# Fiber Optic Amplifier Communication Converters

## BFNC Series

PRODUCT MANUAL

**Be sure to follow the instructions and precautions in the instruction manual, other manuals, and the Autonics website.**
The specifications, dimensions, and other information in this document are subject to change without notice for product improvement.
Certain models may be discontinued without notice.

## Safety Precautions

- 'Safety Precautions' are provided to ensure safe and proper use of the product and to prevent accidents or hazards. Please make sure to follow them carefully.
- ⚠ symbol indicates a caution, warning of potential hazards under certain conditions.

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

01. **Fail-safe device must be installed when using the product in applications that may cause serious injuries or property loss. (E.g. nuclear control systems, medical equipment, ships, vehicles, railroads, aircraft, combustion devices, safety devices, security systems, disaster prevention devices, etc.)**
    Failure to do so may result in personal injury, property loss or fire.
02. **Do not use or store the product in environments containing flammable, explosive, or corrosive gases, or in places exposed to high humidity, direct sunlight, radiant heat, vibration, shock, or salt.**
    Failure to do so may result in explosion or fire.
03. **Install the device inside a device panel before use.**
    Failure to do so may result in fire.
04. **When expanding amplifiers, be sure to mount the units on a DIN rail. Securely fix the fiber optic amplifier and communication converter on the DIN rail by attaching end plates on each end. If using third-party end plates, make sure it meets the manufacturer's specification requirements.**
    Failure to do so may result in fire or product malfunction due to poor contact of the side connectors.
05. **The side connectors of the amplifiers on each end or any unused amplifiers must be covered with side connector protective caps.**
    Failure to do so may result in electric shock or product damage.
06. **Do not disassemble, repair, or modify the product without authorization.**
    Failure to do so may result in fire or injury.
07. **Wait at least 3 seconds after applying power before using the product.**
08. **Do not connect, repair, or inspect the unit while connected to a power source.**
    Failure to follow this instruction may result in fire.
09. **Check the connection diagram before wiring.**
    Failure to do so may result in fire or product damage.
10. **Installation, configuration, and integration with machine control system must be performed by a qualified supervisory user who is:**
    **- fully familiar with the installation, configuration, operation, and maintenance of the product.**
    **- fully familiar with national and regional standards, regulations, and laws applicable to the type of machine on which the product is installed.**
    Installation or configuration by personnel other than a supervisory user may result in improper operation or increase the risk of accidents.
11. **After installing the product, check that the product's functions and settings are working as intended before the machine is in operation.**
    Improper configuration of the product may result in personal injury.
12. **This product is not a safety sensor and does not comply with any domestic or international safety standards.**
    **Do not use the product in applications where personal injury, loss of life, or property damage may occur.**

**⚠ Caution** Failure to follow instructions may result in injury or product damage.

01. **When wiring the BFNC-EC / CL power connectors, use copper (Cu) wires rated for temperatures of 60 °C or higher, with sizes between AWG 28 and AWG 16. Tighten the screws with a torque of 0.34 N·m.**
    Failure to do so may result in fire or product malfunction due to contact failure.
02. **Use the product within its rated specifications and performance limits.**
    Failure to do so may result in fire or product damage.
03. **Use a dry cloth to clean the product. Do not use water or organic solvents.**
    Failure to do so may result in fire.
04. **Prevent metal, dust, wiring debris, and other foreign material from entering the product.**
    Failure to do so may result in fire, product malfunction, or product damage.

## Cautions During Use

- Make sure to follow the instructions in 'Cautions During Use'. Failure to do so may result in unexpected accidents.
- Power input should be supplied from an isolated and limited voltage/current source, or from a Class 2 or SELV power supply.
- When supplying power with an SMPS, ground the F.G. terminal and connect a noise suppression capacitor between the 0 V and F.G. terminals.
- When connecting inductive loads such as DC relays, use a diode, varistor, or similar component to suppress surges.
- To prevent surges and inductive noise, separate the wiring from high-voltage and power lines, and keep wiring lengths as short as possible.
- When installing power lines and input lines close to each other, use a line filter or varistor on the power lines and shielded wires on the input lines. For stable operation, use shielded wires and ferrite cores when installing communication lines, power lines, and signal lines.
- Do not use the product near devices that generate strong magnetic fields or high-frequency noise.
- The communication section of the product is isolated, but the input section is not isolated. Please exercise caution regarding electrical safety when using the product.
- Turn off the power before connecting or disconnecting fiber optic amplifier units to the product. Failure to do so may result in product damage.
- When connecting the product with fiber optic amplifiers, connect the power supply only to the communication converter. Do not connect separate power supplies to the communication converter and the fiber optic amplifier.
- Use communication cables recommended by each communication association, and refer to the manuals published by the respective association for specific connection specifications. The communication distance must be within the rated specification range, and be sure to observe the following precautions when wiring.
  - Install communication cables with sufficient distance from power lines and high-voltage lines.
  - Avoid excessive bending or pulling of the communication cables.
  - Do not place objects on top of the communication cables.
  - Communication cables must be installed inside a duct.
- When disposing of this product, treat it as industrial waste. For detailed information, refer to the applicable national and regional standards, regulations, and laws.
- This product may be used in the following environmental conditions.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude: up to 2,000 m
  - Pollution Degree 3
  - Installation Category II

