Communication Converter

The SCM series communication converters are available in various types, to offer easy signal conversion and flexibility for building diverse systems. Wireless, USB-RS485, RS232C-RS485, and USB-Serial are available.

SCM-WF48	**SCM-38I**	**SCM-US48I**	**SCM-US**
Wi-Fi/RS485·USB wireless communication converter	RS232C/RS485 communication converter	USB/RS485 communication converter	USB/Serial communication converter

▣ Example of Configuration

DAQMaster Mobile

DAQMaster

Wi-Fi

USB/RS232C/Wi-Fi

**SCM Series
Communication converter**

RS485/Serial

Autonics and KONICS products which support the PC loader port

SCM-WF48   Wireless Comm. Converter
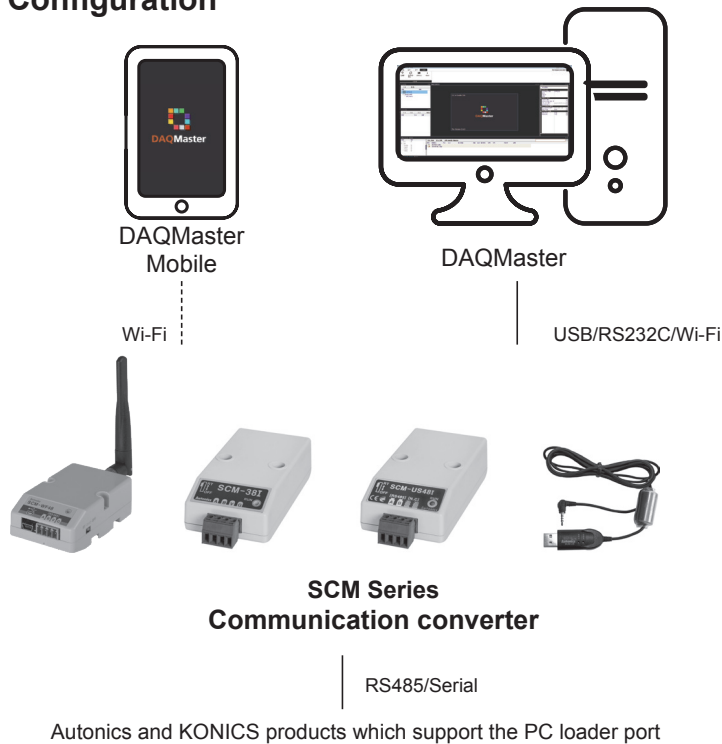
SCM-WF48
(Wi-Fi/RS485, USB wireless communication converter)

▣ Features
- Converting USB or RS485 signal to Wi-Fi signal and wireless communication up to max. 100m
- Compact size (W48×H25×L76.3mm, except antenna)
- Built-in surge protection circuit, reverse polarity protection circuit
- Supports AP mode and station mode
- Various mounting methods (DIN rail, panel)

⚠ **Please read "Safety Considerations" in operation manual before using.**

CE KC

▣ Specifications
● Standard specifications

Model	SCM-WF48
Power supply	24VDC⎓
Allowable voltage range	12-28VDC⎓
Power consumption	Approx. 3W
Communication type	RS485, USB, WiFi
Isolation resistance	Min. 200MΩ (at 500VDC megger between external terminal and case)
Protection circuit	Reverse polarity protection circuit, surge protection circuit
Dielectric strength	1,000VAC 50/60Hz for 1 min (between external terminal and case)
Noise resistance	±500V the square wave noise (pulse width: 1μs) by the noise simulator
Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
Shock	500m/s² (approx. 50G) in each X, Y, Z direction for 3 times
Environ-ment	Ambient temp.	-10 to 55℃, storage: -20 to 60℃
	Ambient humi.	35 to 80%RH, storage: 35 to 80%RH
Protection	IP20 (IEC standards)
Mounting	DIN rail or panel mounting
Accessories	USB 2.0 Mini B type cable (length: 1m): 1 , Connector for RS-485 (4-pin, male type): 1
Accessory	CE KC
Weight[1]	Approx. 160g (approx. 57g)

※1: The weight is with packaging and the weight in parentheses is only unit weight.
※Environment resistance is rated at no freezing or condensation.

● RS-485 communication specifications

Connection	RS-485
Standard	EIA RS-485
Communication method	2-wire half duplex
Synchronous method	Asynchronous
Effective com. distance	Max. 800m
Communication speed[1]	4800, 9600 (default), 19200, 38400, 57600, 115200bps
Data bit[1]	5-bit, 6-bit, 7-bit, 8-bit (default)
Stop bit[1]	1-bit (default), 2-bit
Parity bit[1]	None (default), Even, Odd
Multi-drop	Max. 31 multi-drop
Connection type	4-wire screw terminal (2-wire communication method)

※1: You can set communication speed and stop bit, parity bit by DAQMaster.

