CAT.EU02-22 B -UK

SMC

CE

Compatible communication protocols

CC-Link

DeviceNet™

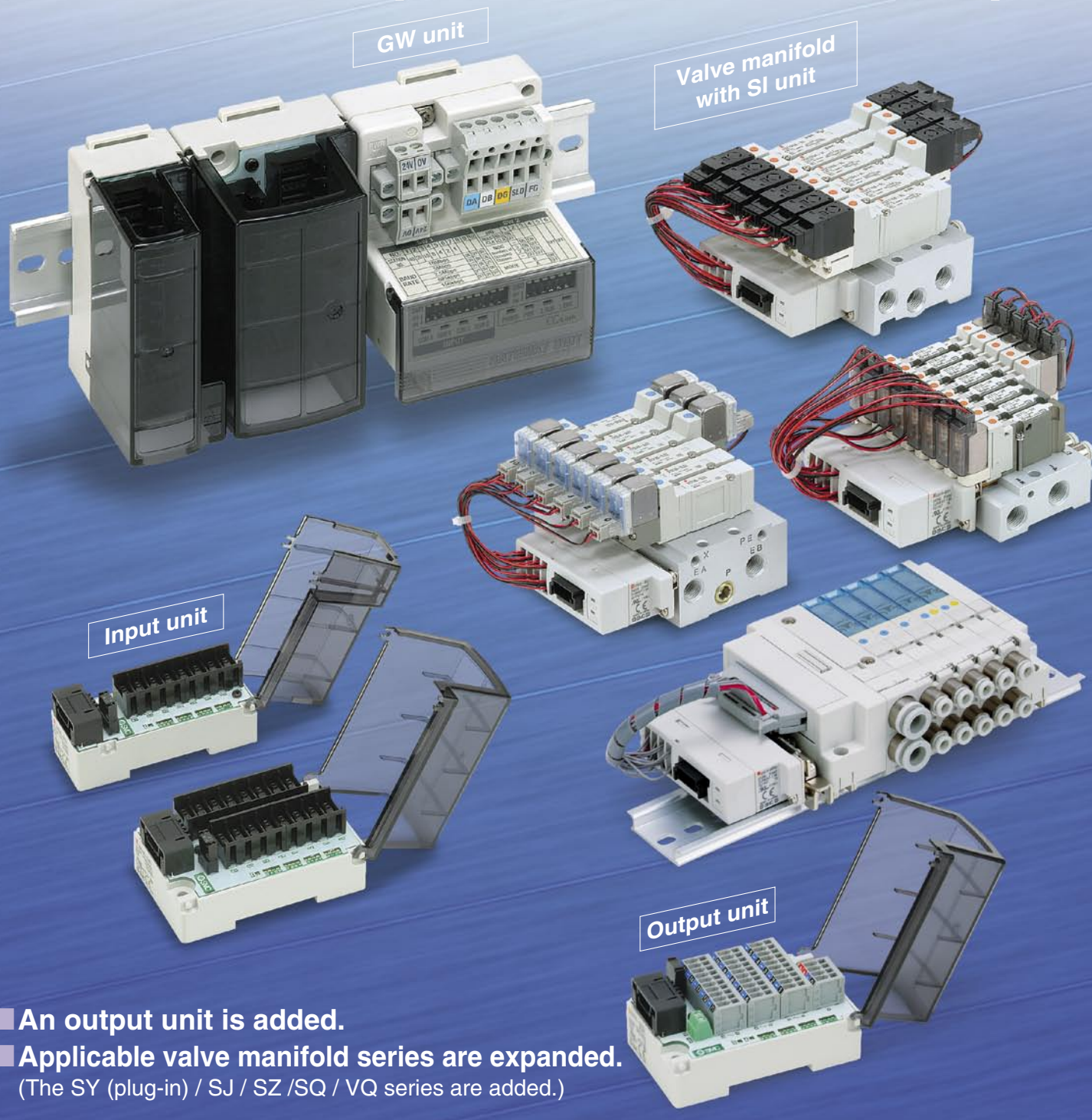
PROFIBUS PROCESS FIELD BUS

Gateway System

Serial Transmission System

Series EX510

MAX 128 points (Input **64** points/Output **64** points)



- **An output unit is added.**
- **Applicable valve manifold series are expanded.**
  (The SY (plug-in) / SJ / SZ /SQ / VQ series are added.)

Compatible communication protocols

CC-Link

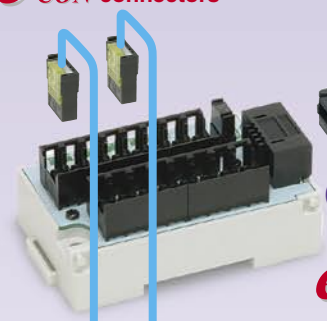
DeviceNet™

PROFIBUS PROCESS FIELD BUS

GW unit

* Input units with covers

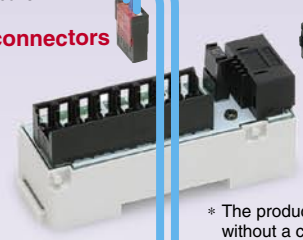
e-CON connectors



16-point input unit
(interlinks 16 connectors)

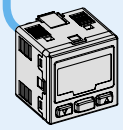
* The product is shown without a cover.

e-CON connectors

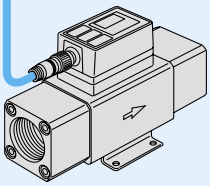


16-point input unit
(interlinks 8 connectors)

* The product is shown without a cover.

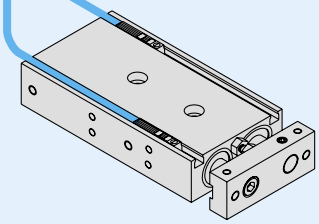


Pressure switch



Flow switch

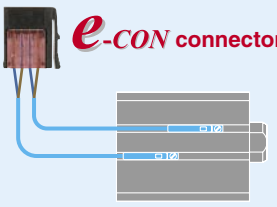
Input device



Auto switch

Two 2-wire auto switches can be connected to a single connector.

e-CON connectors

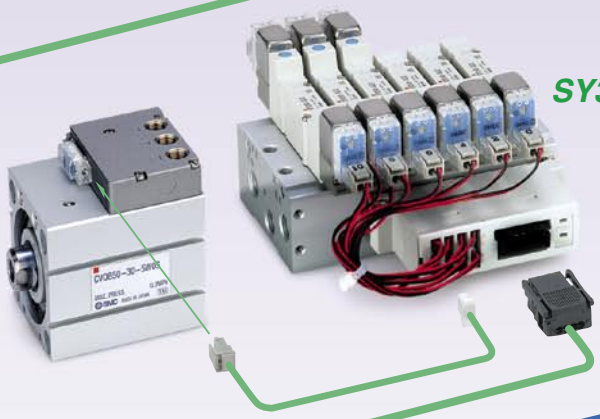


Manifold valve with SI unit

VQZ1000/2000/3000

S0700

SY3000/5000/7000/9000



Output unit

SY3000/5000 (Plug-in)

SYJ3000/5000/7000

SJ2000/3000

SZ3000

SQ1000/2000

VQ1000/2000

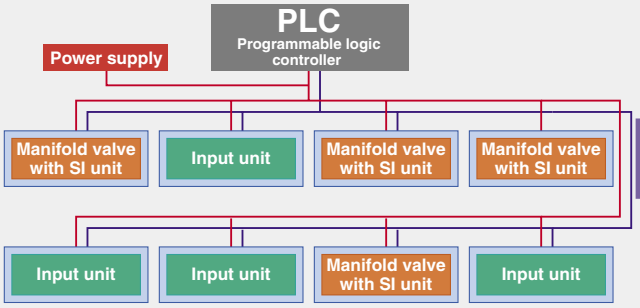
Output equipment

Valve, indicator light, relay, buzzer, etc. can be connected.

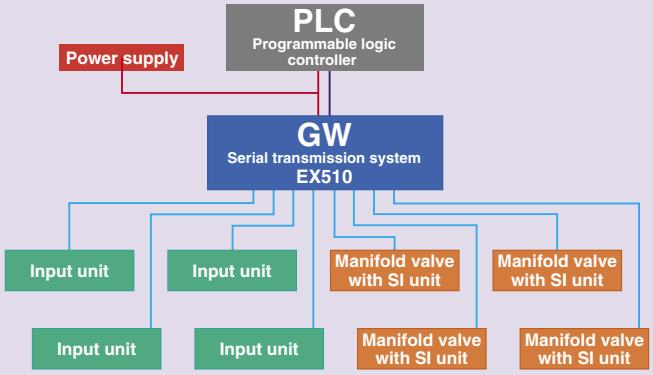
2 port solenoid valve

Features of Series EX510

Conventional



Adoption of Series EX510



Feature 1 More valves & sensors can be connected.

Compatible protocol	Conventional type SI unit
CC-Link	3 master stations 3 manifold
DeviceNet	1 node 1 manifold
PROFIBUS-DP	1 node 1 manifold

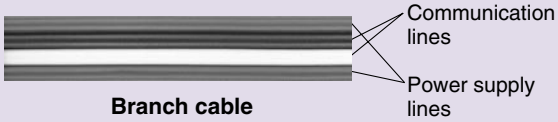
- **The introduction of the EX510 series makes it possible to connect more valves and sensors.**

Compatible protocol	Series EX510
CC-Link	**3 master stations 4 manifold/4-input unit**
DeviceNet	**1 node 4 manifold/4-input unit**
PROFIBUS-DP	**1 node 4 manifold/4-input unit**

Feature 2 Connector cables result in wire-savings (including power supply cable)

- A power supply cable for each slave unit was required in the past.

- **With the introduction of the EX510 series, only a power supply cable to the GW unit is required.**
  Connected to each unit is a branch cable which combines the lines for communication and power supply.



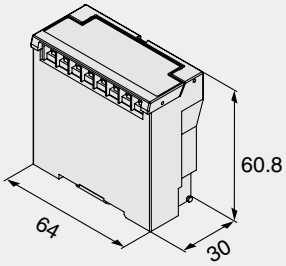
Feature 3 There is no need to set the address for the SI and input units.

- Setting the address for each unit was required in the past.

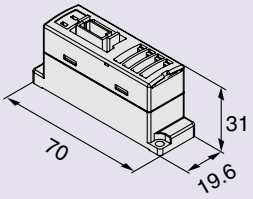
- **With the introduction of the EX510 series only the address of the GW unit needs to be set.**

Feature 4 Compact SI unit

- The SI unit which connects output devices such as a solenoid valve, has a compact design compared with the conventional model. (Compactness: volume reduced by more than 60%)



Conventional model (Series EX120)



Series EX510

Feature 5 Can easily change to a diffirent protocol.

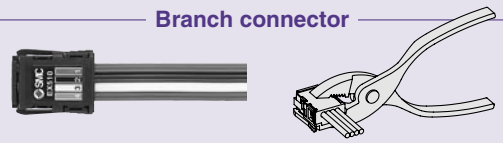
- In the past, all the part numbers of slave units were needed to be changed by returning it to the manufacturer and reordering (re-estimate, delivery time) it.

- **After the introduction of the EX510 series, only the GW unit needs to be changed.**

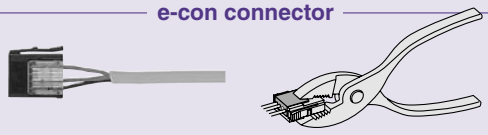
Feature 6 Adoption of connectors which do not require any special tools for installation

No special tools are required for the press-fitting the connectors of the branch cable connections and the e-con connectors for the sensor connections.

Branch connector

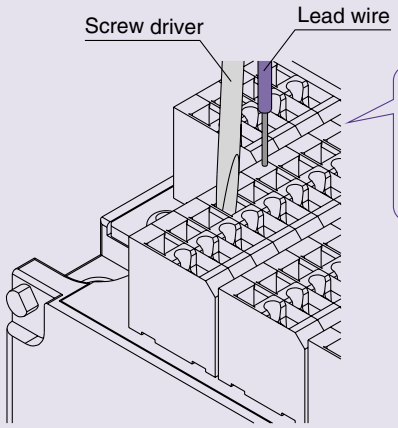


e-con connector



No need to strip the wire **Only pliers are required for clamping.**

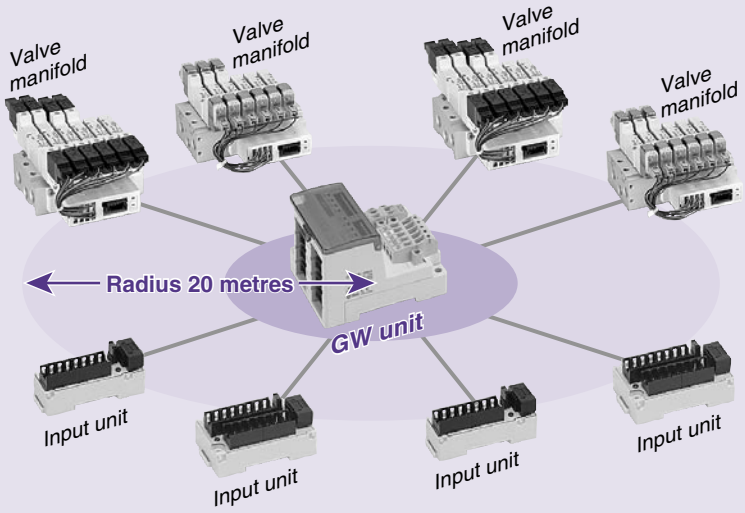
The output unit adopts a spring type terminal box, eliminating the need to tighten any retaining screws.



Torque control and crimping work is unnecessary.
Screwless construction. No tightening of retaining screws required.

Feature 7 Cable length of up to 20 metres is available.

Various units can be connected within a radius of 20 metres around the GW unit.



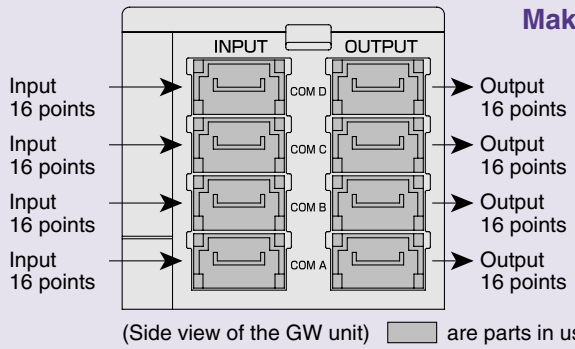
Feature 8 Delay in transmission of 1 ms or less

The delay in transmission between the GW unit and SI unit/Output unit/Input unit is 1 ms or less.

Feature 9 Making I/O flexible

The number of occupied points in the GW unit can be configured easily by setting a switch.

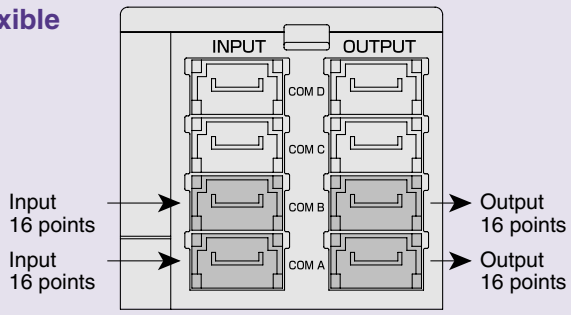
Input 64 points/Output 64 points (Initial setting)



(Side view of the GW unit) are parts in use.

