



Expertise – Passion – Automation

EXpend your communications Serial Interface – Fieldbus System

Quick overview



Serial Interface – Fieldbus System

EXpand your communications

Fieldbus brought you savings

The use of Fieldbus in manufacturing processes has substantially improved the way we handle communications, providing us with substantial savings in terms of wiring, connectors, installation and set-up time, electronic diagrams or documentation.

SMC's Serial Interface Solutions will EXpand your communications

For the development of our Serial Interface range, we have gone a step further and enlarged the number of possibilities in industrial communication, bearing in mind the flexibility and versatility that markets currently demand.

SMC's EX range of solutions:

- **Communicate & connect** – Our solutions communicate in your language: EtherNet-based Fieldbus system and other common industrial communication protocols available. Furthermore, the range's versatility allows connecting any EX unit to any of our valve manifolds: all-to-all connectivity with no surprises.

- **Enter the Industry 4.0 era** – Taken by the hand of its remote control capabilities. Our solutions offer a high degree of access to and feedback from automation components via control systems.

Also by the hand of EX range's adaptability. Our solutions provide the possibility of managing different pneumatic components such as valves, cylinders or instrumentation equipment in any common network. Besides, you will be able to easily update, enlarge or integrate your machine with our solution in a simple way.

- **Build a complete solution with us** – Range of 12,000 basic models with over 700,000 variations to accommodate many of your automation requirements.

“Our solutions communicate in your language.

Our solutions offer a high degree of access to and feedback from automation components via control systems.”

General specifications

Main features

► Fieldbus system

Serial interface uses Fieldbus for communicating, instead of point-to-point connections, thus allowing savings in:

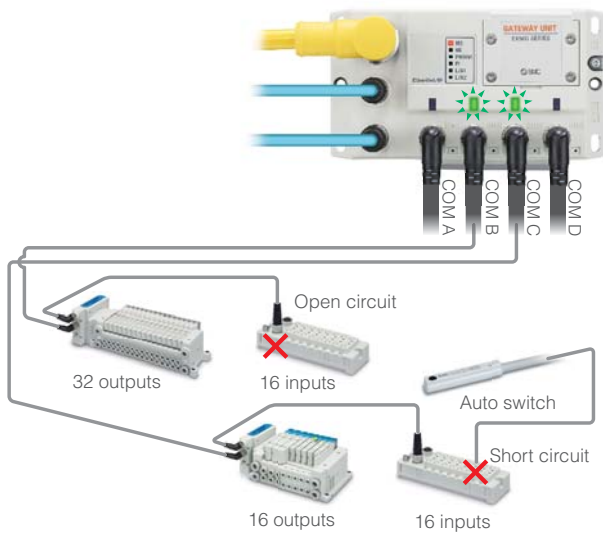
- Material costs – cables, connectors, gutters
- Connection and set-up times
- Generation of electrical diagrams
- Labelling and documentation
- Electric panels, cleaner and more compact – it is even possible to remove cabinets.

► Compatible with EtherNet-based and other common industrial protocols



► Short/open circuit detection

Easy to identify short circuits or open circuits.



► Highlighted EX serial interface solutions

EX260 Series – centralised and compact solution for solenoid valves, with up to 32 outputs.

EX600 Series – centralised and great capacity solution for both solenoid valves and I/O, with up to 512 inputs & 512 outputs.

EX500 Series – decentralised solution for both solenoid valves and I/O, with up to 128 inputs & 128 outputs.

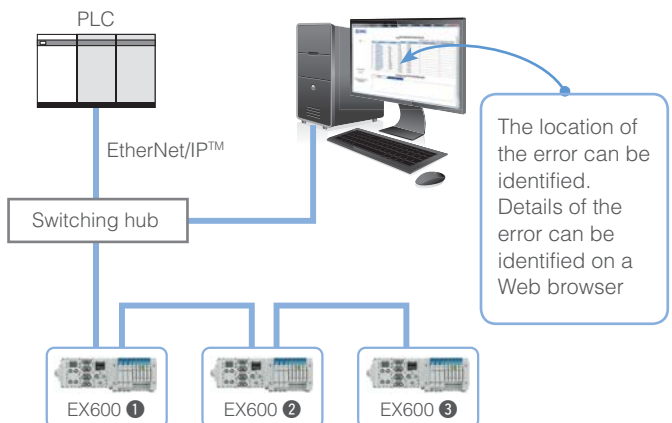


► High environmental resistance

Up to IP67 enclosure protection.

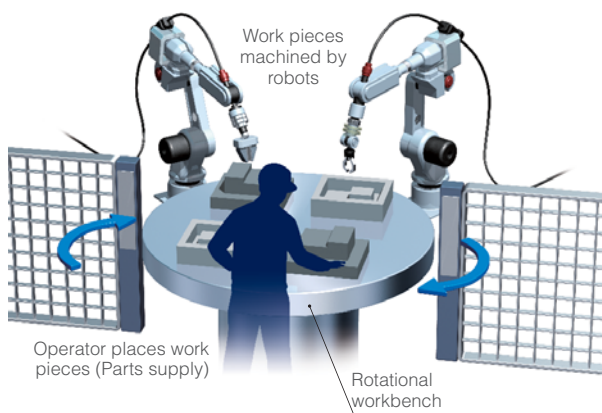
► Web server function

This function allows remote access via a general-purpose web browser, such as Internet Explorer, and enables status checks, parameter settings and forced output, among others, so start-up of the system and maintenance can be performed efficiently.