● WiFi communication specifications

Protocol	TCP/IP (IPv4)
Standard	802.11b/g/n (IEEE 802.11b) compatible
Comm. speed	Max. 11Mbps
Freq. range	2.4 to 2.497GHz
Security	WEP, WPA, WPA2-PSK, Enterprise
Antenna	2dBi external antenna
Comm. distance	Max. 100m

● USB communication specifications

Power	5V, 500mA
Standard	USB 2.0 (compatible sub-transmission)
Comm. method	2-wire half duplex
Connections	USB 2.0 Mini B type (male)
Comm. distance	Max. 1m ± 30%

(A) Photoelectric Sensors
(B) Fiber Optic Sensors
(C) Door/Area Sensors
(D) Proximity Sensors
(E) Pressure Sensors
(F) Rotary Encoders
(G) Connectors/ Sockets
(H) Temperature Controllers
(I) SSRs / Power Controllers
(J) Counters
(K) Timers
(L) Panel Meters
(M) Tacho / Speed / Pulse Meters
(N) Display Units
(O) Sensor Controllers
(P) Switching Mode Power Supplies
(Q) Stepper Motors & Drivers & Controllers
(R) Graphic/ Logic Panels
(S) Field Network Devices
(T) Software

SCM-WF48

▣ Part Description
◎ SCM-WF48
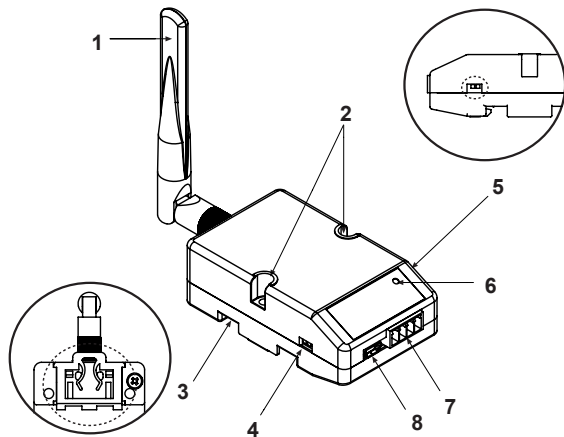
1. WiFi antenna
: Antenna for transmitting and receiving WiFi communication data.
It may be broken when excessive pressure is applied.
2. Fixing screw hole: Used for mounting the unit on a panel.
3. Rail Lock: Used for fixing this unit at DIN rail mounting.
4. Communication method switch
: Switch for select communication method.

USB ◄──────► RS485

[■] (default)   ※For setting SCM-WF48 via DAQMaster, set USB.

5. Terminating resistance switch
: Switch for whether using terminating resistance
(120 Ω, 1% (F) grade chip resistance, 1/4 W).
(only when selecting RS485 communication method.)

RT ◄──────► OFF

[■] (default)

RT: Uses terminating resistances.
OFF: Not use terminating resistance.

6. Indicator: Indicator for statue of AP mode and Station mode.

State \ Mode	AP mode	Station mode
Green ON	Power ON	Power ON
Red ON	AP ready	AP connection is complete
OFF	No power	

7. RS485 connector: Used for connecting RS485 communication cable.
8. USB connector: Used for connecting a PC, etc. with an USB cable.

▣ Comprehensive Device Management Program (DAQMaster)

DAQMaster is the comprehensive device management program.
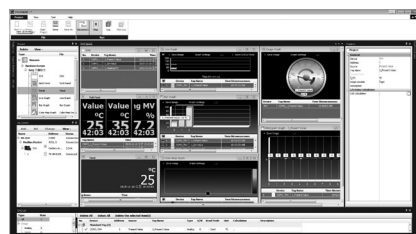**Set the communication method switch of SCM-WF48 as USB, and connect this unit and a PC with USB cable.**
You can set the communication setting for SCM-WF48 by DAQMaster.
Visit our website (www.autonics.com) and download DAQMaster.

< Computer specification for using software >

Item	Minimum requirements
System	IBM PC compatible computer with Intel Pentium III or above
Operating system	Microsoft Windows 98/NT/XP/Vista/7/8/10
Memory	256MB or more
Hard disk	More than 1GB of free hard disk space
VGA	1024×768 or higher resolution display
Others	RS-232 serial port (9-pin), USB port

