

Fiber Optic Amplifier Communication Converters

BFC Series
INSTRUCTION MANUAL

TCD210066AB

Autonics

Thank you for choosing our Autonics product.
Read and understand the instruction manual and manual thoroughly before using the product.
For your safety, read and follow the below safety considerations before using.
For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.
Keep this instruction manual in a place where you can find easily.
The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.
Follow Autonics website for the latest information.

Safety Considerations

- Observe all ‘Safety Considerations’ for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death.

- 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, economic loss or fire.
- Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
Failure to follow this instruction may result in explosion or fire.
- Install the unit on DIN rail to use.**
Failure to follow this instruction may result in 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 Failure to follow instructions may result in injury or product damage.

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

Cautions during Use

- Follow instructions in ‘Cautions during Use’. Otherwise, it may cause unexpected accidents.
- When connecting an inductive load such as a DC relay, remove surge by using a diode or varistor.
- Use the product after 3 sec of the power input.
- Wire as short as possible and keep it away from high voltage lines or power lines to prevent surge and inductive noise.
- When using switching mode power supply (SMPS), ground F.G. terminal and connect a condenser between 0V and F.G. terminal to remove noise.
- Since external disturbance light (sunlight, fluorescent lighting, etc.) can cause product malfunction, use the product with a light shield or slit.
- Be cautious that this product is non-insulated.
- Turn off the power of this product before installation or removal.
- Use twisted pair wire for communication line.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in ‘Specifications’)
 - Altitude max. 2,000 m
 - Pollution degree 2
 - Installation category III

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

BFC - ①

① Input method

N: NPN solid-state input
P: PNP solid-state input

Product Components

- Product
- Connector cable
- Instruction manual
- Side connector

Sold Separately

- Fiber optic amplifier: BF5 series
- Communication converter: SCM series

Software

Download the installation file and the manuals from the Autonics website.

■ DAQMaster

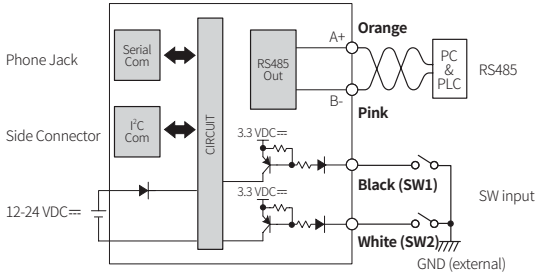
It is the comprehensive device management program for Autonics' products, providing parameter setting, monitoring and data management.

Manual

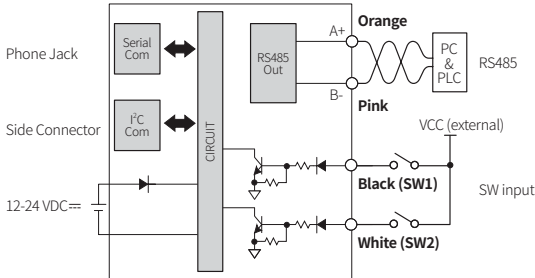
For proper use of the product, refer to the manuals and be sure to follow the safety considerations in the manuals.
Download the manuals from the Autonics website.

Connections and Circuit

■ NPN solid-state input

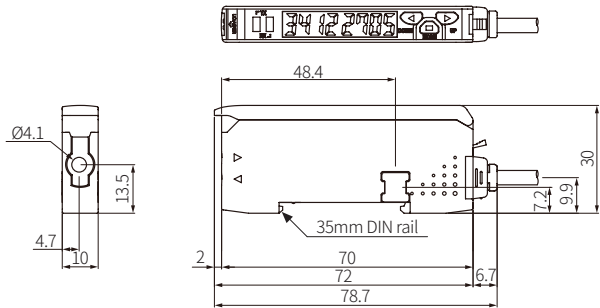


■ PNP solid-state input



Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.



Error

Error	Cause	Troubleshooting
E r A	Data read/write error occurs in EEPROM of the amplifier.	Check the circuitry around EEPROM inside the product.
E r b	- Slave fails to execute the Master's instructions such as 1:M copy, load all, save all, and group teaching due to unstable communication lines. - Another communication error occurs.	- Check the cascading status. - Check the circuitry around the side connector and hardware condition.