## Ordering Information

For reference only. The actual product does not support all combinations.
To check all supported models, please refer to the Autonics website.

**BFNC - ❶**

**❶ Communication protocol**
No-mark: Modbus RTU
EC: EtherCAT
CL: CC-Link

## Product Components

- Product, instruction manual
- [BFNC-EC/CL] Power connector
- [BFNC-CL] Communication connector, Termination resistor ×2

## Sold Separately

- Fiber optic amplifier: BFN Series
- End plate: BK-BFN-B
- Serial communication converter : SCM-US

## Manuals and Software

Refer to the product manual for detailed product information and instructions, and be sure to follow the precautions in the technical documents.
Manuals and software can be downloaded from the Autonics website.

### ■ BFNC Series Communication Manual

Provides communication tables for each protocol for the BFN Series dual display models.

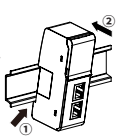
### ■ DAQMaster

Comprehensive device management software used to configure parameters, monitor status, and manage data of supported Autonics devices..

## Installing the Communication Converter

⚠ **Turn off the power before starting installation.**

**Installation**
01. Hook the DIN rail holder on the bottom (①) onto the DIN rail.
02. Push the top part of the converter (②) toward the DIN rail to lock it in place.




**Removal**
01. Push the bottom part of the converter upward and slightly lift it off the DIN rail.
02. Tilt the converter outward to remove it from the DIN rail.

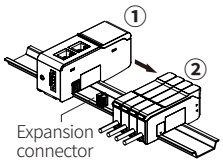
- Install end plates (BK-BFN-B, sold separately) on each end to secure the converter. When installing the screws, tighten with a torque less than 0.59 N m.

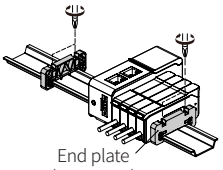
## Connecting Communication Converters with Amplifiers

- This installation example is based on the BFNC-EC model. The external appearance and connector positions may differ depending on the model. Please refer to the specifications of each model before installation.

⚠
**01. Turn off the power before starting installation.**
**02. Do not apply excessive force to the side connector.**
Failure to do so may result in damaging or bending the connector pins.
**03. Make sure the side connector is tightly and securely connected.**
Failure to do so may result in reduced performance or product malfunction..
**04. When using BFNC-EC/CL, connect the power only to the comm. converter.**
**05. Do not connect separate power supplies to the communication converter (BFNC-EC/CL) and the fiber optic amplifier.**

01. Install the comm. converter (①) onto the DIN rail.
02. Mount the amplifiers (②) one by one onto the DIN rail in the correct order.
Check the mounting direction and order of each amplifier, and make sure to follow the amplifier installation instructions. If the expansion connector is covered with a protective cap, remove the cap before connecting the units.
03. Push the side connector on the right side of the converter toward the expansion connector of the amplifier to make the connection. Check that the connectors are securely and tightly connected.
04. Check that all devices are firmly mounted and all connectors are properly engaged.
05. If a side connector of an amplifier is exposed after installation, reattach the protective cap to cover it.
06. Install the end plates (BK-BFN-B, sold separately) on both ends of the entire unit, and tighten the screws with a torque less than 0.59 N m to fix the position.

