



**BLONDER
TONGUE**
LABORATORIES, INC.

User Manual

BTEA Series

Erbium Doped Fiber Amplifier

Rev.005

August 18,2009

BTEA Series

User Manual



BTEA Series EDFA

BTEA-CO-B16-116-SA
BTEA-CO-B19-216-SA
BTEA-CO-B23-219-SA
BTEA-CO-B26-419-SA

BTEA-CO-B19-119-SA
BTEA-CO-B23-416-SA
BTEA-CO-B26-816-SA

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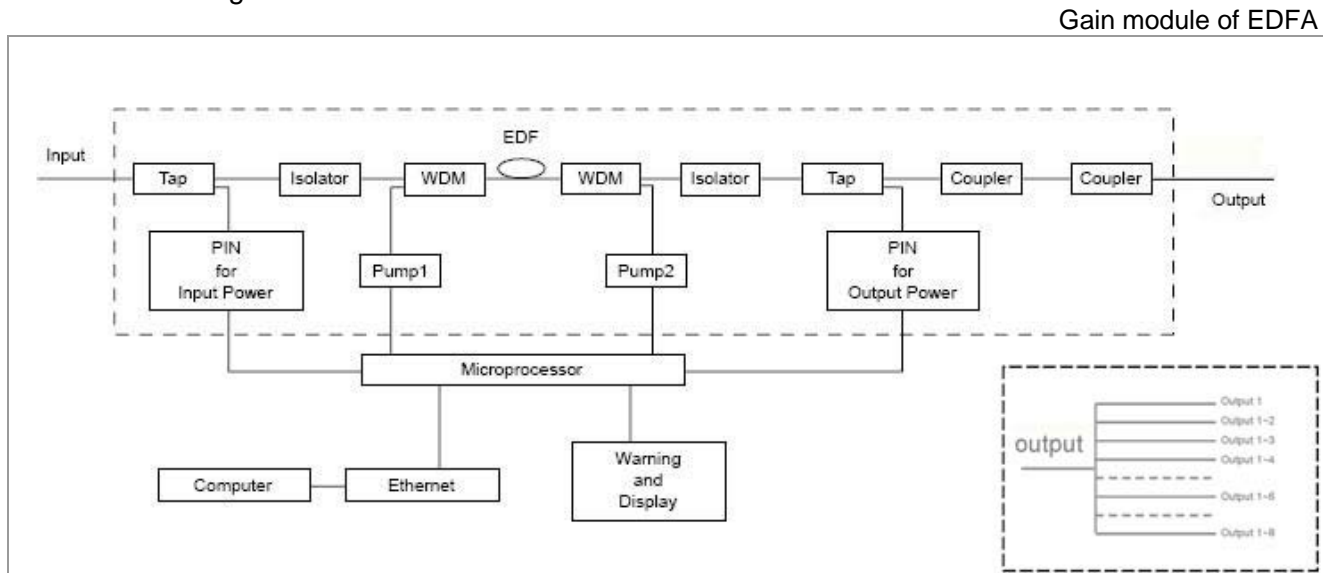
I. INTRODUCTION

The BTEA Series Erbium Doped Fiber Amplifiers are designed for 1550nm transmission networks. They feature low noise figure, stable output power and fine environmental stability.

The EDFA is made up of two main parts:

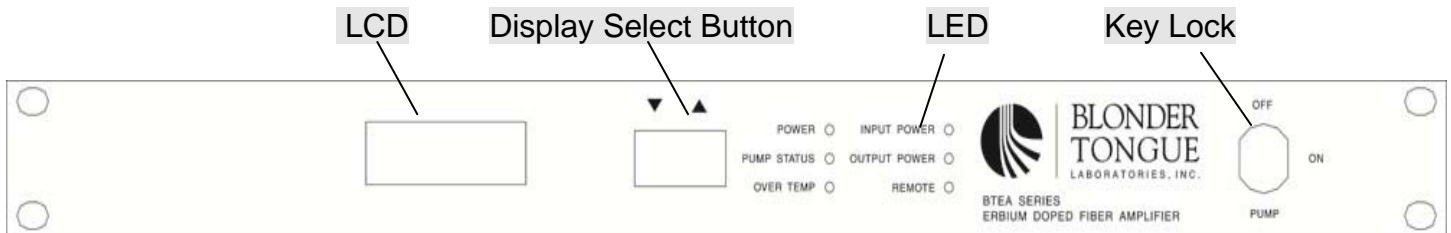
Fiber Gain Module This is the core of the EDFA by which the EDFA can amplify the optical signal in 1550 nm wavelength band. It is made of high quality optical components provided by world famous companies, and carefully designed to ensure the desired specifications for its overall performance

The Structure Diagram of EDFA:



External Control System This part is necessary to the EDFA to ensure the gain module is working in optimum state. Controlled by micro-processor, it monitors the states of the gain module, such as pump power, pump temperature, pump current, input and output power, and adjusts all the parameters to ensure a stabilized output power of the gain module, and also to maintain ideal working states. Moreover, this system provides a warning function, which can give a warning signal through the LEDs on the front panel of EDFA when the working state of the amplifier is abnormal. The detailed working parameters of the EDFA are shown by the LCD on the front panel. This information can also be accessed via RJ45 interface by an external computer.

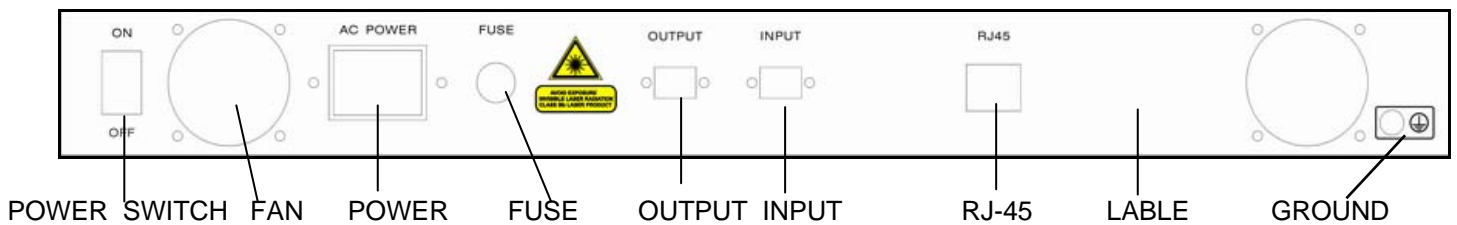
Front panel of BTEA series:



BTEA series EDFA:

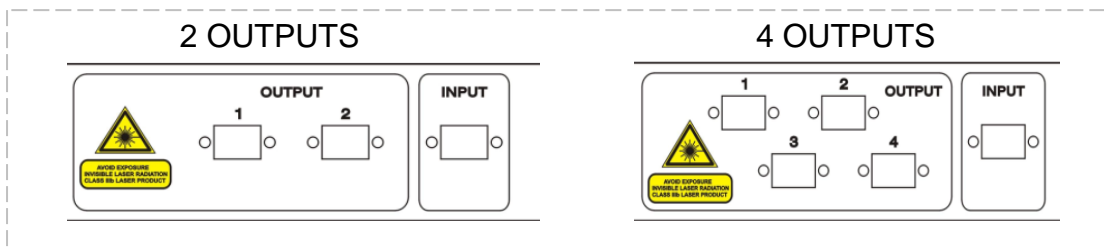
- | | |
|--------------------|--------------------|
| BTEA-CO-B16-116-SA | BTEA-CO-B19-119-SA |
| BTEA-CO-B19-216-SA | BTEA-CO-B23-416-SA |
| BTEA-CO-B23-219-SA | BTEA-CO-B26-816-SA |
| BTEA-CO-B26-419-SA | |

