

(S) Field Network Device

Product overview	S-1
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SCM-38I(RS232C to RS485 converter)	S-8
SCM-US(USB to Serial converter) NEW	S-11
SCM-US48I(USB to RS485 converter) NEW	S-12

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
(I)	SSR/Power controller
(J)	Counter
(K)	Timer
(L)	Panel meter
(M)	Tacho/Speed/Pulse meter
(N)	Display unit
(O)	Sensor controller
(P)	Switching power supply
(Q)	Stepping motor & Driver & Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Production stoppage models & replacement

Digital remote I/O ARD Series



NEW

USB to Serial converter SCM-US



NEW

USB to RS485 converter SCM-US48I






RS232C to RS485 converter SCM-38I





Product Overview

Digital remote I/O



Model	Basic unit	ARD-DI08A	ARD-DI16N	ARD-DI16P	ARD-DO08R	ARD-DO08S	ARD-DO16N	ARD-DO16P	ARD-DX16N	ARD-DX16P
	Expansion unit	ARD-DI08AE	ARD-DI16NE	ARD-DI16PE	ARD-DO08RE	ARD-DO08SE	ARD-DO16NE	ARD-DO16PE	ARD-DX16NE	ARD-DX16PE
Appearances & Dimensions		<div><div>CE</div><div></div><div>[W105×H52×L38.5mm]</div><div></div></div>								
Power supply		Rated voltage : 24VDC, Voltage range : 12-28VDC								
Power consumption		Max. 3W								
Isolation type		Photocoupler isolated								
I/O points		AC input 8 points	NPN input 16 points	PNP input 16 points	Relay output 8 points	SSR output 8 points	NPN output 16 points	PNP output 16 points	NPN input 8 + output 8 points	PNP input 8 + output 8 points
Control I/O	Voltage	75-250VAC	10-28VDC		Normal open (NO) 250VAC 2A 1a	30-250VDC	10-28VDC (Voltage drop : Max. 0.5V)			
	Current	13mA / Point	10mA / Point			1A / Point	Input : 10mA, Output : 0.5A / Point (Leakage current:Max. 0.5mA)		0.5A / Point (Leakage current: Max. 0.5mA)	
Common		8 points, Common			1point, 1COM	8 points, Common				
Protection circuit		Surge, Reverse polarity protection circuit (Common) • TR output type  Overcurrent protection circuit (NPN type : Operated from 1.9A → Power is reapplied in overcurrent status, PNP type : Operated at min. 0.7A), Overheating protection (165℃ Typical), Short-circuit protection								
Indicator		Network status LED (Green, Red), Module status LED (Green, Red), I/O status LED								
Material		Front case : PC, Body case : PC, Rubber cap : NBR								
Mounting		DIN rail or screw lock type								
Reference		S-3 to 7								

Communication converter(RS232C to RS485 converter)

Series		SCM-38I	
Appearances & Dimensions		<div></div> <div></div> <div>[W39×H23.5×L75.5mm]</div>	
Power supply		12-24VDC	
Allowable voltage range		90 to 110% of rated voltage	
Power consumption		Max. 1.7W	
Communication speed		1200 to 115200bps(1200/2400/4800/9600/19200/38400/56700/115200)	
Communication type		Half duplex type	
Available communication distance		Max. 1.2Km	
Multi-drop		Max. 32 multi-drop	
Data type	Data Bit	5 to 8 data bits	
	Stop Bit	1 or 2 stop bits	
	Parity Bit	No / Odd / Even parity bit	
Connection type	RS232C	D-sub 9 pin	
	RS485	4-wire Screw terminal(2 wires communication type)	
Reference		S-8 to 10	

Product Overview

Communication converter(USB to Serial converter, USB to RS485 converter)

Series	SCM-US	SCM-US48I
Appearances & Dimensions	NEW  ※ Cable length 1.5m [W52×H18×L8mm]	NEW  [W39×H23.5×L75.5mm]
Power supply	5VDC USB bus Power	
Power consumption	Max. 1W	
Communication speed	(*1) Recommended ⇨ 9600bps (1200/2400/4800/9600/19200/38400/57600/115200)	
Communication type	Half duplex type	
Available communication distance	1.5m(No extension allowed)	USB: Max. 1m±30%, RS485: Max. 1.2km
Isolation type	Non-isolated	Isolated
Connector type	• Computer ⇨ USB(Type A) • Autonics products ⇨ Earphone jack(4 pole stereo phone plug)	• Computer ⇨ USB(Type B) • RS485 communication products ⇨ 4-wire screw terminal(2wire communication type)
Accessory	Install CD	USB AB cable (length : 1m)
Reference	S-11 to 15	

(*1) Protocol and Communication speed are set by Hyper terminal, DAQ master, ParaSet, Modbus Poll.

When communicating with Autonics products, set communication speed to 9,600bps.

※ There might be some differences in the specification above depending on PC environment.

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
(I)	SSR/Power controller
(J)	Counter
(K)	Timer
(L)	Panel meter
(M)	Tacho/Speed/Pulse meter
(N)	Display unit
(O)	Sensor controller
(P)	Switching power supply
(Q)	Stepping motor & Driver & Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Production stoppage models & replacement


ARD Series

W105×H52mm small size, digital remote I/O

■ Features

- **DeviceNet digital remote I/O**
- Automatic communication speed recognition
 - : Able to recognize communication speed recognition when connecting with master
- Monitoring of network voltage
 - : Max. value-read, Min. value-read, Setting value-read/write, process value-read, it enables to receive an abnormality flag of network power by explicit message.
- Single byte I/O : Read/write on single byte
- Multi-byte I/O : Read/write on several bytes
- Reading the number of expansion unit
 - : Read the number of connected expansion unit
- Reading of unit specification
 - : Read the specification of standard or expansion unit
- Lengthen the expansion unit
 - : Able to lengthen expansion model up to 3 units



 Please read "Caution for your safety" in operation manual before using.










