BUENO ELECTRIC

SW-400T

4 Port CAN Switch User Manual

Content

1 Overview

1.1 Product overview

The CAN BUS SW-400T is the device that can connect the different CAN networks together and make the complex multi-drop bus link come true.SW-400T eliminated the distance limit of the trunk network and any 2 nodes can reach the protocol distance. The switch has 4 CAN ports,each port has the independent CAN transmitter and receiver,so the nodes number can be multiplied,which solved the problem of nodes number limit.Every port has LED,by which we can see the CAN network's work status.

SW-400T can reach 1Mbps rate and all ports can work at different baud rate.SW-400T supports CAN2.0A and 2.0 and it can be applied to high layer protocols(CANOpen，SDS，J1939，DeviceNet and other self-defined protocols based on CAN).

SW-400T has message filter function,thus we can filter some message and let the necessary message transmit to the CAN repeater or other CAN network. The SW-400T has also the router function,which can lead one CAN port's data to any other port on the switch.

1.2 New features

➢ **32 bit 120M high processor , embedded real-time OPS and auto-sensing flow control formula,which is good for the tough systems.(Only one in the world)**

➢ **1000 frames buffering of each port.**

➢ **The common baud rates can be configured by rotary button directly.**

➢ **CAN baud rate config complies with SJA1000T.**

1.3 Product picture

Figure 1-3-1

1.4 Specifications:

➢   32 bit 120M high speed ARM processor , embedded real-time OPS

➢   Port data can reach 6000frames/second (1Mbps)

➢   4 isolated CAN ports

➢   Rate configurable by rotary button or RS-232 port : 5Kbps~1Mbps

➢   Strong Filter function

➢   Strong router function,any CAN port can talk with any other CAN port on it

➢   All CAN ports have electric isolation(2500V DC)

➢   In compliance with CAN2.0 A/Band ISO/DIS 11898

➢   With DIP Switch for terminal resistance

➢   LED(Power,status,CAN Transmit,CAN receive,CAN error)

➢ Wide voltage input : 9-40VDC (Surge protection、Over current and reverse

connection protection)

➢ Work temperature : -20℃ ~ +70℃

➢ Size of metal enclosure : 147mm*112mm*36mm

1.5 Apllication

● Industrial automation and control
● Building automation(BAS),broadcasting syste,
● Security
● Electricity,mining industry
● Other control fields
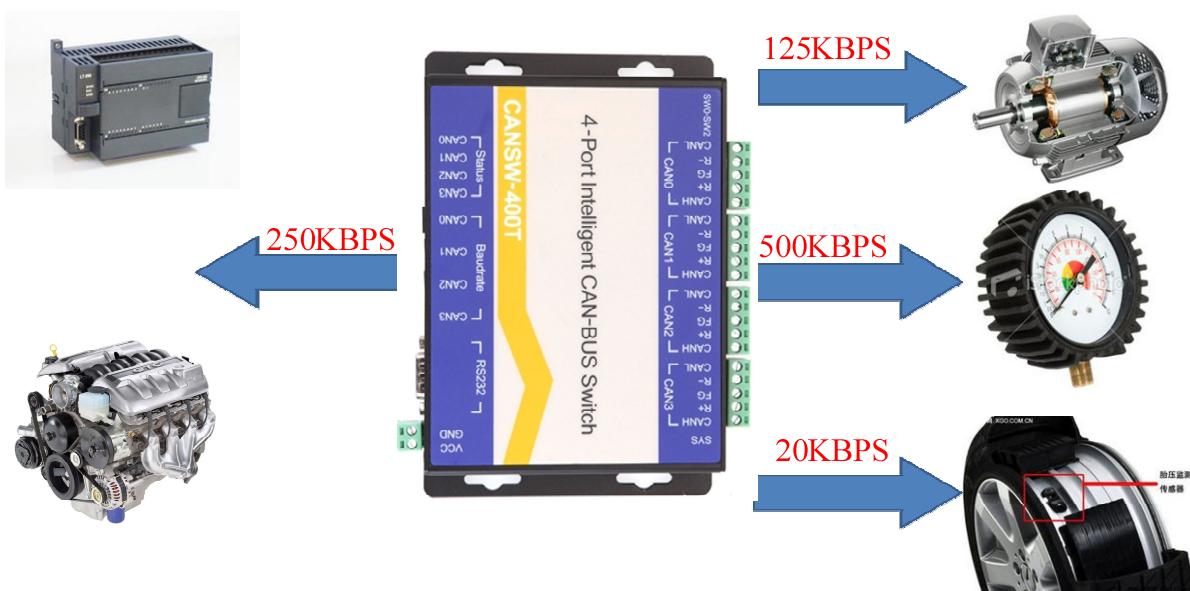
Figure 1-1-1 SW-400T typical application