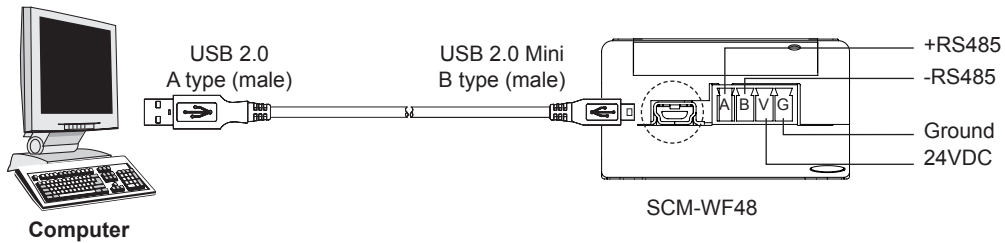< DAQMaster screen >

Autonics
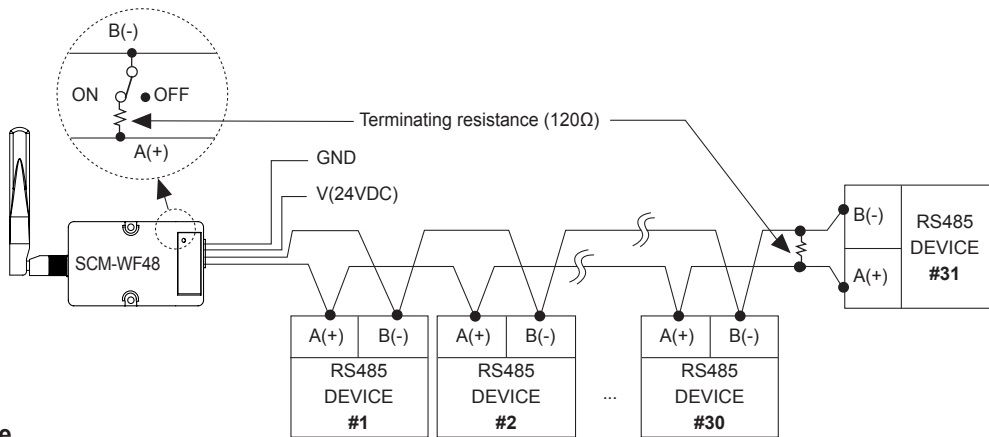
Wireless Comm. Converter

▣ Example of Connections

※When wiring the RS485 connector, use AWG 24 cable and
tighten the connector screw with a tightening torque of 0.22 to 0.4N·m with the screwdriver for M2 screw.
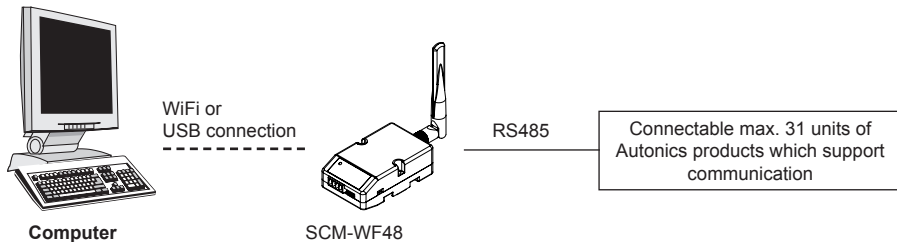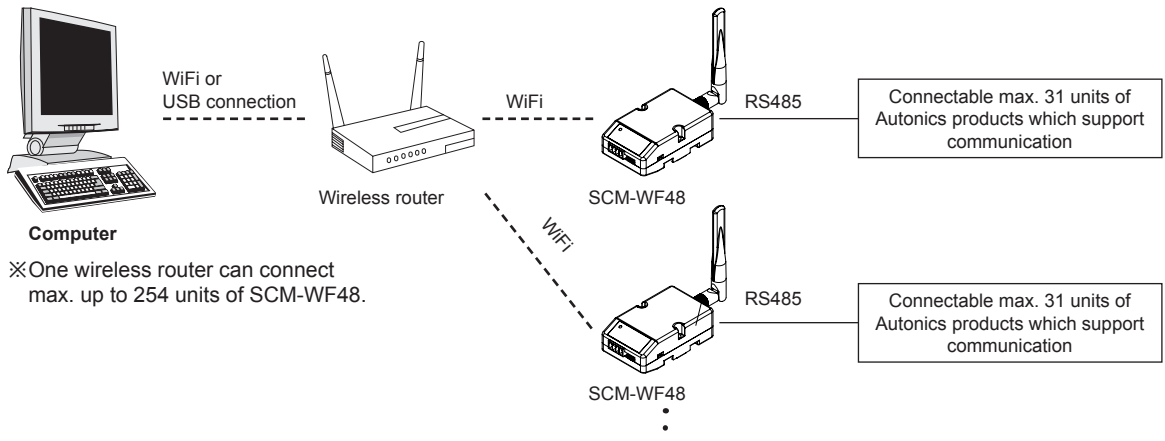
● **Cable connections**

USB 2.0
A type (male)

USB 2.0 Mini
B type (male)

+RS485
-RS485

Ground
24VDC

Computer

SCM-WF48

● **Connection of SCM-WF48 and Multi-drop**

B(-)

ON   ●OFF

A(+)

Terminating resistance (120Ω)

GND

V(24VDC)

SCM-WF48

B(-)

A(+)

RS485
DEVICE
#31

A(+) | B(-)

RS485
DEVICE
#1

A(+) | B(-)

RS485
DEVICE
#2

...

A(+) | B(-)

RS485
DEVICE
#30

● **AP mode**

WiFi or
USB connection

RS485

Connectable max. 31 units of
Autonics products which support
communication

Computer

SCM-WF48

● **Station mode**

WiFi or
USB connection

WiFi

RS485

Connectable max. 31 units of
Autonics products which support
communication

Wireless router

SCM-WF48

WiFi

Computer

RS485

Connectable max. 31 units of
Autonics products which support
communication

※One wireless router can connect
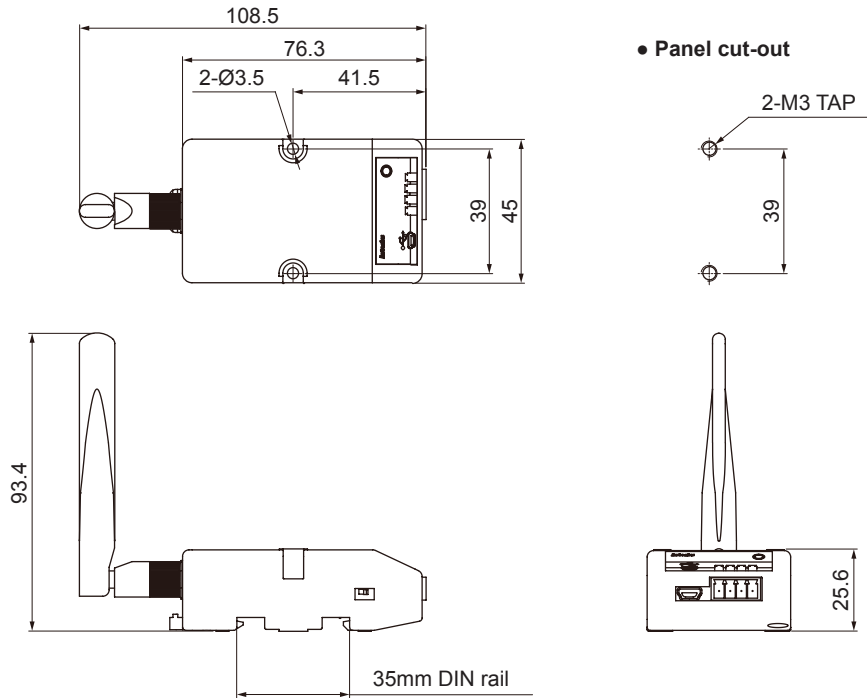max. up to 254 units of SCM-WF48.