Making I/O flexible

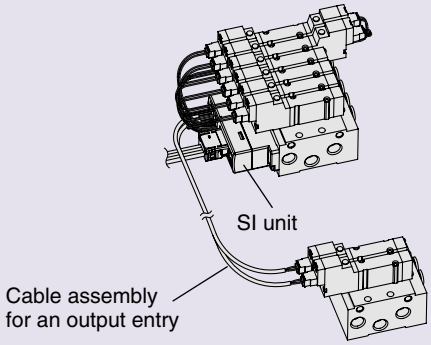
Example) Input 32 points/Output 32 points



* Setting is different depending on the respective protocol. Refer to the specifications for details.

Feature 10 Effectively use the unused points of the SI unit

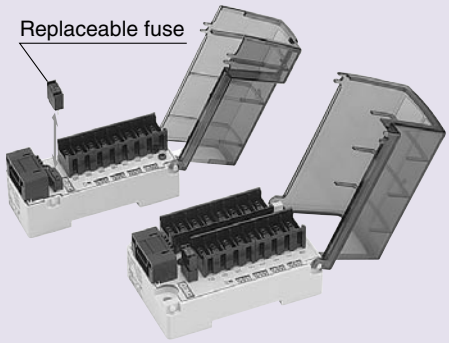
Valves which are independent from the manifold can be converted to serial transmission without purchasing new SI units.



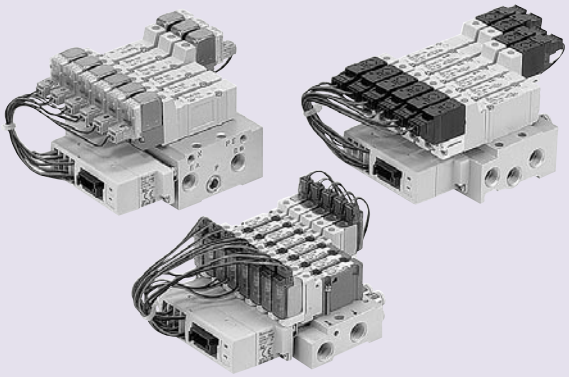
Feature 11 Protection

Each unit is protected against short circuiting from the power supply load.

The fuses for the Input / Output units are replaceable.

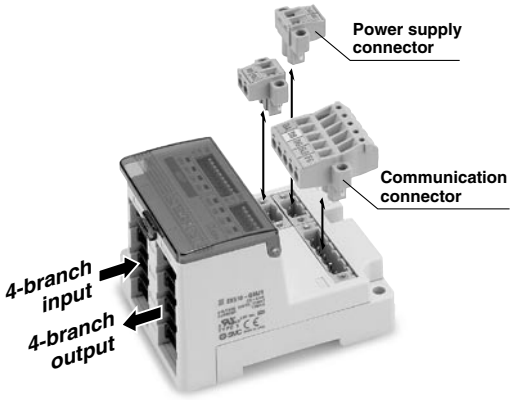


Short circuit protection is integrated for the SI unit.



Gateway System
Serial Transmission System
Series EX510

GW Unit



How to Order

EX510-G MJ1

Communication protocol

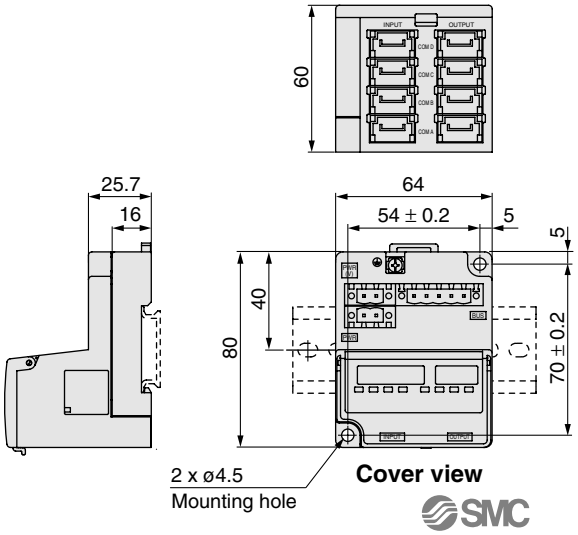
MJ1	CC-Link
DN1	DeviceNet
PR1	PROFIBUS-DP

Specifications

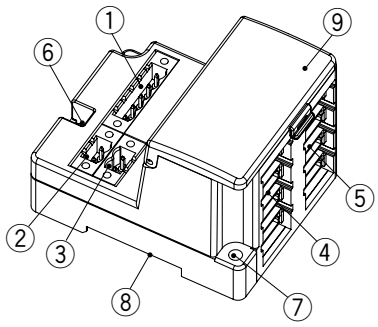
Model	EX510-GMJ1	EX510-GDN1	EX510-GPR1
Communication protocol	CC-Link (Ver.1.10)	DeviceNet (Release2.0)	PROFIBUS-DP (EN50170)
GW type	Remote device station	Group 2 Only Server	DPV0 Class 2
Communication speed	156/625 kbps 2.5/5/10 Mbps	125/250/500 kbps	9.6/19.2/45.45/93.75/ 187.5/500 kbps 1.5/3/6/12 Mbps
Device data file Note 1)	—	EDS file	GSD file
Rated voltage	24 VDC		
Power supply voltage range	Power supply for input and control unit for GW: 24 VDC ±10% Power supply for output: 24 VDC +10%/–5% (with power drop warning at approx. 20 V)		
	—	Communication power supply for DeviceNet 11 to 25 VDC	—
Current consumption	100 mA or less (single GW unit)		
	—	Communication power supply for DeviceNet 50 mA or less	—
Number of inputs/ outputs	[Usable I/O points] • Setting to occupy 2 stations Input 32 points/Output 32 points • Setting to occupy 3 stations Input 64 points/Output 64 points ∗ Number of occupied stations can be changed by setting a switch.	Number of inputs: Max. 64 points / Number of outputs: Max. 64 points Number of inputs/outputs can be changed respectively by setting a switch. • Number of inputs settings 0, 16, 32, 64 points • Number of outputs settings 0, 16, 32, 64 points	
Number of input/output branches	Input 4 branches/Output 4 branches		
Branch cable	4 core flat cable		
Branch cable length	Within 20 m		
Ambient operating temperature/humidity	–10 to 50°C/35 to 85% RH (no condensation)		
Ambient stored temperature	–20 to 60°C		
Enclosure	IP20		
Applicable standards	UL, CSA, CE Note 2)		
Weight (g)	160 g (accessory included)		

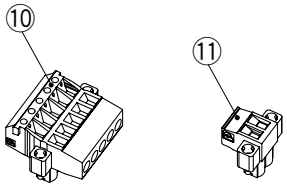
Note 1) The file for using when setting the device automatically. Contact our sales representative for each file.
Note 2) EMC directive 89/336/EEC; EN61000-6-2: 2001, EN55011: 1998+A1+A2

Dimensions



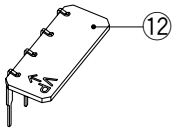
Parts Description





Communication connector (1 pc.)

Power supply connector (2 pcs.)



Terminating resistor (1 pc.)
∗ Attached to EX510-GPR1 only.

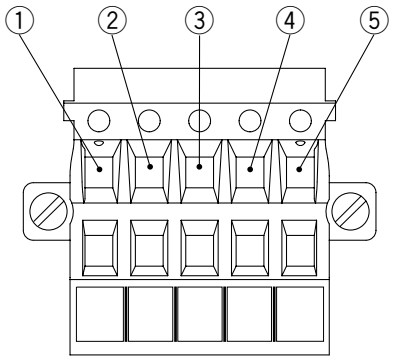
Included accessories

GW Unit

No.	Description	Applications
1	**Communication socket (BUS)**	For connecting with a network, using the communication connector (⑩).
2	**Power supply socket (PWR(V))**	Supplies power for output devices, such a solenoid valve, using the power supply connector (⑪).
3	**Power supply socket (PWR)**	Supplies power for input devices, as well as the Gateway control unit, using the power supply connector (⑪).
4	**Branch connector (for inputs) on GW unit side**	Connects input units, etc., using a branch cable (EX510-FC□□).
5	**Branch connector (for outputs) on GW unit side**	Connects SI units (manifold valves) and output units, etc., using a branch cable (EX510-FC□□).
6	**PE terminal**	Used for grounding.
7	**Mounting hole**	Used for mounting the unit with two M4 screws.
8	**Mounting groove for DIN rail**	Used for mounting the unit to a DIN rail.
9	**Display, Switch setting part**	Displays the LEDs corresponding to the units condition and the switches for setting the adress and the communication speed.
10	**Communication connector**	Used for connecting the network cable.
11	**Power supply connector**	Used for connecting the power supply cable.
12	**Terminating resistor**	Connects a terminating resistor to both end units of a transmission route.

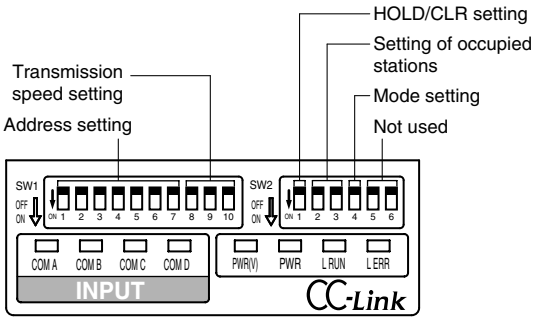
Communication Connector Pin Assignment

Part no.	Communication protocol	Pin assignment and the corresponding wire colour				
		①	②	③	④	⑤
EX510-GMJ1	CC-Link (Ver.1.10)	DA (Blue)	DB (White)	DG (Yellow)	SLD	FG
EX510-GDN1	DeviceNet (Release2.0)	V-(Black)	CAN_L (Blue)	Drain	CAN_H (White)	V+ (Red)
EX510-GPR1	PROFIBUS-DP (EN50170)	VP	RxD/TxD-N (Green)	DGND	RxD/TxD-P (Red)	SHIELD



EX510-GMJ1 (CC-Link compatible)

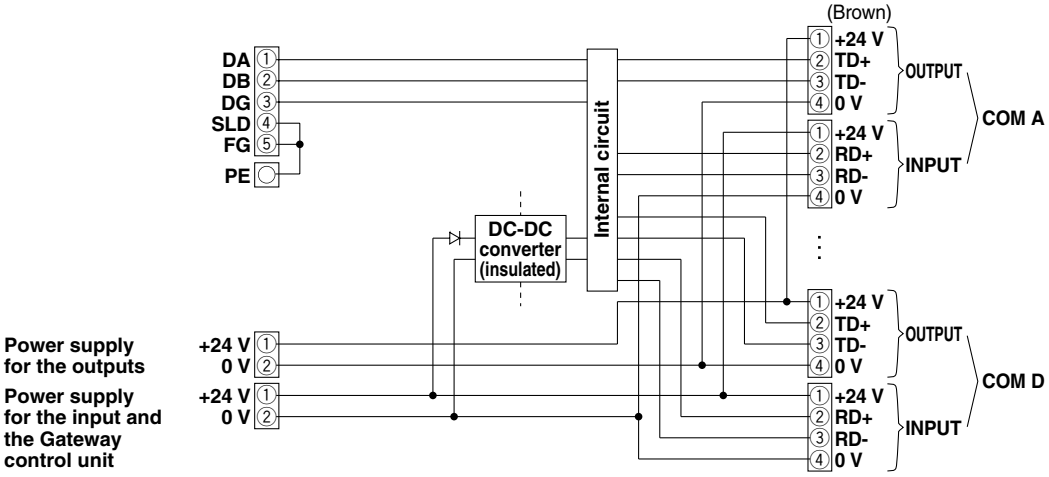
Display Setting



Display	Contents	Indicator light condition
PWR(V)	The output power supply voltage is supplied as specified. The output power supply voltage is not supplied as specified.	Light is on. Light is off.
PWR	When the input and the power for the Gateway is being supplied. When the input and the power for the Gateway is not being supplied.	Light is on. Light is off.
L RUN	When transmission is working properly. When transmission is interrupted.	Light is on. Light is off.
L ERR	When there is an error in the transmission. When setting the station number while being energised. When the transmission speed setting switch is changed. When the transmission is working properly.	Light is on. Light is on. (Blinks at 0.4 second intervals) Light is off.
COM A to D	When COM A to D are receiving data. When COM A to D are not receiving data.	Light is on.* Light is off.

* Input unit (Input device) is connected and will illuminate when communication is working properly.

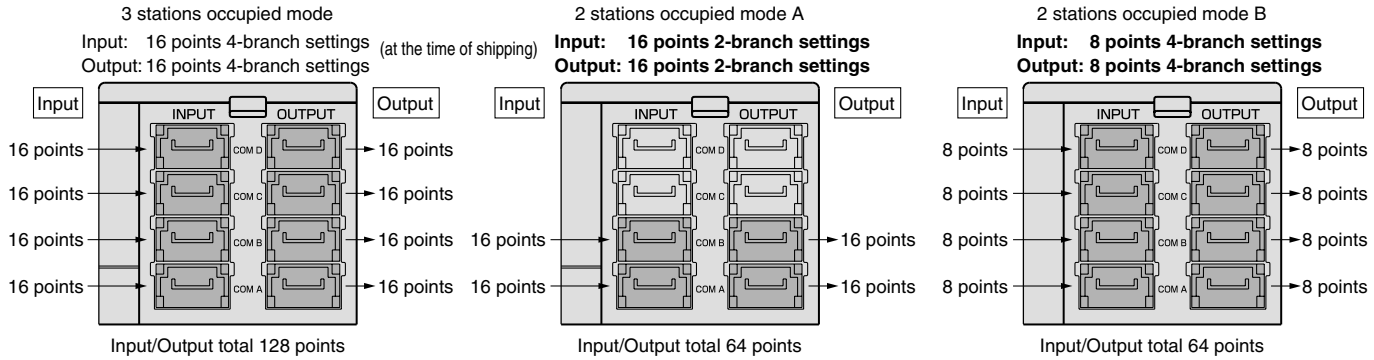
Internal Circuit



Examples of Flexible I/O Settings

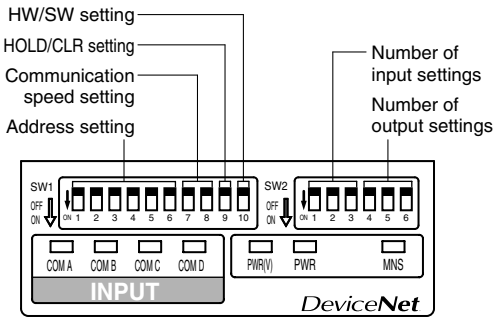
The occupying number of the Gateway units can be changed easily by setting a switch.
Consult the instruction manual for details.

(Side view of the Gateway unit ■ are parts in use.)