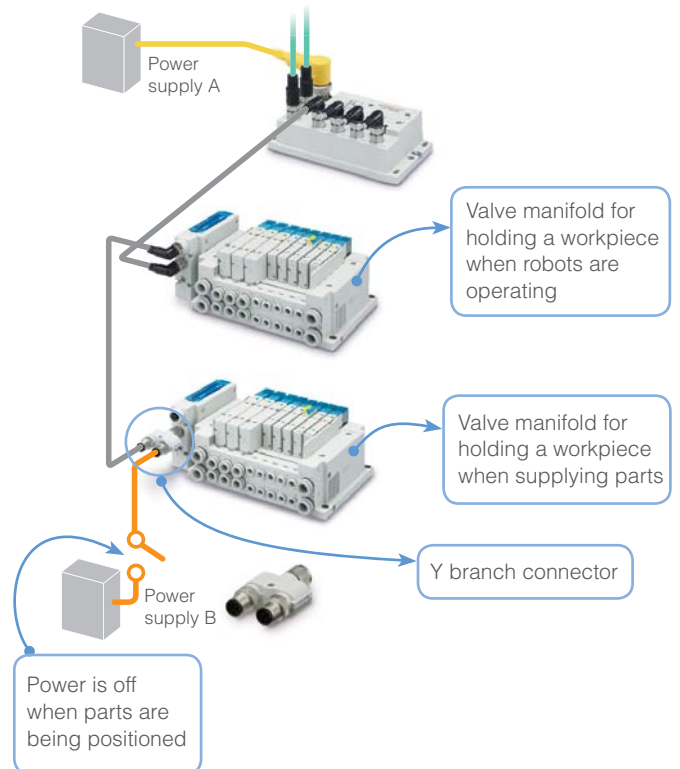


► **Independent power supply control areas**

Ease which, in the same machine, allows removing the power supply of one zone and maintaining the power supply of the rest. This is useful for collaborative robotics, where operators and robots work together.

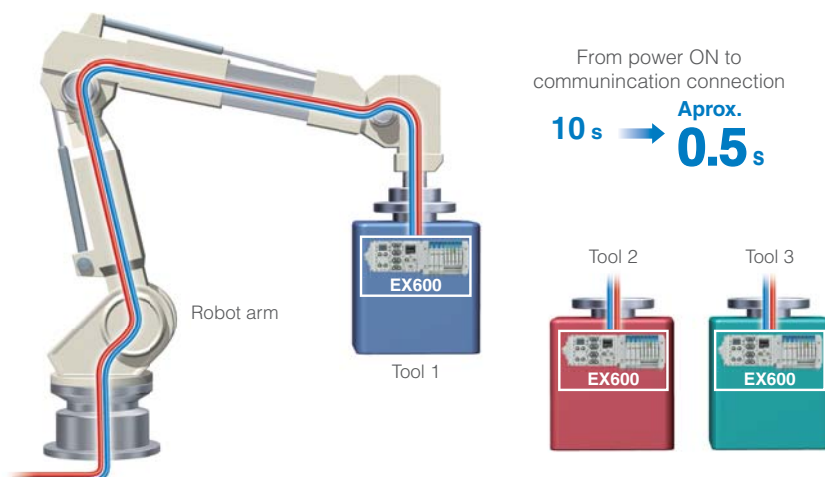


In the example, just by using a Y branch connector, power from a different system can be supplied to the serial interface unit (valve manifold).



► **QuickConnect™ function**

Enables the EtherNet/IP™ devices to quickly power up and join an EtherNet/IP™ network, thus considerably reducing the communication connection times.



Similar functions also available for other protocols.

Fieldbus system portfolio

Series	Centralised system		Decentralised system
	Integrated type (for output) EX260 Series	Integrated type (for input/output) EX600 Series	Gateway type EX500 Series
Compatible protocol			
DeviceNet™	•	•	•
PROFIBUS DP	•	•	•
CC-Link	•	•	•
EtherNet/IP™	•	•	•
EtherCAT®	•	•	•
PROFINET	•	•	•