SCM-WF48

※Before using this unit, set the communication method switch of SCM-WF48 as USB, and connect this unit and a PC
with USB cable. You can set the communication setting for SCM-WF48 by DAQMaster.

SCM-WF48

■ Dimensions

(unit: mm)

108.5

76.3

2-Ø3.5   41.5

39

45

93.4

35mm DIN rail

● **Panel cut-out**

2-M3 TAP

39

25.6

■ Installations

③

Fixing
screw hole

②

①
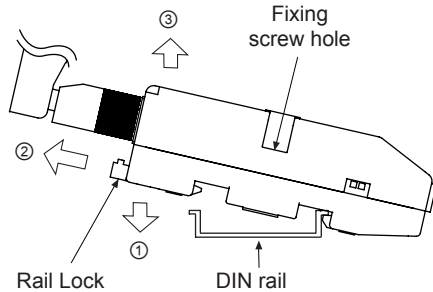
Rail Lock   DIN rail

● **Mounting to and removing from DIN rail**
  ● **Mounting**
    1) Hang up the backside holder on a DIN rail.
    2) Press the unit toward ① direction until it snaps.
  ● Removing
    1) Pull rail locks of the backside of this unit to ② direction.
    2) Pull the unit to ③ direction. .

● **Mounting to panel**
  1) This unit is able to mount on a panel with two fixing screws at center of both sides.
  2) For mounting the unit, use M3 screws. Tighten screws with 0.4 N·m torque

Autonics

Wireless Comm. Converter

▣ Driver Installation

◎ USB Driver Installation

※It describes based on Windows 7 operating system. Installation method may be different by operating system of PC.

When PC is connected INTERNET and the unit is connected with PC via USB port, PC searches and installs the driver automatically.
If auto driver installation is fail, follow the below order to install the driver.

1) Visit our web site (www.autonics.com) and download 'SCM-WF48 Driver'.

2) Unzip the downloaded file at the desired directory.

3) Connect the unit at USB port of the PC and run CDM21216_Setup.exe at the directory.

4) 'FTDI CDM Drivers' dialog box appears. Click 'Extract'. Files are extracted.
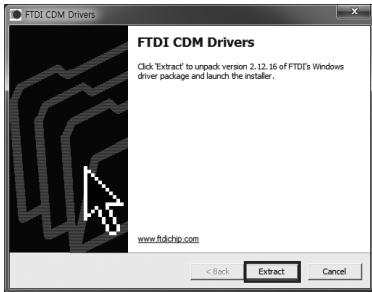
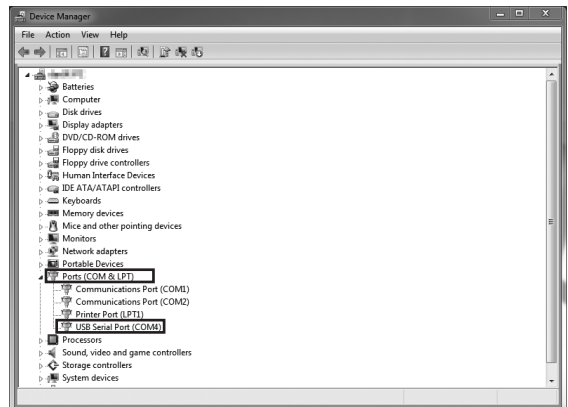5) 'Device Driver Installation Wizard' dialog box appears. Click 'Next'.
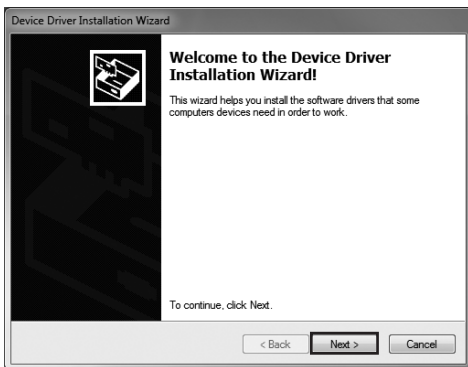
6) 'License Agreement' dialog box appears. Select 'I accept this agreement' and click 'Next'.

7) Driver installation is completed.

※After installing the driver, you can check the driver installation at Device Manager.
Enter [Start]-[Control Panel]-[Device Manager] and extend Ports (COM & LPT) and USB Serial Port (COM4) to check SCM-WF48 connection.

※ If USB port is changed, reinstall the USB driver.

SCM-38I

SCM-38I (RS232C to RS485 communication converter)

▣ Features
● Built-in surge protection circuit
● The insulation type of signal line
  (insulating RS232C and RS485)
● Create Tx-Enable signal automatically

⚠	Please read "Safety Considerations" in operation manual before using.