Figure 1-1-2
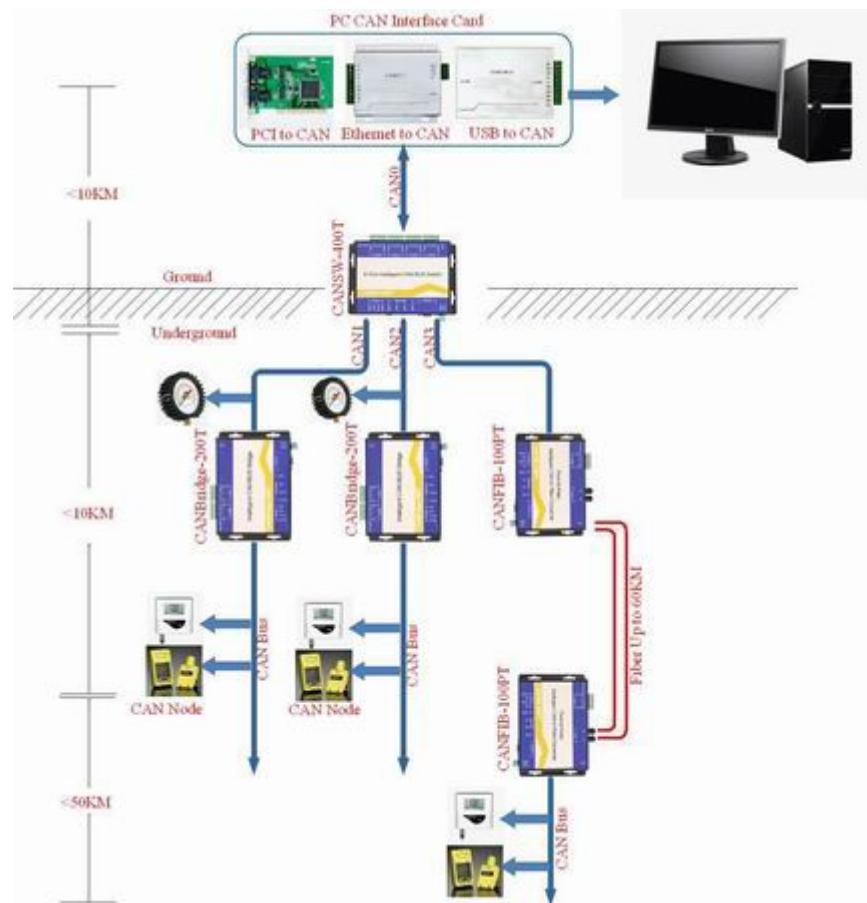
2.Hardware

2.1 Mechanical dimension
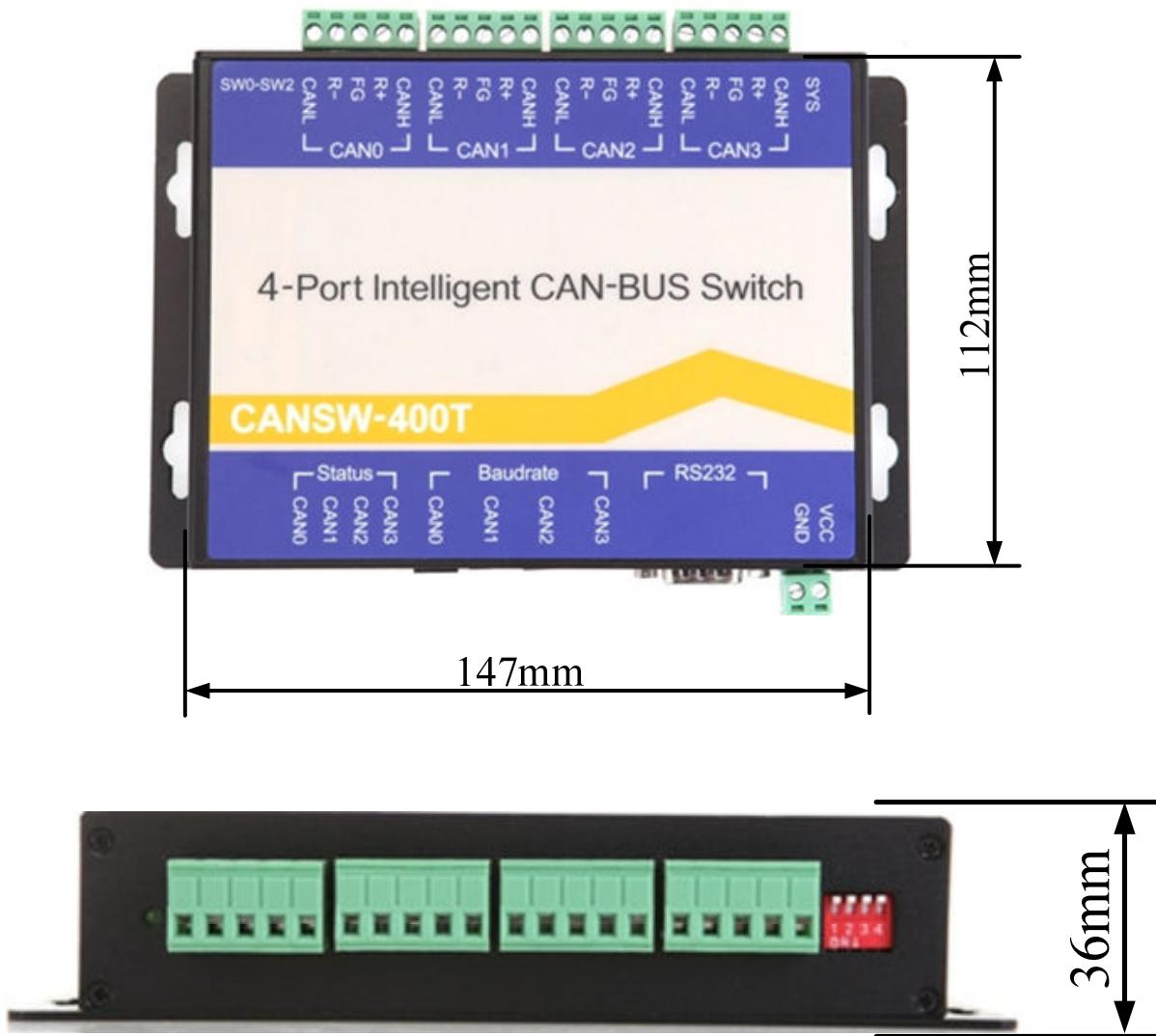
Figure 2-1-1 SW-400T

2.2 Interfaces

2.2.1 Port name
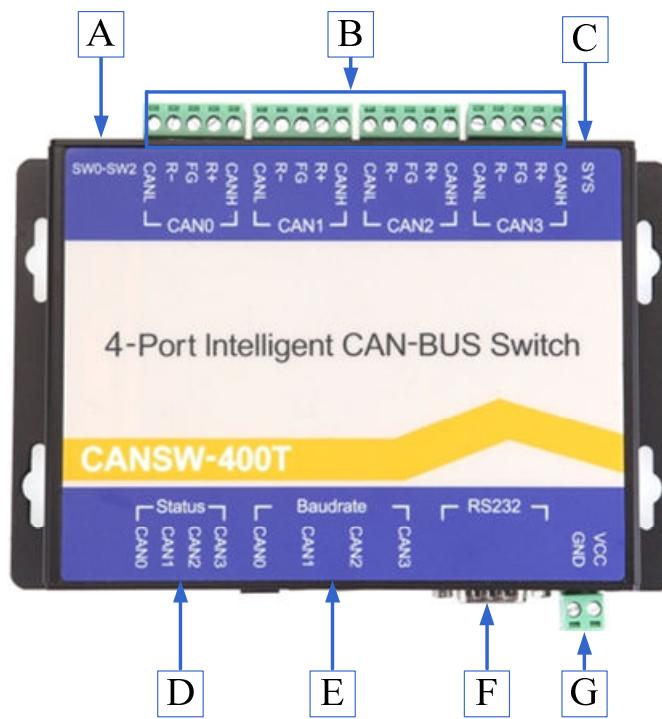
Figure 2-2-1-1

Functions of the ports

Label	Name	Description
A	DIP switch	Set the resistance of each port
B	CAN port	CAN0、CAN1、CAN2、CAN3
C	Status LED	Status of the switch
D	LED	Transmit and receive,error status of each port
E	Rotary button	Set up baud rate of each port
F	RS232 port	For configuring the baud rate by software
G	Terminals	Power input