■ Ordering information

AR	D	—	D	I	08	A	E												
								Structural division	<table><tr><td>Blank</td><td>Basic unit</td></tr><tr><td>E</td><td>Expansion unit</td></tr></table>	Blank	Basic unit	E	Expansion unit						
								Blank	Basic unit										
E	Expansion unit																		
								Input • Output type	<table><tr><td>A</td><td>AC voltage</td></tr><tr><td>N</td><td>NPN open collector</td></tr><tr><td>P</td><td>PNP open collector</td></tr><tr><td>R</td><td>Relay</td></tr><tr><td>S</td><td>SSR</td></tr></table>	A	AC voltage	N	NPN open collector	P	PNP open collector	R	Relay	S	SSR
								A	AC voltage										
								N	NPN open collector										
								P	PNP open collector										
								R	Relay										
S	SSR																		
								I/O points	<table><tr><td>08</td><td>8 Points type</td></tr><tr><td>16</td><td>16 Points type</td></tr></table>	08	8 Points type	16	16 Points type						
								08	8 Points type										
16	16 Points type																		
								I/O type	<table><tr><td>I</td><td>Input type</td></tr><tr><td>O</td><td>Output type</td></tr><tr><td>X</td><td>I/O integrated type</td></tr></table>	I	Input type	O	Output type	X	I/O integrated type				
								I	Input type										
								O	Output type										
X	I/O integrated type																		
								Digital/Analog type	<table><tr><td>D</td><td>Digital type</td></tr></table>	D	Digital type								
								D	Digital type										
	<table><tr><td>D</td><td>DeviceNet type</td></tr></table>	D	DeviceNet type																
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Product type									<table><tr><td>AR</td><td>Autonics Remote module</td></tr></table>	AR	Autonics Remote module								
AR	Autonics Remote module																		

■ Model

Model		Specification
Basic unit	Expansion unit	
ARD-DI08A	ARD-DI08AE	8 Points of 75-250VAC input(13mA/Point)
ARD-DI16N	ARD-DI16NE	16 Points of 10-28VDC NPN input(10mA/Point)
ARD-DI16P	ARD-DI16PE	16 Points of 10-28VDC PNP input(10mA/Point)
ARD-DO08R	ARD-DO08RE	8 Points of Relay output(2A/Point), Life cycle of contact:100,000 times
ARD-DO08S	ARD-DO08SE	8 Points of SSR output(1A/Point)
ARD-DO16N	ARD-DO16NE	16 Points of NPN output(0.5A/Point)
ARD-DO16P	ARD-DO16PE	16 Points of PNP output(0.5A/Point)
ARD-DX16N	ARD-DX16NE	8 Points of 10-28VDC NPN input(10mA/Point), 8 Points of NPN output(0.5A/Point)
ARD-DX16P	ARD-DX16PE	8 Points of 10-28VDC PNP input(10mA/Point), 8 Points of PNP output(0.5A/Point)

Specifications

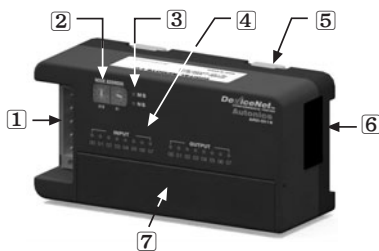
Model		ARD-DI08A	ARD-DI16N	ARD-DI16P	ARD-DO08R	ARD-DO08S	ARD-DO16N	ARD-DO16P	ARD-DX16N	ARD-DX16P
		ARD-DI08AE	ARD-DI16NE	ARD-DI16PE	ARD-DO08RE	ARD-DO08SE	ARD-DO16NE	ARD-DO16PE	ARD-DX16NE	ARD-DX16PE
Power supply		Rated voltage : 24VDC, Voltage range : 12-28VDC								
Power consumption		Max. 3W								
Isolation type		Photocoupler isolated								
I/O points		AC input 8 points	NPN input 16 points	PNP input 16 points	Relay output 8 points	SSR output 8 points	NPN output 16 points	PNP output 16 points	NPN input 8 + output 8 points	PNP input 8 + output 8 points
Control I/O	Voltage	75-250 VAC	10-28VDC		Normal open(NO) 250VAC 2A 1a	30-250 VAC	10-28VDC (Voltage drop : Max. 0.5V)			
	Current	13mA/ Point	10mA/Point			1A/ Point	Output : 0.5A/Point (Leakage current: Max. 0.5mA)		Input : 10mA, Output : 0.5A/Point (Leakage current: Max. 0.5mA)	
Common		8 points, Common			1 point, 1 COM	8 points, Common				
Insulation resistance		Min. 200MΩ (at 500VDC megger)								
Noise strength		±240V the square wave noise(pulse width:1μs) by the noise simulator								
Dielectric strength		1000VAC 50/60Hz for 1 minute								
Vibration		1.5mm amplitude at frequency of 10~55Hz in each of X, Y, Z directions for 2 hours								
Shock		500m/s ² (Approx. 50G) in X, Y, Z directions for 3 times								
Ambient temperature		-10 to 50℃ (at non-freezing status), Storage : -25 to 75℃								
Ambient humidity		35 to 85%RH, Storage : 35 to 85%RH								
Protection		IP20(IEC standard)								
Protection circuit		Surge, Reverse polarity protection circuit (Common) • TR output type  Overcurrent protection circuit(NPN type : Operated from 1.9A→ Power is reapplied in overcurrent status, PNP type : Operated at min. 0.7A), Overheating protection4 (165℃ Typical), Short-circuit protection								
Indicator		Network status LED(Green, Red), Module status LED(Green, Red), I/O status LED								
Material		Front case : PC, Body Case : PC, Rubber cap : NBR								
Mounting		DIN rail or screw lock type								
Approval			 				 			
Unit weight		Approx. 150g	Approx. 140g		Approx. 160g	Approx. 170g	Approx. 140g			

DeviceNet communication

Item	Specification
Communication	I/O Slave messaging(Group 2 only slave) • Poll command : Y • Bit_strobe command : Y • Cyclic command : Y • COS command : Y
Communication distance	Max. 500m(125kbps), Max. 250m(250kbps), Max. 100m(500kbps)
Node	Max. 64node(Set by front panel rotary switch)
Communication speed	It is set automatically when connecting with master • 125kbps • 250kbps • 500kbps
Insulation	I/O and inner circuit : Photocoupler is insulated, DeviceNet and inner circuit : Non-insulated, Power of DeviceNet : Non-insulated
Power supply	• Power supply : 24VDC • Power range : 12~28VDC • Power consumption : Max. 3W
Approval	ODVA conformance test

Part description

Basic unit



1 DeviceNet connector

No.	Color	For	Organization
5	Red	24DC(+)	
4	White	CAN_H	
3	None	Shield	
2	Blue	CAN_L	
1	Black	24DC(-)	

② Rotary switch for address : It is address setting switches displaying the tens digit by 1st one and the units digit by 2nd one.