CE ⓀC

▣ Specifications

Model		SCM-38I
Power supply		12-24VDC⎓±10%
Power consumption		Approx. 1.7W
Max. com speed[※1]		1,200 to 115,200bps (recommended: 9,600bps)
Communication type		Half duplex type
Available com. distance		Max. 1.2km
Multi-drop		Max. 31 multi-drop
Protocol[※1]	Data bit	5-bit, 6-bit, 7-bit, 8-bit
	Stop bit	1-bit, 2-bit
	Parity bit	None, Even, Odd
Connection type		RS232: D-sub 9-pin
		RS485: 4-wire screw terminal (2-wire communication type)
Isolation type		Isolation
Dielectric strength		●Between terminals and case: 2500VAC 50/60Hz for 1 min
		●Between RS232C and RS485: 2500VAC 50/60Hz for 1 min
Insulation resistance		Min. 100MΩ (at 500VDC megger)
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 X, Y, Z direction for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 min
Shock	Mechanical	300m/s^2 (approx. 30G) in each X, Y, Z direction for 3 times
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times
Environ-ment	Ambient temp.	-10 to 55℃, storage: -20 to 60℃
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH
Approval		CE ⓀC
Weight[※2]		Approx. 106g (approx. 46g)

※1: Protocol and communication speed are set by Hyper terminal. DAQMaster, ParaSet, Modbus Poll.
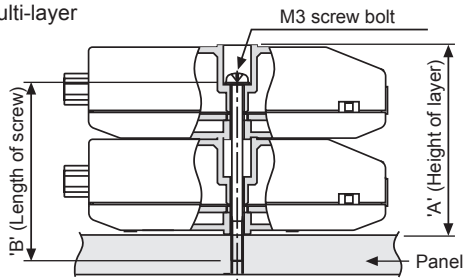　　When communicating with Autonics products, set communication speed to 9,600bps.
※2: The weight includes packaging. The weight in parenthesis is for unit only.
※There might be some differences in the specification above depending on PC environment.
※Environment resistance is rated at no freezing or condensation.

▣ Installations

Multi-layer

M3 screw bolt

'B' (Length of screw)

'A' (Height of layer)

Panel

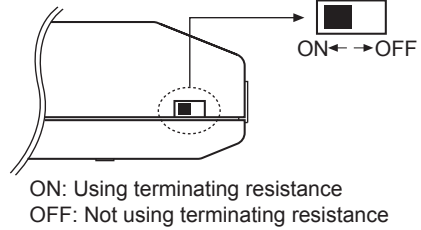| Number of layers (N)	"A" size (23N+0.5)	"B" size (23N-3)
1	23.5mm	20mm
2	46.5mm	43mm
3	69.5mm	66mm
4	92.5mm	89mm

Autonics

RS232C to RS485 Comm. Converter
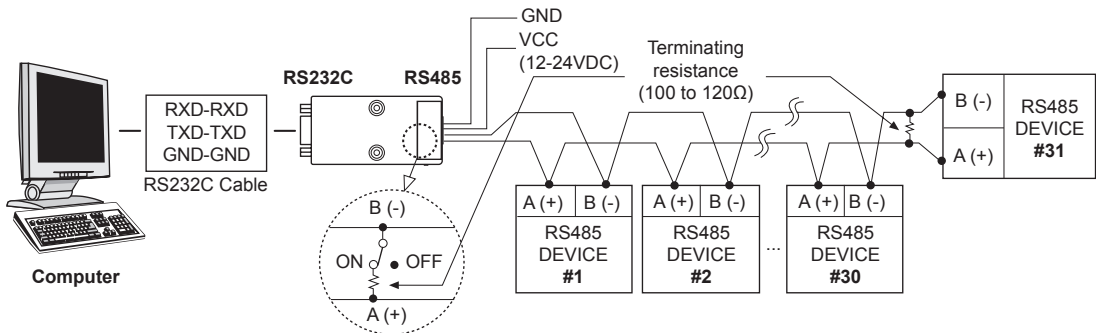
■ Example of Connections

※When wiring the RS485 connector, use AWG 24 cable and
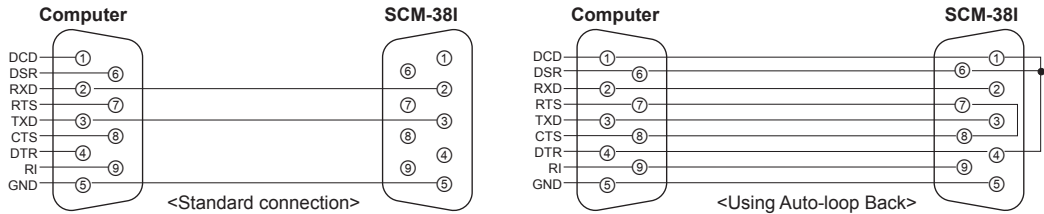tighten the connector screw with a tightening torque of 0.22 to 0.4N·m with the screwdriver for M2 screw.

A B V G

- G: GROUND
- V: 12-24VDC input
- B (-) ⎤ RS485 signal line
- A (+) ⎦
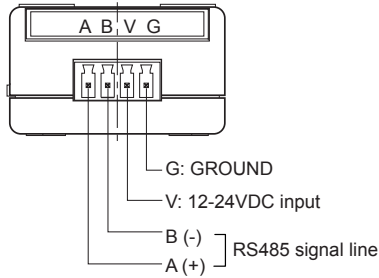
● **Terminating resistance selection**

ON← →OFF

ON: Using terminating resistance
OFF: Not using terminating resistance

● **Multi-drop connection method with PC**

GND
VCC
(12-24VDC)

Terminating resistance (100 to 120Ω)

RS232C Cable
RXD-RXD
TXD-TXD
GND-GND

RS232C **RS485**

Computer

B (-)
ON ⟋ ● OFF
A (+)

| A (+) | B (-) | A (+) | B (-) | A (+) | B (-) |
| RS485 DEVICE #1 | | RS485 DEVICE #2 | | RS485 DEVICE #30 | |

B (-) / A (+) RS485 DEVICE #31

● **RS232C cable connection**

Computer / SCM-38I

DCD ① DSR ⑥ RXD ② RTS ⑦ TXD ③ CTS ⑧ DTR ④ RI ⑨ GND ⑤

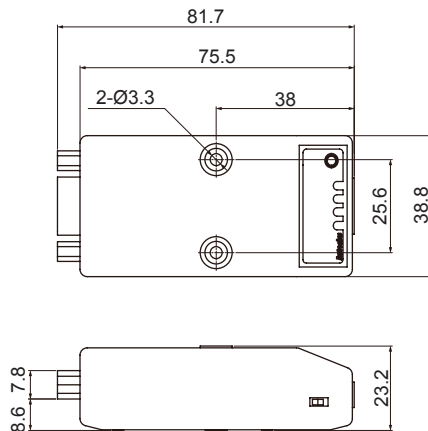<Standard connection>
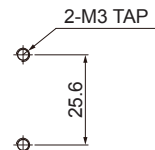
<Using Auto-loop Back>

