

# Autonics

## LASER DISPLACEMENT SENSOR COMMUNICATION CONVERTER BD-C SERIES

### INSTRUCTION MANUAL

Thank you for choosing our Autonics product.  
Please read the following safety considerations before use.

#### ■ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.  
※⚠ symbol represents caution due to special circumstances in which hazards may occur.

- Warning** Failure to follow these instructions may result in serious injury or death.
- Caution** Failure to follow these instructions may result in personal injury or product damage.

#### ⚠ Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)  
Failure to follow this instruction may result in personal injury, fire or economic loss.
- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**  
Failure to follow this instruction may result in explosion or fire.
- Do not disassemble or modify the unit.**  
Failure to follow this instruction may result in fire.
- Do not connect, repair, or inspect the unit while connected to a power source.**  
Failure to follow this instruction may result in fire.
- Check 'Connections' before wiring.**  
Failure to follow this instruction may result in fire.

#### ⚠ Caution

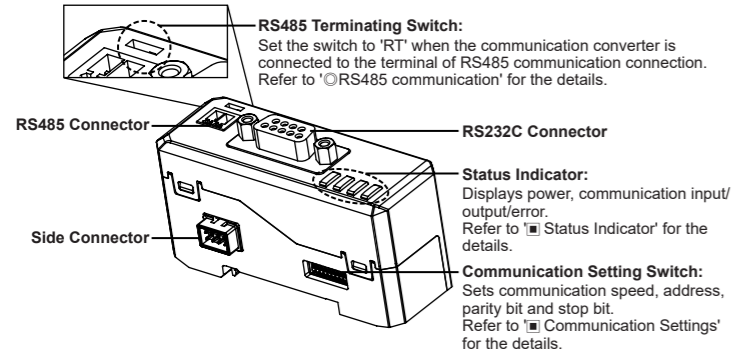
- Use the unit within the rated specifications.**  
Failure to follow this instruction may result in fire or product damage.
- Use dry cloth to clean the unit, and do not use water or organic solvent.**  
Failure to follow this instruction may result in fire.

#### ■ Proper Usage

Before using this communication converter unit, depending on the usage environment, keep following items handy.

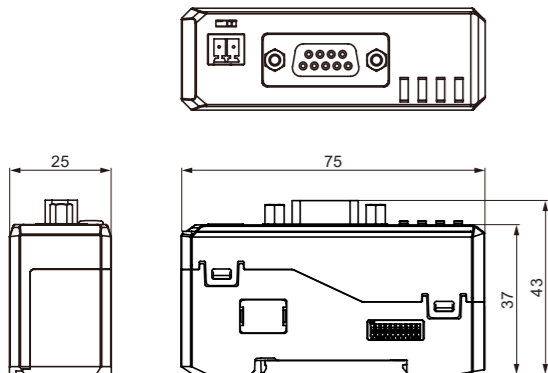
- Visit our web site ([www.autonics.com](http://www.autonics.com)) to download.
- atDisplacement program, manual
- SCM-38I (RS232C - RS485) Driver, Instruction manual
- SCM-US48I (USB - RS485) Driver, Instruction manual
- SCM-WF48 (Wi-Fi, USB - RS485) Driver, Instruction manual
- BD Series manual

#### ■ Unit Description



#### ■ Dimensions

(unit: mm)



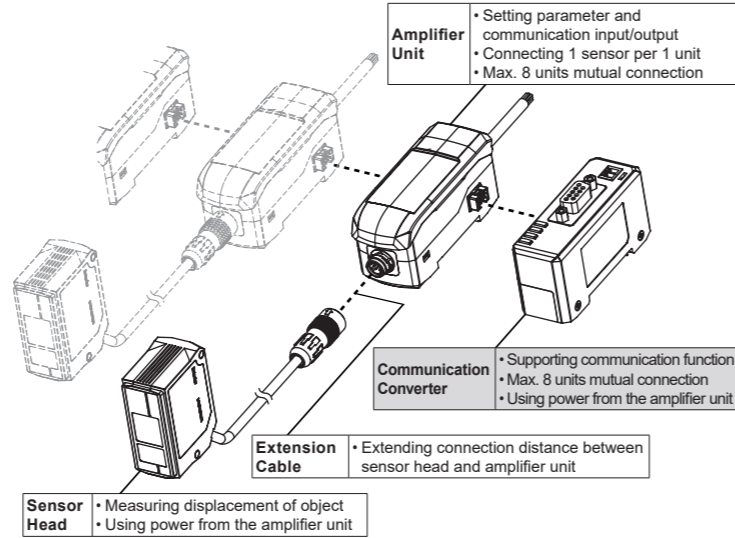
※The above specifications are subject to change and some models may be discontinued without notice.  
※Be sure to follow cautions written in the instruction manual, user manual and the technical descriptions (catalog, website).

