communication between units · EX600 I/O unit detects diagnostic information · Valve diagnostic information detected
			Red LED is ON.	Non-restorable error is detected. (e.g. Hardware failure)
			OFF	No remote module connected.
_	LINK/ACT1	Communication status of	Green LED is ON.	Link, No Activity
7	LINK/ACT2	PROFINET ports 1 and 2	Green LED flashes. OFF	Link, Activity
				No Link, No Activity



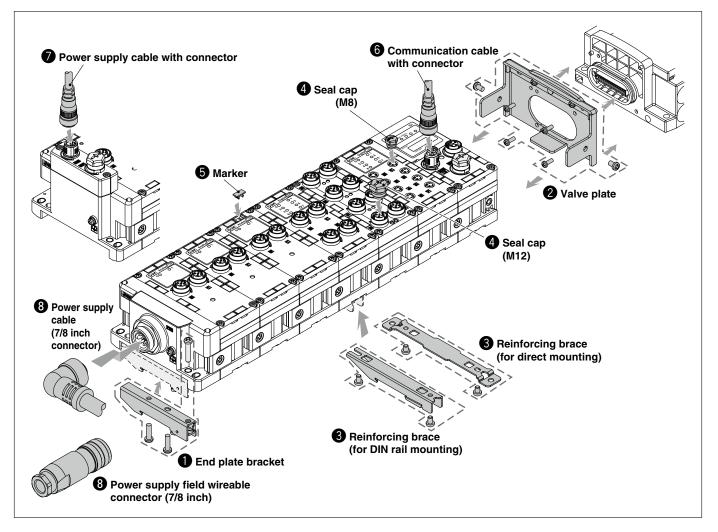
LED Display

Remote module



No.	LED name	Function	Color of LED	Operation
1	PWR (V)	Power supply voltage for output (US2)	Green LED is ON.	Power supply voltage for output (US2) is normal.
			Red LED flashes.	Power supply voltage for output (US2) is abnormal. (Indication only. The product can be operated. Applicable when the output power supply voltage monitoring setting is enabled)
			OFF	Power supply for control and input (US1) is not supplied.
		Radio wave receiving intensity (For communication from base to remote)	Green LED is ON.	Received power level is 3.
	W-SS		Green LED flashes. (1 Hz)	Received power level is 2.
2			Green LED flashes. (2 Hz)	Received power level is 1.
			Red LED flashes.	Wireless communication is not connected.
			OFF	Base module is not registered.
3	W-NS	Wireless communication connection status	Green LED is ON	Remote is connected correctly.
			Red LED flashes.	No remotes connected.
			Red LED is ON.	No remotes connected (Non-restorable error in wireless communication
			Red/Green	Wireless communication connection is under construction. (Pairing
			Orange LED is ON.	Forced output mode
			OFF	Base module is not registered.
		Remote module system status	Green LED is ON.	Remote module is normal.
4	MS		Red LED flashes.	Restorable error is detected. (LED flashes when one diagnostic information item or more is detected.) · Abnormal power supply voltage level for control and input (Applicable when the control and input power supply voltage monitoring setting is enabled) · Excessive I/O setting inputs/outputs · Analog I/O upper set limit exceeded · Analog input range upper and lower limit exceeded · Error in communication between units · EX600 I/O unit detects diagnostic information · Valve diagnostic information detected
			Red LED is ON.	Non-restorable error is detected. (e.g. Hardware failure)
			OFF	Power supply for control and input (US1) is not supplied.

EX600-W Series Accessories (Optional Parts)



End Plate Bracket

This bracket is used for the end plate of DIN rail mounting.

EX600-ZMA2

Enclosed parts Round head screw (M4 x 20) 1 pc. P-tight screw (4 x 14) 2 pcs.

Valve Plate

EX600-ZMV1

Enclosed parts

Round head screw (M4 x 6) 2 pcs. Round head screw (M3 x 8) 4 pcs.