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

■ Dimensions

(unit: mm)

81.7
75.5
2-Ø3.3
38
25.6
38.8

● **Panel cut-out**

2-M3 TAP
25.6

7.8
8.6
23.2

Autonics S-35

(A) Photoelectric Sensors
(B) Fiber Optic Sensors
(C) Door/Area Sensors
(D) Proximity Sensors
(E) Pressure Sensors
(F) Rotary Encoders
(G) Connectors/Sockets
(H) Temperature Controllers
(I) SSRs / Power Controllers
(J) Counters
(K) Timers
(L) Panel Meters
(M) Tacho / Speed / Pulse Meters
(N) Display Units
(O) Sensor Controllers
(P) Switching Mode Power Supplies
(Q) Stepper Motors & Drivers & Controllers
(R) Graphic/ Logic Panels
(S) Field Network Devices
(T) Software

SCM-US48I

SCM-US48I (USB to RS485 communication 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 (Windows 98, 98SE, ME, 2000, Server 2003, XP, Vista, 7)
● User friendly features through compatibility with USB 1.1 and USB 2.0

> ⚠ **Please read "Safety Considerations" in operation manual before using.**

CE CE ℂ

■ Specifications

Model		SCM-US48I
Power supply		5VDC USB bus power[※1]
Power consumption		Approx. 1W
Max. com speed[※2]		1,200 to 115,200bps (recommended: 9,600bps)
Communication type		Half duplex type
Available com. distance		USB: Max. 1m ± 30% RS485: Max.1.2km
Multi-drop		Max. 31 multi-drop
Protocol[※2]	Data bit	5-bit, 6-bit, 7-bit, 8-bit
	Stop bit	1-bit, 2-bit
	Parity bit	None, Even, Odd
Connection type		USB: USB 2.0 B type (male)
		RS485: 4-wire screw terminal (2-wire communication type)
Isolation type		Isolation
Dielectric strength		●Between terminals and case: 2000VAC 50/60Hz for 1 min ●Between USB and RS485: 2500VAC 50/60Hz for 1 min
Insulation resistance		Min. 100MΩ (at 500VDC megger)
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 X, Y, Z direction for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 min
Shock	Mechanical	300m/s^2 (approx. 30G) in each X, Y, Z direction for 3 times
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times
Environ-ment	Ambient temp.	-10 to 55℃, storage: -20 to 60℃
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH
Approval		CE ℂ
Accessory		USB 2.0 AB type connector (length: 1m)
Weight[※3]		Approx. 197g (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.
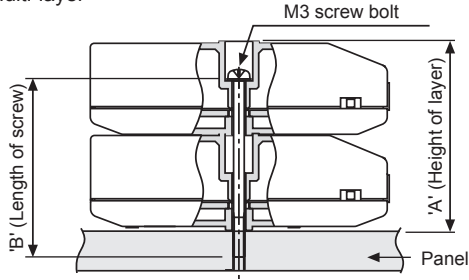※3: The weight includes packaging. The weight in parenthesis is for unit only.
※There might be some differences in the specification above depending on PC environment.
※Environment resistance is rated at no freezing or condensation.

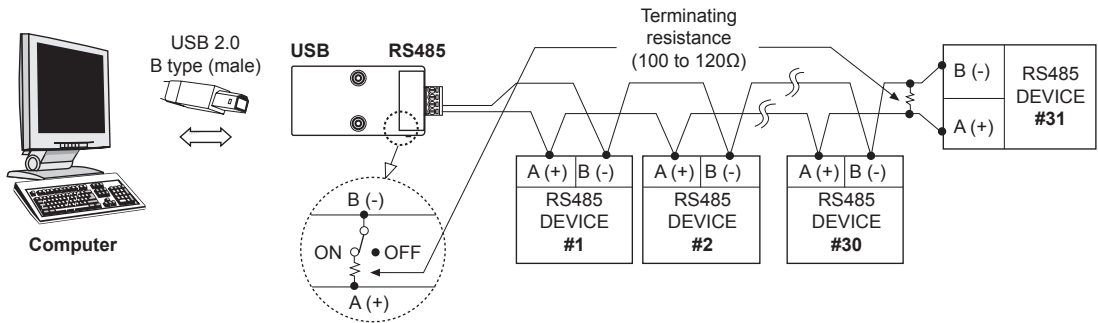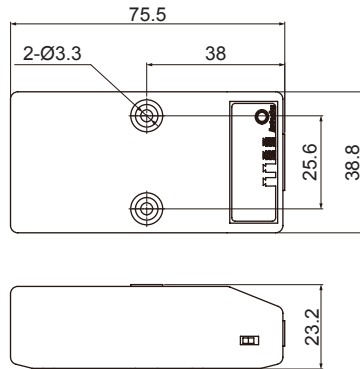# USB to RS485 Comm. Converter

▣ Installations

Multi-layer

M3 screw bolt

'B' (Length of screw)

'A' (Height of layer)

Panel

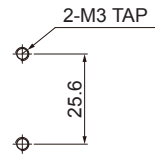| Number of layers (N)	"A" size (23N+0.5)	"B" size (23N-3)
1	23.5mm	20mm
2	46.5mm	43mm
3	69.5mm	66mm
4	92.5mm	89mm

▣ Example of Connections

※When wiring the RS485 connector, use AWG 24 cable and
  tighten the connector screw with a tightening torque of 0.22 to 0.4N·m with the screwdriver for M2 screw.