2.2.2 CAN port
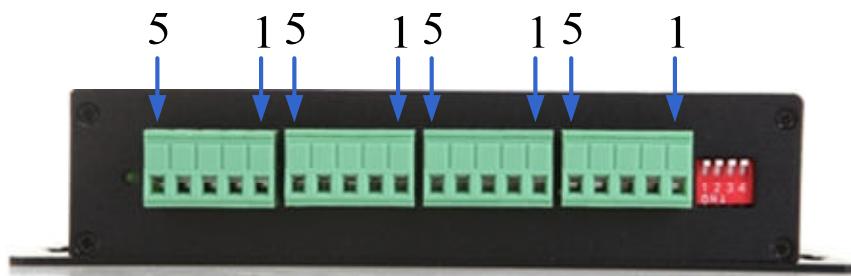
Figure 2-2-2-1 CAN Terminals

SW-400T provides 4 CAN channels,the definition is as the following:

PIN	Port	Name	Function
1		CANL	CANL cable
2		R-	R－ terminal resistance（internally to CAN_L）
3	CAN0	FG	Grounding(Not necessary)
4		R+	R＋ terminal resistance（Internally to CAN_H）
5		CANH	CANH cable
1		CANL	CANL cable
2		R-	R－ terminal resistance
3	CAN1	FG	Grounding(Not necessary)
4		R+	R＋ terminal resistance）
5		CANH	CANH cable
1		CANL	CANL cable
2		R-	R－ terminal resistance
3	CAN2	FG	Grounding(Not necessary)
4		R+	R＋ terminal resistance
5		CANH	CANH cable
1		CANL	CANL cable
2		R-	R－ terminal resistance
3	CAN3	FG	Grounding(Not necessary)
4		R+	R＋ terminal resistance
5		CANH	CANH cable

2.2.3 DIP Switch
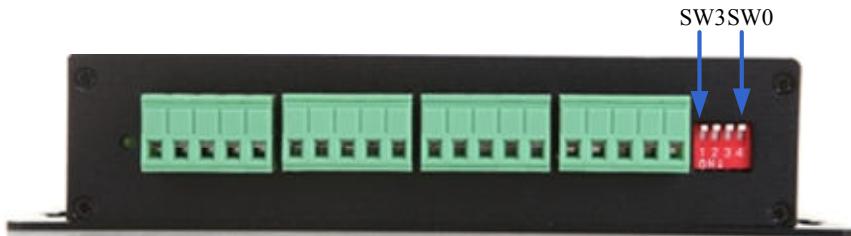


Figure2-2-3-1

SW-400T provides 4 CAN channels，each channel's 120Ohm terminal resistance can be set up by DIP switch:

PIN	Port	Name	Function
1		SW0	Turn on CAN0's terminal resistance
2	SW	SW1	Turn on CAN1's terminal resistance
3		SW2	Turn on CAN2's terminal resistance
4		SW3	Turn on CAN3's terminal resistance

2.2.4 LED

Figure 2-2-4-1

LED Definition:

LED No	LED for t port	LED name	Function
1		TX	Transmitting data
2	CAN0	RX	Receiving data
3		Error	Error on the port
1		TX	Transmitting data
2	CAN1	RX	Receiving data
3		Error	Error on the port
1		TX	Transmitting data
2	CAN2	RX	Receiving data
3		Error	Error on the port
1		TX	Transmitting data
2	CAN3	RX	Receiving data
3		Error	Error on the port