Other Fieldbus system solutions

► Centralised system, integrated type for input/output

EX250 Series

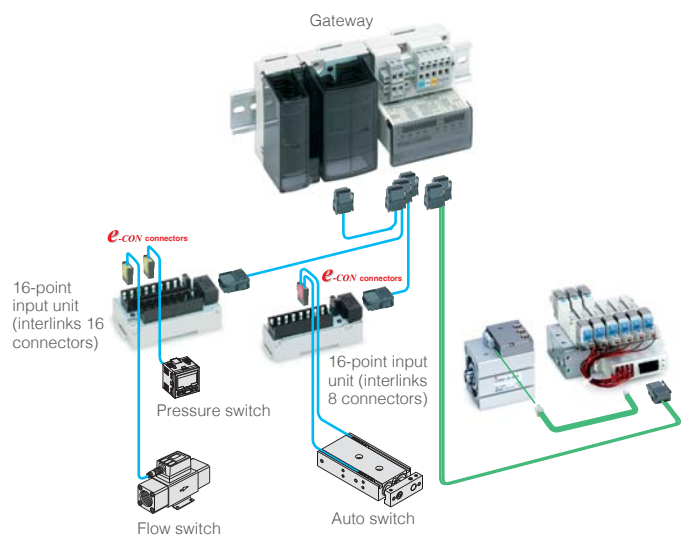
- Solenoid valve solution + I/O
- 32 inputs / 32 outputs module
- Output units available for external use, EX9
- Applicable protocols: DeviceNet™, PROFIBUS DP, CC-Link, EtherNet/IP™, CANopen®, AS-Interface
- Applicable valve series: SY, VQC, S0700, SV
- Enclosure: up to IP67.











► Decentralised system, gateway type

EX510 Series

- Solenoid valve solution + digital I/O
- 64 inputs / 64 outputs in 8 branches
- Possibility of terminal outputs for external use
- Applicable protocols: DeviceNet™, PROFIBUS DP, CC-Link
- Applicable valve series: SY, VQC, S0700, SV
- Enclosure: IP20.



Applicable valve series

Series	Flow rate characteristics (4/2→5/3)			Maximum number of solenoids	Power consumption [W]	Enclosure	International standard
	C [dm ³ /(s·bar)]	b	Q [l/min] (ANR) ²⁾				
	SY3000	1.6	0.19	381	32	IP67	
	SY5000	3.6	0.17	848			
	SY7000	5.9	0.20	1413			
	VQC1000	1.0 ¹⁾	0.30 ¹⁾	254	24	IP67	
	VQC2000	3.2 ¹⁾	0.30 ¹⁾	814			
	VQC4000	7.3 ¹⁾	0.38 ¹⁾	1958			
	VQC5000	17.0 ¹⁾	0.31 ¹⁾	4350			
	S0700	0.37	0.39	100	32	IP40	
	SV1000	1.1	0.35	289	32	IP67	
	SV2000	2.4	0.18	568			
	SV3000	4.3	0.21	1036			

1) Values for 2-position single, rubber seal type.

2) These valves have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Fieldbus system, integrated type (for output) EX260 Series



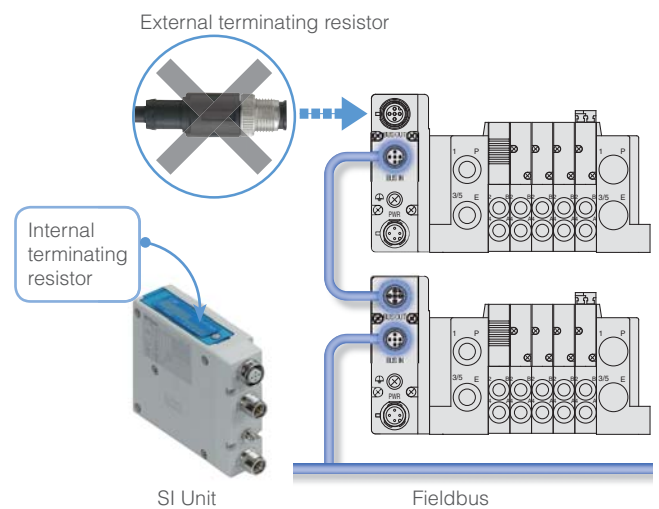
The cost effective solution for your communications



Main features

- ▶ **Centralised & compact Fieldbus system**
- ▶ **Valve output system for driving 5 port solenoid valves**
Up to 32 solenoids, up to 24 stations.
- ▶ **Compatible communication protocols:**
EtherNet/IP™
PROFINET
EtherCAT®
PROFIBUS DP
DeviceNet™
CC-Link
- ▶ **IP67 enclosure protection**
For units with D-sub connector, and when connected to S0700 manifolds, it is IP40.
- ▶ **SPEEDCON connectors compatible**
Just insert and rotate 1/2 turn.
- ▶ **Wiring and piping possible from the same direction**

- ▶ **Daisy-chain communication**
External branch connector is not necessary.



- ▶ **Internal terminal resistor**
ON/OFF switching is possible with an internal terminating resistor, an external terminating resistor is not necessary. Only available for M12 PROFIBUS DP, CC-Link communication connectors.