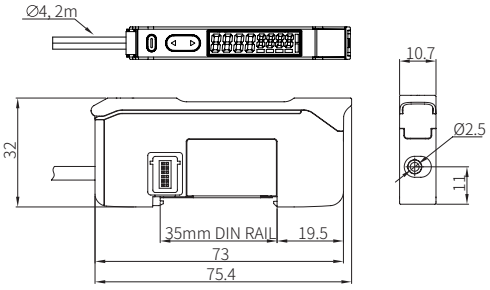



## Dimensions

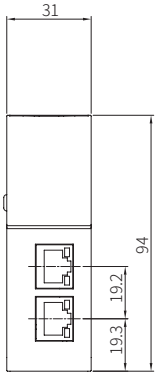
- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)

### ■ BFNC

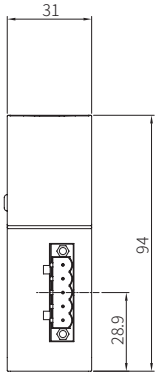



### ■ BFNC-EC/CL

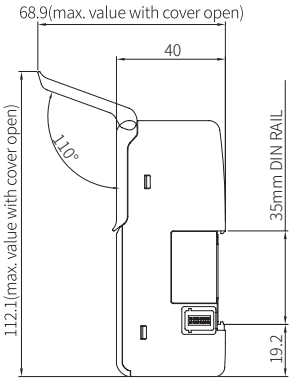
BFNC-EC

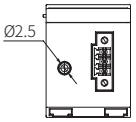



BFNC-CL

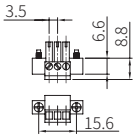



- Protective cover fully open

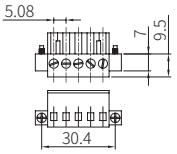


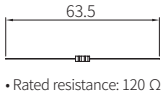

### ■ Power Connector (BFNC-EC/CL)




### ■ Comm. Connector (BFNC-CL)




### ■ Termination Resistor (BFNC-CL)




- Rated resistance: 120 Ω
- Tolerance: ± 1%
- Rated power: 0.25 W (1/4 W)
- Resistor type: Metal Film Resistor

## Specifications

| Model | BFNC | BFNC-EC | BFNC-CL |
|---|---|---|---|
| Display | FND display (green: 4-digit, white: 4-digit) | Status indicator × 5 | Status indicator × 4 |
| Communication | RS-485 | EtherCAT | CC-Link |
| Power voltage | 10 - 30 VDC⎓ (ripple P-P: ≤ 10%) | | |
| Power supply | Side connector (amplifier) | Power connector (3-pin) | Power connector (3-pin) |
| No. of amplifier expansion units | ≤ 30 units | ≤ 16 units | ≤ 16 units |
| Current consumption | ≤ 80 mA (10 VDC⎓), ≤ 50 mA (30 VDC⎓) | ≤ 300 mA (10 VDC⎓), ≤ 200 mA (30 VDC⎓) | ≤ 200 mA (10 VDC⎓), ≤ 140 mA (30 VDC⎓) |
| Amp. allowable current | — 01) | ≤ 2 A 02) | ≤ 2 A 02) |
| Amp. connection | Via side connector | | |
| Input | NPN / PNP non-contact input | — | — |
| Connection | Cable type | — | — |
| Cable specification | Ø 4 mm, 4-wire, 2 m | — | — |
| Wire specification | AWG23 (0.08 mm, 60-core), insulator outer diameter: Ø 1.25 mm | — | — |
| Certification | CE UKCA cULus KC | CE UKCA cULus KC | CE UKCA cULus KC |
| Weight (packaged) | ≈ 73 g (≈ 137 g) | ≈ 81 g (≈ 125 g) | ≈ 75 g (≈ 128 g) |

01) Power is not supplied to the amplifier.
02) The value indicates the total current supplied to connected or expanded amplifiers.
Ensure that the total current consumption of the connected amplifiers does NOT exceed the allowable limit.

| | |
|---|---|
| Protection circuit | Reverse power protection circuit, surge protection circuit |
| Insulation resistance | ≥ 20 MΩ (500 VDC⎓ megger) |
| Dielectric strength | Between charging part and case: 1,000 VAC~ 50/60 Hz for 1 min |
| Vibration resistance | 1.5 mm double amplitude at frequency 10 to 55 Hz in each X, Y, Z direction for 2 hours |
| Shock resistance | 500 m/s² (≈ 50 G) in each X, Y, Z direction for 3 times |
| Ambient temperature | -10 to 50 °C, storage: -20 to 70 °C (no freezing or condensation) |
| Ambient humidity | 35 to 85% RH, storage: 35 to 85% RH (no freezing or condensation) |
| Installation | 35 mm DIN rail installation |
| Protection rating | [BFNC] IP40 (IEC standard) [BFNC-EC/CL] IP20 (IEC standard) |
| Material | Case, cover: PC |