③ Status LED : It displays the status of unit and network.

④ I/O status LED : It displays each I/O status.

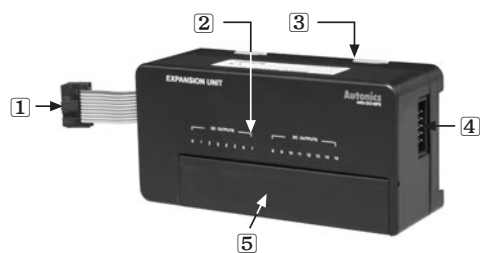
⑤ Locking : It is used for holding DIN rail and fixing screw hole.

⑥ Connector output part : It connects expansion unit.

⑦ I/O terminal block : It connects I/O with external device.

ARD Series

Expansion unit



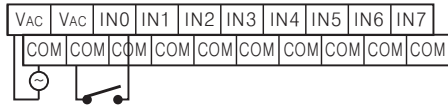
- ① Connector input part : It connects expansion unit and is joined into expansion connector output.
- ② I/O status LED : It displays each I/O status.
- ③ Locking : It is used for holding DIN rail and fixing screw hole.
- ④ Connector output part : It connects expansion unit.
- ⑤ I/O terminal block : It connects I/O with external device.

I/O circuit diagram

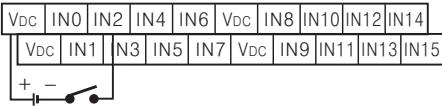
Item	Inner circuit	Load connection
AC input		
NPN input		
PNP input		
Relay output		
SSR output		
NPN output		
PNP output		

Connections

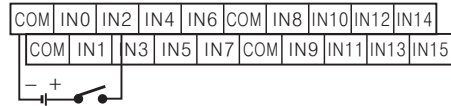
◎ **ARD-DI08A(E)** [AC input]



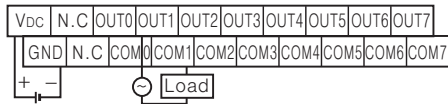
◎ **ARD-DI16N(E)** [DC NPN input]



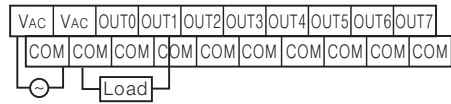
◎ **ARD-DI16P(E)** [DC PNP input]



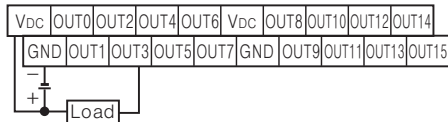
◎ **ARD-DO08R(E)** [Relay output]



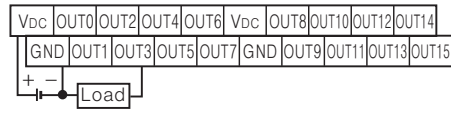
◎ **ARD-DO08S(E)** [SSR output]



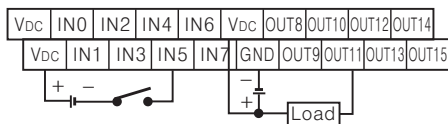
◎ **ARD-DO16N(E)** [NPN output]



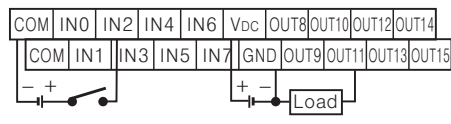
◎ **ARD-DO16P(E)** [PNP output]



◎ **ARD-DX16N(E)** [DC NPN input/DC NPN output]

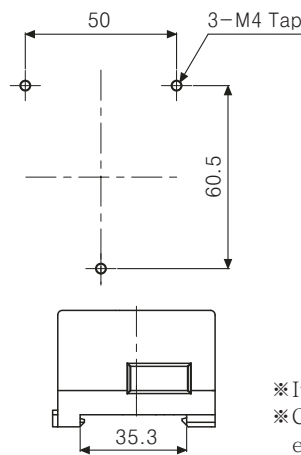
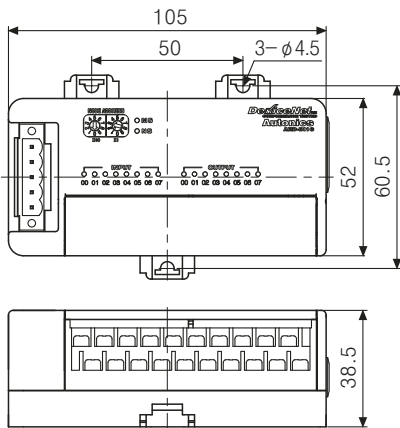


◎ **ARD-DX16P(E)** [DC PNP input/DC PNP output]



Dimensions

(Unit:mm)



※ It is applied to basic, expansion type.
※ Connecting connectors are included for expansion units.

Module/Network status LED

Item	LED		
	Red	Green	Description
Module status LED (MS)	Light	Light-out	Unrecoverable error
	Flash	Light-out	Recoverable error & Expansion unit communication error
	Light-out	Light	Normal operation
	Light-out	Light-out	Power is not applied
Network status LED (NS)	Light-out	Flash	Normal standby
	Light-out	Light	Network on-line
	Light	Light-out	Dupl MAC ID / Bus-off
	Flash	Light-out	Time out
	Light-out	Light-out	Network Off-line

(A) Photo electric sensor
(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/Socket

(H) Temp. controller

(I) SSR/Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/Speed/Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching power supply

(Q) Stepping motor & Driver & Controller

(R) Graphic/Logic panel

(S) Field network device

(T) Production stoppage models & replacement

ARD Series

■ Installation and setup

◎ Setting of address

- Adjust it by rotary switch on front of unit.
- There are two switches, $\times 10$ represents tens digit and $\times 1$ is ones digit and it is able to set 0 to 63 of address.
- Address will be read when power is supplied to basic units and it is required to restart power to change address.



◎ Installation on panel

- ① Pull 3 DIN rail lockings under the lower part of unit, there is a fixing screw hole.
- ② Place unit on a panel to be mounted.
- ③ Make a hole on a fixing screw position.
- ④ Place screws on 3 holes and tighten them firmly.