Selected part numbers

● Stocked items

Part number	Protocol	Number of outputs	SI unit output polarity	Communication connector	Enclosure protection
EX260-SEN1 ●	EtherNet/IP™	32	Source/PNP	M12	IP67
EX260-SEN3 ●		16			
EX260-SPN1 ●	PROFINET	32			
EX260-SPN3 ●		16			
EX260-SEC1 ●	EtherCAT®	32			
EX260-SEC3 ●		16			
EX260-SDN1 ●	DeviceNet™	32			
EX260-SDN3 ●		16			
EX260-SPR1 ●	PROFIBUS DP	32			
EX260-SPR3 ●		16			
EX260-SPR5 ●		32			
EX260-SPR7 ●		16			
					D-Sub

Accessories

● Stocked items

Part number	Description	
EX500-AP010-S ●	Power cable for EtherNet/IP™, PROFINET, EtherCAT®, PROFIBUS DP, DeviceNet™	Straight connector, 1 m
EX500-AP050-S ●		Straight connector, 5 m
EX500-AP010-A ●		Angled connector, 1 m
EX500-AP050-A ●		Angled connector, 5 m
EX9-AC030-1 ●	Power cable for CC-Link	Straight connector, 3 m
EX9-AC050-1 ●		Straight connector, 5 m
PCA-1446566 ●	Communication cable for EtherNet/IP™, PROFINET, EtherCAT®	M12 SPEEDCON connector, 5 m
EX9-AC020EN-PSRJ ●	Communication cable for EtherNet/IP™, PROFINET, EtherCAT®, PROFIBUS DP, DeviceNet™, CC-Link	M12 – RJ-45 connector, 2 m
EX9-AC050EN-PSRJ ●		M12 – RJ-45 connector, 5 m

Fieldbus system, integrated type (for input/output) EX600 Series



Increase the capabilities of your communications

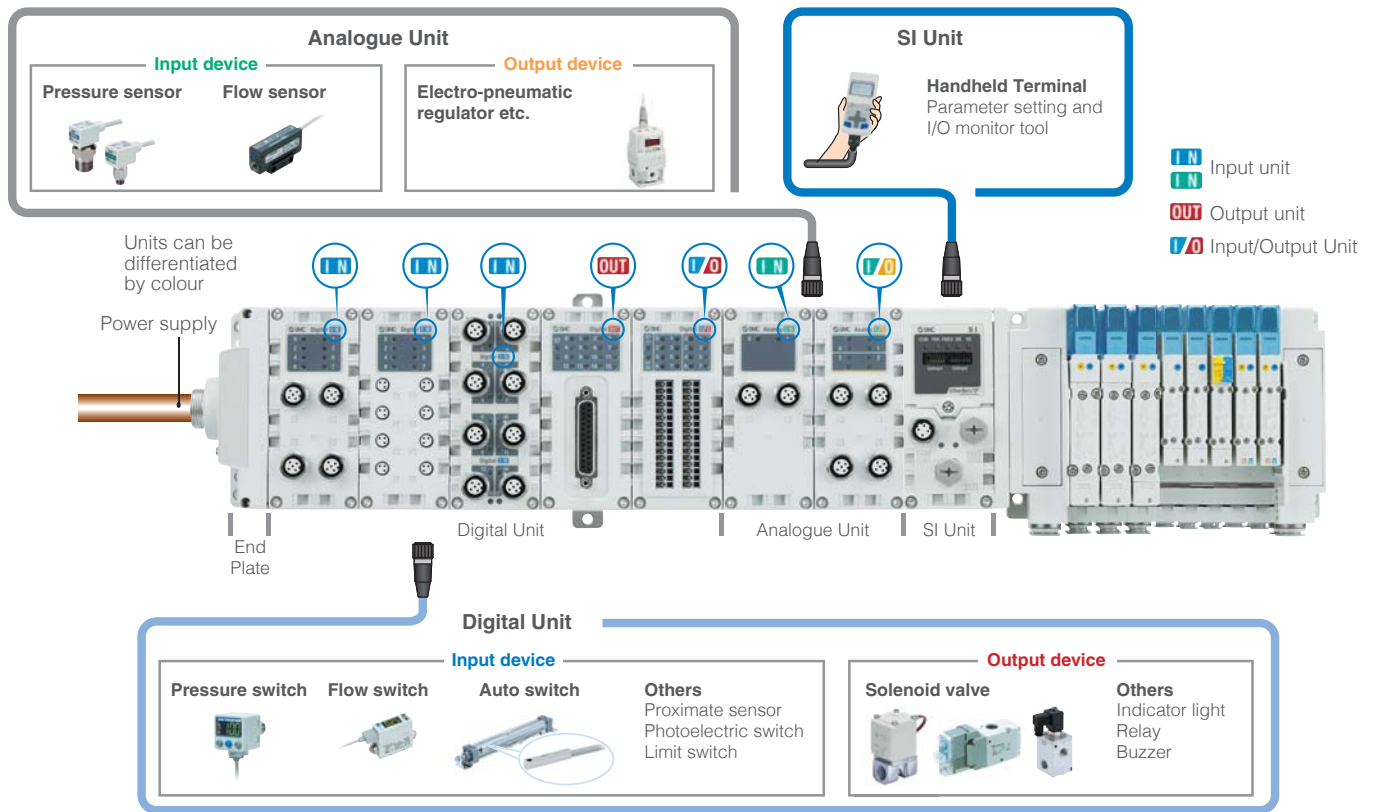


Main features

- ▶ **Centralised & compact Fieldbus system**
- ▶ **Valve output system for driving 5 port solenoid valves**
- ▶ **Up to 9 input/output units either digital or analogue, can be connected in any order:**
 - 144 digital inputs – 8/16 inputs/module
 - 72 digital outputs – 8 outputs/module
 - 18 analogue inputs – 2 inputs/module
 - 18 analogue outputs – 2 outputs/module.