2.2.5 Rotary button
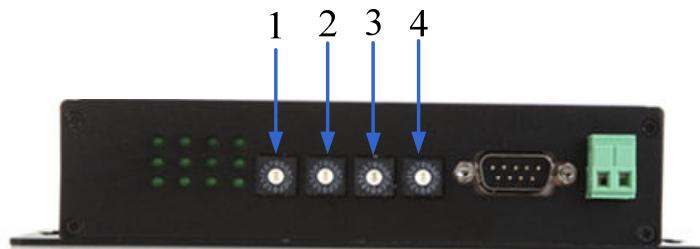
Figure 2-2-5-1

Definition of rotary buttons:

No	Port No	Name	Function
1	CAN0	Baudrate0	Configure the port's baud rate
2	CAN1	Baudrate1	Configure the port's baud rate
3	CAN2	Baudrate2	Configure the port's baud rate
4	CAN3	Baudrate3	Configure the port's baud rate

Figure 2-2-5-2 Baud rate corresponding to Rotary button's number

No	CAN baud rate	BTR0(Timer 0)	BTR1(Timer1)
F	Configure by software	Configure by software	Configure by software
E	5Kbps	0xBF	0xFF
D	10Kbps	0x31	0x1C
C	20Kbps	0x18	0x1C
B	40Kbps	0x87	0xFF
A	50Kbps	0x09	0x1C
9	80Kbps	0x83	0Xff
8	100Kbps	0x04	0x1C
7	125Kbps	0x03	0x1C
6	200Kbps	0x81	0xFA
5	250Kbps	0x01	0x1C
4	400Kbps	0x80	0xFA
3	500Kbps	0x00	0x1C
2	666Kbps	0x80	0xB6
1	800Kbps	0x00	0x16
0	1000Kbps	0x00	0x14

2.2.6 RS232 port
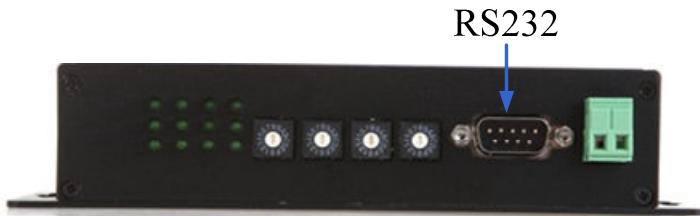
RS232

Figure 2-2-6-1 RS232 port

The RS-232 port is for configuring the unusual baud rate by software

RS-232's PIN definition

PIN	Signal	Function
2	TXD	Transmit
3	RXD	Receive
5	GND	Grounding
Others	N.C.	

The port is DB-9 male connector,please take a double faced DB9 female connector to connect to it,the cross cable does not work.

2.2.7 Power input

GNDVCC

Figure2-2-7-1

The power input range is 9 to 40V DC.

