**BUENO ELECTRIC**

# BE-CAN-FO CAN Bus Fiber Optic Converter

# User Manual

# Table of Contents

# 1. Overview

## 1.1 Introduction

The BE-CAN-FO No-Cascading CAN Fiber Optic Modem is a very advanced multi-master and high performance Field bus Control System (FCS). The modular fiber optic transmission system can be used to transmit CAN-based bus systems such as DeviceNet or CANOpen via fiber optics data interfaces over a pair of multi mode or single mode optical fibers. Our FMC Fiber Optic Modem uses the fiber cable as its transmission medium and utilizes Optical Fiber modulation/demodulation technology to changes the electric medium into a light medium transmission.It has 1500 frames buffering per second and the power input has surge protection,overcurrent protection and reverse-connection protection functions.

The Fiber Optic Modem product eliminates many of the disadvantages of copper cable. Examples of these disadvantages are EMI/RFI, ground loops (electrical isolation with fiber), high attenuation (high signal loss), short transmission distance between nodes of a system, and potential lightning damage.

The BE-CAN-FO Fiber Optic Modem can be widely used, such as Industrial Controls, Intelligent Transportation Systems (ITS), Industrial Networking, Supervisory Control and Data (SCADA) and so on.

## 1.2 Technical Specification

| CAN BUS | |
|---|---|
| Connectors | Block Terminal |
| Standard | CAN1.0, CAN2.0 |
| Data Rate | DC0-1Mbps |
| Extended Distance | 0~20Km |

| OPTICAL | |
|---|---|
| Number of Fibers | 2 |
| Wavelength | 1310/1550nm(SM), 850/1310nm(MM) |
| Fiber Type | 62.5/125μm(MM), 9/125μm(SM) |
| Distance | 0 ~ 2Km(MM) , 0-20 Km(SM) |
| Connector Type | ST/PC or SC/PC |

| GENERAL | |
|---|---|
| Operating Temperature | -30~ 70˚C / -30 ~ +158ºF |
| Operating Humidity | 0 ~ 95% non-condensing |
| Mean Time Between Failure (MTBF) | > 70,000hrs |
| Power Supply Adaptor | DC12V or 24V |

| Dimensions (H ×L×W) | 122.5(H)×86(D)×29(W)mm |
|---|---|

## 1.3 Warranty

- Repair
  - □ Please contact your local distributors when product is defective. Please apply RA in advance and prepay shipping cost when returning the defective product to us. We will pay the cost for sending it back to you.
  - □ Please attach a statement clearly describing the problem.
- We will repair defective product under warranty free of charge to our customer.
- 2 years warranty for product only.
- Any unauthorized modification of hardware and software voids the warranty.
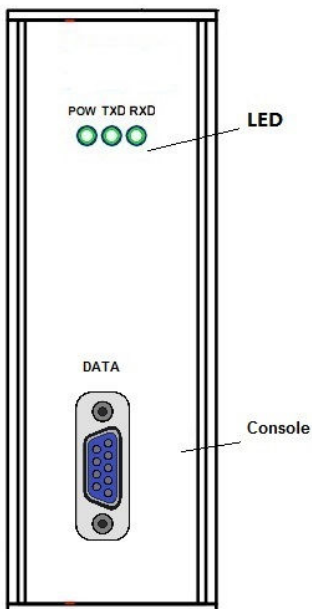- Warranty does not cover mishandling and/or abuse of the product.

# 2  Installation

## 2.1  Package Contents

- Fiber Optic Modem
- One User Manual

Please contact dealer or distributor if part is missing or damaged.
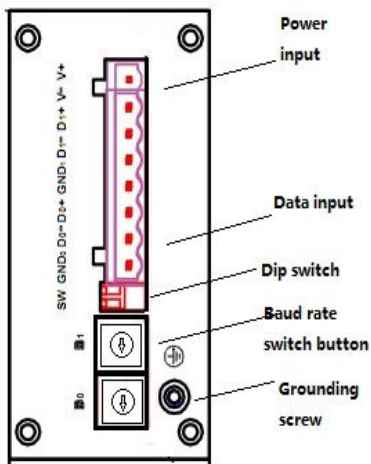
## 2.2  Enclosure

**Front Panel View**

**LED Indicators:**

POW:   Power Supply & Converter Status      Flashing if it is OK..

TXD:    The Transmit Fiber Link      Flashing if there is activity.

RXD:    The Receive Fiber Link      Flashing if there is activity..