◎ Installation on DIN rail

- ① Pull 3 DIN rail lockings on the rear part of unit.
- ② Place unit on DIN rail to be mounted.
- ③ Fix DIN rail lockings firmly.



◎ Connection of Standard and Expansion unit

- ① Cut off the power supply for a basic unit.
- ② Place the expansion unit to be installed next to the basic unit.
- ③ Connect the cable of expansion unit to expanding connector of basic unit.
- ④ Mount connected expansion units as right figure.
- ⑤ Apply power into basic unit.



■ Communication distance

Baud Rate	Allowable network length	Allowable length of branch line	Allowable expansion length of branch line
125kbps	500m max.	6m max.	156m max.
250kbps	250m max.	6m max.	78m max.
500kbps	100m max.	6m max.	39m max.

■ Terminating resistance

- 120Ω ● 1% of metallic film ● 1/2W

※ Do not install terminal resistance on the unit or, it may cause network problem.
(Impedance can be too high or low.)

If remove node with terminal resistance, it may cause a network problem.

※ Connect terminating resistance on the both ends of the trunk line.

■ Caution for using


1. Make sure that each network unit has its own NODE ADDRESS to prevent NODE ADDRESS duplication error. NODE ADDRESS setting should be done without applying power on the master unit.
2. Make sure to install an expansion unit with a basic unit before supplying power. It may not be able to recognize the expansion unit if installing the expansion unit during the operation.
3. Communication speed of master unit will be automatically set. If changing communication speed of the master unit while operating, make sure to cut off the power of masters and supply again after changing communication speed.
4. Make sure to use standards communication cables, taps and terminating resistance. It may cause communication error if non-standards products are used.
5. Make sure to examine disconnection or short-circuit before connecting cables.
6. Make sure to install terminating resistance on both ends of networks.
7. Avoid installing the units where severe dust exists or where corrosion may occur.

Communication Converter

Communication converter(RS232C to RS485 converter)

■ Features

- Includes the circuit of surge protection.
- The insulation type of signal line
(Insulating RS232C and RS485)
- Create Tx-Enable signal automatically


 Please read "Caution for your safety" in operation manual before using.



■ Ordering information

SCM	—	3	8	I	
					Isolation type
					I Insulation
					8 RS485
					3 RS232C
					SCM Serial Converter Module
					Item

■ Specifications

Model		SCM-38I
Power supply		12-24VDC
Allowable voltage range		90 to 110% of rated voltage
Power consumption		Max. 1.7W
Maximum communication speed		(※1) 1,200 to 115,200bps(Recommended : 9,600bps)
Communication type		Half duplex type
Available communication distance		Max. 1.2km
Multi-Drop		Max. 31 multi-drop
(※1) Protocol	Data Bit	5 to 8 data bits
	Stop Bit	1 or 2 stop bits
	Parity Bit	No/Odd/Even parity bit
Connection type	RS232C	D-sub 9pin
	RS485	4-wire screw terminal(2wire communication type)
Insulation resistance		Min. 100MΩ (at 500VDC megger)
Dielectric strength		Between terminals and case : 2000VAC 50/60Hz for 1 min. Between RS232C and RS485 : 2500VAC 50/60Hz for 1 min.
Noise strength		±500V the square wave noise(pulse width : 1μs) by the noise simulator
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes
Shock	Mechanical	300m/s ² (Approx. 30G) 3 times at X, Y, Z direction
	Malfunction	100m/s ² (Approx. 10G) 3 times at X, Y, Z direction
Ambient temperature		-10 to 55℃ (at non-freezing status)
Storage temperature		-20 to 60℃ (at non-freezing status)
Ambient humidity		35 to 85%RH
Approval		
Unit weight		Approx. 46g

※(※1)Protocol and communication speed are set by Hyper terminal, DAQMaster, ParaSet, Modbus Poll.

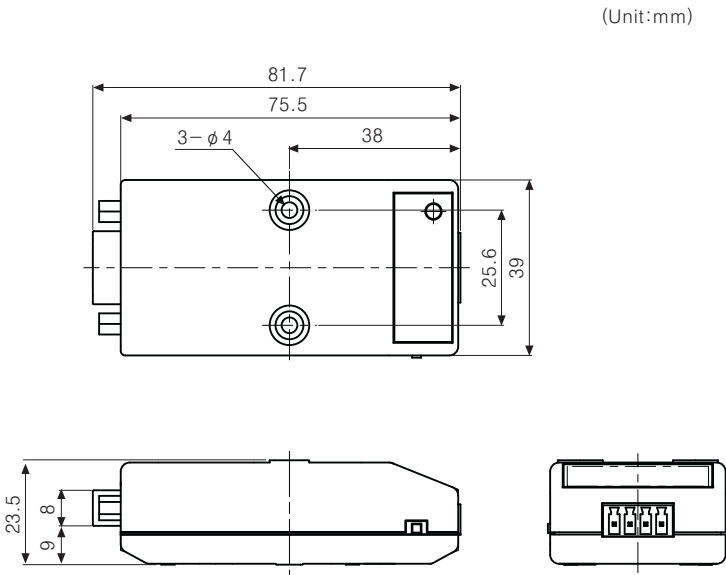
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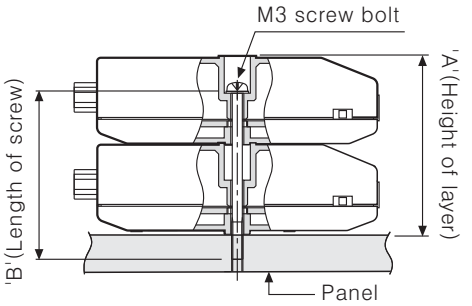
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SCM-38I