EX510-GDN1 (DeviceNet compatible)

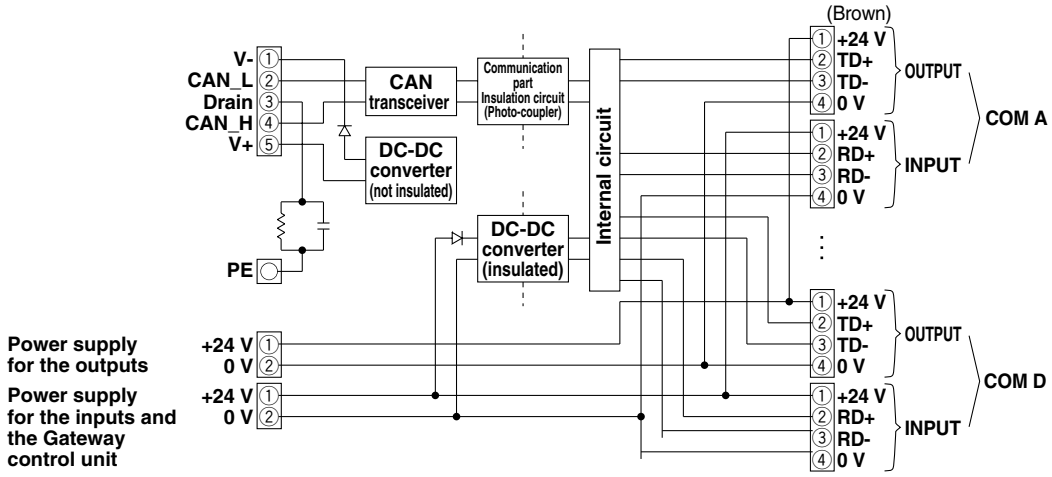
Display Setting



Display	Contents	Indicator light condition
PWR(V)	The output power supply voltage is supplied as specified. The output power supply voltage is not supplied as specified.	Light is on. Light is off.
PWR	When the input and the power for the Gateway is being supplied. When the input and the power for the Gateway is not being supplied.	Light is on. Light is off.
MNS	When the power supply is OFF, off-line, or checking the MAC ID duplication. When I/O connection is on stand by. (On-line state) I/O connection installation is completed. (On-line state) I/O connection, time-out (Light degree of communication error) MAC ID duplication error, or BUS OFF error (Heavy degree of communication error)	Light is off. Green light blinks. Green light is on. Red light blinks. Red light is on.
COM A to D	When COM A to D are receiving data. When COM A to D are not receiving data.	Light is on.* Light is off.

∗ Input unit (Input device) is connected and will illuminate when communication is working properly.

Internal Circuit

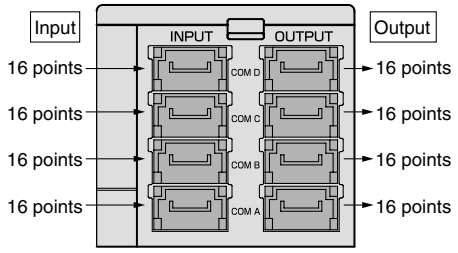


Examples of Flexible I/O Settings

Side view of the Gateway unit
■ are parts in use.

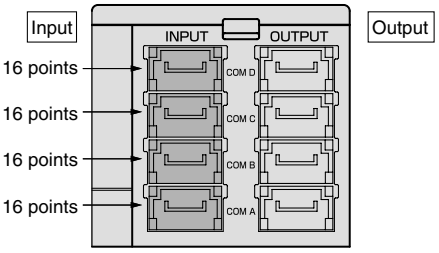
The occupying number of the Gateway units can be changed easily by setting a switch.
The number of occupied inputs and outputs can be set respectively. (Figures below are examples of the flexibility of setting the output occupied numbers.)
Consult the instruction manual for details.

Input: 16 points 4-branch settings
Output: 16 points 4-branch settings (at the time of shipping)



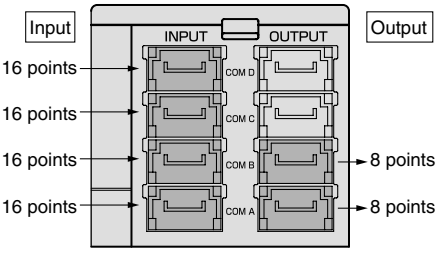
Input/Output total 128 points

Input: 16 points 4-branch settings
Output: Unused settings



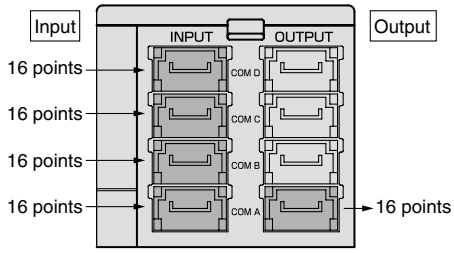
Input/Output total 64 points

Input: 16 points 4-branch settings
Output: 8 points 2-branch settings



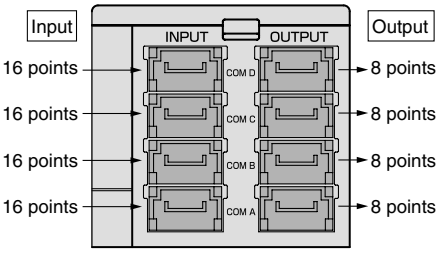
Input/Output total 80 points

Input: 16 points 4-branch settings
Output: 16 points 1-branch setting



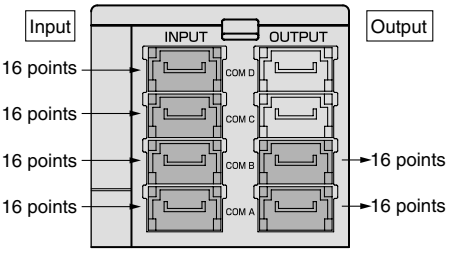
Input/Output total 80 points

Input: 16 points 4-branch settings
Output: 8 points 4-branch settings



Input/Output total 96 points

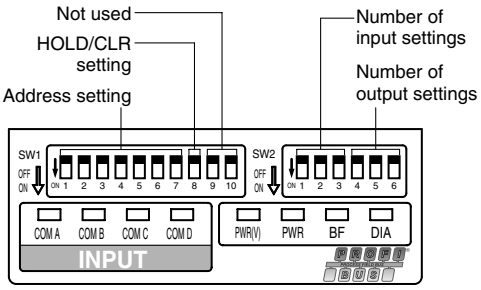
Input: 16 points 4-branch settings
Output: 16 points 2-branch settings



Input/Output total 96 points

EX510-GPR1 (PROFIBUS-DP compatible)

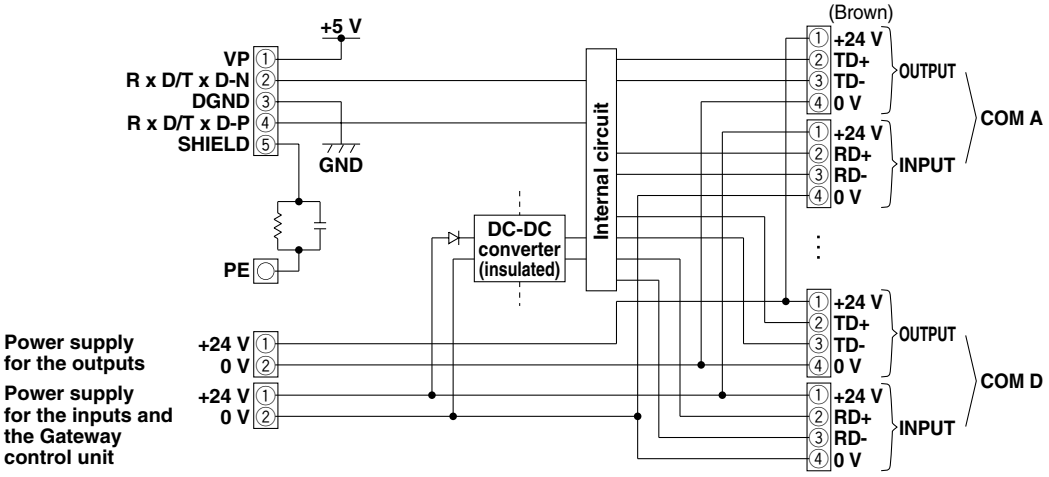
Display Setting



Display	Contents	Indicator light condition
PWR(V)	The output power supply voltage is supplied as specified. The output power supply voltage is not supplied as specified.	Light is on. Light is off.
PWR	When the input and the power for the Gateway is being supplied. When the input and the power for the Gateway is not being supplied.	Light is on. Light is off.
BF	When PROFIBUS-DP communication is working improperly. When PROFIBUS-DP communication is working properly.	Light is on. Light is off.
DIA	When DIA is working improperly. When DIA is working properly.	Light is on. Light is off.
COM A to D	When COM A to D are receiving data. When COM A to D are not receiving data.	Light is on.* Light is off.

* Input unit (Input device) is connected will illuminate when communication is working properly.

Internal Circuit

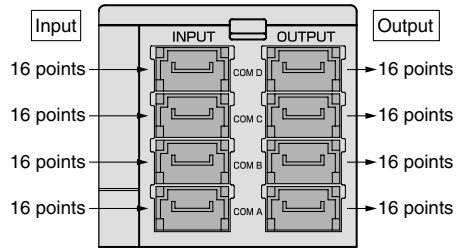


Examples of Flexible I/O Settings

The occupying number of the Gateway units can be changed easily by setting a switch.
The number of occupied inputs and outputs can be set respectively. (Figures below are examples of the flexibility of setting the input occupied numbers.)
Consult the instruction manual for details.

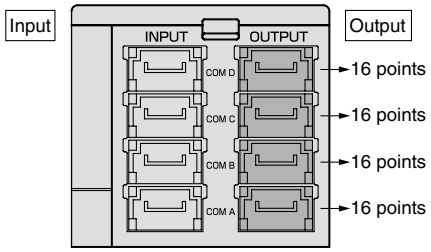
(Side view of the Gateway unit ▒ are parts in use.)

Input: 16 points 4-branch settings (at the time of shipping)
Output: 16 points 4-branch settings



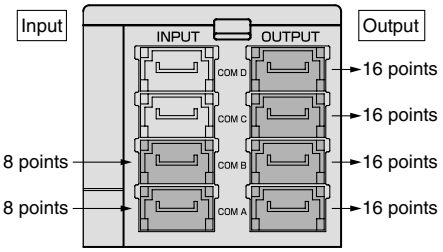
Input/Output total 128 points

Input: Unused settings
Output: 16 points 4-branch settings



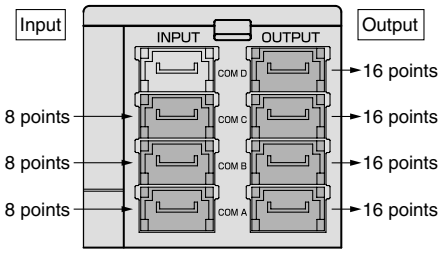
Input/Output total 64 points

Input: 8 points 2-branch settings
Output: 16 points 4-branch settings



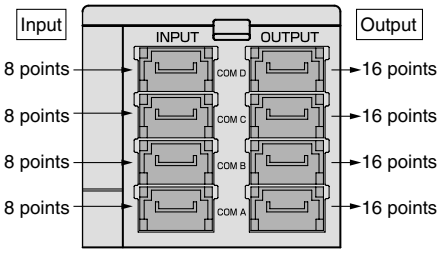
Input/Output total 80 points

Input: 8 points 3-branch settings
Output: 16 points 4-branch settings



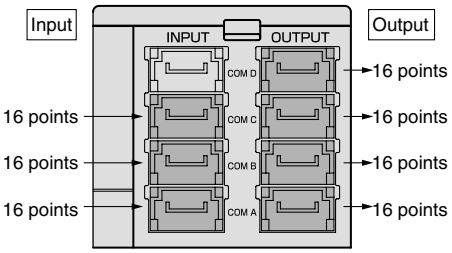
Input/Output total 88 points

Input: 8 points 4-branch settings
Output: 16 points 4-branch settings



Input/Output total 96 points

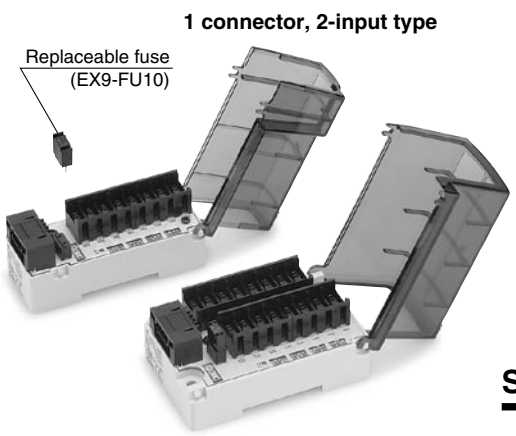
Input: 16 points 3-branch settings
Output: 16 points 4-branch settings



Input/Output total 112 points

Input Unit

1 connector, 2-input type



1 connector, 1-input type

How to Order

EX510-DX N 1

Unit type

1	1 connector, 2-input type
2	1 connector, 1-input type

Compliant sensor

N	NPN output
P	PNP output
B	2-wire type

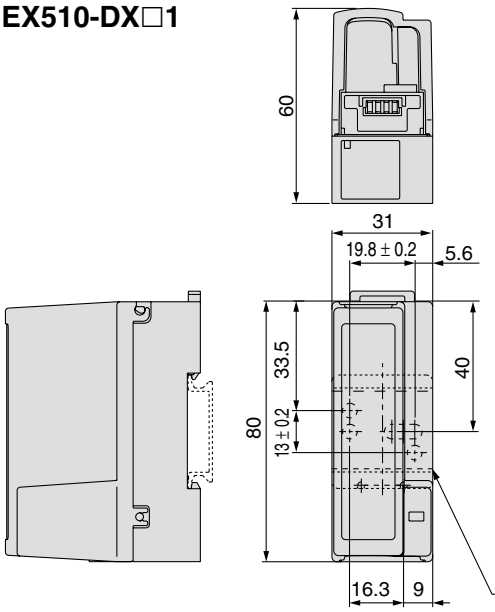
Note 1) B (2-wire type) is available with 1 connector, 2-input type only.

Specifications

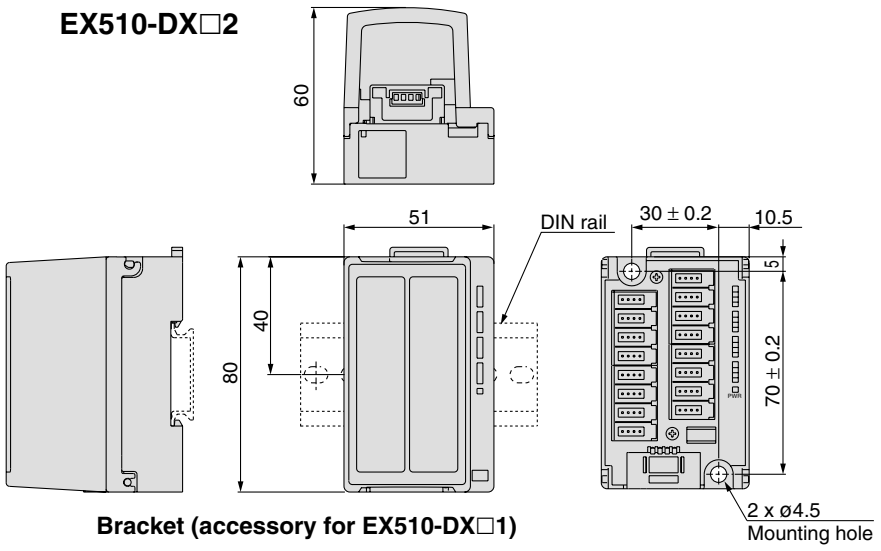
Model	EX510-DXN□	EX510-DXP□, DXB1
Input type	NPN input	PNP input
Number of inputs	16 points	
Sensor supply voltage	24 VDC	
Max. sensor supply current	0.2 A/1 point, 0.9 A/1 unit	
Consumption current	100 mA (Input unit internal parts)	
Input resistance	5.6 kΩ	
Rated input current	Approx. 4 mA	
ON voltage/ON current	17 V or greater/2.5 mA or greater (Between input terminal and for sensor + 24 VDC)	17 V or greater/2.5 mA or greater (Between input terminal and for sensor 0 VDC)
OFF voltage/OFF current	7 V or less/1 mA or less (Between input terminal and for sensor + 24 VDC)	7 V or less/1 mA or less (Between input terminal and for sensor 0 VDC)
Display	Green LED (illuminated when ON)	
Weight	EX510-DX□1: 90 g EX510-DX□2: 110 g (accessories included)	

Dimensions

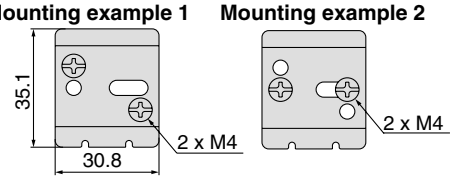
EX510-DX□1



EX510-DX□2



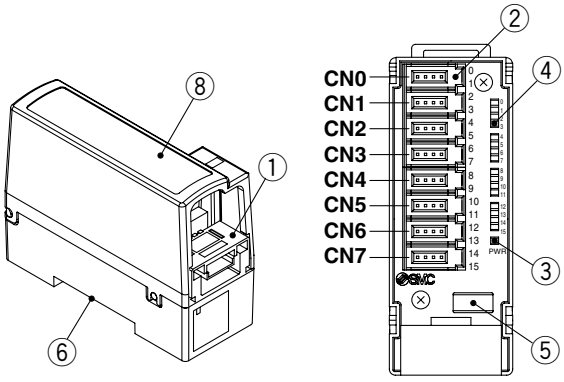
Bracket (accessory for EX510-DX□1)



Shown with cover removed.