It is possible to connect various input and output devices to the digital/analogue I/O units.
- ▶ **Compatible communication protocols:**
 - EtherNet/IP™
 - PROFINET
 - EtherCAT®
 - PROFIBUS DP
 - DeviceNet™
 - CC-Link
- ▶ **IP67 enclosure protection**
 - IP40 for the input/output units with D-sub connector or spring type terminal block.
 - IP20 for the handheld terminal.
- ▶ **SPEEDCON connectors compatible**
 - Just insert and rotate 1/2 turn.
- ▶ **Dual port SI unit for EtherNet/IP™ that allows for DLR topology**
 - No loss of EtherNet/IP™ communication occurs, despite having a disconnected location, thanks to DLR (Device Level Ring) topology.
- ▶ **QuickConnect™ function**
 - In the case of a tool changer, communication can be established in approximately 0.5 seconds.
- ▶ **Web server function**
 - Status checks and settings can be performed on a general purpose web browser.
- ▶ **Self diagnosis function**
 - In combination with the handheld terminal, the following functions are available:
 - Short/Open circuit detection
 - Counter function.
- ▶ **Handheld terminal**
 - Can be used for the adjustment of internal parameters and the monitoring of input and output signal status.
 - Forced input and output function
 - Password setting function
 - Simple operation.

EX600 Series configuration



Selected part numbers

● Stocked items

Part number	Type of unit / Description	No. of inputs/outputs	Polarity	Communication connector	Enclosure protection
EX600-SEN1 ●	SI unit, EtherNet/IP™ (1 port)	- / 32	PNP	M12 connector (5 pins)	IP67
EX600-SEN3 ●	SI unit, EtherNet/IP™ (2 ports)				
EX600-SPN1 ●	SI unit, PROFINET				
EX600-SEC1 ●	SI unit, EtherCAT®				
EX600-SDN1A ●	SI unit, DeviceNet™				
EX600-SPR1A ●	SI unit PROFIBUS DP				
EX600-DXPB ●	Digital input unit	8 / -	PNP	M12 connector (5 pins)	IP40
EX600-DXPC ●				M8 connector (3 pins)	
EX600-DXPC1 ●				M12 connector (5 pins)	
EX600-DXPD ●				D-sub connector (25 pins)	
EX600-DXPE ¹⁾ ●	Digital output unit	16 / -	PNP	Spring type terminal block (32 pins)	IP67
EX600-DXPF ¹⁾ ●				M12 connector (5 pins)	
EX600-DYPB ●	Digital input/output unit	- / 8	PNP	D-sub connector (25 pins)	IP40
EX600-DYPE ¹⁾ ●				Spring type terminal block (32 pins)	
EX600-DYPF ¹⁾ ●				D-sub connector (25 pins)	
EX600-DMPE ¹⁾ ●	Digital input/output unit	8 / 8	PNP	Spring type terminal block (32 pins)	IP40
EX600-DMPF ¹⁾ ●				D-sub connector (25 pins)	
EX600-AXA ●	Analogue input unit	2 / - channels	-	M12 connector (5 pins)	IP67
EX600-AYA ¹⁾ ●	Analogue output unit	- / 2 channels			
EX600-AMB ¹⁾ ●	Analogue input/output unit	2 / 2 channels			
EX600-ED2 ●	End plate	- / -	-	M12 connector (5 pins), without DIN rail mounting bracket	IP67
EX600-ED2-2 ●				M12 connector (5 pins), with DIN rail mounting bracket	
EX600-ED3 ●				7/8 inch connector (5 pins), without DIN rail mounting bracket	

1) This element cannot communicate with the handheld terminal.