Rear panel of BTEA series :



AC POWER (90~240VAC)
or
DC POWER (36~60VDC)

BTEA-CO-B16-116, 1 output
BTEA-CO-B19-119, 1 output
BTEA-CO-B19-216, 2 output
BTEA-CO-B23-219, 2 outputs
BTEA-CO-B23-416, 4 outputs
BTEA-CO-B26-419, 4 outputs
BTEA-CO-B26-816, 8 outputs



II. SPECIFICATIONS

BTEA SERIES EDFA:

Item	Min.	Typ.	Max.
Operating Wavelength (nm)	1540	1550	1560
Signal Input Power (dBm)	-2	3	10
Signal Output Power (dBm)			
BTEA-CO-B16-116 (1 output)	16.0	16.2	16.5
BTEA-CO-B19-119 (1outputs)	19.0	19.2	19.5
BTEA-CO-B19-216 (2outputs)	16.0	16.2	16.5
BTEA-CO-B23-219 (2outputs)	19.0	19.2	19.5
BTEA-CO-B23-416 (4outputs)	16.0	16.2	16.5
BTEA-CO-B26-419 (4outputs)	19.0	19.2	19.5
BTEA-CO-B26-816 (8outputs)	16.0	16.2	16.5
Number of output port	1~8		
Noise Figure @ 1550nm, 0dBm input (dB)			5.0
Input/Output Isolation (dB)	30		
Pump Leakage to Input/Output (dBm)			-30
Input/Output Return Lose (dB)	50		
Input/Output Interface	SA /FA or Customer Specified		
Operating Temperature (°C)	0 ~ 50		
Storage Temperature (°C)	-25 ~ 70		
Relative Humidity (Non Condensing)	5% ~ 95%		
Voltage	90 ~ 240VAC or 36 ~ 60VDC		
Dimension	434mm (W) × 260 (D) × 44 (H)		
Installation	Standard 19" 1U Rack Mounted		

III. OPERATION INSTRUCTIONS

1. Connection

- Connect the EDFA to the power supply when EDFA's power switch and key lock are both off
- Be sure that the input optical power is in the right range, and the optical interfaces of the patch cords used are in accordance with those of the EDFA.
- Connect the patch cords to the input and output interfaces

2. Turn EDFA on and off

- First turn on the power switch (in the back panel), the LCD will display and LED will light. Then open the key switch, and EDFA will be in the normal working state.
- To turn off the EDFA, first close the key lock, then turn off power switch after a moment.