■Dimensions

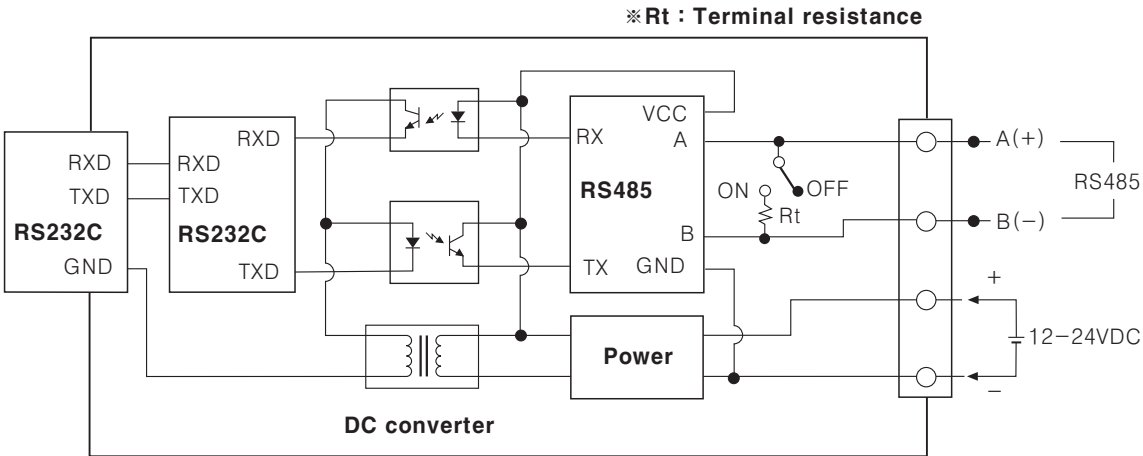


※Side view of the multilayer

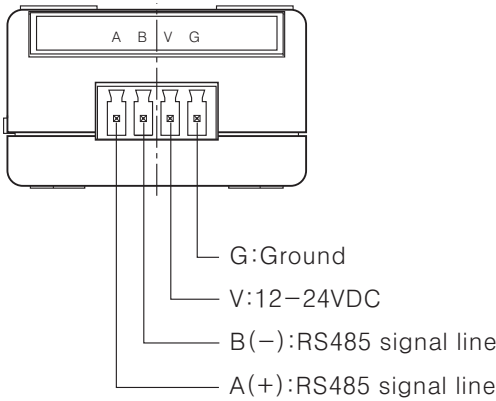


Number of layers (N)	"A" size (23N+0.5)	B" size (23N-3)
1	23.5mm	20mm
2	46.5mm	43mm
3	69.5mm	66mm
4	92.5mm	89mm

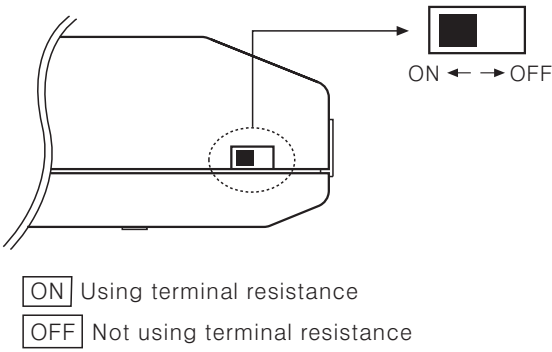
■Functional block diagram



■Connections



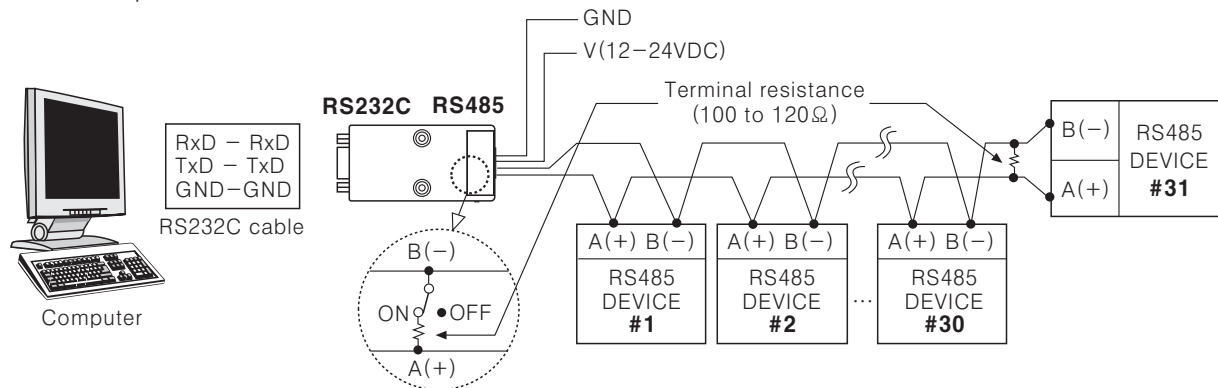
■Terminal resistance selection



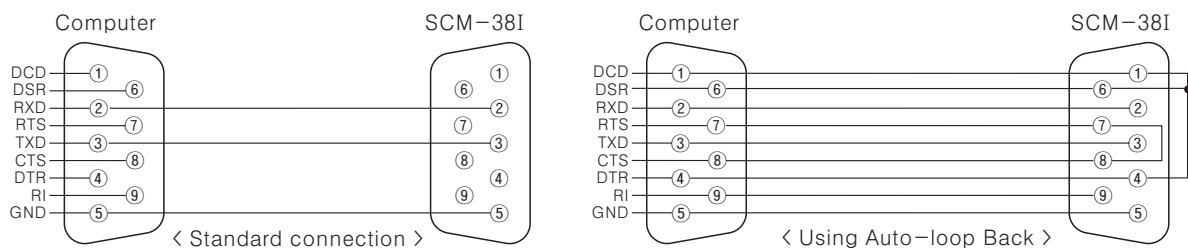
Communication Converter

■ System organization

◎ Multi-drop connection method with PC



◎ RS232C cable connection



※ When the software of the communication driver uses Auto-loop Back, please connect as the above.

■ Proper usage

● Tx_Enable signal (RTS signal) :

Tx_Enable signal (RTS signal) is automatically generated according to protocol.

● Auto-loop Back : When Auto-loop Back is required, please use as 'RS232C cable connections'.

● Setting of protocol rule (Start bit, Stop bit, Parity bit, Data bit, Baud rate) can be set by software without external input or internal setting.

● Using the Twist pair cable (AWG 24), which is suitable to RS485 communication is recommended. If the twist pair cable is not used, be sure preserving the length of A(+) and B(-) cables.

● The extension of communication cable is maximum 1.2km, and the number of available connecting communication product is 32 items.