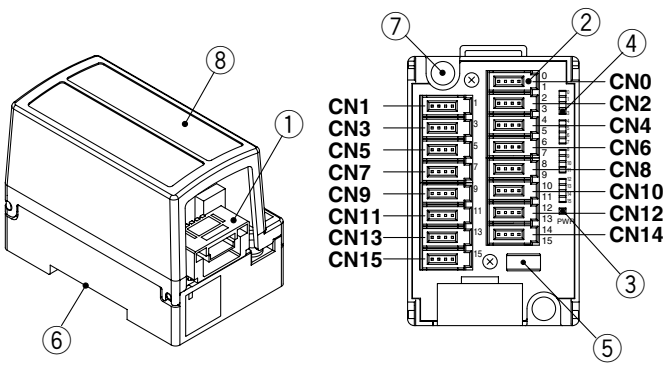
Parts Description

EX510-DX□1



Shown with cover removed.

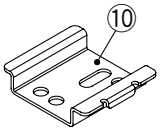
EX510-DX□2



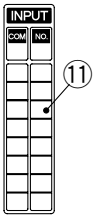
Shown with cover removed.

Included accessories

Branch connector (2 pcs.)
(EX510-LC1)



Bracket
∗ Attached to
EX510-DX□1 only



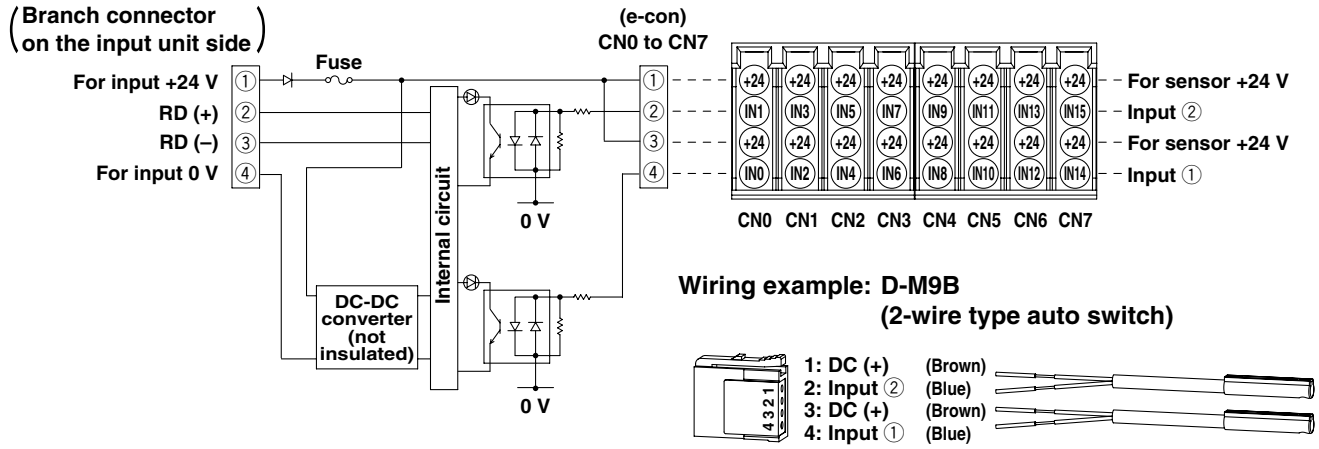
Marker label

Input Unit

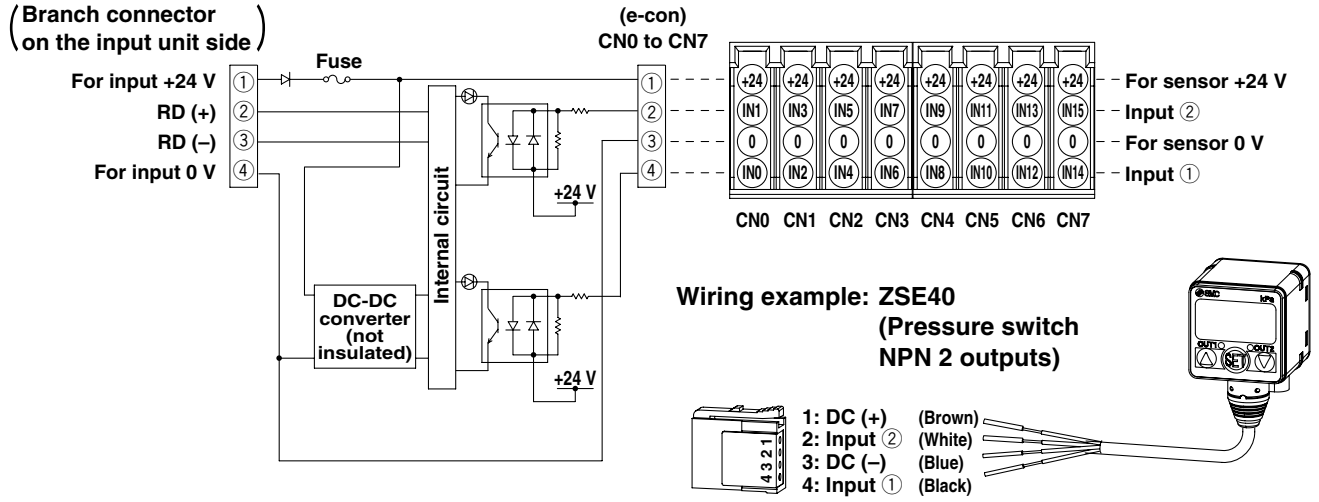
No.	Description	Applications
1	**Branch connector on the input unit side**	For connecting with the GW unit, by press-fitting the branch connector (⑨) to the branch cable (EX510-FC□□).
2	**e-con connector**	Connecting sensor, etc.
3	**LED for power supply**	Light ON: Power supply ON (Normal) state Light OFF: Power supply OFF state
4	**LED for display**	Light ON: When the input for sensor signal is turned ON. Light OFF: When the input for sensor signal is turned OFF.
5	**Fuse**	Replaceable fuse (EX9-FU10)
6	**Mounting groove for DIN rail**	For attaching to a DIN rail or when mounting with screws to the accessory bracket (⑩).
7	**Mounting hole**	Used for mounting the unit with two M4 screws.
8	**Cover**	For protecting the sensor cables. Place the marker label (⑪) on the top of the cover.

Internal Circuits and Wiring Examples

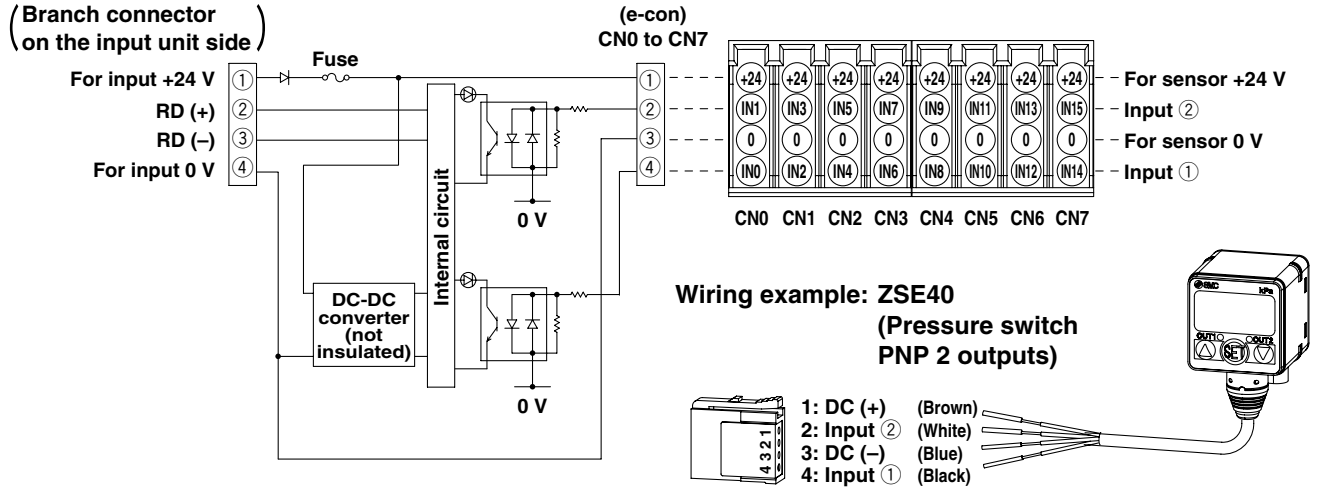
• EX510-DXB1 ··· 2-wire type input unit (1 connector, 2-input type)



• EX510-DXN1 ··· Input unit for NPN (1 connector, 2-input type)

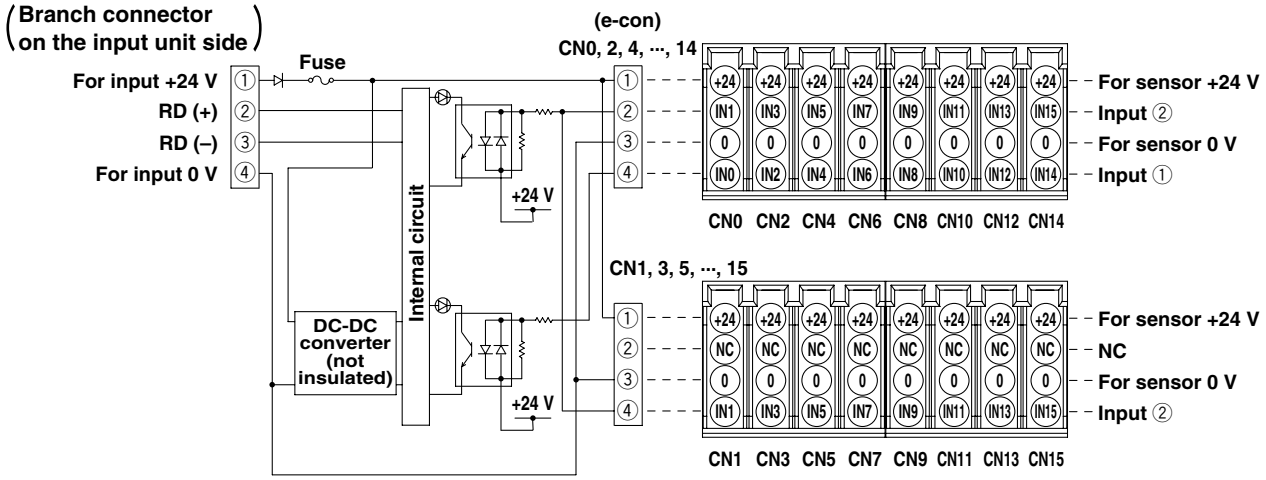


• EX510-DXP1 ··· Input unit for PNP (1 connector, 2-input type)

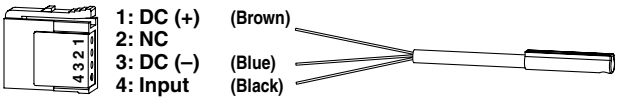


Internal Circuits and Wiring Examples

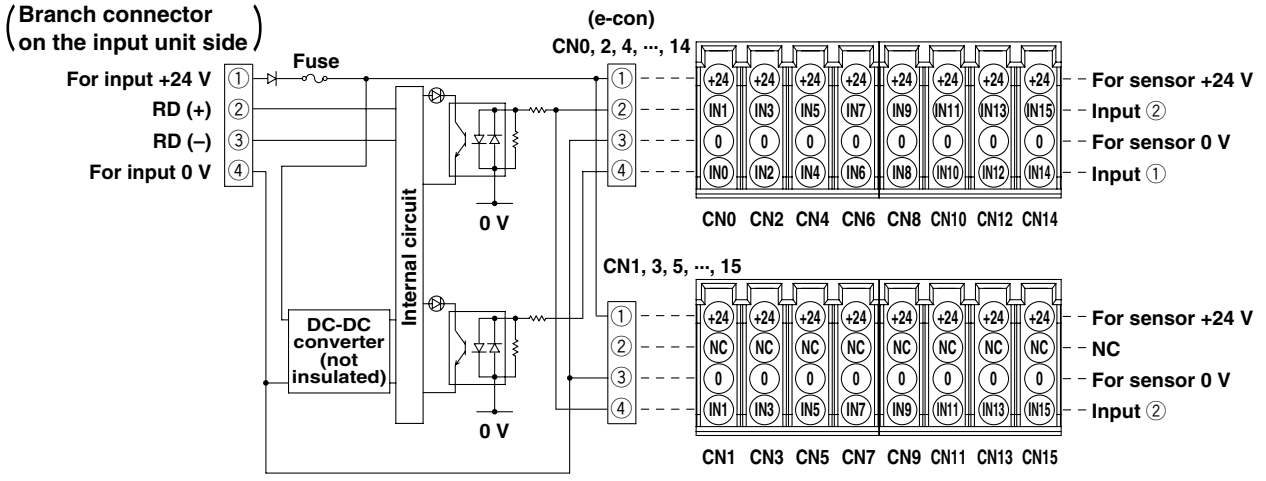
• EX510-DXN2 ··· Input unit for NPN (1 connector, 1 input type)



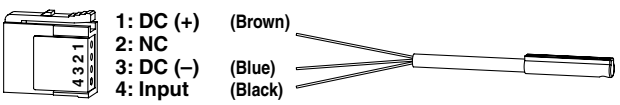
Wiring example: D-M9N
(3-wire type auto switch, NPN output)



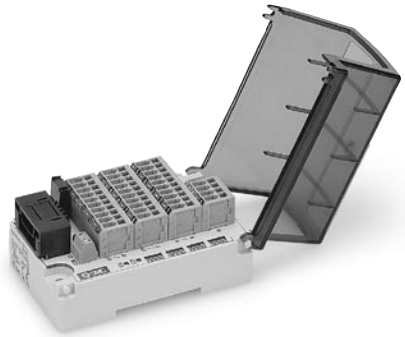
• EX510-DXP2 ··· Input unit for PNP (1 connector, 1 input type)