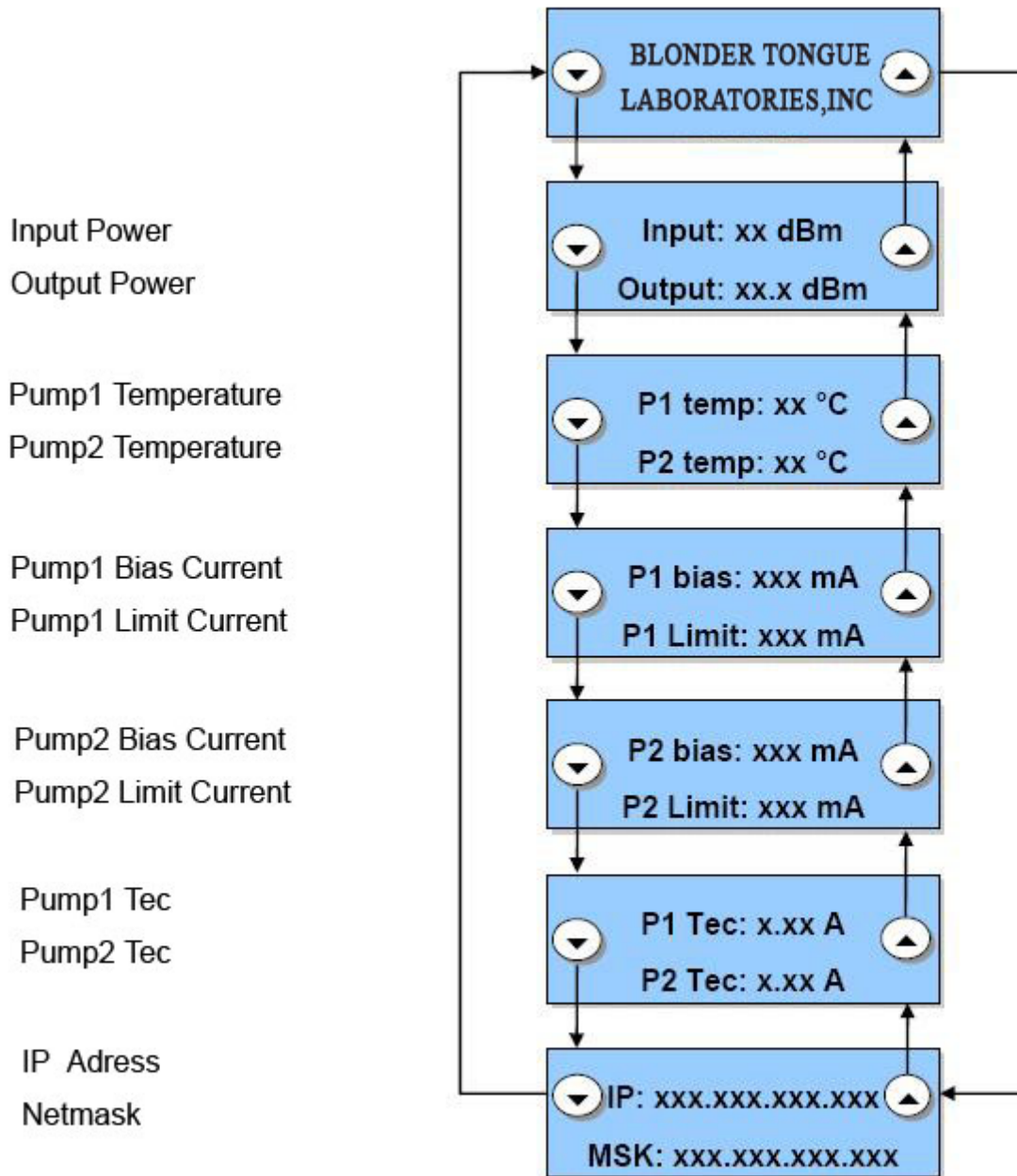
3. LED Indications

The six LEDs indicate as follows:

- POWER, power indicator
Shows green when the power is on.
- PUMP STATUS, pump states indicator
Shows green when the pump works in normal states, and shows red when the pump is not working. The pump will be shut down in these cases: input power is less than default setting / pump temperature is higher than 35°C / pump current value exceeds its limit value.
- INPUT POWER, input power indicator
Shows green when the input power is in its right range, and red when the input power is less than default setting.
- OUTPUT POWER, output power indicator
Shows red when the output power is 3dB less than the rated output power, otherwise shows green.
- OVER TEMP, over temperature indicator
Shows green when pump temperature is below 35°C, otherwise shows red. Moreover, it will flash green when the fan is broken out and flash red when pump TEC current is higher than 3A.
- REMOTE, Remote connection
Shows green when remote control function is normal. If the indicator is not lit up there is an internal communication problem.

4. LCD Display

The LCD screen in the front panel is to show the detail information of EDFA. Press the blue key to show these parameters circularly.