● After connecting the communication cable between SCM-38I and lower system, be sure to attach the terminal resistance (100 to 120Ω). (The terminal resistance of SCM-38I is set by external switch)

● For the connection be sure that protocol is consisted with each communication product when programming the software program by connecting to other communication products.

● Terminal resistance : RS485 communication have a rapid transmission speed and long communication distance, if the communication line and impedance between Driver, Receiver of RS485 are not matched, it causes a reflective wave.

It can make an error for using, please use the terminal resistance at the tip of the network. (Terminal resistance : 100 to 200Ω)

● To avoid inductive noise, separate the wires from high voltage cable and power cable.

● Do not this unit as following place

- A place where vibration, shock is occurred.
- A place where strong alkali or acid material is used.
- A place where the direct ray of light is occurred.
- A place where strong magnetic force or electric noise is occurred.

● Storage

To preserve for long term, please avoid direct ray of light and keep it under the temperature from -20 to 60℃ and the relative humidity less than 35 to 85%RH. Wrap same as shipping for optimum storage.

● Installation environment

- It shall be used indoor
- Altitude max. 2000m
- Pollution degree 2
- Installation category I

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
(I)	SSR/Power controller
(J)	Counter
(K)	Timer
(L)	Panel meter
(M)	Tacho/Speed/Pulse meter
(N)	Display unit
(O)	Sensor controller
(P)	Switching power supply
(Q)	Stepping motor & Driver & Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Production stoppage models & replacement

Communication converter(USB to Serial converter)

NEW

■ Features

- Applicable OS : Windows 98, 98SE, ME, 2000, Server 2003, XP, Vista
- Both USB 1.1 and USB 2.0 compatible
- Data transmission / power supply indicating LED
- Easy to connect with PC
- Built-in protection circuit
- Ferrite core cable for noise reduction
- Non-isolation type

⚠ Please read "Caution for your safety" in operation manual before using.



※ This unit is specifically designed to connect to particular Autonics products.

■ Ordering information

SCM	-	U	S		Isolation type
					Blank Non-isolation
					S Serial(TTL level)
					U USB
					SCM Serial Converter Module

■ Specifications

Model	SCM-US	
Power supply	(※1)	5VDC USB bus power
Power consumption		Max. 1W
Communication speed	(※2)	1,200 to 115,200bps(Recommended : 9,600bps)
Communication type		Half duplex
Communication distance		1.5m(No extension allowed)
Isolation type		Non-isolated
Vibration	Destruction	0.75mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each X, Y, Z direction for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each X, Y, Z direction for 10 minutes
Shock	Destruction	300m/s ² (30G) in X, Y, Z directions for 3 times
	Malfunction	100m/s ² (10G) in X, Y, Z directions for 3 times
Ambient temperature		-10 to 55℃ (at non-freezing status)
Storage temperature		-20 to 60℃ (at non-freezing status)
Ambient humidity		35 to 85%RH
Connector type	• Computer ⇄ USB(Type A) / • Autonics products ⇄ Earphone jack (4 pole stereo phone plug)	
Approval		
Unit weight	Approx. 41g	

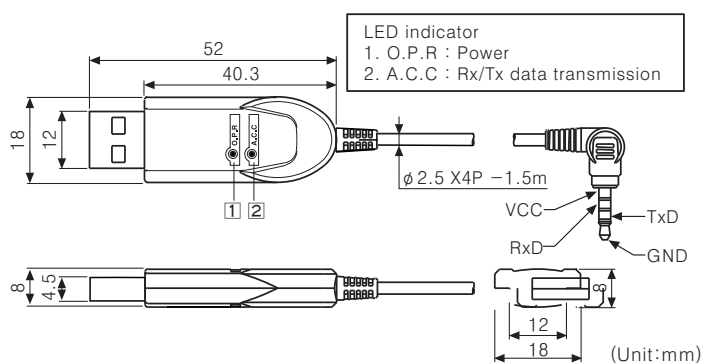
(※1) USB bus power is supplied from PC or USB host controller.

(※2) Protocol and communication speed are set by Hyper terminal, DAQMaster, ParaSet, Modbus Poll.

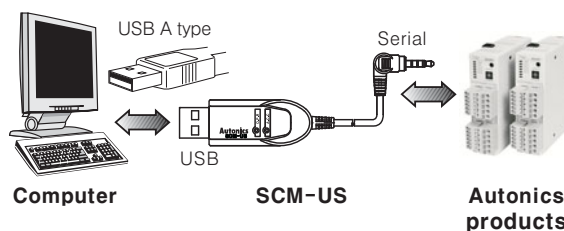
When communicating with Autonics products, set communication speed to 9,600bps.

※ There might be some differences in the specification above depending on PC environment.

■ Dimensions



■ Connection and installation



Communication converter(USB to RS485 converter)

■ Features

- Available to transmit signals to max. 1.2km by converting USB signal to RS485 signal
- Realizing electrical insulation(2500V RMS) between USB port and RS485 port through RS485 transceiver.
- Improved stability and durability with built-in protection circuit
- Easy connections between devices with bus power supplied from USB host controller without external power supply.
- Offering USB 2.0 A/B type cable with built-in ferrite core for noise reduction
- Various operating systems supported (Window 98, 98SE, ME, 2000, Server 2003, XP, Vista)
- User friendly features through compatibility with USB 1.1 and USB 2.0

⚠ Please read "Caution for your safety" in operation manual before using.



NEW

■ Ordering information

SCM

-

U

S

48

I

Isolation type

I

Isolation

48

RS485

S

Serial(TTL level)

U

USB

SCM

Serial Converter Module

Item

■ Specifications

Model		SCM-US48I	
Power supply		(※1)	5VDC USB bus power
Allowable voltage range			90 to 110% of rated voltage
Power consumption			Max. 1W
Maximum communication speed		(※2)	1,200 to 115,200bps(Recommended : 9,600bps)
Communication type			Half duplex type
Available communication distance			USB: Max. 1m±30%, RS485: Max. 1.2km
Multi-drop			Max. 31 multi-drop
Protocol (※2)	Data bit		5 to 8 data bits
	Stop bit		1 or 2 stop bits
	Parity bit		No/Odd/Even parity bit
Connection type	USB		B type connector
	RS485		4-wire screw terminal(2wire communication type)
Insulation resistance			Min. 100MΩ (at 500VDC megger)
Dielectric strength			Between terminals and case : 2500VAC 50/60Hz for 1 min. Between USB and RS485 : 2500VAC 50/60Hz for 1 min.
Noise strength			±500V the square wave noise(pulse width : 1μs) by the noise simulator
Vibration	Mechanical		0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1 hour
	Malfunction		0.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes
Shock	Mechanical		300m/s ² (Approx. 30G) 3 times at X, Y, Z direction
	Malfunction		100m/s ² (Approx. 10G) 3 times at X, Y, Z direction
Ambient temperature			-10 to 55℃ (at non-freezing status)
Storage temperature			-20 to 60℃ (at non-freezing status)
Ambient humidity			35 to 85%RH
Approval			CE
Unit weight			Approx. 34.5g

(※1) USB bus power is supplied from PC or USB host controller.