Wiring example: D-M9P
(3-wire type auto switch, PNP output)



Output Unit



How to Order

EX510-DY P 3

Connector type

3	Terminal box type (Internal power supply)
4	Terminal box type (External power supply)

Output specification

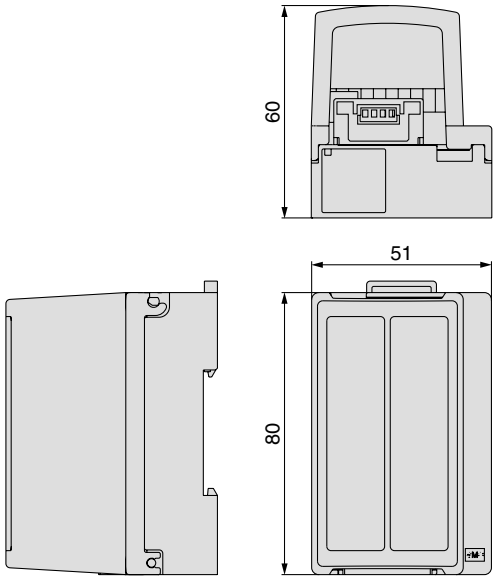
N	NPN output
P	PNP output

Specifications

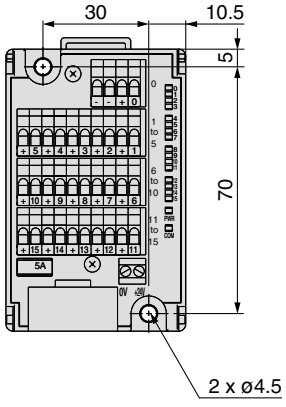
Model	EX510-DYN3	EX510-DYP3	EX510-DYN4	EX510-DYP4
Output type	NPN output (sink type)	PNP output (source type)	NPN output (sink type)	PNP output (source type)
Rated load voltage	24 VDC			
Power supply type	Internal power supply (supplied by GW unit)		External power supply (supplied by power supply connector)	
Applicable cable for power supply connector	—		0.14 to 1.5 mm^2 (AWG16 to 26)	
Number of outputs	16 points			
Output connector type	Spring type			
Applicable cable	0.08 to 1.5 mm^2 (AWG16 to 28)			
Max. load current	Meet the following 3 conditions: 1. 0.5 A or less per point 2. 1 A or less per unit 3. The total current for OUT0 to 7 must be 1 A or less. The total current for OUT8 to 15 must be 1 A or less.		Meet the following 3 conditions: 1. 0.5 A or less per point 2. 3 A or less per unit 3. The total current for OUT0 to 7 must be 1.5 A or less. The total current for OUT8 to 15 must be 1.5 A or less.	
Protection	Built-in short circuit protection			
Current consumption	50 mA or less (inside a unit)			
Weight	130 g (including accessories)			

Dimensions

EX510-DY□□

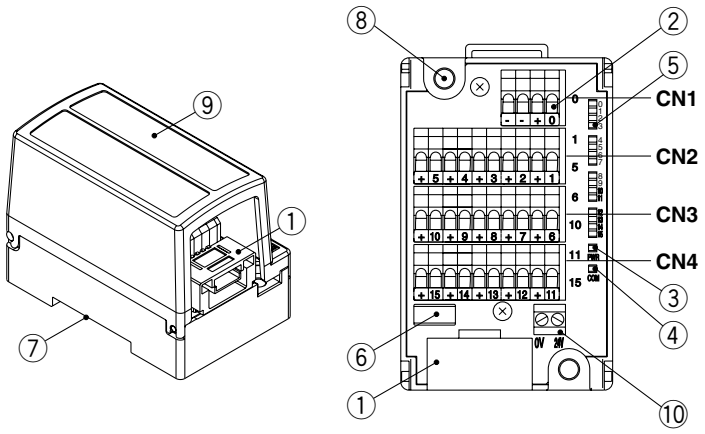


Fixed with screws



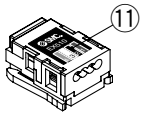
Shown with cover removed.

Parts Description

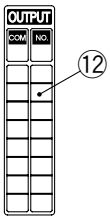


Shown with cover removed.

Included accessories



Branch connector (2 pcs.)
(EX510-LC1)



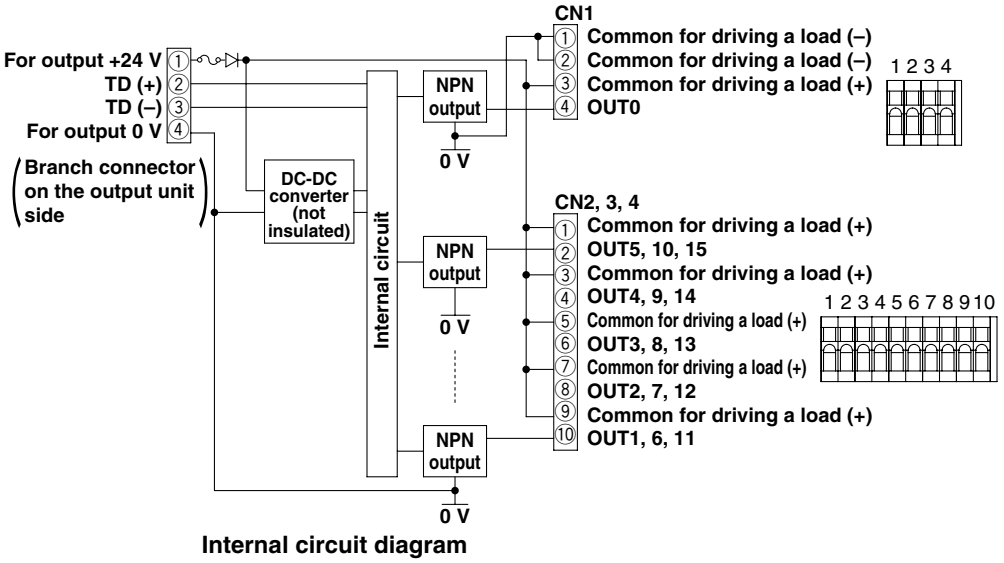
Marker label

Output Unit

No.	Description	Applications
1	**Branch connector on the output unit side**	For connecting with the GW unit, by press-fitting the branch connector (⑪) to the branch cable (EX510-FC□□).
2	**Output terminal box**	Connect on output device such as a solenoid valve, etc.
3	**LED for power supply**	Light ON: Power supply ON (Normal) state Light OFF: Power supply OFF state
4	**LED for communications**	Light ON: When receiving data Light OFF: When there is no communication data.
5	**LED for display**	Light ON: When the output signal is turned on. Light OFF: When the output signal is turned off.
6	**Fuse**	Replaceable fuse
7	**Mounting groove**	Used for mounting the unit on a DIN rail.
8	**Mounting hole**	Used for mounting the unit with two M4 screws.
9	**Cover**	For protecting the output load cable. Place the marker label (⑫) on the top of the cover.
10	**Terminal box for external power supply**	Terminal for power supply (EX510-DYN4, EX510-DYP4 only)

Internal Circuits and Wiring Examples

• EX510-DYN3 ··· Output unit for NPN (Internal power supply type)



Internal circuit diagram

Terminal Block Connector (CN1)

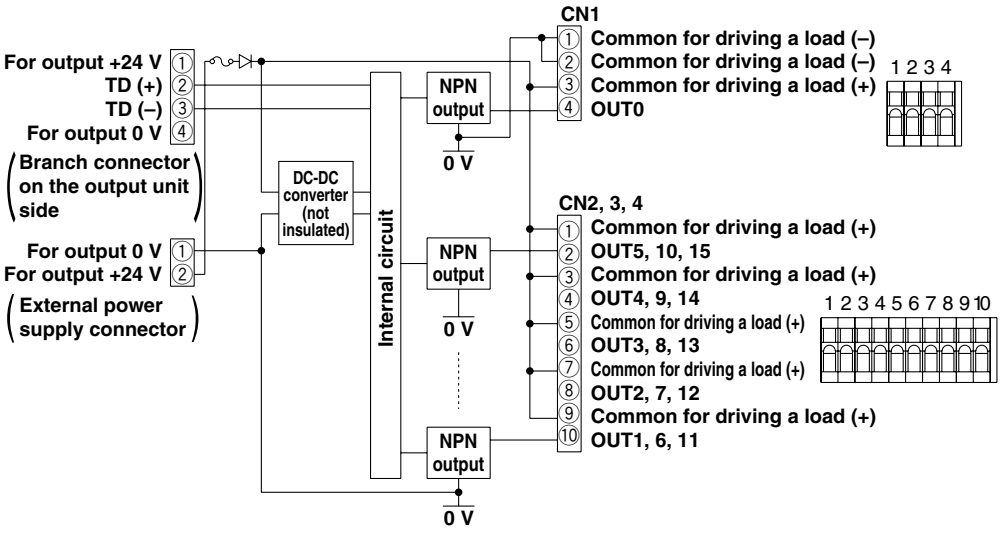
No.	Description	Functions
		CN1
1	**COM**	Common for driving a load (–)
2	**COM**	
3	**COM**	Common for driving a load (+)
4	**Output**	OUT0

Terminal Block Connector (CN2, CN3, CN4)

No.	Description	Functions		
		CN2	CN3	CN4
1	**COM**	Common for driving a load (+)		
2	**Output**	OUT5	OUT10	OUT15
3	**COM**	Common for driving a load (+)		
4	**Output**	OUT4	OUT9	OUT14
5	**COM**	Common for driving a load (+)		
6	**Output**	OUT3	OUT8	OUT13
7	**COM**	Common for driving a load (+)		
8	**Output**	OUT2	OUT7	OUT12
9	**COM**	Common for driving a load (+)		
10	**Output**	OUT1	OUT6	OUT11

Internal Circuits and Wiring Examples

• EX510-DYN4 ··· Output unit for NPN (External power supply type)



Internal circuit diagram

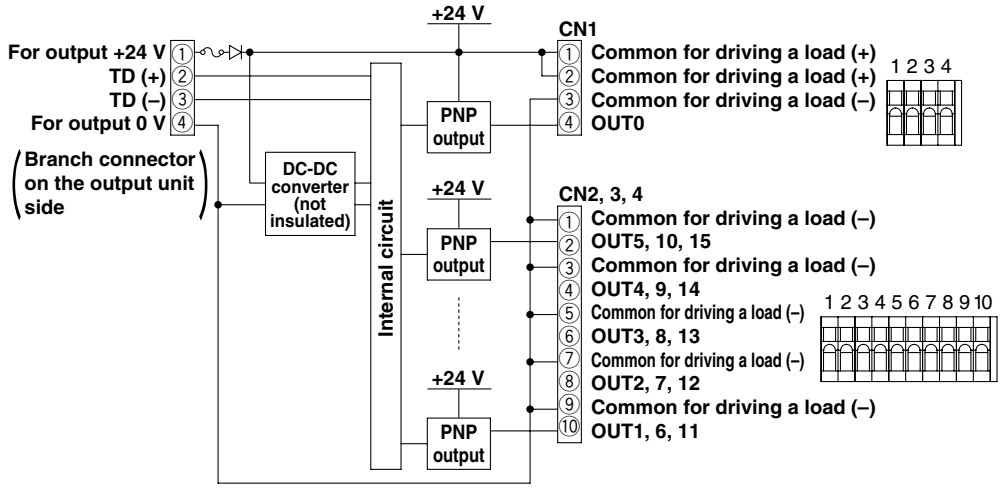
Terminal Block Connector (CN1)

No.	Description	Functions
		CN1
1	COM	Common for driving a load (–)
2	COM	
3	COM	Common for driving a load (+)
4	Output	OUT0

Terminal Block Connector (CN2, CN3, CN4)

No.	Description	Functions		
		CN2	CN3	CN4
1	COM	Common for driving a load (+)		
2	Output	OUT5	OUT10	OUT15
3	COM	Common for driving a load (+)		
4	Output	OUT4	OUT9	OUT14
5	COM	Common for driving a load (+)		
6	Output	OUT3	OUT8	OUT13
7	COM	Common for driving a load (+)		
8	Output	OUT2	OUT7	OUT12
9	COM	Common for driving a load (+)		
10	Output	OUT1	OUT6	OUT11

• EX510-DYP3 ··· Output unit for PNP (Internal power supply type)



Internal circuit diagram

Terminal Block Connector (CN1)

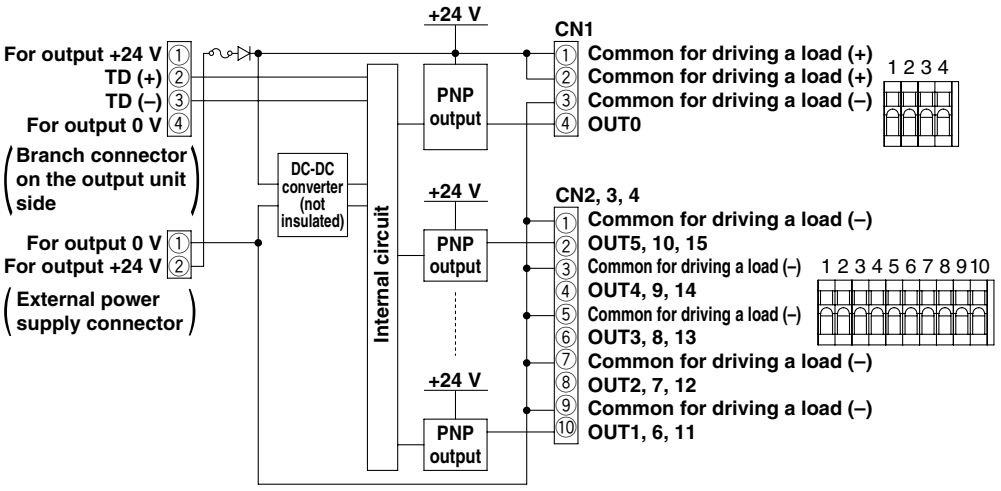
No.	Description	Functions
		CN1
1	COM	Common for driving a load (+)
2	COM	
3	COM	Common for driving a load (–)
4	Output	OUT0

Terminal Block Connector (CN2, CN3, CN4)

No.	Description	Functions		
		CN2	CN3	CN4
1	COM	Common for driving a load (–)		
2	Output	OUT5	OUT10	OUT15
3	COM	Common for driving a load (–)		
4	Output	OUT4	OUT9	OUT14
5	COM	Common for driving a load (–)		
6	Output	OUT3	OUT8	OUT13
7	COM	Common for driving a load (–)		
8	Output	OUT2	OUT7	OUT12
9	COM	Common for driving a load (–)		
10	Output	OUT1	OUT6	OUT11

Internal Circuits and Wiring Examples

• EX510-DYP4 ··· Output unit for PNP (External power supply type)



Internal circuit diagram

Terminal Block Connector (CN1)

No.	Description	Functions
		CN1
1	COM	Common for driving a load (+)
2	COM	
3	COM	Common for driving a load (–)
4	Output	OUT0

Terminal Block Connector (CN2, CN3, CN4)

No.	Description	Functions		
		CN2	CN3	CN4
1	COM	Common for driving a load (–)		
2	Output	OUT5	OUT10	OUT15
3	COM	Common for driving a load (–)		
4	Output	OUT4	OUT9	OUT14
5	COM	Common for driving a load (–)		
6	Output	OUT3	OUT8	OUT13
7	COM	Common for driving a load (–)		
8	Output	OUT2	OUT7	OUT12
9	COM	Common for driving a load (–)		
10	Output	OUT1	OUT6	OUT11

Connection to Output Equipment

The output unit can be connected to 2-port solenoid valves such as the VX, VCW, VDW series and any other 3-port valves. Pay attention to the applicable cable and maximum load current when selecting a solenoid valve. The 2-port valves other than those shown below can be used as long as they meet the conditions; operating environment (enclosure, etc.), applicable cable and the maximum load current. Shown below is the typical 2-port solenoid valve. Additionally, we recommend a model with surge voltage suppressor is used for the 2-port solenoid valve.