IV. ERRORS AND MAINTENANCE

When the EDFA is operating normally, the front panel LEDs will all be green. If any of the LEDs are red, it indicates an abnormal working state. In this case, please make sure that:

1. The key lock is on
2. The input power is in correct range
If the value of input power is less than default setting, the INPUTSTATUS LED will show red. In this case the pump will turn off, and the EDFA will stop working.
3. Environmental temperature is suitable for EDFA working in its normal state
The working temperature for EDFA is from 0°C to 50°C. Too high environment temperature will cause TEC current exceed its limit, thus OVERTEMP LED will show red to give a warning. When pump temperature exceed 35°C, EDFA will shut off the pump automatically, and the PUMP STATUS LED will also show red. Besides, EDFA can not work in too cold condition as well.

Please contact us if the problem cannot be solved by considering the above facts. Do not repair it by yourselves.

V. SAFETY PRECAUTIONS

When the amplifier is working in normal state, the output power of light with wavelengths in the invisible range (infrared light) may be over 16dBm (40 mW). Therefore, to avoid damaging your eyes, please do not look into the output port of the EDFA directly.

Please do not clean the output connector when the pump laser is on in order not to damage the connector.

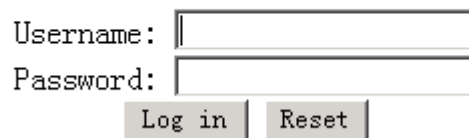
The fiber amplifier is fine equipment. Therefore, please do not open the case of the amplifier to avoid damaging the internal component devices. Opening the case of the amplifier without the permission of us, the warranty of the EDFA will be void.

□ SNMP NETWORK MANAGEMENT USER GUIDE

Accessing server management

1. Start the web browser and type the URL: <http://xxx.xxx.xxx.xxx>.
Note: xxx.xxx.xxx.xxx is the default IP address.
2. The login screen of EDFA Network Management System is shown below:

Log in to EDFA Network Management System



Username:

Password:

Fig.6-1

3. The default Server Management user name is “admin”, and it is necessary to log in with this name for full access to the server.
4. Use the default password “snmpedfa” to log in.

Management interface summary

When the network manager of EDFA logs in, the web browser displays the following main interface:

MAIN INTERFACE



Fig.6-2

system menu

Clicking on the different system menu will change the displaying area screen.

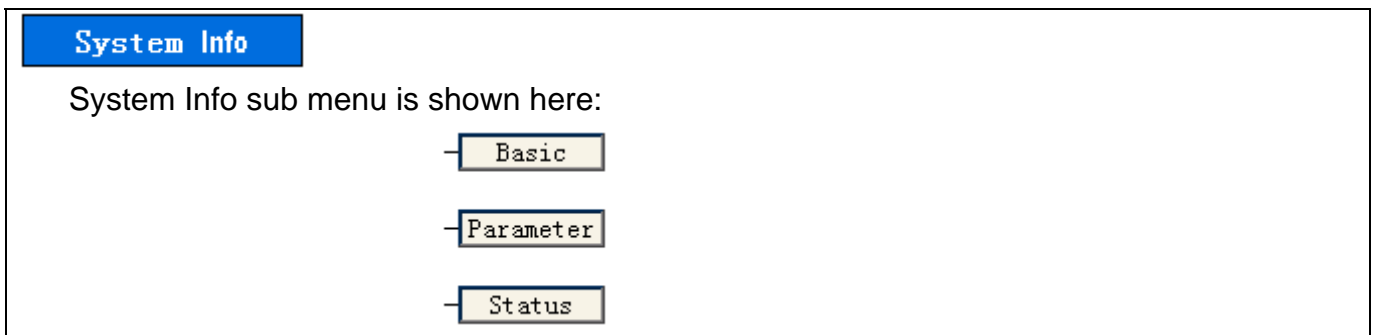


Fig.6-3

System Info sub menu explanation:

Basic: Click **[Basic]** to view the network basic information, the SNMP information and the user setting information for EDFA networking management system.