## Communication Interface

### ■ RS-485

| | |
|---|---|
| Communication protocol | Modbus RTU |
| Application standard | EIA RS-485 compliant |
| Comm synchronization method | Asynchronous |
| Communication method | 2-wire half duplex |
| Transmission speed | 1,200 / 2,400 / 4,800 / 9,600 / 19,200 / 38,400 / 57,600 / 115,200 (default) bps |
| Transmission medium | RS-485 compliant or Modbus Association certified cable |
| Cable length | ≤ 1 km |
| Address setting | FND display and button |
| Address range | 1 to 99 |
| Topology | Daisy Chain, Bus, Drop Line, Trunk |
| Start bit | 1-bit |
| Data bit | 8-bit |
| Parity bit | None (default), Even, Odd |
| Stop bit | 1-bit, 2-bit (default) |

### ■ EtherCAT

| | |
|---|---|
| Communication protocol | EtherCAT |
| Association certification 01) | EtherCAT Conformance tested |
| Ethernet standard | 100BASE-TX (IEEE802.3u) |
| Transmission speed | 100 Mbps |
| Transmission medium | Category 5e STP or ETG certified cable |
| Cable length | ≤ 100 m |
| Communication connector | RJ45 × 2 |
| Node address setting | Hexadecimal rotary switch × 3 |
| Node address range | 0 to 4095 |
| Topology | Daisy Chain |
| Communication function | Process Data Object Communication (PDO) / Mailbox Communication (CoE Compliant) |
| ESI file | Download from Autonics website |

01) EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany

### ■ CC-Link

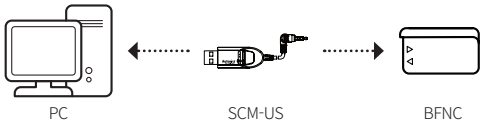
| | |
|---|---|
| Communication protocol | CC-Link Ver. 1.1 / Ver. 2.0 |
| Association certification | CC-Link |
| Remote station type | Remote device station |
| Transmission speed | 156 kbps / 625 kbps / 2.5 Mbps / 5 Mbps / 10 Mbps |
| Transmission medium | CLPA certified cable |
| Distance between nodes | ≥ 20 cm |
| Cable length | Varies depending on transmission speed<br>156 kbps ≤ 1,200 m / 625 kbps ≤ 900 m / 2.5 Mbps ≤ 400 m<br>5 Mbps ≤ 160 m / 10 Mbps ≤ 100 m |
| Communication connector | 5-pin PCB × 1 |
| Node address setting | Decimal rotary switch × 2 |
| Node address range | 1 to 64 |
| Number of stations | Ver. 1.1: 1, 2, 3, or 4 stations<br>Ver. 2.0: 3 stations 2 cycles |
| Topology | Daisy Chain, Bus, Drop Line, Trunk |
| CSP+ file | Download from Autonics website |

## Serial Communication

- Use the serial communication converter (SCM-US, sold separately) to connect the product to the DAQMaster software. (For maintenance purposes only)
- DAQMaster must be installed on the PC.
- In the parameter settings, 'Communication mode' to COM USB (serial communication mode).
- Be sure to set the same communication port and address on the product and DAQMaster software.

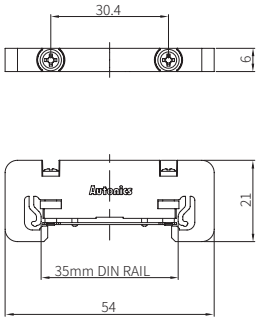
### ■ Connecting to the PC

01. Connect the serial communication converter (SCM-US, sold separately) to the serial communication port on the product.
02. Connect the SCM-US to the PC.
03. Proceed with settings in the DAQMaster software.
For the detailed information, refer to the 'DAQMaster Software User Manual.'