Example) In the case of using 5 VX23 series (rated voltage: 24 VDC / power consumption: 10.5 W) (calculated under the condition with 5 valves turned on simultaneously)

Operating current per point for one valve
10.5 W ÷ 24 V = 0.44 A ..... Meets the output unit load current requirement 1.

Therefore, the total current of the output unit is:
10.5 (W) ÷ 24 (V) x 5 (pcs.) = 2.2 (A) ..... Therefore only the external power supply type can meet condition 2. The internal power supply type cannot be used.

Based on condition 3, The total current for OUT0 to 7 and OUT8 to 15 are 1.5 A respectively.
Therefore, 3 VX valves can be wired to either of the 3 points for OUT0 to 7. (1.32 A for OUT0 to 7) and 2 VX valves can be wired to either of the 2 points OUT8 to 15. (0.88 A for OUT8 to 15)

Other outputs can be made available by reducing the total number of the occupied points for simultaneous operation.

Load Current Requirement

Model	EX510-DYN3	EX510-DYP3	EX510-DYN4	EX510-DYP4
Output type	NPN output (sink type)	PNP output (source type)	NPN output (sink type)	PNP output (source type)
Power supply type	Internal power supply (supplied by GW unit)		External power supply (supplied by power supply connector)	
Max. load current	Meet the following 3 conditions: 1. 0.5 A or less per point 2. 1 A or less per unit 3. Total current for OUT 0 to 7 must be 1 A or less. Total current for OUT 8 to 15 must be 1 A or less.		Meet the following 3 conditions: 1. 0.5 A or less per point 2. 3 A or less per unit 3. Total current for OUT 0 to 7 must be 1.5 A or less. Total current for OUT 8 to 15 must be 1.5 A or less.	

Direct Operated 2 Port Solenoid Valve

VX

Series	Material		Valve type	Port size	Orifice diameter [mmø]	Rated voltage [V]	Power consumption [W]
	Body	Seal					
VX21	C37 Stainless steel	NBR FKM EPDM PTFE	N.C. N.O.	1/8 to 1/2	2 to 10	DC 24	4.5
VX22							7.0
VX23							10.5

VCW

Series	Material		Valve type	Port size	Orifice diameter [mmø]	Rated voltage [V]	Power consumption [W]
	Body	Seal					
VCW20	C37 Stainless steel	NBR FKM EPDM PTFE	N.C. N.O.	1/8 to 3/4	2 to 10	DC 24	6.0
VCW30							8.0
VCW40							11.5

VDW

Series	Material		Valve type	Port size	Orifice diameter [mmø]	Rated voltage [V]	Power consumption [W]
	Body	Seal					
VDW10	C37 Stainless steel	NBR FKM	N.C.	M5 to 1/4	1 to 4	DC 24	2.5
VDW20							3.0
VDW30							3.0

SI Unit

How to Order

EX510-S 0 0 1 ☐

Output specification

0	NPN output (common (+))
1	PNP output (common (–))

Applicable valve manifold

1	Non-plug-in manifold
2	Plug-in manifold

Mounting specification

-	Screw mounting
A	Mounting on DIN rail vertically
B	Mounting on DIN rail horizontally
C	Mounting on DIN rail horizontally (Dedicated for the SJ manifold) Note)

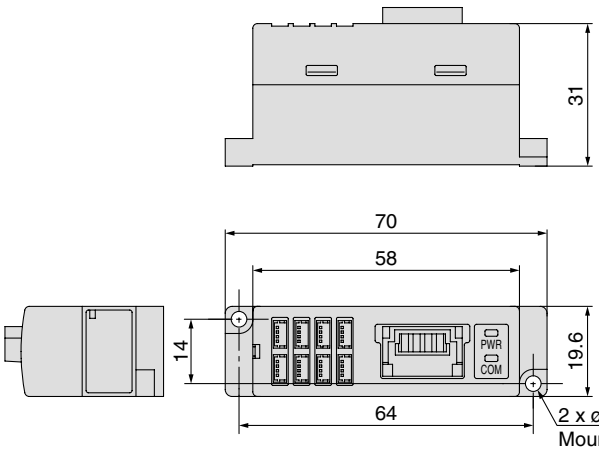
Note) Applicable for EX510-S☐02 only.

Specifications

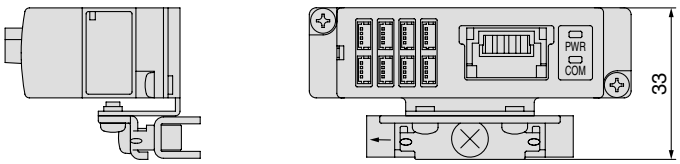
Model	**EX510-S001☐, S002☐**	**EX510-S101☐, S102☐**
Output type	NPN output (sink type)	PNP output (source type)
Number of outputs	16 points	
Rated load voltage	24 VDC	
Max. load current	Meet the following 3 conditions: 1. 0.25 A or less per point 2. 1.4 A or less per unit 3. Total current for OUT 0 to 7 must be 1 A or less. Total current for OUT 8 to 15 must be 1 A or less.	
Protection	Built-in short circuit protection	
Current consumption	50 mA or less (SI unit internal parts)	
Weight	EX510-S☐01: 40 g EX510-S☐01A, B: 80 g EX510-S☐02: 50 g EX510-S☐02A, B, C: 90 g (including accessories)	

Dimensions

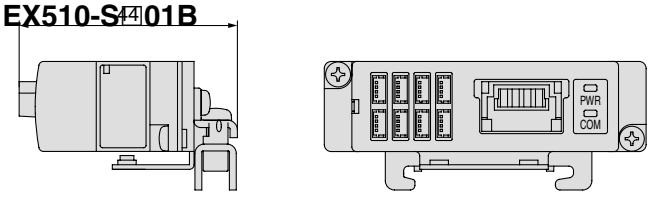
EX510-S☐01



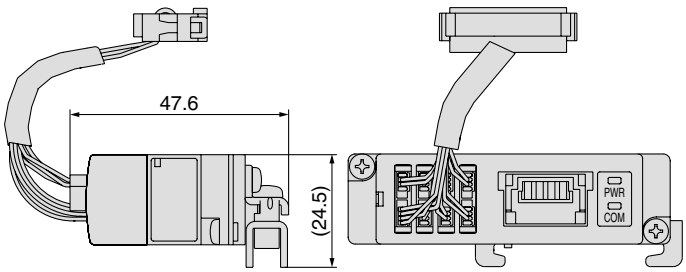
EX510-S☐01A



EX510-S☐01B



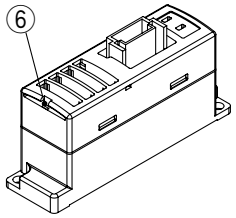
EX510-S☐02C



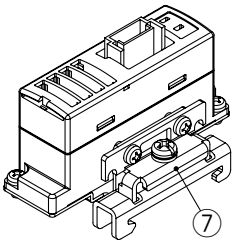
Parts Description

It is possible to order a valve manifold with SI unit from the valve series listed in the brackets below. For further information, please refer to the individual valve/manifold catalogues. Also, you can change the system of your device by retrofitting the SI unit to an already purchased manifold.

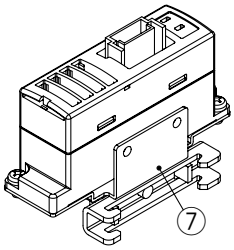
EX510-S□01
(Series SY, SYJ, S0700, VQZ)



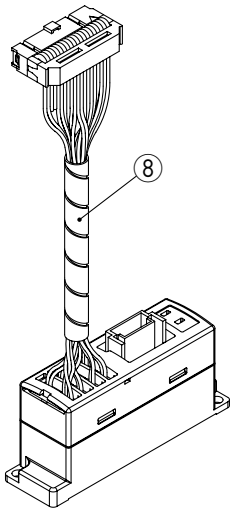
EX510-S□01A
(Series SY (Type 45))



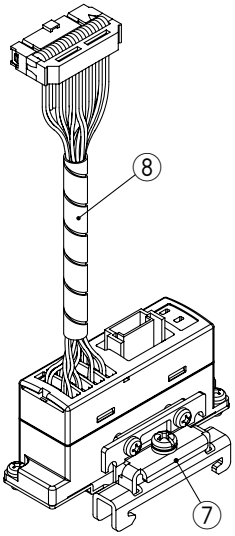
EX510-S□01B



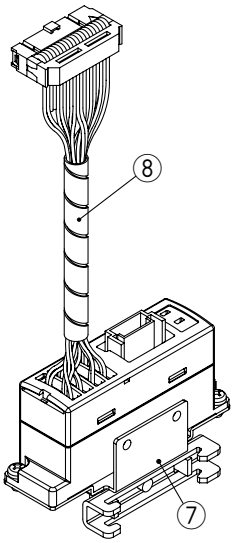
EX510-S□02



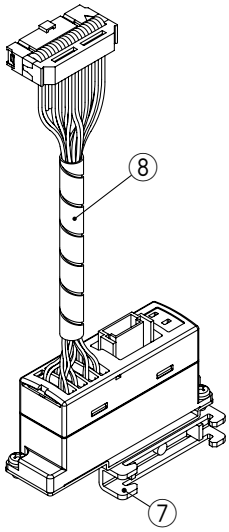
EX510-S□02A
(Series SY, VQ)



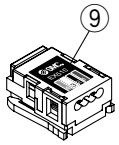
EX510-S□02B
(Series SZ, SQ)



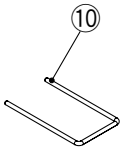
EX510-S□02C
(Series SJ)



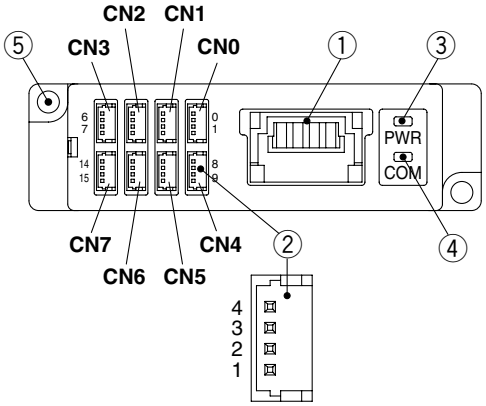
Included accessories



Branch connector (2 pcs.)
(EX510-LC1)



Connector lock pin
(1 pc.)

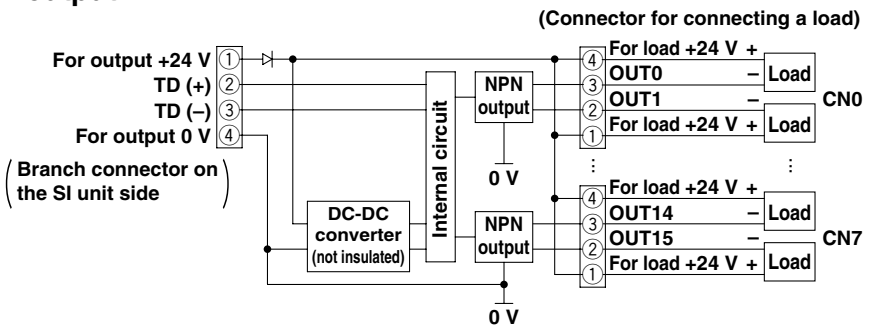


SI Unit

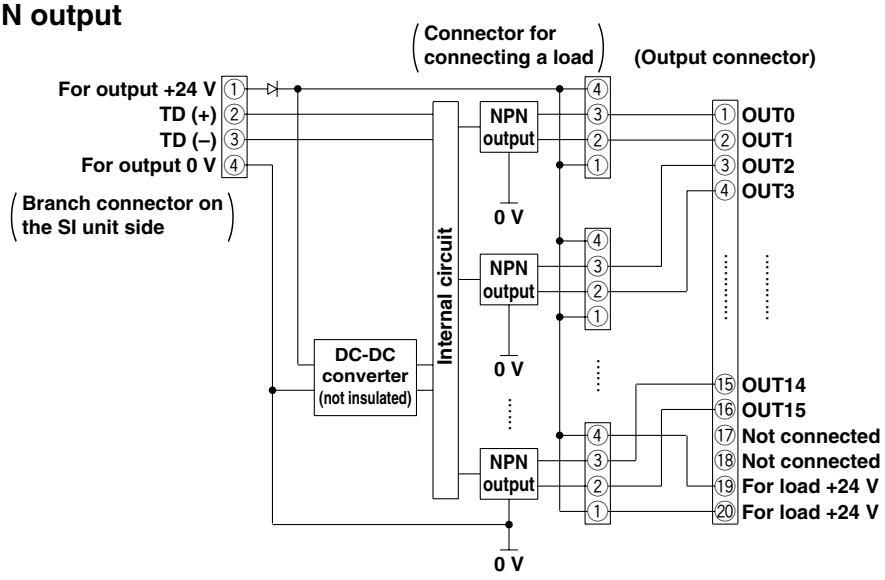
No.	Description	Applications
1	**Branch connector on the SI unit side**	For connecting with the GW unit, by press-fitting the branch connector (⑨) to the branch cable (EX510-FC□□).
2	**Connector for connecting a load**	Connects an output device such as a solenoid valve, etc.
3	**LED for power supply**	Light ON: Power supply ON (Normal) state Light OFF: Power supply OFF state
4	**LED for communications**	Light ON: When receiving data Light OFF: When there is no communication data.
5	**Mounting hole**	Used for mounting the unit with two M3 screws.
6	**Connector lock pin insertion part**	Used for securing the output connectors in a unit with the connector lock pin (⑩). (EX510-S□02□ is inserted.)
7	**Mounting bracket**	Can be mounted on a DIN rail.
8	**Coversion cable assembly**	The cable assembly used for connection with the plug-in valve manifold.