(※2) Protocol and communication speed are set by Hyper terminal, DAQMaster, ParaSet, Modbus Poll.
When communicating with Autonics products, set communication speed to 9,600bps.

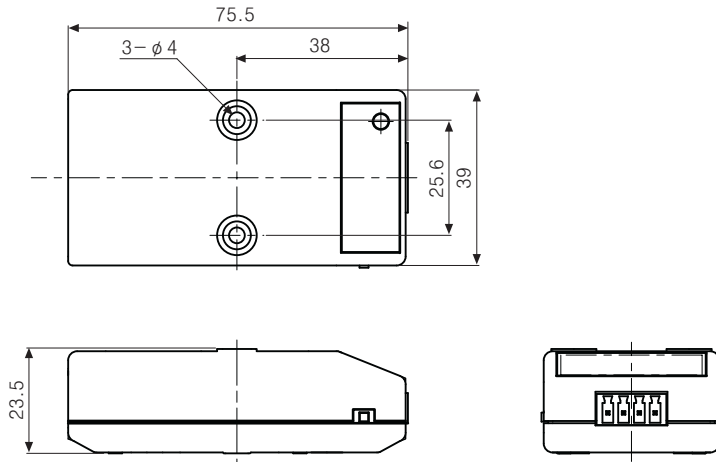
※ There might be some differences in the specification above depending on PC environment.

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
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(Q)	Stepping motor & Driver & Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Production stoppage models & replacement

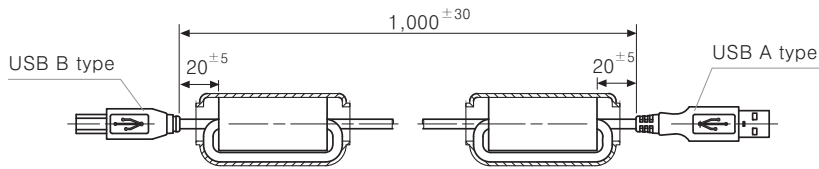
SCM-US48I

■ Dimensions

※USB cable is enclosed and also sold separately. (Model : USB AB cable)



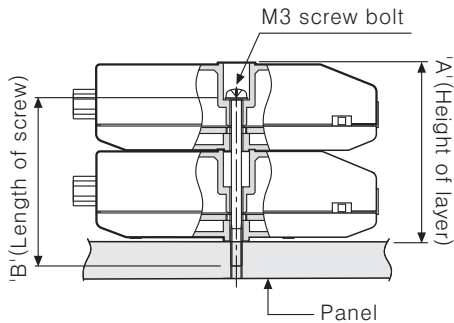
- USB 2.0 AB Type Cable



(Unit:mm)

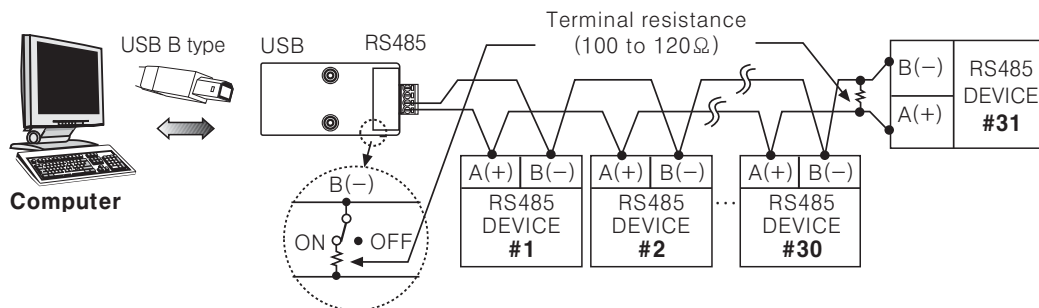
■ Panel mounting

※Side view of the multilayer



Number of layers(N)	"A" size (23N+0.5)	B" size (23N-3)
1	23.5mm	20mm
2	46.5mm	43mm
3	69.5mm	66mm
4	92.5mm	89mm

■ Connection and installation



SCM-US/SCM-US-48I Common Features

■ Installation

◎ USB driver installation

1) Visit our website (<http://www.autonics.com>).

2) Download USB Driver by type in keyword in the search box or choose Model, series and Material at Support → download center.

-Search by keyword

① Enter 'SCM-US' or 'SCM-US48I' in the search box.

② Download 'SCM-US USB Driver' or 'SCM-US48I USB Driver'.

-Search by category

① Select Temperature Controller at '1 Step : Product list'.

② Select 'SCM-US' or 'SCM-US48I' at '2 Step : Series list'.

③ If select software at the document lists, 'SCM-US USB Driver' or 'SCM-US48I USB Driver' will be displayed.

④ Download suitable Driver.

3) Unzip download 'SCM-US.zip' or 'SCM-US48I.zip' at any directory.

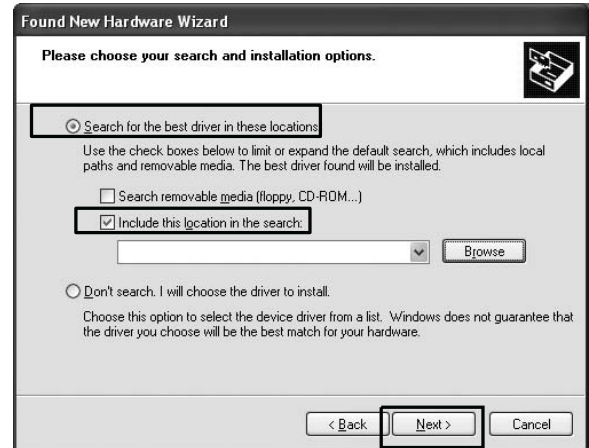
4) When connecting product with USB port, 'Found New Hardware Wizard' will appear automatically. 'Do you want to search software by connecting 'Window Update'?. Click 'No' button and the following window will be displayed to proceed Driver installation.