3 Parameter Configuration

3.1 Configuration by hardware

   Please refer to 2-2-5-2

3.2 Configuration by software

3.2.1 Software interface

   After open the software of CANConfig，please choose"CANSW-400T"：
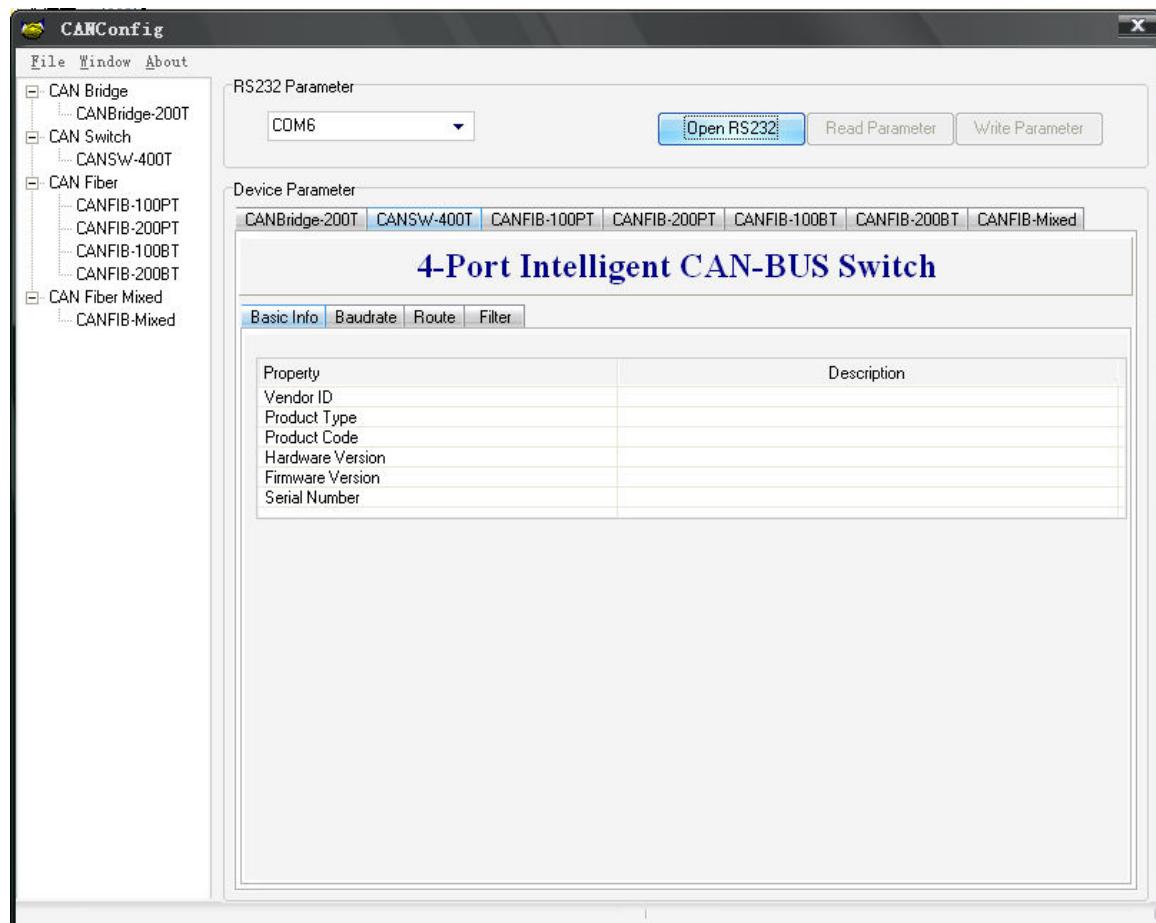
Figure 3-2-1-1

3.2.2 Software operation

(1) Open RS232 button: Start the serial

(2) Read Parameter: Read all parameters and display.

 (3) Write Parameter: Write all parameters into the device and these parameters will be stored to the flash.

3.2.3 Device parameters

3.2.3.1 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.

3.2.3.2 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:
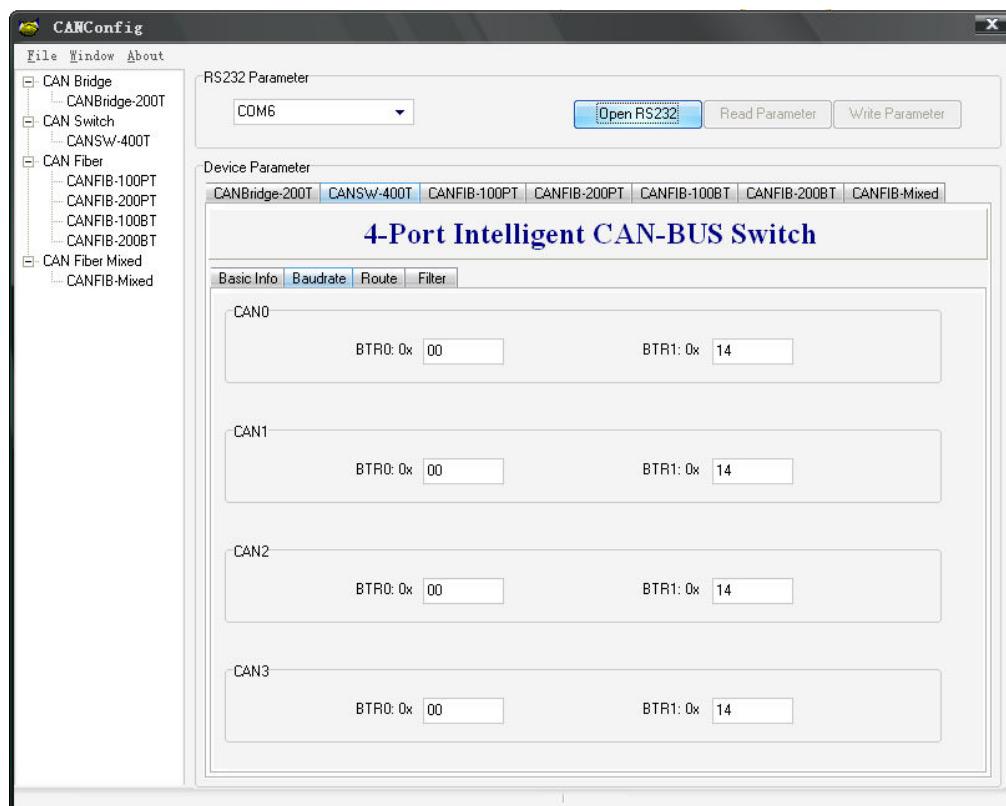