Internal Circuits and Wiring Examples

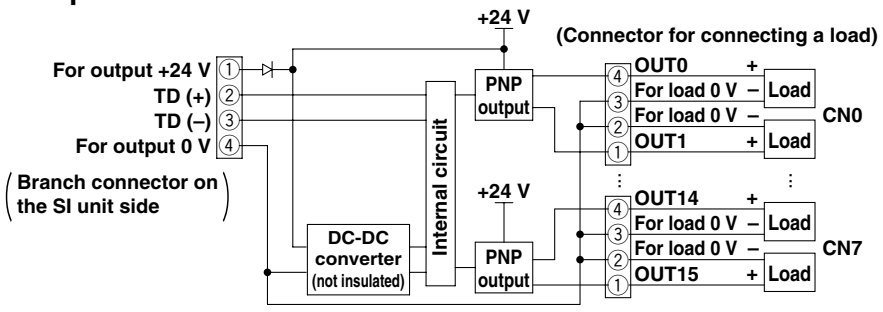
EX510-S001/NPN output



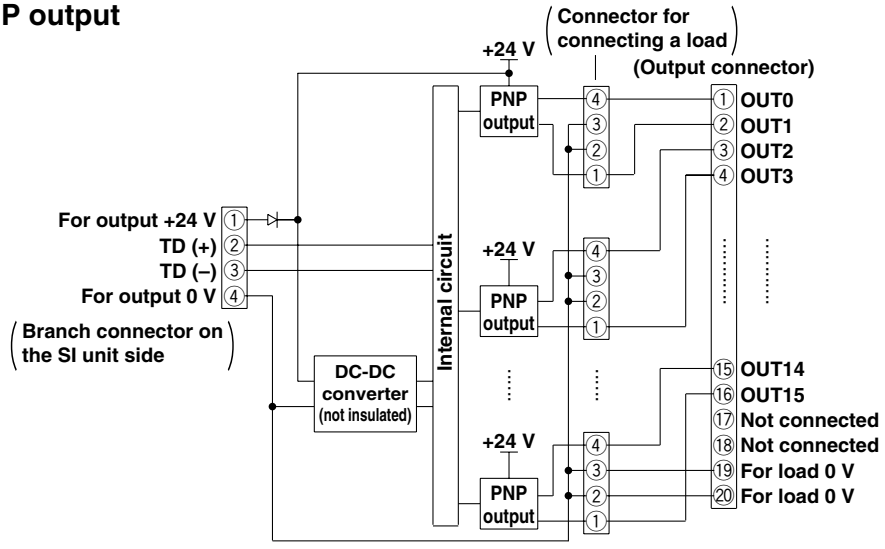
EX510-S002/NPN output



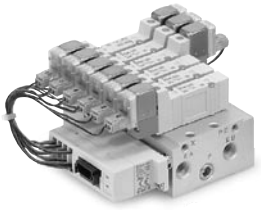
EX510-S101/PNP output



EX510-S102/PNP output

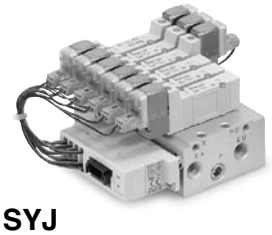


EX510 Serial Wiring Compatible
5 Port Solenoid Valves



SY

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports												
			Piping with One-touch fittings									Thread piping			
			Metric size					Inch size							
			ø4	ø6	ø8	ø10	ø12	ø5/32"	ø1/4"	ø5/16"	ø3/8"	M5	1/8	1/4	3/8
SY3000	**1.1**	**ø40**	●	●				●	●			●	●		
SY5000	**2.8**	**ø63**	●	●	●			●	●	●			●	●	
SY7000	**4.5**	**ø80**			●	●				●	●			●	
SY9000	**10.0**	**ø100**			●	●	●			●	●			●	●



SYJ

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports								
			Piping with One-touch fittings						Thread piping		
			Metric size			Inch size					
			ø4	ø6	ø8	ø5/32"	ø1/4"	ø5/16"	M3	M5	1/8
SYJ3000	**0.46**	**ø25**	●			●			●	●	
SYJ5000	**0.83**	**ø40**	●	●		●	●			●	
SYJ7000	**2.9**	**ø50**		●	●		●	●			●

S0700

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports				
			Piping with One-touch fittings				Thread piping
			Metric size		Inch size		
			ø3.2	ø4	ø1/8"	ø5/32"	M5
S0700	**0.36**	**ø20**	●	●	●	●	●

VQZ

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports												
			Piping with One-touch fittings									Thread piping			
			Metric size					Inch size							
			ø3.2	ø4	ø6	ø8	ø10	ø1/8"	ø5/32"	ø1/4"	ø5/16"	ø3/8"	M5	1/8	1/4
VQZ1000	**1.2**	**ø40**	●	●	●			●	●	●			●		
VQZ2000	**2.0**	**ø63**		●	●	●			●	●	●			●	
VQZ3000	**3.9**	**ø80**			●	●	●			●	●	●			●

For details, refer to the catalogue of each product.

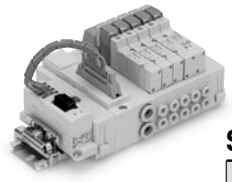
Plug-in Type Manifold

SJ

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports				
			Piping with One-touch fittings			Thread piping	
			Metric size				
			ø2	ø4	ø6	M3	M5
SJ2000	0.36	ø**25**	●	●		●	
SJ3000	0.56	ø**32**	●	●	●		●

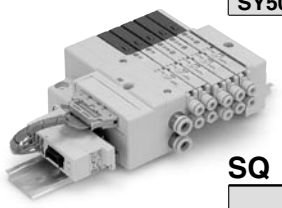
SZ

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports				
			Piping with One-touch fittings				Thread piping
			Metric size		Inch size		
			ø4	ø6	ø5/32"	ø1/4"	M5
SZ3000	0.77	ø**32**	●	●	●	●	●



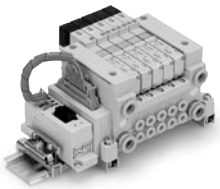
SY

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports					
			Piping with One-touch fittings					
			Metric size			Inch size		
			ø4	ø6	ø8	ø5/32"	ø1/4"	ø5/16"
SY3000	1.1	ø**40**	●	●		●	●	
SY5000	2.8	ø**63**	●	●	●	●	●	●



SQ

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports									
			Piping with One-touch fittings								Thread piping	
			Metric size				Inch size					
			ø3.2	ø4	ø6	ø8	ø1/8"	ø5/32"	ø1/4"	ø5/16"	M5	10-32UNF
SQ1000	0.83	ø**32**	●	●	●		●	●	●		●	●
SQ2000	2.9	ø**63**		●	●	●		●	●	●		

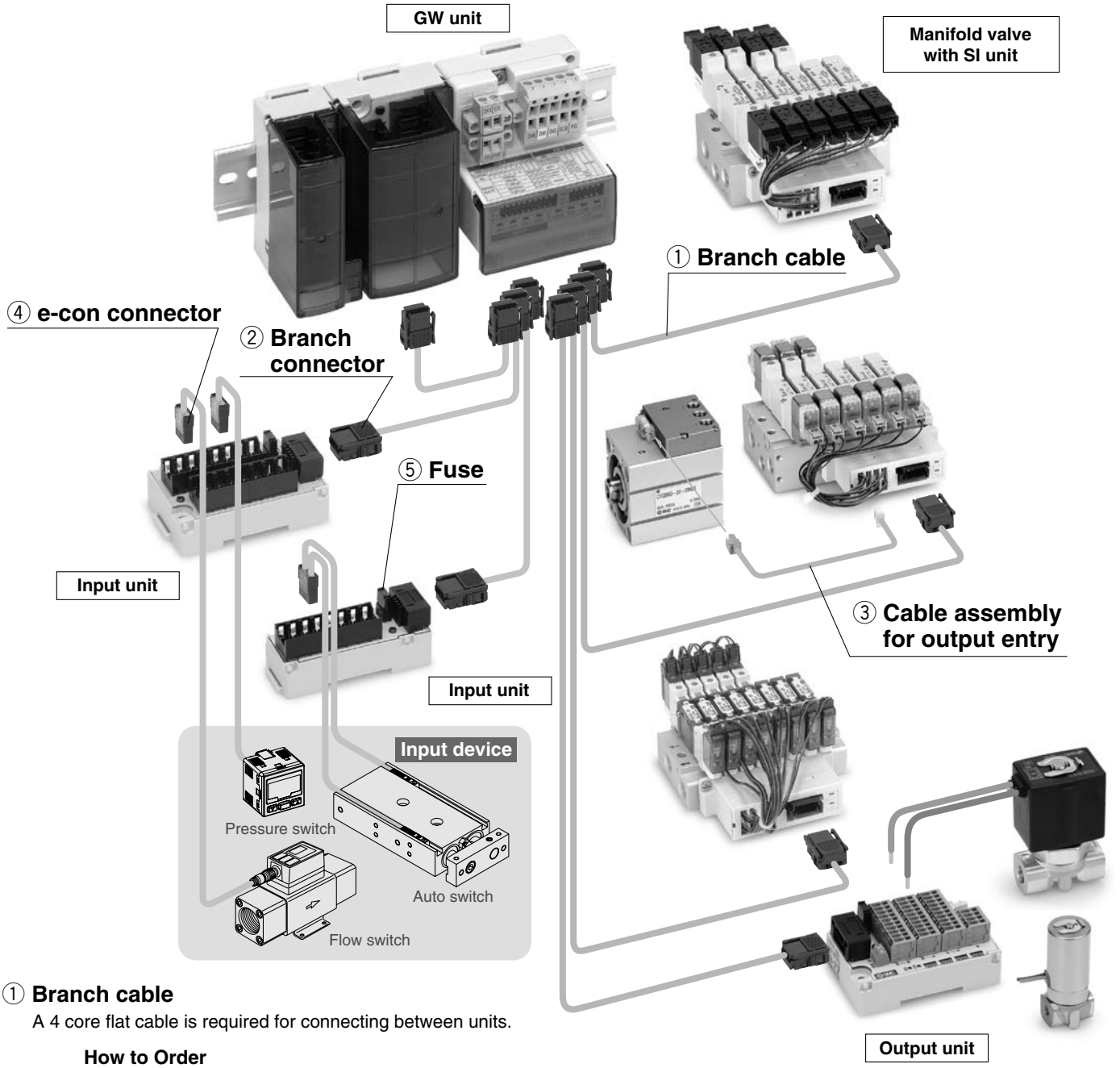


VQ

Series	Sonic conductance: C [dm³/(s•bar)] (representative value)	Applicable cylinder size (reference)	Port size for A, B ports									
			Piping with One-touch fittings								Thread piping	
			Metric size				Inch size					
			ø3.2	ø4	ø6	ø8	ø1/8"	ø5/32"	ø1/4"	ø5/16"	M5	10-32UNF
VQ1000	1.0	ø**40**	●	●	●		●	●	●		●	●
VQ2000	3.2	ø**63**		●	●	●		●	●	●		

For details, refer to the catalogue of each product.

System Composition / Options



① Branch cable

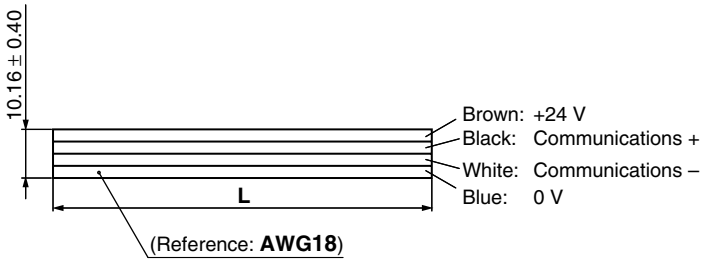
A 4 core flat cable is required for connecting between units.

How to Order

EX510-FC 10

Cable length (L)

01	1 m
02	2 m
05	5 m
10	10 m
20	20 m
60	60 m



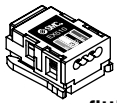
* The maximum length of a branch cable for the EX510 series should be 20 metres or less.

② Branch connector (Unit 1 pc.)

Connector required for connecting a branch cable to each unit.
Two branch connectors are attached to the SI unit, the input unit and the output unit respectively.

How to Order

EX510-LC1



(When press-fitting)

Electrical specifications	
Rated voltage	24 VDC
Rated current	Max. 5.0 A
Contact resistance	20 mΩ or less
Withstand voltage	1000 VAC 1 minute (Leak current 1 mA or less)

③ Cable assembly for output entry

Cable assembly for connecting the unused outputs in the SI unit.

How to Order

EX510-V S 10 S

Output

S	1 point
W	2 points

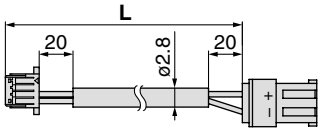
Cable length (L)

10	1 m
30	3 m

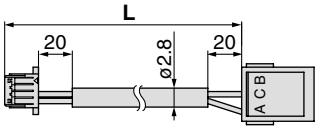
Valve connector

-	None
S	For SY, SYJ series
Q	For VQ, VQZ series

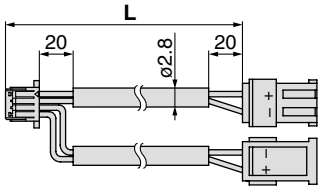
EX510-VS□S



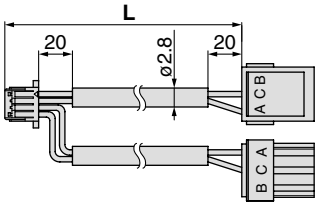
EX510-VS□Q



EX510-VW□S



EX510-VW□Q



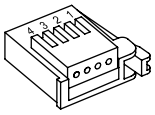
④ e-con connector

Connector for connecting a sensor to the input unit (EX510-DX□□).
Refer to the connector part numbers which are applicable for each sensor.

How to Order

ZS-28-C □—□

e-con



Product	Switch series	e-con part number			
		Tyco Electronics AMP K.K.		Sumitomo 3M Limited	
		SMC part no.	Manufacturer's part no.	SMC part no.	Manufacturer's part no.
Auto switch	**D-A9□**	ZS-28-CA-2	1-1473562-4	ZS-28-C	37104-3101-000FL
	D-M9□	ZS-28-CA-2	1-1473562-4	ZS-28-C	37104-3101-000FL
	D-Y□	ZS-28-CA-3	1473562-4	ZS-28-C	37104-3101-000FL
	D-Z73	ZS-28-CA-2	1-1473562-4	ZS-28-C	37104-3101-000FL
	D-Z76	ZS-28-CA-3	1473562-4	ZS-28-C-1	37104-3122-000FL
	D-Z80	ZS-28-CA-3	1473562-4	ZS-28-C-1	37104-3122-000FL
Pressure switch	**Z/ISE1** Note 1)	ZS-28-CA-3	1473562-4	ZS-28-C-1	37104-3122-000FL
	Z/ISE2 Note 1)	ZS-28-CA-3	1473562-4	ZS-28-C-1	37104-3122-000FL
	Z/ISE30	ZS-28-CA-3	1473562-4	ZS-28-C-1	37104-3122-000FL
	Z/ISE40 Note 2)	ZS-28-CA-3	1473562-4	ZS-28-C-1	37104-3122-000FL
	Z/ISE50 Note 2)	ZS-28-CA-3	1473562-4	ZS-28-C-1	37104-3122-000FL
	Z/ISE60 Note 2)	ZS-28-CA-3	1473562-4	ZS-28-C-1	37104-3122-000FL
	ISE7□	ZS-28-CA-4	2-1473562-4	ZS-28-C-1	37104-3122-000FL
Flow switch	**PF2A7□**	ZS-28-CA-4	2-1473562-4	ZS-28-C-1	37104-3122-000FL
	PF2W7□	ZS-28-CA-4	2-1473562-4	ZS-28-C-1	37104-3122-000FL

Note 1) Grommet type only
Note 2) Connect 2 outputs. Avoid connecting an analogue output and an auto shift input to a connector. These need to be wired separately. Please consult SMC for applicable connector part numbers other than shown above.
Refer to each connector manufacturer for detailed information on the *e-CON* connectors.