Select 'Install from a list or specific location (Advanced)' (S) and click 'Next(N)'.



5) Select 'Search for best driver in these locations' and 'include this location in the search' continuously. Click the 'Browse' button.

6) When 'Browse Folder' window is displayed, select 'SCM-US\Driver' and click 'Finish'. Click 'Next' to proceed with the USB Driver installation.



7) Hardware installation message will appear while Found New Hardware Wizard is running. Click 'Continue Anyway' to proceed with installation.



8) The following window will be displayed if the USB Driver is installed properly. Click the 'Finish' button.

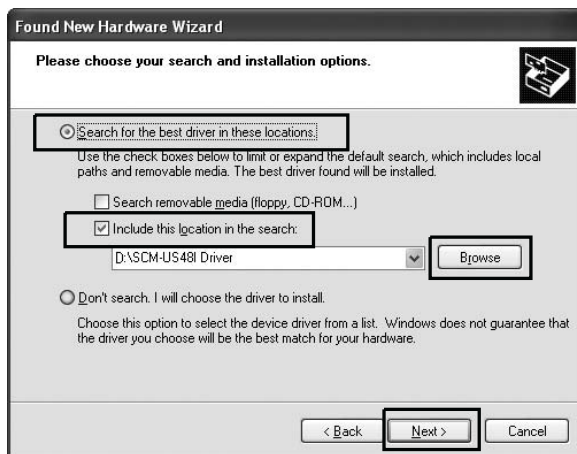


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(T)	Production stoppage models & replacement

SCM-US/SCM-US-48I Common Features

◎Serial Port Driver Installation

- 1) After installing USB Driver, Serial Port (COM port), 'Found New Hardware Wizard' will appear (Serial Port Driver installation follows the same procedures described in installing USB Driver).
- 2) After selecting 'Install from a list or specific location (advance)', click 'Next(N)' button. The following window will be displayed for 'Search and installation options'
- 3) Because a driver location was selected when installing USB driver, click 'Next(N)' button.

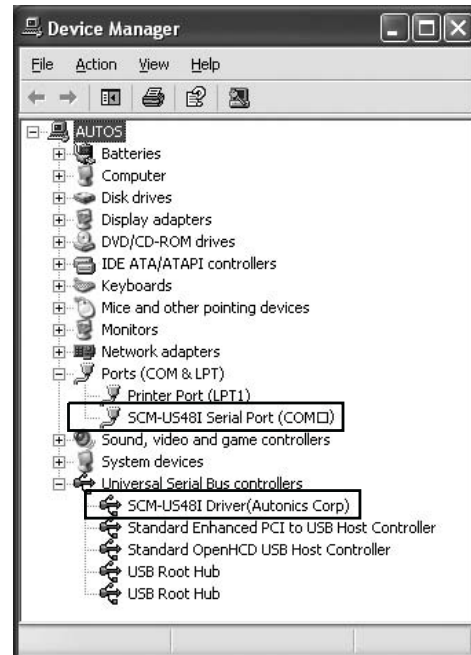


- 4) Hardware installation message will appear while Found New Hardware Wizard is running. Click 'Continue Anyway' to proceed with installation.
- 5) 'Completing the Found New Hardware wizard' will be displayed if the Serial Port Driver is installed properly. Click the 'Finish' button.



※Verify that drivers were installed properly with the windows Device Manager after finishing USB Driver and Serial Port Driver installation.

Open the folder [My computer], open the system folder (click right), click the hardware tab, and click the Device Manager Button. Then, make sure that 'SCM-US Driver(Autonics Corp)' or 'SCM-US48I Driver(Autonics Corp)' is found in 'Common Serial Bus Controller' category and 'Port (COM and LPT)' is found in 'SCM-US Serial Port(COM X)' or 'SCM-US48I Serial Port(COM X)'.



※ This Driver Installation shows the procedure for Window XP. There might be some differences in the specification above depending on OS.

SCM-US/SCM-US-48I Common Features

■ Proper usage

- SCM-US is non-isolated type model. Improper usage of unit may result in damage.
- When changing PC USB port and connecting this unit to another (changed) USB port, USB driver will be reinstalled. This is not a malfunction.
- It is recommend to use twist pair line (AWG24) communication cable for RS485 communication. If do not use this, A(+) and B(-) cables length should be the same.
- When connecting SCM-US communication module, please connect PC and SCM-US first. Then, connect Autonics products afterward. When disconnecting the units, remove the unit in reverse order.
- All protocols (Start bit, Stop bit, Data bit, Baud-rate) can be set by provided S/W.
- While detecting USB Driver, VCP Driver is installed after USB Driver is installed. This is not a malfunction.
- After connects RS485 communication output product, terminal resistance (100 to 120Ω) must be attached on end of communication cable.
- In case of multiple connections of unit, No. of COM Port will be numbered in order. This is not a malfunction. (e.g., COM14, COM15, COM16)
- When connecting USB cable, check COM port number before communication. It may take some time for the computer to detect the cable after the cable is connected. This is not a malfunction.
- Do not extend the USB portion of this cable with an extension cable. It may cause cable malfunction.
- This unit is specifically designed to connect to Autonics products which support SCM-US. Do not apply this unit to other products not supported.
- Observe the rated voltage.
- To avoid malfunctions due to noise, do not place the unit close to a high-voltage power line.
- Proper application environment (Avoid following environments for unit to be used.)
 - Where severe vibration or shock exists
 - Where close to a strong alkali or strong acid
 - Where direct rays of light exist
 - Where near facilities generating strong magnetic forces or electrics noise.
- Storage
Keep the unit -20 to 60℃, 35 to 85%RH with avoiding direct rays of light. It is recommended to keep the unit package as it is.
- Installation environment
 - It shall be used indoor
 - Altitude max. 2000m
 - Pollution degree 2
 - Installation category I

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
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