DATA: For setting up the baud rate，connected to computer's serial port when necessary.

**Power input**

V-:      Connect DC12V or 24V power supply"-"

V+:    Connect DC12V or 24V power supply"+"

**Data input**

D1+:    None

D1-:     None
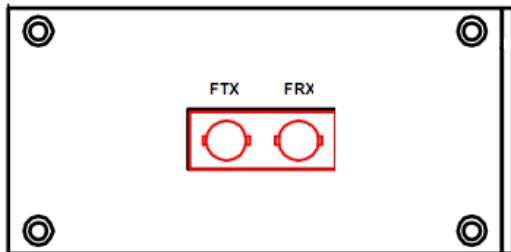
GND1:   None

D0+:     CANH

D0-:     CANL

GND0:   Data of GND

**Bottom Panel View**



**Fiber Optic Connectors:**

FTX:          Transmitter (Fiber Optic ST)
FRX:          Receiver (Fiber Optic ST)

## 2.3 Install Methods

1. Switch off all power supply before installation.
2. Connect the local "FTX" Fiber Optic to the remote "FRX" Fiber Optic, the local "FRX" to the remote "FTX". And ensure that fiber is properly aligned to the receiving connector.
3. Connect the "**D0+**" Data of the CANH and the "**D0-**" Data to the CANL. Then screw down the bolt.
4. On the bottom of the Modem, there is a DIP Switch., When the D1 is "ON",it's connected to 120 Ohm terminal resistance .

DIP Switch setup table:

| DIP Switch pin name | D1 | D2 |
|---|---|---|
| Setup State | OFF | OFF |

**120 ohm Terminal Resistance**

| DIP Switch pin name | D1 | D2 |
|---|---|---|
| Setup State | ON | OFF |

Baud rate switch button setup table:

| "B0 Button Position | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| **CAN Baud Rate** | 80Kbps | 100Kbps | 125Kbps | 200Kbps | 250Kbps | 400Kbps | 500Kbps | 666Kbps | 800Kbps | 1000Kbps |
| | A | B | C | D | E | F | | | | |
| | 50Kbps | 40Kbps | 20Kbps | 10Kbps | 5Kbps | configuration | | | | |

**Note:** When the B0 is switched to F position, you can config the baud rate through the serial DB9 port.

## 2.4 Configure the baud rate by software

Switch the "B0" button to F position and connect the straight line(NOT cross line) to the console port(DB9) and the other end of the line to the computer.

1.Open CANConfig and click"BE-FO-CAN-P",you will see 3 options: Basic Info,Baudrate and Filter.
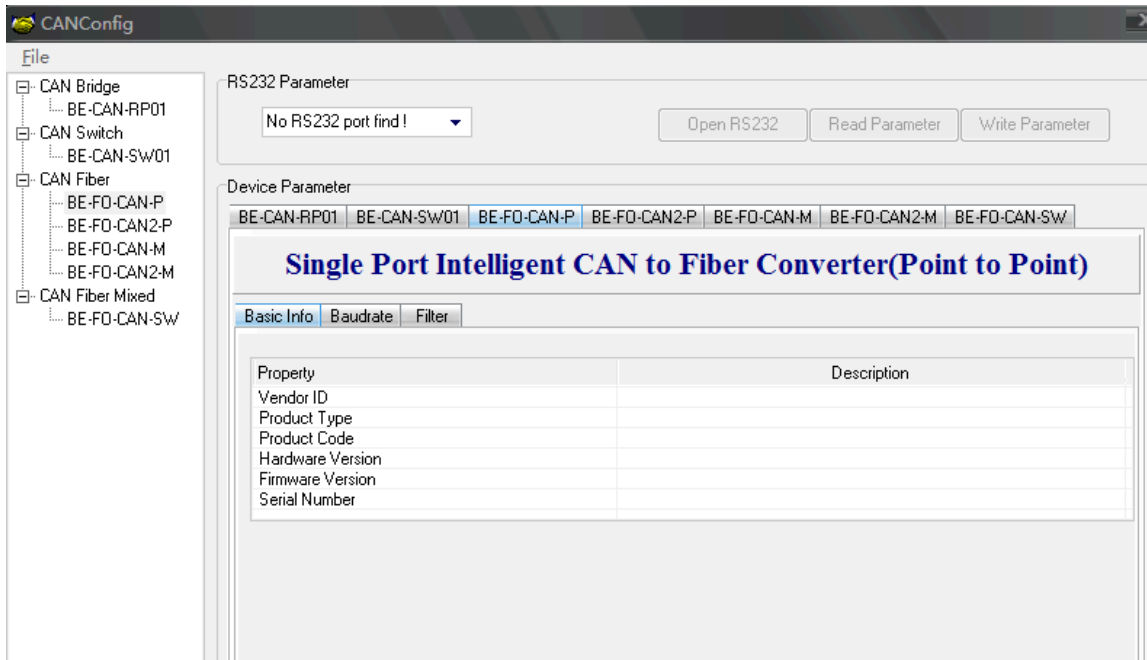