Figure 3-2-3-2-1 "Buadrate"

Common baud rate's BTR0 and BTR1 value

CAN baudrate	BTR0(Timer0)	BTR1(Timer1)
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

3.2.3.3 Route

The SW-400T has the router function，it can forward CAN message from one port to another port.These operations are done in "Route",see the figure below，click the CAN port number and then we can send the message to this channel. After setting up the message forward parameters,click "Write Parameter" and write the route parameters into the device.
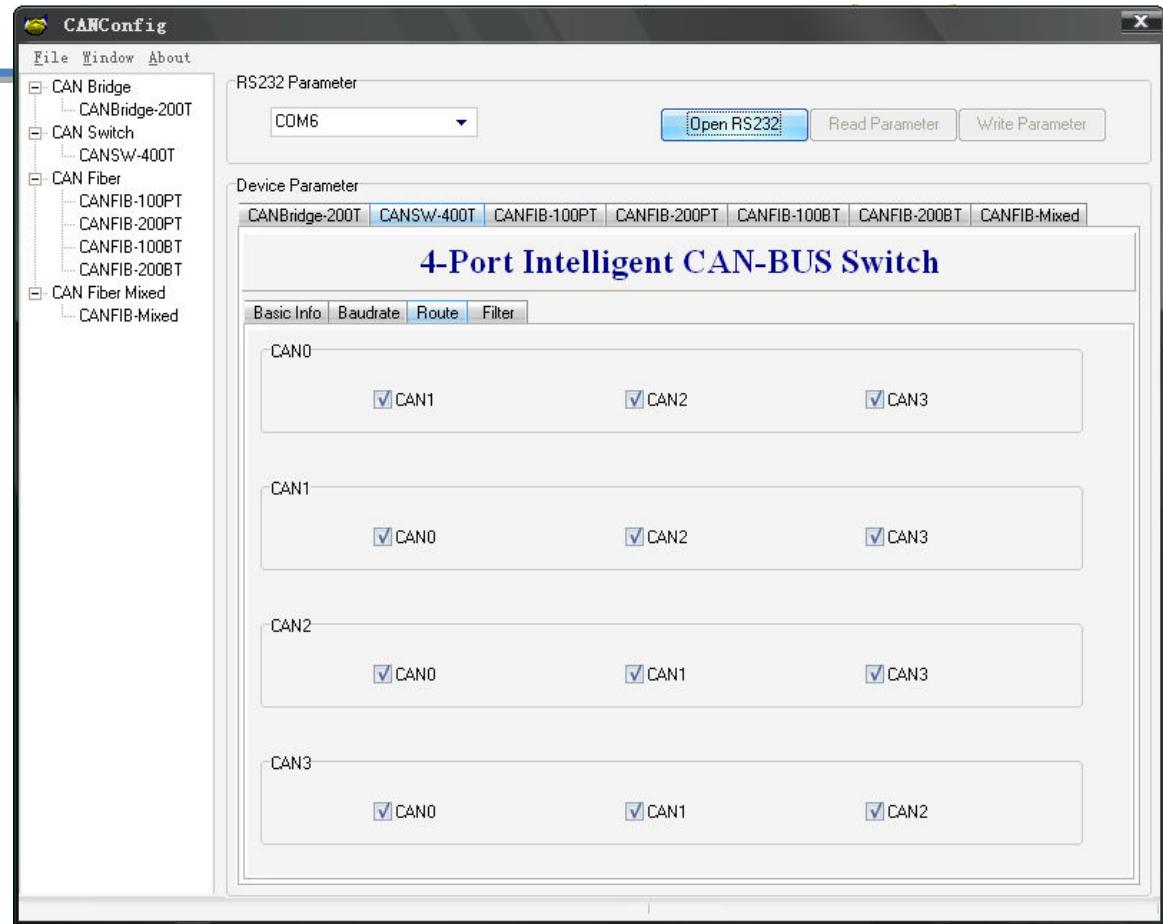
Figure 3-2-3-3-1 "Route"