Accessories

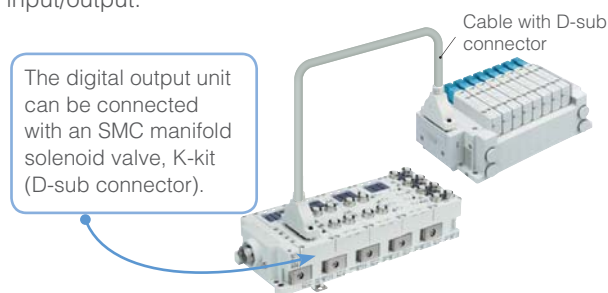
● Stocked items

Part number	Description	
EX600-HT1A ●	Handheld terminal, no cable	
EX600-ZMA2 ●	End plate bracket	General use, except for SY Series
EX600-ZMA3		Specialised for SY series
EX600-ZMV1 ●	Valve plate	General use, except for SY Series
EX600-ZMV2 ●		Specialised for SY series
EX600-ZMB1 ●	Reinforcing brace	For direct mounting
EX600-ZMB2 ●		For DIN rail mounting
EX500-AWES ●	Seal cap	For M8 connector
EX500-AWTS ●		For M12 connector
EX600-AC010-1 ●	Handheld terminal cable	1 m long
EX600-AC030-1 ●		3 m long
PCA-1564927 ●	Power cable with M12 connector	Straight connector, 2 m
PCA-1564930 ●		Straight connector, 6 m
PCA-1564943 ●		Angled connector, 2 m
PCA-1564969 ●		Angled connector, 6 m
PCA-1558810 ●	Power cable with 7/8 inch connector	Straight connector, 2 m
PCA-1558823 ●		Straight connector, 6 m
PCA-1558836 ●		Angled connector, 2 m
PCA-1558849 ●		Angled connector, 6 m
PCA-1446566 ●	Communication cable for SI unit compatible with EtherNet/IP™, PROFINET, EtherCAT®	M12 SPEEDCON connector, 5 m
EX9-AC020EN-PSRJ ●		M12 – RJ-45 connector, 2 m
EX9-AC050EN-PSRJ ●		M12 – RJ-45 connector, 5 m
PCA-1557688 ●	Communication cable for SI unit compatible with PROFIBUS DP	M12 SPEEDCON connector, socket, 5 m
PCA-1557691 ●		M12 SPEEDCON connector, plug, 5 m
PCA-1557633 ●	Communication cable for SI unit compatible with DeviceNet™	M12 SPEEDCON connector, socket, 5 m
PCA-1557646 ●		M12 SPEEDCON connector, plug, 5 m
PCA-1567720 ●	Communication cable for SI unit compatible with CC-Link	M12 SPEEDCON connector, socket, 5 m
PCA-1567717 ●		M12 SPEEDCON connector, plug, 5 m

Examples of connections

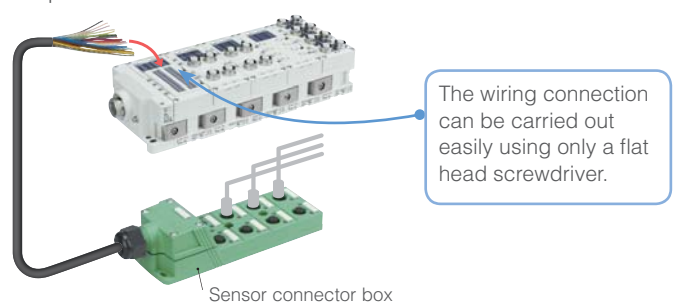
► D-sub connector

There are three EX600 units capable of connection using a D-sub connector: digital input, digital output, and digital input/output.



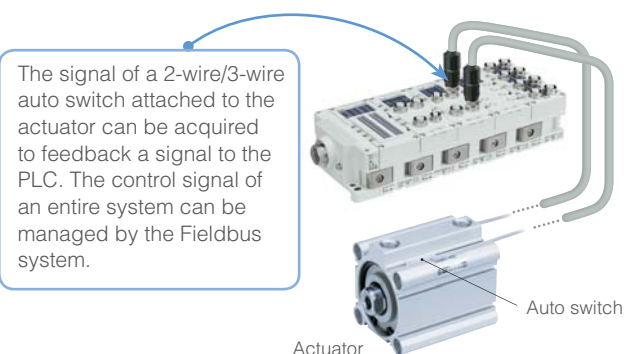
► Spring type terminal block

There are three EX600 units compatible with individual wiring configurations: digital input, digital output, and digital input/output.



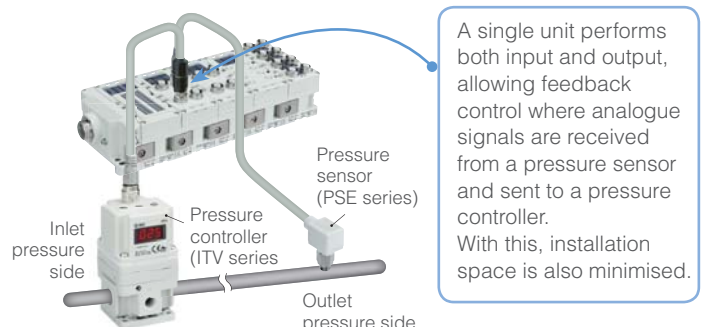
► Digital input unit

This unit is for inputting a digital signal (ON/OFF signal).



► Analogue input/output unit

This unit is for inputting or outputting an analogue signal (voltage/current).