2.Software Configuration

(1) Open RS232：Communicate with the serial RS232.

(2) Read Parameter：Read all parameters of the device and display them.

(3) Write Parameter：Write all parameters into the device.These parameters will be stored to the flash and read them automatically when powers on.

3.Device Parameters

3.1 Basic Info

Click the "Open RS232" and read out all information by clicking "Read Parameter" button.The "Basic info" option contains the vendor ID,device type,device code,hardware version,software version and serial numbers.

3.2 Baudrate

"Baudrate" is for setting up the baud rate of all channels of the device.When the rotary button is switched to"F" position,you can configure the baud rate on it.See the below figure and baud rate table:
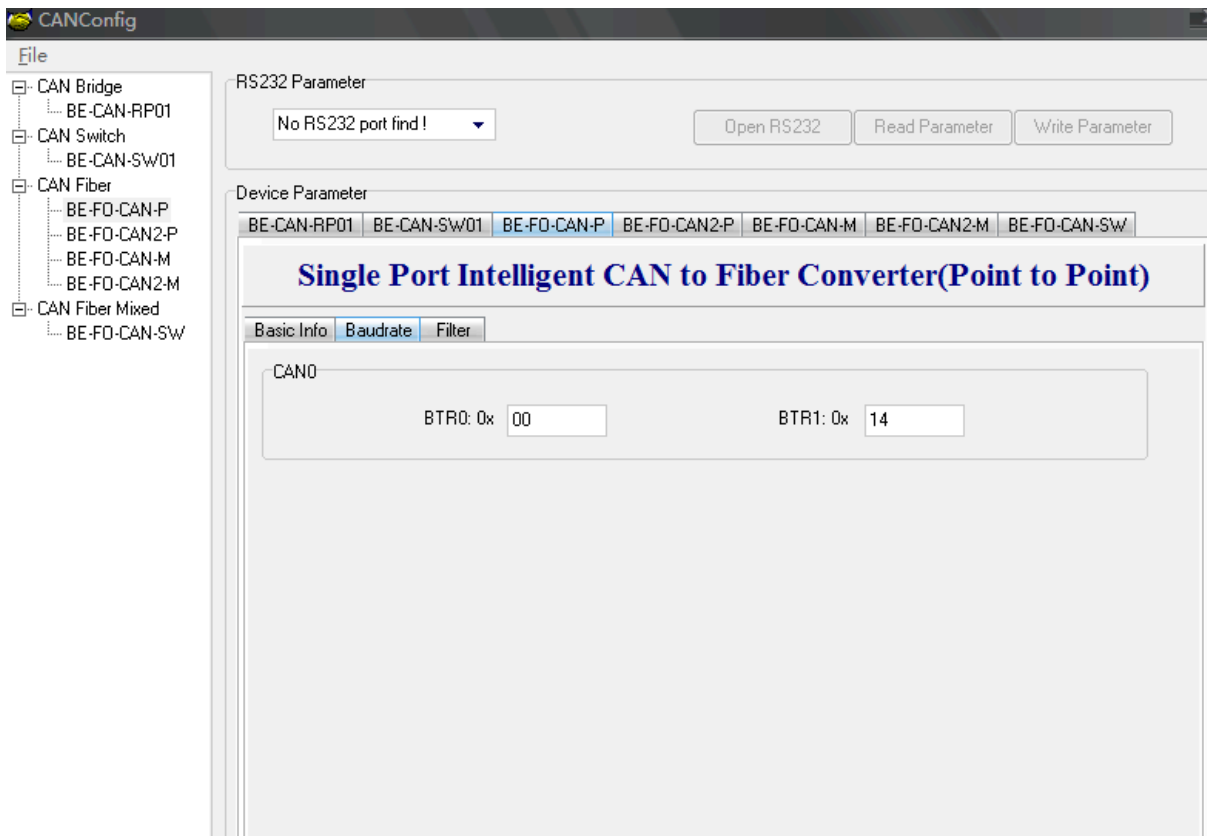
Common standard baud rate's BTR0 and BTR1 values:

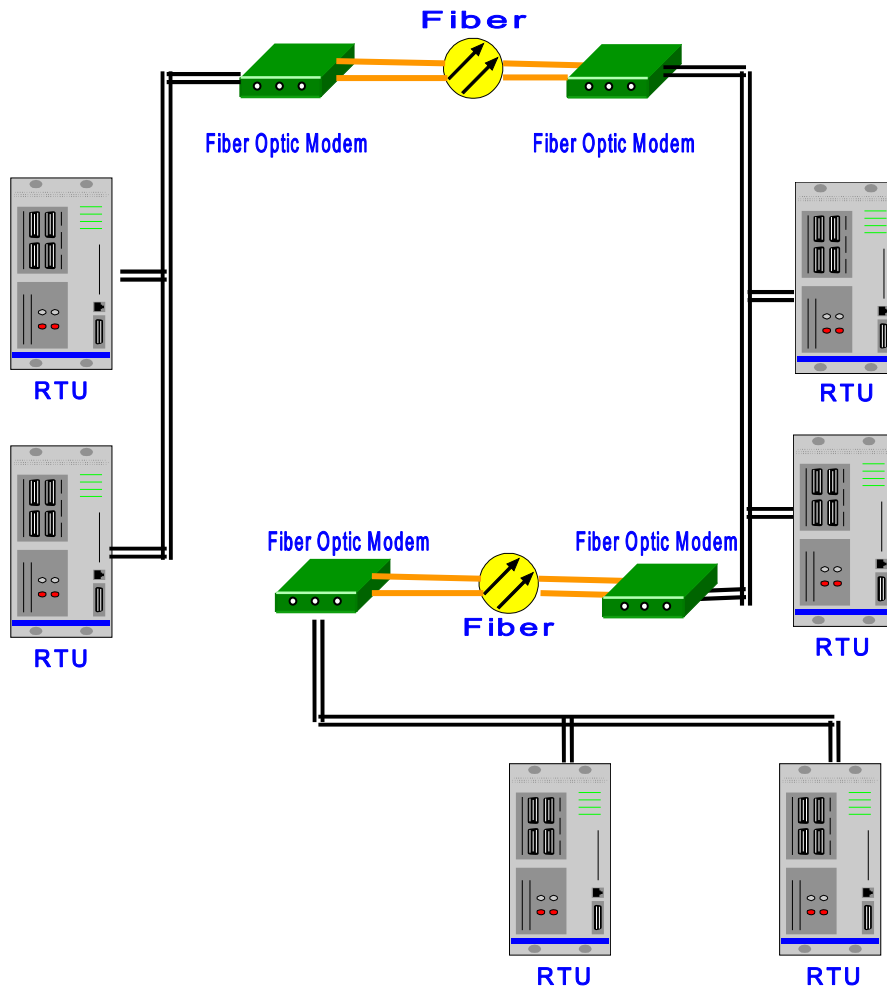| CAN Baud rate | BTR0(Time0-SJA1000) | BTR1(Time1-SJA1000) |
|---|---|---|
| 5Kbps | 0xBF | 0xFF |
| 10Kbps | 0x31 | 0x1C |
| 20Kbps | 0x18 | 0x1C |
| 40Kbps | 0x87 | 0xFF |
| 50Kbps | 0x09 | 0x1C |
| 80Kbps | 0x83 | 0Xff |
| 100Kbps | 0x04 | 0x1C |
| 125Kbps | 0x03 | 0x1C |
| 200Kbps | 0x81 | 0xFA |
| 250Kbps | 0x01 | 0x1C |
| 400Kbps | 0x80 | 0xFA |
| 500Kbps | 0x00 | 0x1C |
| 666Kbps | 0x80 | 0xB6 |
| 800Kbps | 0x00 | 0x16 |
| 1000Kbps | 0x00 | 0x14 |