EX600-ZMV2 (Specialized for the SY series) Enclosed parts

EX600-ZMA3

Enclosed parts

Round head screw

with washer (M4 x 20)

P-tight screw (4 x 14)

(Specialized for the SY series)

1 pc.

2 pcs.

Round head screw (M4 x 6) 2 pcs. Round head screw (M3 x 8) 2 pcs.



Reinforcing Brace

This bracket is used on the bottom of the unit at the intermediate position for connecting 6 units or more.

* Be sure to attach this bracket to prevent connection failure between the units caused by deflection.

For direct mounting EX600-ZMB1

Enclosed parts

Round head screw (M4 x 5) 2 pcs.



Seal Cap (10 pcs.)

Be sure to mount a seal cap on any unused I/O connectors. Otherwise, the specified enclosure cannot be maintained.

For M8 EX9-AWES





For DIN rail mounting

Round head screw (M4 x 6) 2 pcs.

EX600-ZMB2

Enclosed parts



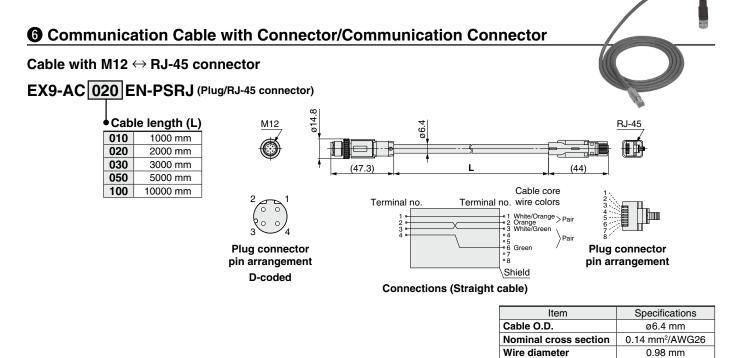
@ SMC

Marker (1 sheet, 88 pcs.)

The signal name of I/O device and each unit address can be entered and mounted on each unit.

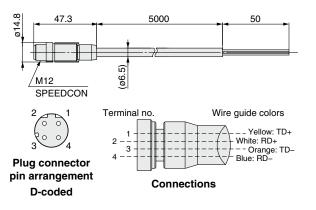
EX600-ZT1





Cable with connector

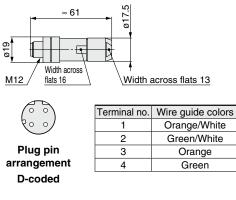
PCA-1446566 (Plug)



Item	Specifications
Cable O.D.	ø6.5 mm
Nominal cross section	AWG22
Wire diameter (Including insulator)	1.5 mm
Min. bending radius	45.5 mm