Applicable Wire

SMC part no. (1 pc.)	Cover colour	Compliant wire diameter (ø)	Nominal cross sectional area (mm^2)	Tyco Electronics AMP K.K. part no.
ZS-28-CA-1	Orange	0.6 to 0.9	0.1 to 0.5 (AWG26 to 20)	3-1473562-4
ZS-28-CA-2	Red	0.9 to 1.0		1-1473562-4
ZS-28-CA-3	Yellow	1.0 to 1.15		1473562-4
ZS-28-CA-4	Blue	1.15 to 1.35		2-1473562-4
ZS-28-CA-5	Green	1.35 to 1.60		4-1473562-4

SMC part no. (1 pc.)	Cover colour	Compliant wire diameter (ø)	Nominal cross sectional area (mm^2)	Sumitomo 3M Ltd. part no.
ZS-28-C	Red	0.8 to 1.0	0.14 to 0.3 (AWG26 to 24)	37104-3101-000FL
ZS-28-C-1	Yellow	1.0 to 1.2		37104-3122-000FL
ZS-28-C-2	Orange	1.2 to 1.6		37104-3163-000FL
ZS-28-C-3	Green	1.0 to 1.2	0.3 to 0.5 (AWG22 to 20)	37104-2124-000FL
ZS-28-C-4	Blue	1.2 to 1.6		37104-2165-000FL
ZS-28-C-5	Gray	1.6 to 2.0		37104-2206-000FL

SMC part no. (1 pc.)	Cover colour	Compliant wire diameter (ø)	Nominal cross sectional area (mm^2)	OMRON Corp. part no.
—	Clear	Up to 1.5	0.08 to 0.5 (AWG28 to 20)	XN2A-1430*

* The cable may be pulled out if the pulling force is 12 N or greater.

⑤ Replacement fuse

Replacement fuse for the input unit (EX510-DX□□) and the output unit (EX510-DY□□).

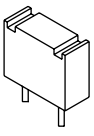
How to Order

EX9-FU 10

Fuse rated current

10	1 A
50	5 A

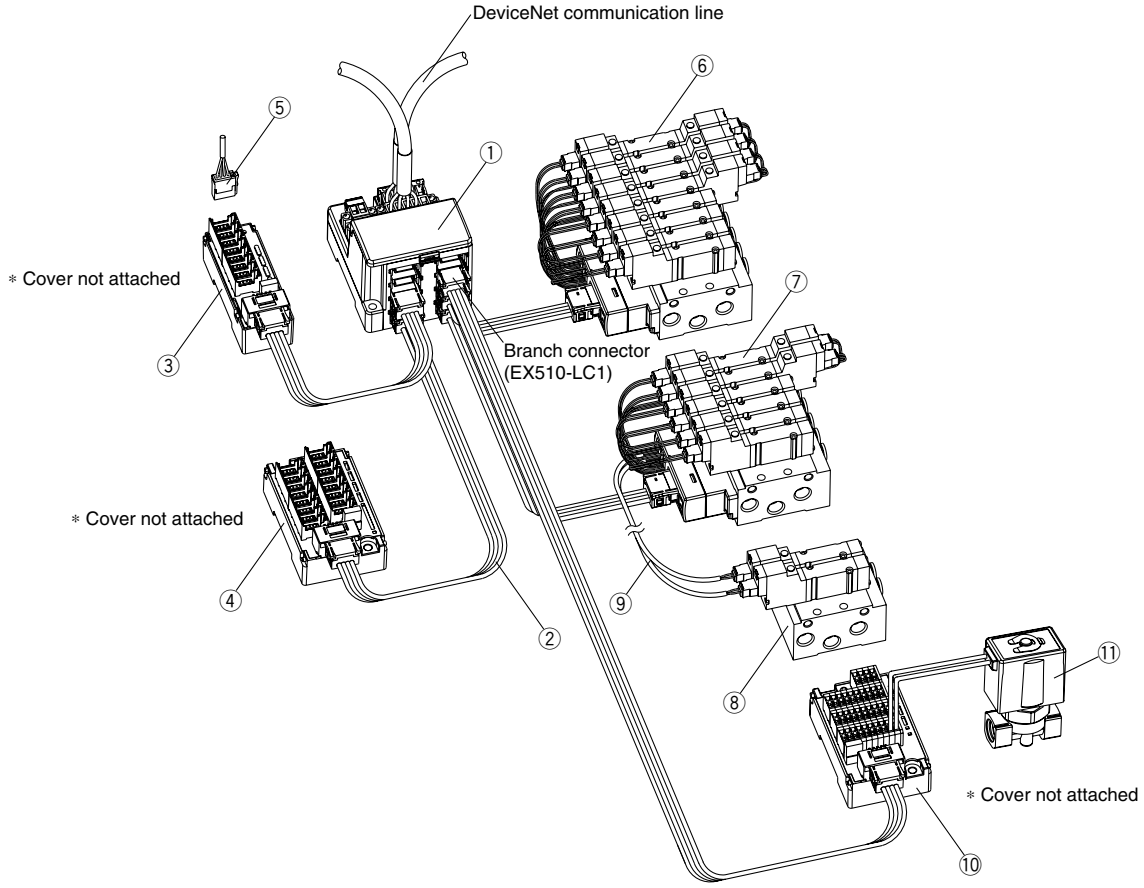
Fuse



Electrical specifications		
Part no.	**EX9-FU10**	**EX9-FU50**
Applicable model	**EX510-DX□□ EX510-DY□3**	**EX510-DY□4**
Rated current	1 A	5 A
Rated insulation capacity	AC/DC 48 V 50 A	
Fuse resistance value	0.145 Ω	18 mΩ

Ordering Examples

Shown is an example for ordering the EX510 series.



①	Gateway unit (DeviceNet compatible)	EX510-GDN1	1 unit
②	Branch cable 20 metres	EX510-FC20	1 roll
∗ ③	Input unit (1 connector, 2-input type NPN input)	EX510-DXN1	1 unit
∗ ④	Input unit (1 connector, 1 input type NPN input)	EX510-DXN2	1 unit
⑤	e-con	ZS-28-C□	24 pcs.
∗ ⑥	SY series manifold	SS5Y3-42SA-08-C6-Q ∗ SY3140-5LOZ-Q ∗ SY3240-5LOZ-Q	1 unit 4 units 4 units
∗ ⑦	VQZ series manifold	VV5QZ15-SA06C6-Q ∗ VQZ1150-5LO-Q ∗ VQZ1250-5LO-Q	1 unit 4 units 2 units
⑧	SY series manifold	SS5Y3-42-02-C6-Q ∗ SY3140-5LOZ-Q	1 unit 2 units
⑨	Cable assembly for output entry	EX510-VW10S	1 pc.
∗ ⑩	Output unit	EX510-DYN3	1 unit
⑪	2 port solenoid valve	VX2120-02-5GS1	1 pc.

∗ **Two branch connectors are attached to the manifold with SI unit and two are attached to the input unit and the output unit respectively.**
The branch connector (EX510-LC1) is used to connect the individual units.

Series EX510
Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of **"Caution", "Warning"** or **"Danger"**. To ensure safety, be sure to observe these instructions.

⚠ Caution : Operator error could result in injury or equipment damage.

⚠ Warning : Operator error could result in serious injury or loss of life.

⚠ Danger : In extreme conditions, there is a possible result of serious injury or loss of life.

⚠ Warning

1. **The compatibility of the reduced-wiring system is the responsibility of the person who designs the system or decides its specifications.**
   Since the products specified here are used in various operating conditions, their compatibility for the specific system must be based on specifications or post analysis and/or tests to meet the specific requirements. The expected performance and safety assurance are the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalogue information with a view to giving due consideration to any possibility of equipment failure when configuring a system.
2. **Only trained personnel should operate this equipment.**
   Reduced-wiring system can be dangerous if handled incorrectly. Assembly, handling or repair of the systems using reduced-wiring system should be performed by trained and experienced operators.
3. **Do not service machinery/equipment or attempt to remove components until safety is confirmed.**
   1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driven object have been confirmed.
   2. When equipment is to be removed, confirm the safety process as mentioned above. Turn off the power supply for this equipment.
   3. Before machinery/equipment is restarted, confirm that safety measures are in effect.
4. **Contact SMC if the product is to be used in any of the following conditions:**
   1. Conditions and environments beyond the given specifications, or if product is used outdoors.
   2. Installation on equipment in conjunction with atomic energy, medical equipment, food and beverages, or safety equipment.
   3. An application which has the possibility of having negative effects on people, property, requiring special safety analysis.
5. **Prior to use, thoroughly read the "Instruction Manual" and use the product appropriately after first confirming the product's operation with the distributor or SMC.**
6. **Before using, carefully read the handling cautions described in this catalogue.**
7. **Some products listed in this catalogue have limitations to the operating usage and locations. Please confirm the limitations with the distributor or SMC.**

■ Exemption from Liability

1. **SMC, its officers and employees shall be exempted from liability for any loss or damage arising out of earthquakes or fire, action by a third person, accidents, customer error with or without intention, product misuse, and any other damages caused by abnormal operating conditions.**
2. **SMC, its officers and employees shall be exempted from liability for any direct or indirect loss or damage, including consequential loss or damage, loss of profits, or loss of chance, claims, demands, proceedings, costs, expenses, awards, judgments and any other liability whatsoever including legal costs and expenses, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.**
3. **SMC is exempted from liability for any damages caused by operations not contained in the catalogues and/or instruction manuals, and operations outside of the specification range.**
4. **SMC is exempted from liability for any loss or damage whatsoever caused by malfunctions of its products when combined with other devices or software.**

Series EX510
Specific Product Precautions 1

Be sure to read this before handling.

Caution on Design and Selection

⚠ Warning

1. Use within the allowable voltage range.

Using beyond the allowable voltage range is likely to cause the units and connecting devices to be damaged or to malfunction.

2. Do not use beyond the specification range.

Using beyond the specification range is likely to cause a fire, malfunction, or breakdown in the units and connecting devices. Check the specifications before handling.

3. Establish a backup system beforehand, which employs fail-safe concepts such as multiple equipment and devices to prevent breakage or malfunction of this product.

4. Provide an external emergency stop circuit that will immediately stop an operation and cut off the power supply.

5. When using in an interlock circuit:

- Provide a double interlock which is operated by another system (such mechanical protection function).
- Perform an inspection to check that the interlock circuit is working properly because it can cause possible injuries.

⚠ Caution

1. Keep the surrounding space free for maintenace.

When designing a system, take into consideration the amount of free space needed for performing maintenance.

2. Use the UL-certified products below for combined direct current power supply.

(1) Circuit in which voltage and current are controlled in accordance with UL508

A circuit to which power is supplied by the secondary coil of a transformer that meets the following conditions.

- Maximum voltage (with no load):
  30 Vrms (42.4 V at peak) or less
- Maximum current:
  1. 8 A or less (including when short-circuited)
  2. and in case of being controlled by circuit protection devices (fuse, etc) which meets the below rated volatges.

Voltage with no load (V peak)	Max. rated current (A)
0 to 20 (V)	5.0
Exceeding 20 (V) up to 30 (V)	100
	Voltage figure at peak

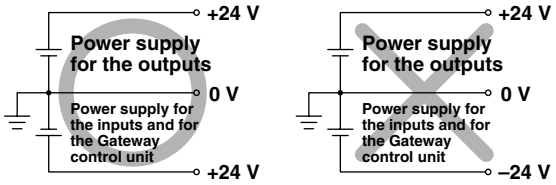
(2) A Class 2 circuit using a maximum of 30 Vrms or less (42.4 V at peak), which power is supplied by a Class-2 power supply unit in accordance with ULB10 or UL1585.

3. This product is one of the components that is installed into a final piece of equipment. The customer has to confirm that the whole equipment conforms to the EMC directive.

Caution on Design and Selection

⚠ Caution

4. The power supply for the Gateway unit should be 0 V as standard for both the power supply of the outputs as well as the power supply for the inputs and for the Gateway control unit.



Mounting

⚠ Caution

1. Do not drop, bump, or apply excessive impact.

Otherwise, the unit can become damaged, malfunction, or fail to function.

2. Hold the body while handling this product.

Otherwise, the unit can become damaged, malfunction, or fail to function.

3. Observe the tightening torque range

Tightening outside of the allowable torque range will likely damage the product.

4. Do not install a unit in a place where it can be used as a scaffold.

Applying any excessive load such as stepping on the unit by mistake or placing a foot on it, will cause it to break.

Series EX510
Specific Product Precautions 2

Be sure to read this before handling.

Wiring

⚠ Warning

1. Avoid miswiring.

If miswired, there is a probability of damaging units or connecting devices.

2. Do not wire while energising the product.

It is likely to damage the units or connecting devices.

3. Avoid wiring power and high tension lines in the same wiring route as the unit.

Noise or surge produced in the signal line from the power line or high line could cause a malfunction. Wiring of the reduced wiring system and the power line or high pressure line should be separated from each other.

4. Confirm the wiring insulation.

Inferior insulation (contact with other circuit, insulation between terminals, etc.) will likely cause damage to the units or connecting devices due to excessive voltage or the influx of current.

⚠ Caution

1. Take measures to avoid applying repeated bending forces or pulling forces to the cable.

Also, pay attention not to place any heavy matter on the cable or clipping. It is likely to cause a broken wire.

2. Confirm grounding to maintain the safety of the reduced wiring system and for anti-noise performance.

Grounding should be close to units and keep the grounding distance short.

Operating Environment

⚠ Warning

1. Do not use this product in the presence of dust, particles, water, chemicals, and oil.

Use with such materials is likely to cause a malfunction or breakage.

2. Do not use this product in the presence of a magnetic field.

Use in such an environment is likely to cause a malfunction.

3. Do not use this product in an atmosphere containing an inflammable gas, explosive gas, or corrosive gas.

Use in such an atmosphere is likely to cause a fire, explosion, or corrosion.
This wire-reduced system is not explosion-proof.

4. Do not use this product in places where there are cyclic temperature changes.

In case that the cyclic temperature is beyond normal temperature changes, the internal unit is likely to be adversely effected.

5. Do not use this product in places where there is radiated heat around it.

Such a place is likely to cause a malfunction or breakage.

Operating Environment

⚠ Warning

6. Use it near sources that generate a surge which exceeds the benchmark test. Even though this product is CE-marked, do not.

The internal circuit components are likely to deteriorate or become damaged when there is equipment (solenoid type lifter, high frequency guided furnace, motor, etc.) which generates a large surge around the reduced wiring system. Take measures to prevent an electrical surge and avoid having the wires touch each other.

7. Use a product type that has an integratedsurge absorption element when directly driving a load which generates a surge voltage such as relay or a solenoid valve.

8. The reduced wiring system should be installed in places with no vibration or shock.

If installed in a place with vibration or shock, a malfunction or breakage is likely to occur.

Adjustment, Operation

⚠ Warning

1. Do not short-circuit a load.

If a load is short-circuited, excessive current can cause damage to the connected devices. The fuse of the input unit will melt and below. The overcurrent protection function of the output and SI units will activate. However, they cannot cover all modes, so damage is likely to occur.

2. Do not manipulate or perform settings with wet hands.

⚠ Caution

1. DIP switches and rotary switches should be set with a small watchmakers' screwdriver.

Maintenance

⚠ Warning

1. Do not disassemble, modify (including circuit board replacement) or repair this product.

Such actions are likely to cause injuries or breakage.

2. Perform periodic inspection.

Confirm that wiring or screws are not loose.
Otherwise, unpredicted malfunction in the system composition devices is likely to occur.

3. When an inspection is performed.

- Turn off the power supply.
- Stop the supplied fluid and discharge the fluid in the piping and confirm the release to the atmosphere before performing an inspection. Otherwise injuiries are likely to occur.

⚠ Caution

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