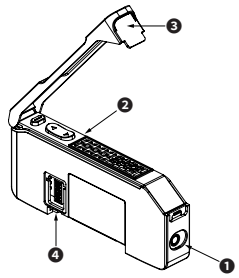

## Sold Separately: End Plate (BK-BFN-B)

- Unit: mm (Refer to the CAD files from the Autonics website for exact dimensions)



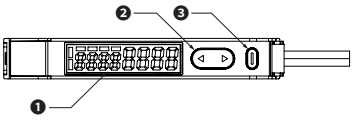
# BFNC

## Unit Description



❶ **SCM-US connection terminal**
❷ **Display·Operation part**
❸ **Protective cover**
❹ **Side connector**

### ■ Display / Operation



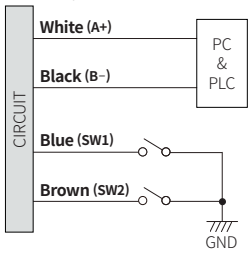
❶ **Display**
Displays the communication standby or active status.
❷ **[◀] [▶] (UP / DOWN) key**
Changes setting values in communication settings.
❸ **[MODE] key**
Enters communication settings from communication standby.

## Wiring and Circuit Diagram

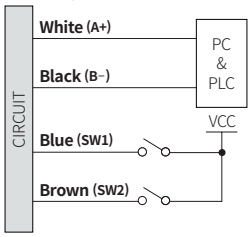
- Configure the SW input power to match the BFN power specifications. Failure to do so may result in product malfunction or damage.

| Wire color | Function |
|---|---|
| White | A+ |
| Black | B- |
| Blue | SW 1 |
| Brown | SW 2 |

- Communication mode: SW
- Switch input method: NPN




- Communication mode: SW
- Switch input method: PNP




## Alarms

| Display | | Alarm description |
|---|---|---|
| ErrA | E001 | NVM error |
| ErrA | E004 | BFN configuration error |
| ErrA | E007 | BFN response error |
| ErrA | E008 | BFN CRC error |
| Errb | NNnn | BFN error |

## Parameter Settings

- While in communication standby, press the [MODE] key for over 3 seconds to enter communication settings.
  Display: COM PARA will flashe twice, then automatically enter parameter settings.
- [MODE] key: save and move to next setting / [◀ / ▶] key: change setting vlaue

| Parameter | | Display | | Setting Value | Comm. Mode |
|---|---|---|---|---|---|
| C-1 | Comm. mode | Com | 485 | COM USB: USB communication<br>COM 485: RS-485 communication<br>SW BANK (0/1/2): SW input | |
| C-2 | Comm. address | Adr5 | 01 | 01 to 99<br>• Same communication address not allowed in the network. | COM USB, COM 485 |
| C-3 | Comm. speed | bPS | 1152 | 1200/2400/4800/9600/192k/384k/576k/1152 | |
| C-4 | Parity bit | PrtY | nonE | NONE, EVEN, ODD | |
| C-5 | Stop bit | StoP | 2bit | 1BIT, 2BIT | |
| C-6 | Switch input method | tYPE | nPn | NPN, PNP | SW BANK |

## Communication Settings

### ■ Communication Mode: USB / RS-485

| Status | Display | | Description |
|---|---|---|---|
| Comm. standby | YAIt | ---- | Waits for communication. |
| Run teaching command | tCHI | ---- | Runs teaching on expanded amplifier units via master command. |
| Run LOAD command | LoAd | bAnD | Runs LOAD on expanded amplifier units via master command. |
| Run SAVE command | SAvE | bAnD | Runs SAVE on expanded amplifier units via master command. |
| Run initialization command | Init | ---- | Runs initialization (reset) on expanded amplifier units via master command. |

### ■ Communication Mode: SW

- Connect an external switch to load a BANK into the expanded amplifier units.

| Display | | Setting Operation |
|---|---|---|
| SEt | bAnD | Waits for communication. |
| SY0 | bAnD | Selects BANK 0–2 by inputting external switch for more than 3 seconds. |
| LoAd | bAnD | Enters BANK LOAD. |
| CH01 | oE | Runs LOAD command on each channel.<br>Includes expanded amplifier units. |
| LoAd | End | LOAD completed. Enters communication standby status. |

- BANK is selected based on C-6 switch input method setting and external switch input.

| | NPN | | PNP | |
|---|---|---|---|---|
| | SW1 (Blue) | SW2 (Brown) | SW1 (Blue) | SW2 (Brown) |
| **Comm. standby** | H | H | L | L |
| **BANK 0** | H | L | L | H |
| **BANK 1** | L | H | H | L |
| **BANK 2** | L | L | H | H |