Field wireable connector

PCA-1446553



Applicable Cable

Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.34 mm ² /AWG26 to 22

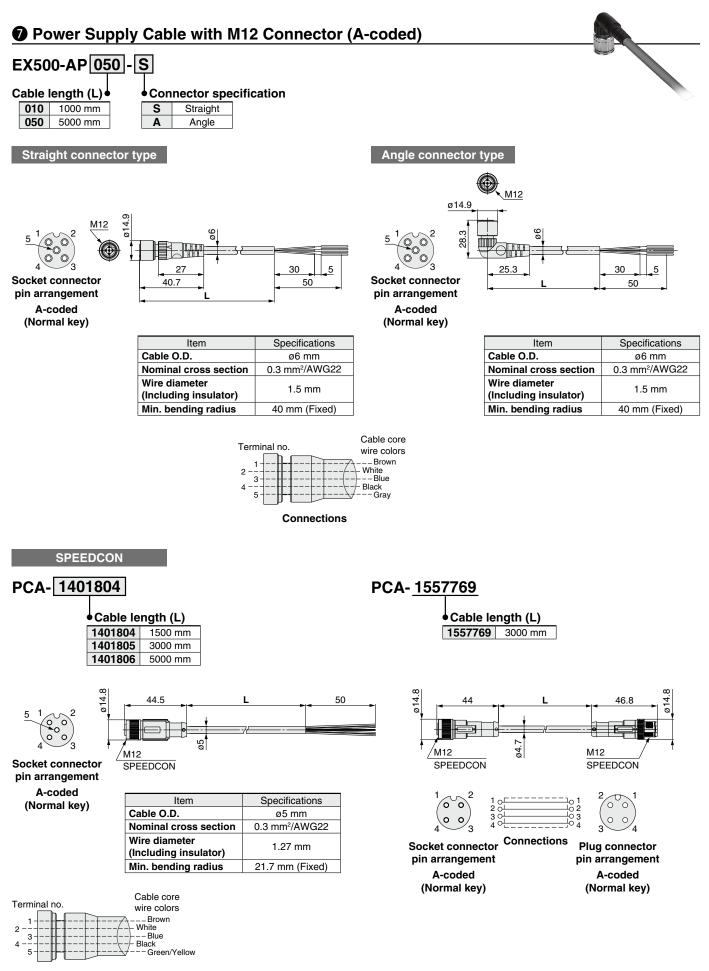
Min. bending radius

26 mm (Fixed)

* The table above shows the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.



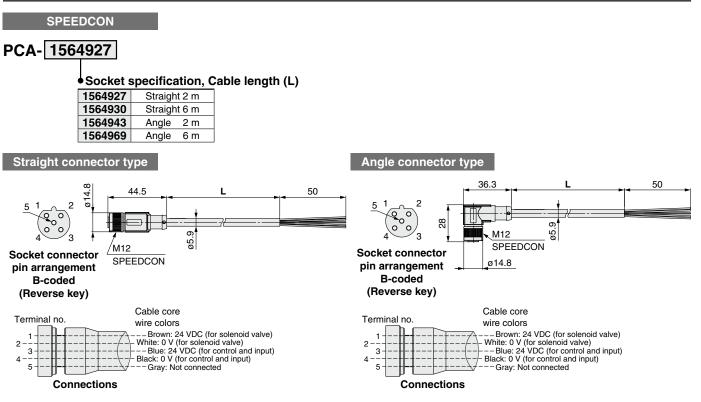
Accessories **EX600-W** Series



Connections



Power Supply Cable with M12 Connector (B-coded)



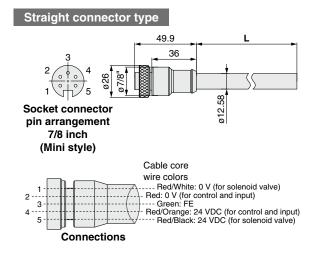
Accessories **EX600-W** Series

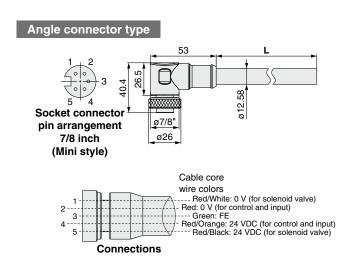
Power Supply Cable with 7/8 Inch Connector/Power Supply Connector

PCA-1558810

Specifications

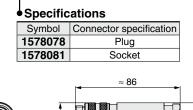
-p			
Symbol	Cable length (L)	Connector specification	
1558810	2000	Straight	
1558823	6000	Straight	
1558836	2000	Right angle	
1558849	6000	Right angle	



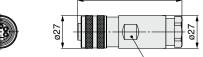


Field wireable connector

PCA- 1578078









Socket connector

pin arrangement

7/8 inch

(Mini style)





Plug connector pin arrangement 7/8 inch (Mini style)

Terminal no.	Wire guide colors
1	Red/White
2	Red
3	Green
4	Red/Orange
5	Red/Black

Applicable Cable

Cable O.D.	12.0 to 14.0 mm
Wire gauge (Stranded wire cross section)	0.34 to 1.5 mm ² /AWG22 to 16