Fieldbus system, gateway type EX500 Series



Branch out your communications



SI unit

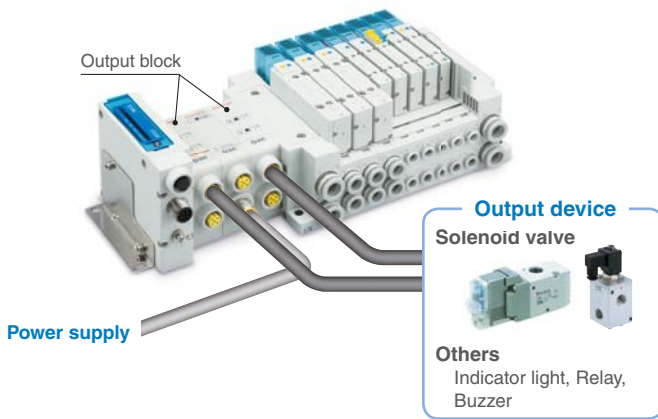


EX500
gateway unit



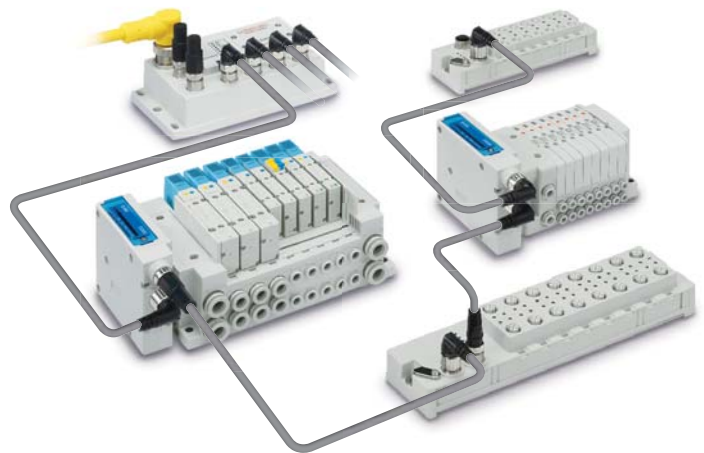
Main features

- ▶ **Decentralised Fieldbus system**
- ▶ **Valve output system for driving 5 port solenoid valves**
- ▶ **Up to 128 digital inputs/outputs, up to 16 valve manifolds and input unit connections**
 - Up to 32 input/output points per branch
 - Up to 8 manifold connections, 2 per branch
 - Up to 8 input unit connections, 2 per branch
 - 4 branches or subnetworks possible, each up to 20 metres long.
- ▶ **Output units available for external use (EX9)**
Applicable to output devices other than valve manifolds – it is possible to operate elements such as lights and buzzers by using output blocks.



- ▶ **Compatible communication protocols:**
EtherNet/IP™
PROFINET
PROFIBUS DP
DeviceNet™

- ▶ **IP65/IP67 enclosure protection**
IP67 for the input units (128 points system) and the SI units.
IP65 for the input units (64 points system) and the gateways.
- ▶ **Web server function**
Status checks and settings can be performed on a general purpose web browser.
Valve operation test (ON/OFF).
Connection diagnostic between valve manifold and input unit.
Short-circuit diagnostic of input device.
- ▶ **Fixed I/O mapping**
I/O data for the valve manifolds (SI unit) and input units is automatically set by the gateway unit.
- ▶ **Management of different power supplies**
By using a Y branch connector, it is possible to supply power from a different system to the SI unit (valve manifold).
- ▶ **EX500 Series configuration**



Selected part numbers

128 points gateway decentralised system

Part number	Type of unit / Description	No. of inputs/ outputs	Polarity	Communication connector	Enclosure protection
EX500-GEN2	Gateway unit, EtherNet/IP™	128 / 128	—	M12 connector (5 pins)	IP65
EX500-GPN2	Gateway unit, PROFINET				
EX500-S103	SI unit	– / 32 ¹⁾	PNP	M12 connector (8 pins)	IP67
EX500-DXPA	Input unit	16 / –		M8 connector (3 pins)	
EX500-DXPB				M12 connector (5 pins)	

1) Number of outputs can be 16 or 32, switched by a built-in setting switch.

64 points gateway decentralised system

● Stocked items

Part number	Type of unit / Description	No. of inputs/ outputs	Polarity	Communication connector	Enclosure protection
EX500-GDN1 ●	Gateway unit, DeviceNet™	64 / 64	–	M12 connector (5 pins)	IP65
EX500-GPR1A ●	Gateway unit, PROFIBUS DP				
EX500-S001 ●	SI unit for SV valve series	– / 16	NPN	M12 connector (8 pins)	IP67
EX500-Q101 ●	SI unit for SY/S0700/VQC valve series		PNP		
EX500-IB1 ●	Input unit	16 / –	–		
EX500-IE1 ●	Input block, 2 inputs	2 / –	PNP	M8 connector (3 pins)	IP65
EX500-IE3 ●				M12 connector (4 pins)	
EX500-IE5 ●	Input block, 8 inputs	8 / –	NPN	M8 connector (3 pins)	
EX500-IE6 ●					