Basic Info	
IP Address	192.168.1.254
Gateway	--- not set ---
Netmask	255.255.255.0
Trap IP Address1	192.168.1.204
Trap IP Address2	--- not set ---
Trap IP Address3	--- not set ---
Community Name(read)	public
Community Name(write)	private
Stat	Com Normal
Firmware Version	V3.1.0.0
Location	aaaaaaa
Administrator	bbbbbbb
Telephone	1111111

Fig.6-4

Basic Info explain:

IP Address: Unique IP address designated to this system.

Gateway: The IP address of the default gateway (router).

Netmask: The subnet mask of the IP address specified above.

Trap IP Address: IP address of the trap host to which a trap is issued.

Community Name (read): The read community to which the system belongs.

Community Name (write): The write community to which the system belongs.

Stat: Scan data elements status.

Com Abnormal expresses unreliable or useless data status.

Com Normal expresses reliable or useful data status.

Firmware Version: The version of the SNMP network management.

Location: Location where the system is installed (user setting).

Administrator: Administrator for the system (user setting).

Telephone: Contact telephone regarding the system (user setting).

Parameter: Click **[Parameter]** to view EDFA working parameters in a table.

Parameter Info	
Input Power	3dBm
Output Power	19.3dBm
Pump1 Current	218mA
Pump1 TEC Current	348mA
Pump1 Bias Limit	350mA
Pump1 Temperature	25°C
Pump2 Current	368mA
Pump2 TEC Current	315mA
Pump2 Bias Limit	700mA
Pump2 Temperature	26°C
Pump3 Current	0mA
Pump3 TEC Current	0mA
Pump3 Bias Limit	0mA
Pump3 Temperature	0°C

Fig.6-5

Note: The EDFA management system can monitor up to three pumps, it can automatically identifies the number of pumps, if the parameters of a pump are all zero, then the pump is not present in the equipment.

Status: Click **[Status]** to view EDFA status.

EDFA Status Info
• Power Normal
• Pump status Normal
• Input power Normal
• Output power Normal
• Over temp Normal
• Remote Connected

Fig.6-6

Status items are explained as follows:

Power Normal: power supply of EDFA is normal.

Pump status Normal: Pump works in normal states.

Pump status Abnormal: the pump is not working. The pump will be shut down in these cases: input power is less than -38dBm, pump temperature is higher than 35°C, pump current value exceeds its limit value.

Input power Normal: Input power is in its right range.

Input power Abormal: Input power is less than -38dBm.

Output power Normal: Output power is not -8dB less than the rated output power.

Output Power Abormal: Output power is -8dB less than the rated output power.

Over temp Normal: Pump temperature is below 35°C.

Over temp Abormal: Pump TEC current is higher than limit or pump temperature is above 35°C.

Remote Connected: The amplifier is connected with network management system.

Remote Disconnected: The amplifier is not connected with network management system .