### ■ Communication Speed Settings

| Display (setting value) | Communication Speed (bps) |
|---|---|
| 1200 | 1200 |
| 2400 | 2400 |
| 4800 | 4800 |
| 9600 | 9600 |
| 192E | 19200 |
| 384E | 38400 |
| 576E | 57600 |
| 1152 | 115200 |

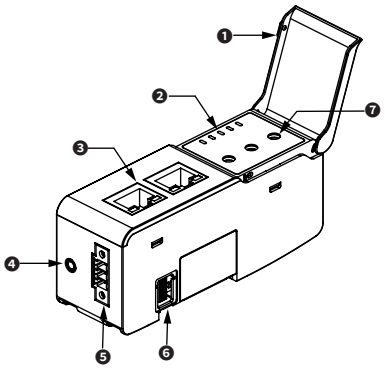
## Segment Table

The actual display on the product represents the following letters and numbers on each type of segment display. The display may differ depending on the product.

| 7-Segment | | 11-Segment | | 12-Segment | | 16-Segment | |
|---|---|---|---|---|---|---|---|
| 0 | 0 | I | I | 0 | 0 | I | I |
| 1 | 1 | J | J | 1 | 1 | J | J |
| 2 | 2 | K | K | 2 | 2 | K | K |
| 3 | 3 | L | L | 3 | 3 | L | L |
| 4 | 4 | M | M | 4 | 4 | M | M |
| 5 | 5 | N | N | 5 | 5 | N | N |
| 6 | 6 | o | O | 6 | 6 | o | O |
| 7 | 7 | P | P | 7 | 7 | P | P |
| 8 | 8 | Q | Q | 8 | 8 | Q | Q |
| 9 | 9 | R | R | 9 | 9 | R | R |
| A | A | S | S | A | A | S | S |
| b | B | T | T | b | B | T | T |
| C | C | U | U | C | C | U | U |
| d | D | V | V | d | D | V | V |
| E | E | W | W | E | E | W | W |
| F | F | X | X | F | F | X | X |
| G | G | Y | Y | G | G | Y | Y |
| H | H | Z | Z | H | H | Z | Z |

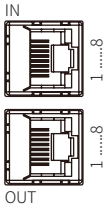
# BFNC-EC

## Unit Description



❶ Protective cover
❷ Indicator
❸ EtherCAT communication connector
❹ SCM-US connection terminal
❺ Power connector
❻ Side connector
❼ Address setting switch

## Connector

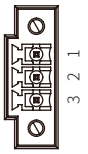



• **EtherCAT Communication Connector**

| Pin | T568A wire color | Signal (Description) |
|---|---|---|
| 1 | Green / White | TD + (Transmit Data +) |
| 2 | Green | TD - (Transmit Data -) |
| 3 | Orange / White | RD + (Receive Data +) |
| 6 | Orange | RD - (Receive Data -) |

• **RJ45 LED (Green)**

| Status | Description |
|---|---|
| OFF | No connection |
| ON | CABLE connected - no communication |
| Flash | CABLE connected - communication exchange |




• **Power Connector**

| Pin | Signal (Description) |
|---|---|
| 1 | FG (Frame Ground) |
| 2 | - (System power: 0 VDC) |
| 3 | + (System power: 10 to 30 VDC) |

## Switch




• **DEVICE ID**

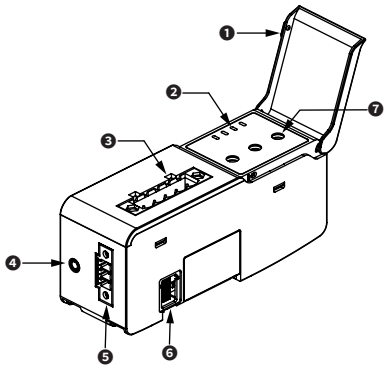
| Rotary Switch (Hexadecimal) | Address |
|---|---|
| 000 to FFFh | 0 to 4095 |