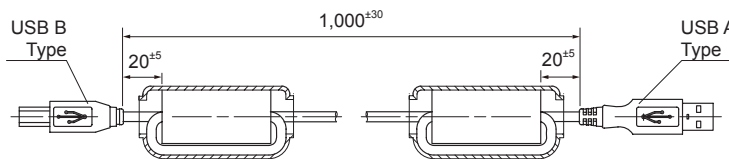USB 2.0 B type (male)

USB **RS485**

Terminating resistance (100 to 120Ω)

| B (-) | RS485 DEVICE **#31** |
| A (+) | |

Computer

B (-)

ON ○ ● OFF

A (+)

| A (+) | B (-) | A (+) | B (-) | A (+) | B (-) |
| RS485 DEVICE **#1** | | RS485 DEVICE **#2** | | RS485 DEVICE **#30** | |

▣ Dimensions

(unit: mm)

75.5

2-Ø3.3

38

25.6

38.8

23.2

● **Panel cut-out**

2-M3 TAP

25.6

● **USB 2.0 AB type cable (accessory)**

※USB 2.0 AB type cable is including the product and is also sold separately.
  (model: USB AB CABLE)

USB B Type

1,000±30

20±5

20±5

USB A Type

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

(S) Field Network Devices

(T) Software

SCM-US48I

▣ Driver Installation

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

◎ USB Driver Installation

1) Visit our website (www.autonics.com) to download USB Driver.

2) Unzip the downloaded 'SCM-US48I.zip', or 'SCM-US. zip' at any directory.

3) 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'.

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

5) When 'Browse Folder' window is displayed, select 'SCM-US\Driver' for SCM-US48I, SCM-US, and click 'Finish'. Click 'Next' to proceed with the USB Driver installation.
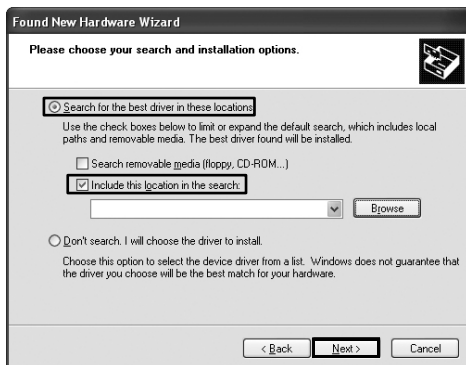
6) Hardware installation message will appear while Found New Hardware Wizard is running. Click 'Continue Anyway' to proceed with installation.

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


※ If USB port is changed, reinstall the USB driver.

# USB to RS485 Comm. Converter

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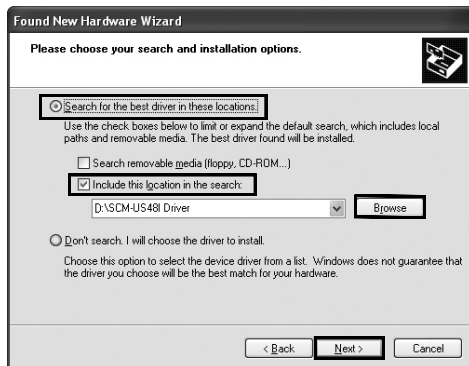
4) Hardware installation message will appear while Found New Hardware Wizard is running. Click 'Continue Anyway' to proceed with installation.

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-US48I Driver (Autonics Corp)' or 'SCM-US Driver (Autonics Corp)' is found in 'Common Serial Bus Controller' category and 'Port (COM and LPT) is found in 'SCM-US48I Serial Port (COM ☐) or 'SCM-US Serial Port (COM ☐)'.
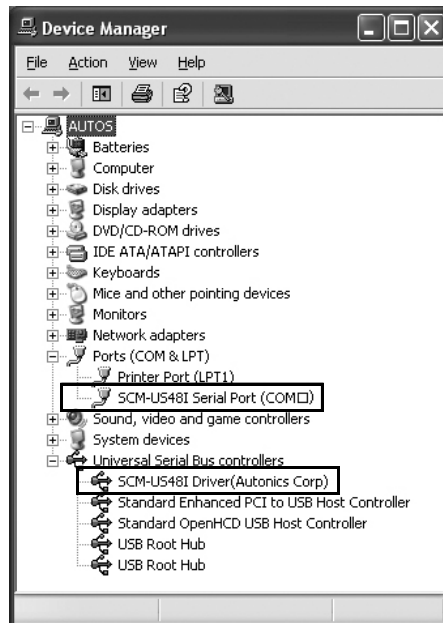
※ This Driver Installation is described based on the procedure for Windows XP.
There might be some differences in the specification above depending on OS.

SCM-US

SCM-US (USB to Serial communication converter)

▣ Features
- Applicable OS: Windows 98, 98SE, ME, 2000, Server 2003, XP, Vista, 7
- Both USB 1.1 and USB 2.0 compatible
- Data transmission / power supply indicating LED
- Easy to connect with PC
  Some products requires the dedicated converter cable (EXT-US, sold separately)
- Built-in protection circuit
- Ferrite core cable for noise reduction
- Non-isolation type

※Specifically designed to connect to particular Autonics and Konics products which support the PC loader port.

⚠ Please read "Safety Considerations" in operation manual before using.