#### ■ Specifications

BD-C Series Communication Converter		
Model	BD-CRS	
Power supply*1	—	
Power consumption	Max. 2.3W	
Communication function	RS-232C, RS-485	
Communication speed	9600, 19200, 38400, 115200bps (default)	
Indication	4 LED status indicators	
Function	<ul style="list-style-type: none"> <li>• Real-time monitoring</li> <li>• Executes every BD-Series feature and sets parameter by external device (Master)</li> </ul>	
Environment	Ambient temperature	-10 to 50°C, Storage: -15 to 60°C
	Ambient humidity	Under 85%RH, Storage: under 85%RH
Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Shock	300m/s <sup>2</sup> (approx. 50G) in each X, Y, Z direction for 3 times	
Protection structure	IP40 (IEC Standards)	
Material	Case: Polycarbonate	
Accessory	Side connector, Connector for RS485	
Sold separately	Communication converter (SCM-38I, SCM-US48I, SCM-WF48)	
Approval		
Weight*2	Approx. 91g (approx. 49g)	

※1: Using power from the amplifier unit. To use BD-C Series communication converter, the amplifier unit needs 12-30VDC power supply.  
※2: This weight is with packaging and the weight in parentheses is only unit weight.  
※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

#### ■ Product Composition



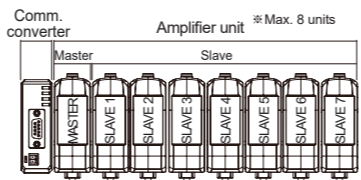
#### ■ Installations

##### ○ Mounting on DIN rail

- Mounting**
  - Insert bottom holder of communication converter to 35mm width DIN rail.
  - Push the front part of the unit to arrow direction to mount.
- Detaching**
  - Side amplifier unit to direction.
  - Pull the assembly part to direction to detach.

##### ○ Communication system composition

- Distinguishing master/slave amplifier units**
  - When the power cable direction is down, the amplifier at the left end is the master unit, and the channel number of slaves increases sequentially to the right.
- Communication converter is connected to the left side of master amplifier unit.

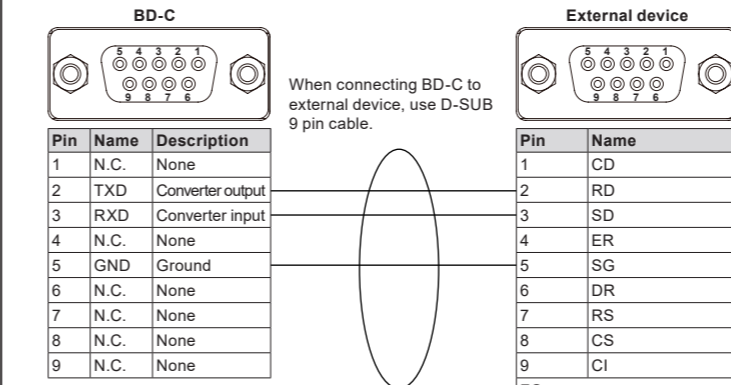


##### ○ Connecting to amplifier unit

- Precautions when connecting amplifier unit**
    - Mount on DIN rail.
    - Do not supply the power when adding amplifier unit.
    - Supply power to each connected amplifier unit at the same time.
    - Up to 8 amplifier units can be connected, and only 1 calculation function can be performed per 1 group of mutually connected amplifiers.
    - When the calculation function is activated, the setting values (SV) of the slave units are disable and the mutual interference prevention function for sensor heads is executed automatically.
  - ① Remove the side cover at the connecting side.
  - ② Connect the side connector to the units.
  - ③ After mounting amplifier unit and communication unit on DIN rail, push it to arrow direction tightly.
- ※In case of disconnecting, follow the upper sequence reversely.

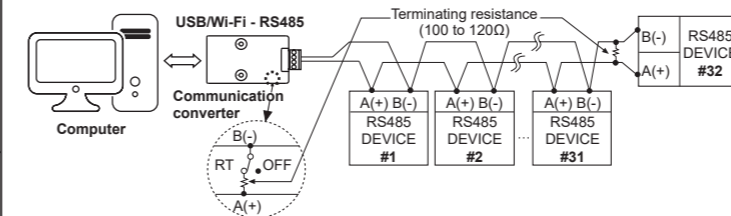
#### ■ Connections

##### ○ RS232C communication



##### ○ RS485 communication

###### • Application of system organization

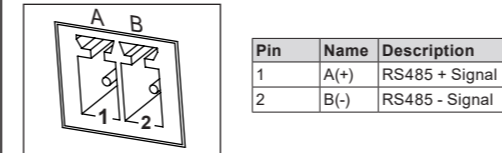


###### • Terminating switch

RT ← OFF

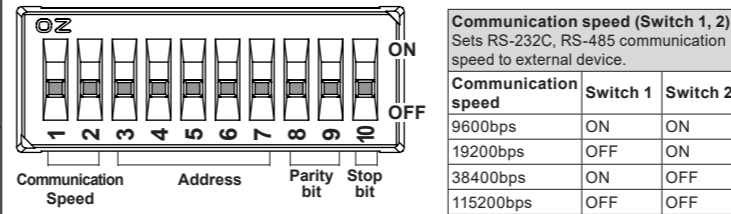
Set the switch to 'RT' when the communication converter is connected to the terminal of RS485 communication connection, and set to 'OFF' when it is in the middle of the communication connection.