Accessories

● Stocked items

Part number	Description	
EX9-OET1 ●	Output block, for low-wattage load, PNP specification	
EX9-PE1 ●	Power block	
EX9-EA03 ●	End plate	
EX500-AC010-SSPS ●	Branch cable	Straight connectors, 1 m
EX500-AC050-SSPS ●		Straight connectors, 5 m
EX500-AC010-SAPA ●		Angled connectors, 1 m
EX500-AC050-SAPA ●		Angled connectors, 5 m
PCA-1415999	Power supply cable for EtherNet/IP™	Straight connector, 2 m
PCA-1415996		Straight connector, 6 m
PCA-1416000		Angled connector, 2 m
PCA-1415997		Angled connector, 6 m
PCA-1558810 ●	Power supply cable for PROFINET	Straight connector, 2 m
PCA-1558823 ●		Straight connector, 6 m
PCA-1558836 ●		Angled connector, 2 m
PCA-1558849 ●		Angled connector, 6 m
EX500-AP010-S ●	Power cable with connector, for SI unit (64 points)	Straight connector, 1 m
EX500-AP050-S ●		Straight connector, 5 m
EX500-AP010-A ●		Angled connector, 1 m
EX500-AP050-A ●		Angled connector, 5 m
PCA-1446566 ●	Communication cable	M12 SPEEDCON connector, 5 m
EX9-AC020EN-PSRJ ●		M12 – RJ-45 connector, 2 m
EX9-AC050EN-PSRJ ●		M12 – RJ-45 connector, 5 m
EX500-AC010-DN ●	Communication cable for DeviceNet™	M12 connector, 1 m
EX500-AC050-DN ●		M12 connector, 5 m
PCA-1557633 ●		M12 SPEEDCON connector, socket, 5 m
PCA-1557688 ●		M12 SPEEDCON connector, socket, 5m
PCA-1557691 ●	Communication cable for PROFIBUS DP	M12 SPEEDCON connector, plug, 5m
PCA-1557743 ●		Connector for output block wiring
PCA-1557756 ●	Seal caps (10 units), male plug	Cable O.D.: 3.5 to 6.0 mm
EX500-AWES ●		For M8 connector
EX500-AWTS ●	Seal cap, female plug	For M12 connector
EX500-AWTP ●		For M12 connector

Other information

Related products

► Electro-pneumatic regulator ITV1000/2000/3000 Series

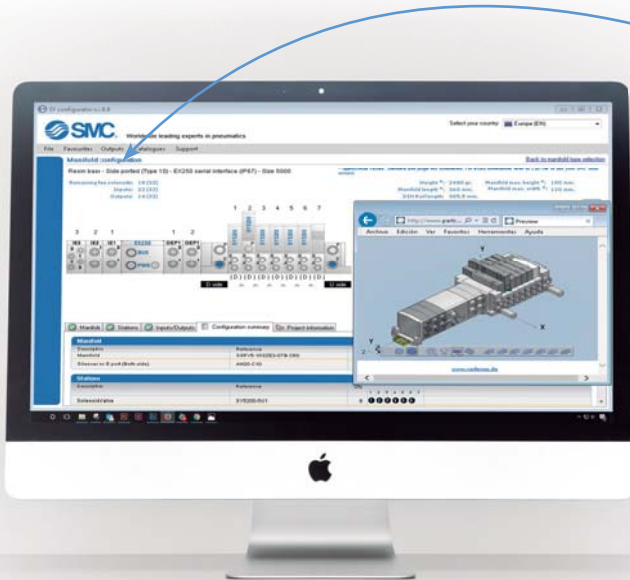


Valve Configurator online

With the help of our Valve Configurator online, defining your valve manifold assembly has never been easier!

Our SY/VQC/SV Configurator software has been specifically developed for defining valve manifold configurations using either our versatile and flexible SY solenoid valve range or other powerful valves, VQC and SV. It facilitates the definition of most usual SY/VQC/SV manifolds in very few steps.

Besides, it will provide you with information about the dimensions and weight of the manifold, a comprehensive parts list, the possibility of downloading the CAD file of the manifold in multiple formats and a quotation document to speed up your communication with our experts.



What to do now:

- 1 Enter SMC's Valve Configurator online at www.smc.eu
- 2 Select your valve series
- 3 Select your manifold type
- 4 Complete your configuration
- 5 Contact SMC for further details

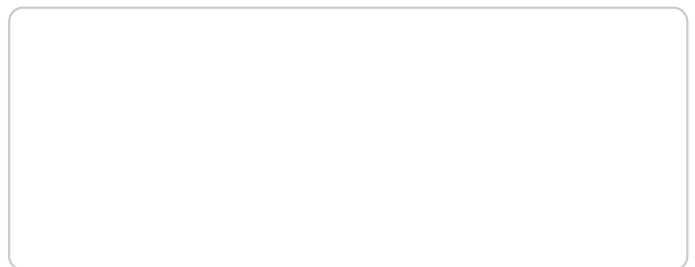
In the event you want to configure your serial transmission solution with S0700 series, visit www.smc.eu



Expertise – Passion – Automation

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