Specifications

Model	BFC-□
Supported amplifier	BF5 Series
Comm. function	RS485, Serial communication, Switch (SW) input
Switch (SW) input	HIGH: 5-24 VDC≐, LOW: 0-1 VDC≐
Function	Real-time monitoring (incident light level, output state), Executes all functions and sets the parameters of BF5 Series via external devices (PC, PLC)
Indicator	TX indicator (red), RX indicator (green), display screen (PV display part: red LED, SV display part: green LED)
Approval	CE ENEC
Unit weight	≈ 15 g

Power supply	12-24 VDC≐ ± 10% (using the power supply of the connected amplifier)
Current consumption	≤ 40 mA
Control output	NPN solid-state input / PNP solid-state input model
Vibration	1 mm double amplitude at frequency 10 to 55 Hz in each X, Y, Z direction for 2 hours
Shock	500 m/s ² (≈ 50 G) in each X, Y, Z direction for 3 times
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity	35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)
Protection rating	IP40 (IEC standard)
Connection	Connector cable
Cable spec.	Ø 4 mm, 4-wire, 2 m
Wire spec.	AWG22 (0.08 mm, 60-core), insulator outer diameter: Ø 1.25 mm
Material	Case: PBT, cover: PC

Communication Interface

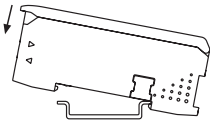
■ RS485

Comm. protocol	Modbus RTU
Application standard	Compliance with EIA RS485
Max. connection	31-unit (communication address setting: 01 to 99)
Comm. synchronous method	Asynchronous
Comm. method	2-wire half duplex
Comm. distance	≤ 800 m
Comm. speed	1,200 / 2,400 / 4,800 / 9,600 / 19,200 / 38,400 bps
Comm. response time	20 to 90 ms
Start bit	1-bit
Data bit	8-bit
Parity bit	None, Even, Odd
Stop bit	1-bit, 2-bit

DIN Rail Mount and Removal

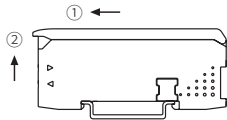
■ Mount

- Hang up the holder on the backside of the communication converter to the DIN rail (35 mm).
- Press the front side of the communication converter toward the DIN rail.



■ Removal

- Slide the communication converter to direction ①.
- Lift the front side of the communication converter to direction ②.



Connect and Remove Connector Cable

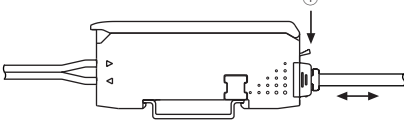
⚠ Caution: Do not connect the connector cable of the amplifier to the communication converter. Otherwise, it may result in product damage.

■ Connection

Insert the connector into the communication converter mounted to the DIN rail with a click.

■ Removal

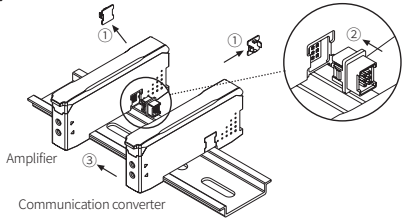
Press the lever lock to the direction ① and pull it from the communication converter.



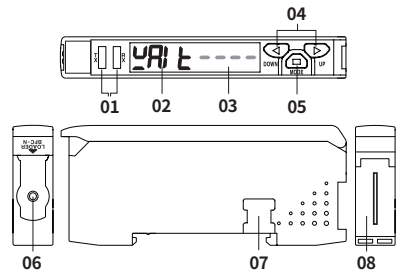
Connect Communication Converter and Amplifier

- Make sure that if you connect the side connector with excessive force, it may cause extruded pins.
- Be sure to mount the side connector to fit tightly. Otherwise, the communication connection may not normally work.

- Remove the side cover (①) on the communication converter and amplifier.
- Mount the side connector to the socket on the side of the communication converter like ②.
- Install the communication converter and amplifiers to the DIN rail and gently push the communication converter toward direction ③.
- Be sure to check the connection of the communication converter and side connector.



Unit Descriptions



- TX (transmission) indicator (red)
RX (reception) indicator (green)
- PV display part (red 4-digit LED)
It shows the parameter.
- SV display part (green 4-digit LED)
It shows the parameter value.
- [◀] [▶] key
Selecting the setting value.
- [MODE] key
Enter mode, move parameter
- Serial communication port
Connection port for the USB/Serial converter (SCM-US, sold separately)
- Side cover
Remove when connecting with the amplifiers
- Connector cable terminal
Terminal for the RS485 communication / switch (SW) input mode