CE KC

▣ Specifications

Model	SCM-US
Power supply	5VDC USB bus power[1]
Power consumption	Approx. 1W
Max. com speed[2]	1,200 to 115,200bps (recommended: 9,600bps)
Communication type	Half duplex type
Available com. distance	1.5m (not extension)
Connection type	USB: USB 2.0 A type (male)
	Earphone jack (4 pole stereo phone plug)[3]
Isolation type	Non-isolation
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 min
Shock	Mechanical	$300m/s^2$ (approx. 30G) in each X, Y, Z direction for 3 times
	Malfunction	$100m/s^2$ (approx. 10G) in each X, Y, Z direction for 3 times
Environ-ment	Ambient temp.	-10 to 55℃, storage: -20 to 60℃
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH
Approval	CE KC
Weight[4]	Approx. 80g (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.
※3: Some products requires the EXT-US(converter cable, sold separately).
※4: The weight includes packaging. The weight in parenthesis is for unit only.
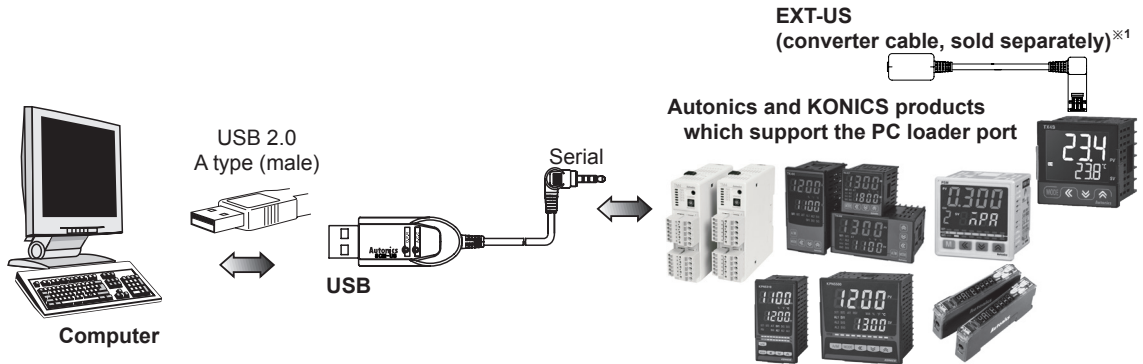※There might be some differences in the specification above depending on PC environment.
※Environment resistance is rated at no freezing or condensation.

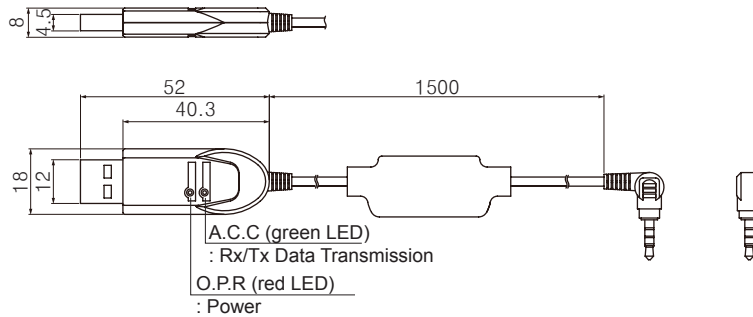# USB to Serial Comm. Converter

■ Example of Connections

※Use only for Autonics/Konics products that support SCM-US.

※1: Some products requires the dedicated converter cable(EXT-US, sold separately) to connect SCM-US. Do not apply excessive force to the converter cable. It may cause damage to the unit. Do not bend cable and connector part. It may cause damage to the unit.
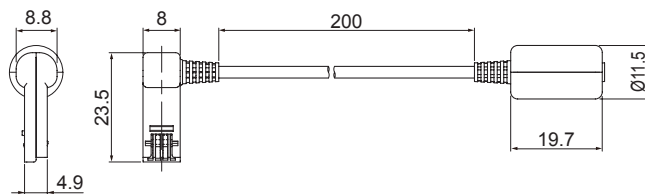
EXT-US
(converter cable, sold separately)※1

Autonics and KONICS products
which support the PC loader port

USB 2.0
A type (male)

Serial

USB

Computer

■ Dimensions

(unit: mm)

A.C.C (green LED)
: Rx/Tx Data Transmission

O.P.R (red LED)
: Power

● **EXT-US (converter cable, sold separately)**

■ Driver Installation

The USB driver installation and serial port driver installation are same as SCM-US48I. Refer to the I-42 page.

◼ Proper Usage (SCM Series common)

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 12-24VDC or 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Use only designated connector and do not apply excessive power when connecting or disconnecting the connectors.
4. Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line. Do not use near the equipment which generates strong magnetic force or high frequency noise.
5. Do not connect or disconnect the USB cable, earphone jack, or RS485 cable quickly and repeatedly while communicating. It may cause damage or malfunction of the product and PC.
6. After supplying power, connect with the communication output product. When disconnect, communication output product first and power last.
7. When connecting multiple SCM-US48I, SCM-US or SCM-WF48 units to a PC, number of COM port goes up in sequential order and it takes some time to identify and assign number of COM port.
8. When connecting the RS485 communication output product, connect the terminating resistance (SCM-38I, SCM-US48I, SCM-US: 100 to 120Ω, SCM-WF48: 120Ω) at each end of the communication cable.
9. Use twist pair wire for RS485 communication. If not, use A(+) and B(-) cables in the same length.
10. Use USB cable of designated standard, and do not use extension cable.
11. This unit may be used in the following environments.
    ① Indoors (in the environment condition rated in 'Specifications')
    ② Altitude max. 2,000m
    ③ Pollution degree 2
    ④ Installation category I