3.2.3.4 Filter

The CAN FIB-100BT 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.
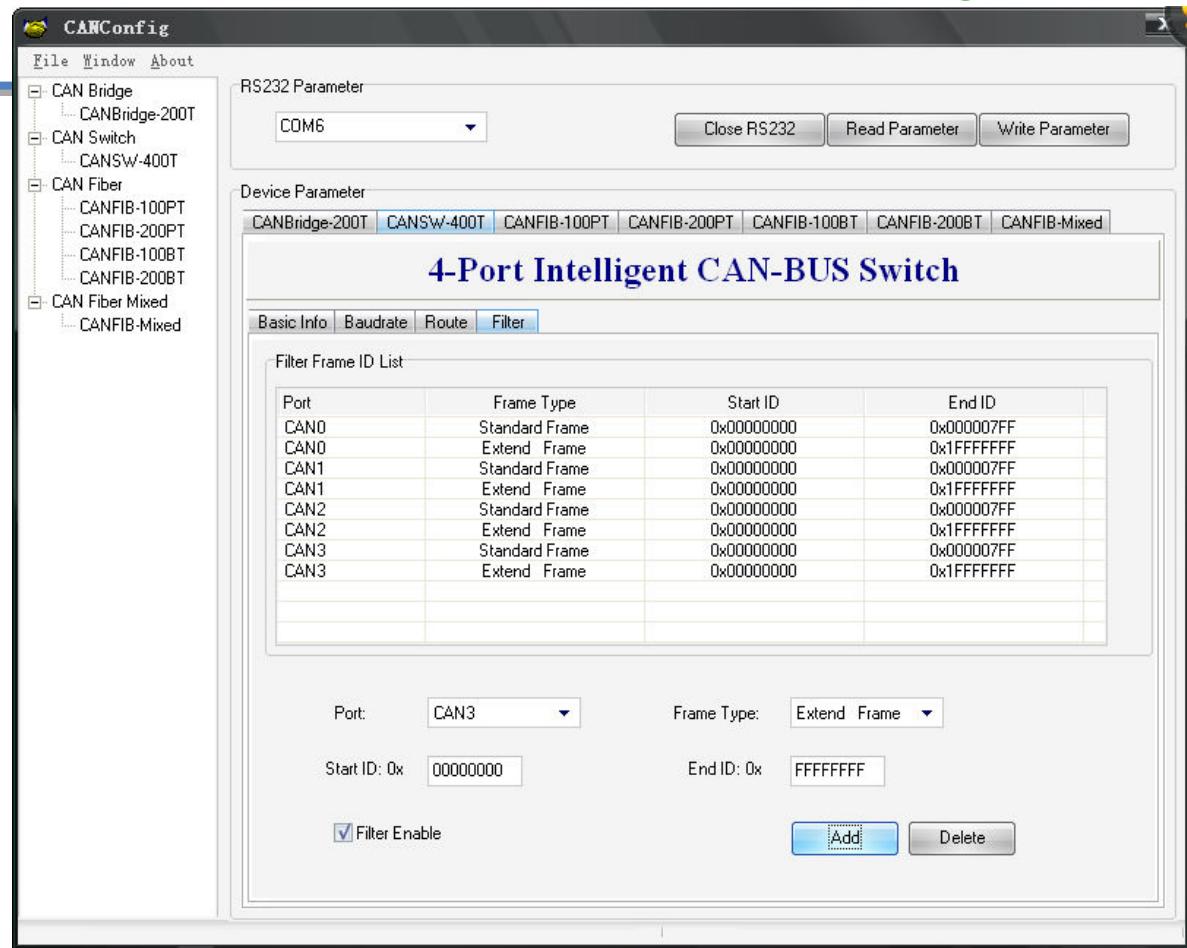
Figure 4-2-3-4-1 "Filter"

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.