###### • Communication pin



#### ■ Communication Setting

##### ○ Communication setting switch



**Address (Switch 3 to 7):** Sets the address of communication converter. It is calculated in binary according to the ON/OFF status of each switch.

Switch No.	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Address
Binary digit	2 <sup>1</sup>	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>	Address=Switch 3×2 <sup>4</sup> + Switch 4×2 <sup>3</sup> + Switch 5×2 <sup>2</sup> + Switch 6×2 <sup>1</sup> + Switch 7×2 <sup>0</sup> + 1
OFF=0						
ON=1						
Address 1	OFF	OFF	OFF	OFF	OFF	1=0×2 <sup>4</sup> + 0×2 <sup>3</sup> + 0×2 <sup>2</sup> + 0×2 <sup>1</sup> + 0×2 <sup>0</sup> + 1
Address 2	OFF	OFF	OFF	OFF	ON	2=0×2 <sup>4</sup> + 0×2 <sup>3</sup> + 0×2 <sup>2</sup> + 0×2 <sup>1</sup> + 1×2 <sup>0</sup> + 1
Address 3	OFF	OFF	OFF	ON	ON	3=0×2 <sup>4</sup> + 0×2 <sup>3</sup> + 0×2 <sup>2</sup> + 1×2 <sup>1</sup> + 1×2 <sup>0</sup> + 1
...	...	...	...	...	...	...
Address 16	ON	OFF	ON	ON	ON	16=1×2 <sup>4</sup> + 0×2 <sup>3</sup> + 1×2 <sup>2</sup> + 1×2 <sup>1</sup> + 1×2 <sup>0</sup> + 1
...	...	...	...	...	...	...
Address 31	ON	ON	ON	ON	OFF	31=1×2 <sup>4</sup> + 1×2 <sup>3</sup> + 1×2 <sup>2</sup> + 1×2 <sup>1</sup> + 0×2 <sup>0</sup> + 1
Address 32	ON	ON	ON	ON	ON	32=1×2 <sup>4</sup> + 1×2 <sup>3</sup> + 1×2 <sup>2</sup> + 1×2 <sup>1</sup> + 1×2 <sup>0</sup> + 1

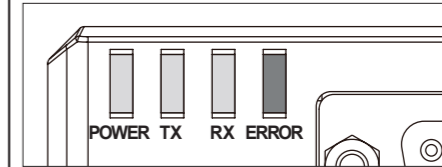
##### ○ Parity bit (Switch 8, 9): Sets parity bit for RS-232C, RS-485 communication.

Parity	Switch 8	Switch 9
Even	ON	ON
Odd	OFF	ON
None	ON	OFF
None	OFF	OFF

##### ○ Stop bit (Switch 10): Sets stop bit for RS-232C, RS-485 communication.

Stop bit	Switch 10
2-bit	ON
1-bit	OFF

#### ■ Status Indicators



**Power indicator (POWER):** Green, Displays power supply.

Status	Reason	Solution
On	Power is supplied.	—
Off	Power is not supplied.	After checking the connection between communication converter and amplifier unit correctly, reconnect the device.

**Communication output indicator (TX):** Green, Displays communication output status from communication converter to external device.

Status	Reason	Solution
Flashing	Signal is outputting.	—
Off	Signal is not outputting.	—

**Communication input indicator (RX):** Green, Displays communication input status from communication converter to external device.

Status	Reason	Solution
Flashing	Signal is inputting.	—
Off	Signal is not inputting.	—

**Communication error indicator (ERROR):** Red, Displays the communication status of communication converter.

Status	Reason	Solution
On	Connection is bad between communication converter and amplifier unit.	After checking the connection between communication converter and amplifier unit correctly, reconnect the device.
Flashing	Communication is bad between communication converter and amplifier unit.	After checking the connection between communication converter and amplifier unit correctly, reconnect the device. Apply noise prevention to communication converter and amplifier unit.
Off	Operation is normal.	—

#### ■ Manual

For the detail information and instructions, please refer to the manual, and be sure to follow cautions written in the technical descriptions (catalog, website).  
Visit our website ([www.autonics.com](http://www.autonics.com)) to download manuals.

#### ■ atDisplacement

- atDisplacement is BD-C Series management program for convenient management of multiple device data monitoring.
- Visit our website ([www.autonics.com](http://www.autonics.com)) to download user manual and program.

##### ○ System requirement

Item	Minimum requirements
System	IBM PC compatible computer with 1GHz + processor
Operations	Microsoft Windows 7 +
Memory	2GB +
Hard disk	1GB + of available hard disk space
VGA	Resolution: 1920×1080 or higher
Others	RS-232 serial port (9-pin), USB port

#### ■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Do not install where strong magnetic or electric field exist. Otherwise, the resolution may be adversely affected.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
- For the optimized performance, it is recommended to measure after 30 minute from supplying power.
- When detecting with the maximum sensitivity, an error may occur depending on each characteristic deviation.
- This unit may be used in the following environments.
  - Indoors/Outdoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000m
  - Pollution degree 2
  - Installation category II