

Fiber Optic Amplifier Communication Converters



BFC Series PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Sets all Functional performance and parameters from external devices (PC, PLC)
- Supports various communications
: RS485 communication, Serial Communication, SW input
- Connected up to 32 amplifiers (BF5 series)
- Slim design with depth 10 mm (W 10 × H 30 × L 70 mm)

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.

01. 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.

02. 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.

03. Install the unit on DIN rail to use.

Failure to follow this instruction may result in fire.

04. Do not disassemble or modify the unit.

Failure to follow this instruction may result in fire.

05. Do not connect, repair, or inspect the unit while connected to a power source.

Failure to follow this instruction may result in fire.

06. 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.

01. Use the unit within the rated specifications.

Failure to follow this instruction may result in fire or product damage.

02. 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.

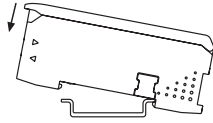
Cautions during Use

- 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

DIN Rail Mount and Removal

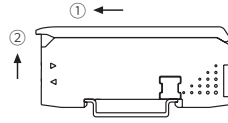
■ Mount

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



■ Removal

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



Connect and Remove Connector Cable

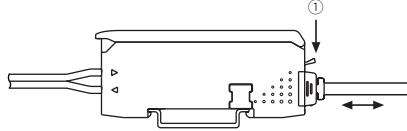
⚠ Caution: Do not connect the connector cable of the amplifier to the communication converter. Otherwise, it may result in product damage.

■ Connection

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

■ Removal

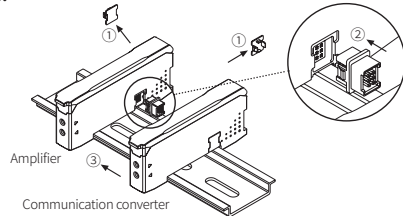
Press the lever lock to the direction ① and pull it from the communication converter.



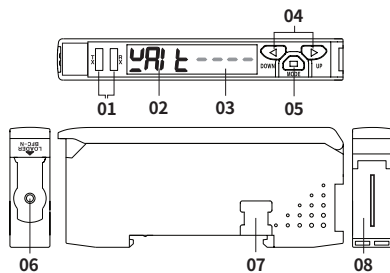
Connect Communication Converter and Amplifier

- 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.

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



Unit Descriptions



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

Parameter setting

- Return to the 2. Communication mode after the screen flashes twice.
- [MODE] key: saves the setting value and move to the next parameter, return to the 0. Communication standby after applying the input for 3 sec
- [◀], [▶] key: selects the setting value

Mode	Display	Factory defaults	Setting range
	PV	SV	
0 Communication standby	Standby	----	• Entering method: [MODE] key 3 sec
1 Communication parameter	Com	Param	-
2 Communication mode	Com	485	485: RS485 communication BANK: switch (SW) input USB: serial communication • Refer to the detailed explanation of each mode.
3 Communication address	Addr	1	1 to 99
4 Communication speed	bPS	9600	1200, 2400, 4800, 9600, 192K: 19200, 384K: 38400
5 Response waiting time	rnt	20	20 to 99 ms • The response time may increase up to 350 ms depending on the number of connected amplifiers.
6 Parity bit	Prty	none	None, Even, Odd
7 Stop bit	Stop	2bit	2 bit, 1bit

Functions Supported by DAQMaster

If you manage the amplifiers via PC under the RS485 and serial communication, DAQMaster supports the functions listed below. For the detailed information, refer to the 'DAQMaster User Manual.'

• Config

It shows the number of cascaded amplifiers (BF5) with the communication converter (BFC).

• Status

It shows the information of the cascaded amplifier (dual/single) by selecting the channel.

• Program Group

You can change the setting values of the program mode of cascaded amplifiers. When setting values are changed, TX and RX indicators flash and apply the changed values to the amplifier.

• Data Bank Group

It supports data bank function, group teaching (teaching all), and initialization.

• Data Bank

It saves the settings of data bank (BANK 0, BANK 1, BANK 2).