The table above shows the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

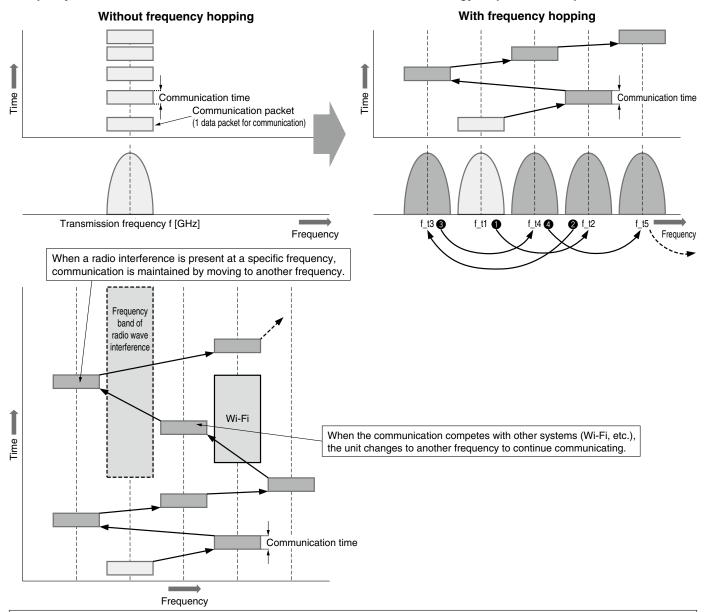
* For further information on cables and connectors, refer to the M8/M12 connector PCA series in the **Web Catalog**.



EX600-W Series Technical Data

Frequency Hopping (FHSS: Frequency Hopping Spread Spectrum)

A communication technology that uses spread spectrum transmission with frequency hopping to rapidly switch the frequency. Because the frequency rapidly changes all the time, this communication method is resistant to radio wave interference due to reflections or noise from other wireless equipment, while ensuring a high level of data security. Multiple systems can be installed in the same area, and it is a suitable technology for point-to-multipoint communication.



Marning <Important>

- The product is certified as a wireless equipment in accordance with the Radio Act and the Japanese radio law 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.
- This product is for use in Japan, European countries (Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, U.K., Turkey), the U.S., Mexico, Brazil, India, Canada, China, Thailand, Australia, New Zealand, Singapore, Taiwan and South Korea. For use in other countries, please contact SMC.
 This product communicates by radio waves, and the communication may stop instantaneously due to ambient environments and operating methods.
- SMC will not be responsible for any secondary failure which may cause personal injury, or damage to other devices or equipment.
- When several units are installed closely to each other, slight interference may occur due to the characteristics of the wireless product.
- The electromagnetic waves emitted from this product may interfere with implantable medical devices such as cardiac pacemakers and cardioverter defibrillators, resulting in the malfunction of the medical device or other adverse effects. Please use extreme caution when operating equipment which may have an adverse effect on your implantable medical device. Be sure to thoroughly read the precautions stated in the catalog, operation manual, etc., of your implantable medical device, or contact the manufacturer directly for further
- details on what types of equipment need to be avoided.
 The communication performance is affected by the ambient environment, so please perform the communication testing before use.
 * As of end of December, 2018



▲ 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.

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

Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

AWarning

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.
 - 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. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

- 1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
- 2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
- An application which could have negative effects on people, property, or animals requiring special safety analysis.
- 4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

- *1) ISO 4414: Pneumatic fluid power General rules relating to systems.
 - ISO 4413: Hydraulic fluid power General rules relating to systems. IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
 - ISO 10218-1: Manipulating industrial robots Safety. etc.

 The product is provided for use in manufacturing industries. The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand

and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

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

- 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.
- 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

- 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.

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

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.



Edition B * PROFINET has been added to protocols. * Number of pages has been increased from 24 to 28.

WT

A Safety Instructions Be sure to read the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.