## Indicator

| Indicator | LED Color | Status | Description |
|---|---|---|---|
| POWER | Green | ON | Input voltage |
| | | OFF | No input voltage |
| SYSTEM | Green | ON | Normal operation |
| | | OFF | Error occured |
| | Red | Flash ×1 | Internal data error (non-recoverable) |
| | | Flash ×2 | Communication setting error |
| | | Flash ×3 | Rotary switch change during operation (recoverable) |
| | | Flash ×4 | Initial sensor configuration error |
| | | Flash ×5 | Field network initialization failed (non-recoverable) |
| | | Flash ×6 | Field network error (non-recoverable) |
| | | Flash ×7 | No response from sensor during BFN communication |
| | | Flash ×8 | CRC error occured during BFN sensor communication |
| SENSOR | Green | ON | BFN normal |
| | | OFF | BFN error occured |
| | Red | ON | BFN error occured |
| | | OFF | BFN normal |
| RUN | Green | OFF | EtherCAT INIT status |
| | | Flash | EtherCAT PRE-OPERATIONAL status |
| | | Flash ×1 | EtherCAT SAFE-OPERATIONAL status |
| | | ON | EtherCAT OPERATIONAL status |
| ERR | Red | OFF | Normal operation |
| | | Flash | Setting error |
| | | Flash ×1 | LOCAL error |
| | | Flash ×2 | Application error |

# BFNC-CL

## Unit Description

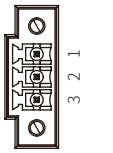


❶ Protective cover
❷ Indicator
❸ CC-Link communication connector
❹ SCM-US connection terminal
❺ Power connector
❻ Side connector
❼ Address setting switch

## Connector


• CC-Link Communication Connector

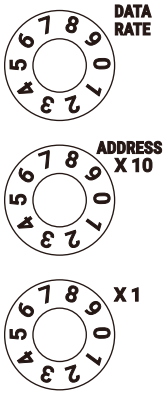
| Pin | Signal | Color | Description |
|---|---|---|---|
| 1 | DA: Data A | Blue | RS-485 High signal |
| 2 | DB: Data B | White | RS-485 Low signal |
| 3 | DG: Data Ground | Yellow | RS-485 signal ground |
| 4 | SH: Shield | - | Shield |
| 5 | FG: Frame Ground | - | Frame ground |




• Power Connector

| Pin | Signal (Description) |
|---|---|
| 1 | FG (Frame Ground) |
| 2 | - (System power: 0 VDC) |
| 3 | + (System power: 10 to 30 VDC) |

## Switch




• DATARATE

| No | Baud Rate | Max. Overall Cable Distance |
|---|---|---|
| 0 | 156 kbps | ≤ 1200 m |
| 1 | 625 kbps | ≤ 900 m |
| 2 | 2.5 Mbps | ≤ 400 m |
| 3 | 5 Mbps | ≤ 160 m |
| 4 | 10 Mbps | ≤ 100 m |

| No | Operation Mode | Station Configuration | No. of Link Points | |
|---|---|---|---|---|
| | | | RX/RY | RWw/RWr |
| 5 | Small Mode | Ver. 1.1 1-station, 1x | 32 | 4 |
| 6 | Monitor Mode 1 | Ver. 1.1 2-station, 1x | 64 | 8 |
| 7 | Monitor Mode 2 | Ver. 1.1 3-station, 1x | 96 | 12 |
| 8 | Full Mode 1 | Ver. 1.1 4-station, 1x | 128 | 16 |
| 9 | Full Mode 2 | Ver. 2 3-station, 2x | 160 | 24 |

• ADDRESS

| Rotary Switch (Decimal) | Address |
|---|---|
| 01 to 64 | 1 to 64 |

## Indicator

| Indicator | LED Color | Status | Description |
|---|---|---|---|
| POWER | Green | ON | Input voltage |
| | | OFF | No input voltage |
| SYSTEM | Green | ON | Normal operation |
| | | OFF | Error occured |
| | Red | Flash ×1 | Internal data error (non-recoverable) |
| | | Flash ×2 | Communication setting error |
| | | Flash ×3 | Rotary switch change during operation (recoverable) |
| | | Flash ×4 | Initial sensor configuration error |
| | | Flash ×5 | Field network initialization failed (non-recoverable) |
| | | Flash ×6 | Field network error (non-recoverable) |
| | | Flash ×7 | No response from sensor during BFN communication |
| | | Flash ×8 | CRC error occured during BFN sensor communication |
| SENSOR | Green | ON | BFN normal |
| | | OFF | BFN error occured |
| | Red | ON | BFN error occured |
| | | OFF | BFN normal |
| L RUN/ERR | Green | ON | CC-Link network connected |
| | | OFF | Waiting for connection, communication line not detected, communication timeout, hardware reset in progress |
| | Red | ON | CRC error |
| | | OFF | Normal operation, hardware reset in progress |

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