■ Application of data bank group setting

Mode	Unit	PV	SV
Communication standby	Communication converter	Standby	----
Bank Load	Communication converter	Load	Load
	Amplifier	Load	Load
Bank Save	Communication converter	Save	Save
	Amplifier	Save	Save
Bank Copy	Communication converter	Copy	Load
	Amplifier	Copy	Load
Bank Load All	Communication converter	Load ⁰¹⁾	Load ⁰¹⁾
	Amplifier	Load	Load
Bank Save All	Communication converter	Save ⁰¹⁾	Save ⁰¹⁾
	Amplifier	Save	Save
Teaching All	Communication converter	Teach	Load
	Amplifier	Teach	Load
Initialize	Communication converter	Init	Init
	Amplifier	Init	Init

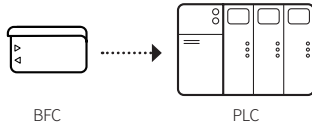
01) Flashing twice

RS485 Communication

- You can manage the cascaded amplifiers via PLC or PC.
- Refer to the 'Connections' for checking the correct wire connection.
- Do not overlap the communication address on the same communication line.
- In the parameter setting, set 2. Communication mode as RS485 communication.

■ PLC connection

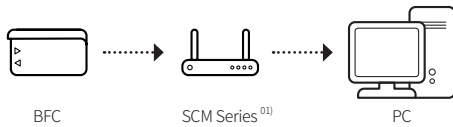
- Directly connect the cables of this product to the PLC.



■ PC connection

- DAQMaster should be installed on your PC.
- Be sure to set the same communication port and address of this product and DAQMaster.

- Connect the cables of this product to the serial communication converters (SCM Series, sold separately).
 - Connect the SCM Series and PC.
 - Proceed the settings via DAQMaster.
- For the detailed information, refer to the 'DAQMaster User Manual.'



01) SCM-WF48 / SCM-US48I / SCM-38I

Segment Table

The segments displayed on the product indicate the following meanings.
It may differ depending on the product.

7 segment	11 segment	12 segment	16 segment
0 0 I I	0 0 I I	0 0 I I	0 0 I I
1 1 J J	1 1 J J	1 1 J J	1 1 J J
2 2 K K	2 2 K K	2 2 K K	2 2 K K
3 3 L L	3 3 L L	3 3 L L	3 3 L L
4 4 M M	4 4 M M	4 4 M M	4 4 M M
5 5 N N	5 5 N N	5 5 N N	5 5 N N
6 6 O O	6 6 O O	6 6 O O	6 6 O O
7 7 P P	7 7 P P	7 7 P P	7 7 P P
8 8 Q Q	8 8 Q Q	8 8 Q Q	8 8 Q Q
9 9 R R	9 9 R R	9 9 R R	9 9 R R
A A S S	A A S S	A A S S	A A S S
b B t T	b B t T	b B t T	b B t T
c C u U	c C u U	c C u U	c C u U
d D v V	d D v V	d D v V	d D v V
E E w W	E E w W	E E w W	E E w W
F F x X	F F x X	F F x X	F F x X
G G y Y	G G y Y	G G y Y	G G y Y
H H z Z	H H z Z	H H z Z	H H z Z

Switch (SW) Input

- You can change all the banks of cascaded amplifiers at once.
- You can select the BANK via signal inputs connecting with the connector cable of the communication converter. (input time: ≥ 3 sec)

	NPN		PNP	
	SW1 (black)	SW2 (white)	SW1 (black)	SW2 (white)
Signal standby	H	H	L	L
BANK 0	H	L	L	H
BANK 1	L	H	H	L
BANK 2	L	L	H	H

- Refer to the 'Connections' for checking the correct wire connection.
- In the parameter setting, set 2. Communication mode as switch input mode (BANK).
- The example below is based on NPN and BANK 1.

Unit	PV	SV	Descriptions
Communication converter	5 2	b R n 2	SW input mode
	5 E t	b R 2 0	Signal standby state, displaying the selected BANK
	5 E t	b R 2 1	SW input - SW1: L, SW2: H
	c H 0 1	a 2	Change the BANK
Amplifier	L d R L	E n d	
	L a R d	E n d	

Serial Communication

- You can manage the cascaded amplifiers via PC. DAQMaster should be installed on your PC.
- In the parameter setting, set 2. Communication mode as serial communication mode (USB).
- Be sure to set the same communication port and address of this product and DAQMaster.

■ PC connection

- Connect the serial communication converters (SCM-US, sold separately) to the serial communication port on this product.
 - Connect the SCM-US and PC.
 - Proceed the settings via DAQMaster.
- For the detailed information, refer to the 'DAQMaster User Manual.'