3.3 Filter

The BE- FO-CAN-P has a strong message filter,on"Filter" option button,The user can set up the filter.This function depends on the work condition of the user.
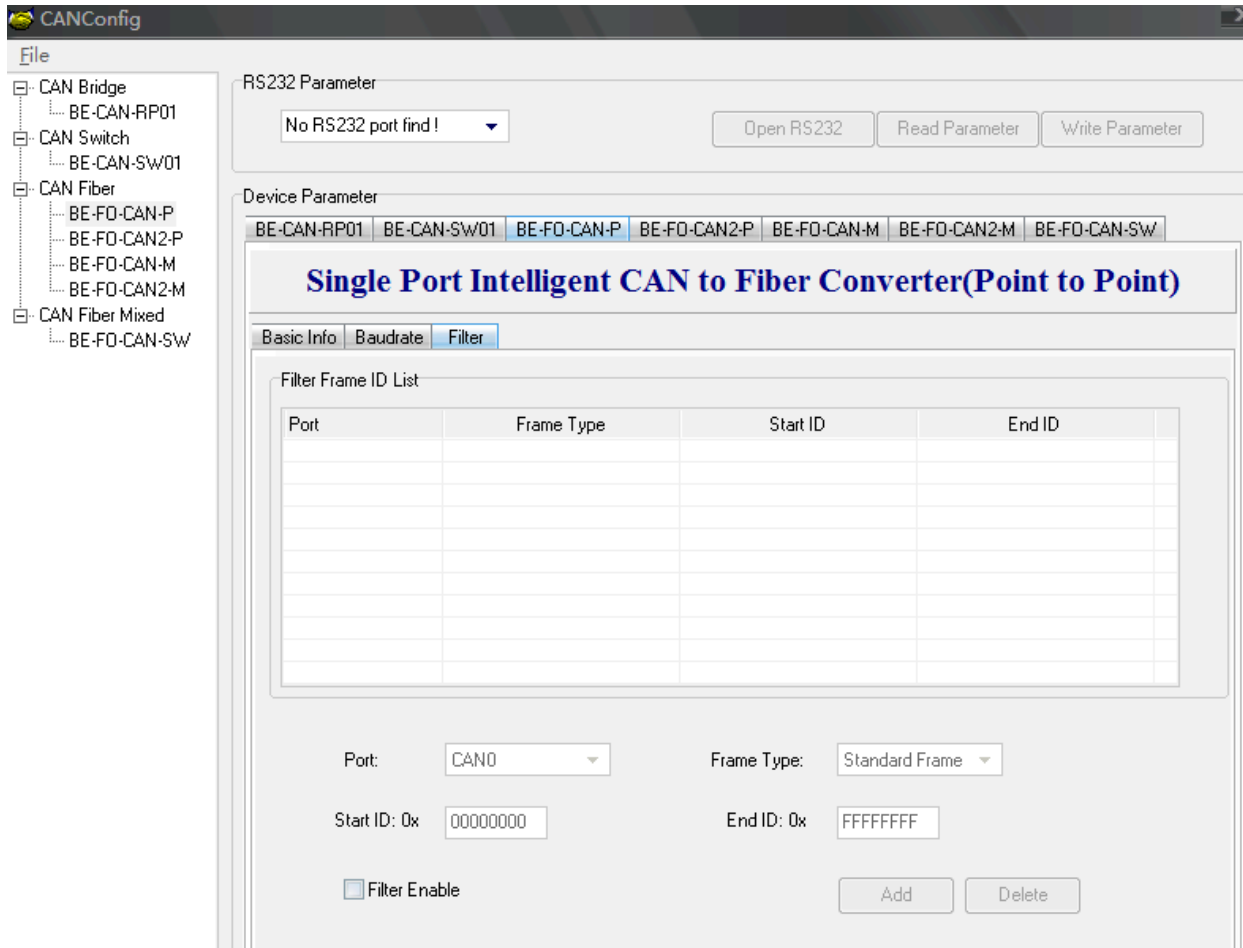


How to use the filter function：

(1) Select "Filter Enable" and you can revise the content of the filter.

(2) Select the channel that needs filter function from the sub list of "Port".

(3) Select the frame type(Standard or extended frame types) from the "Frame Type".

(4) On "Start ID" and "End ID" rows，please fill in the ID of the frame that you want to filter.The standard frame range is 0~2047（0x7FF）and the extended frame range is 0~536870911 (0x1FFFFFFF).

(5)After setting up the frame's filter parameters,please click "Write Parameter" button and write the router parameters into the device,then it's valid.

## 2.5 Install Application

Fiber

Fiber Optic Modem          Fiber Optic Modem

RTU

RTU

RTU

Fiber Optic Modem          Fiber Optic Modem

Fiber

RTU

RTU          RTU

# 3 Dimensions (mm)