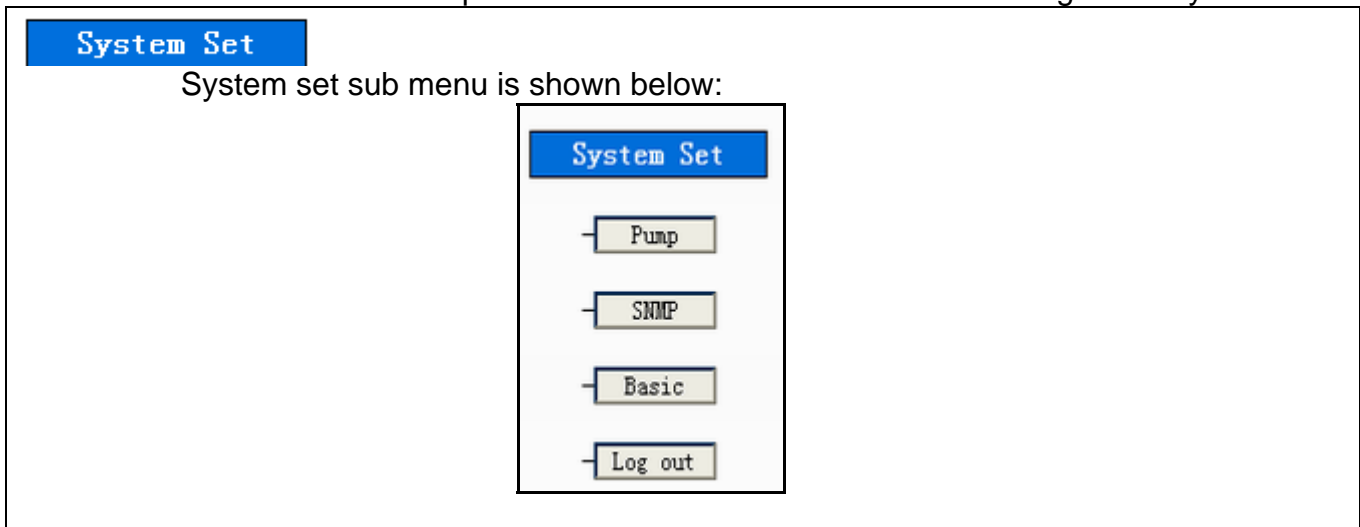


Fig.6-7

System Set sub menu explanation:

Pump: Click [Pump] to view the pump setting.

Pump Current Adjust

In Fig.6-8, the list boxes in the first line are for increasing current. The list boxes in the second line are for decreasing current. Pump option is for selecting pump number. Level option is for adjusting step of pump current. Press down list boxes to choose the pump number, then appears Fig.6-9. Press down list boxes to choose the up/down level, then appears Fig.6-10. Click the UP button to increase the pump bias current, and click the DOWN button to reduce the pump bias current.



Increasing or reducing the pump current may decrease other performance of EDFA(like NF). Be cautious to operate.

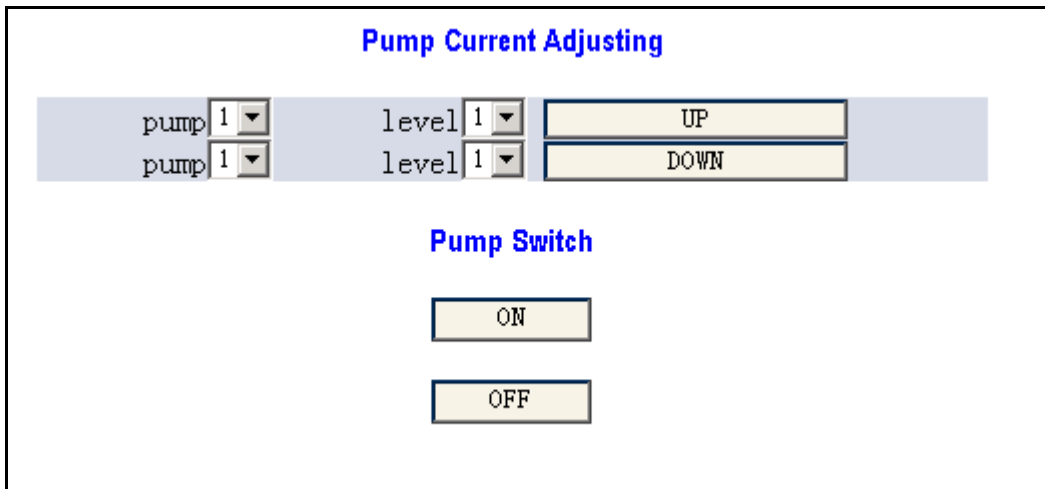


Fig.6-8

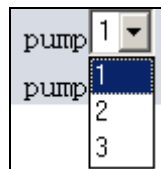


Fig.6-9

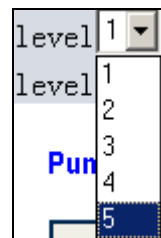

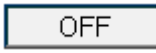


Fig.6-10

Turn on/off the pump

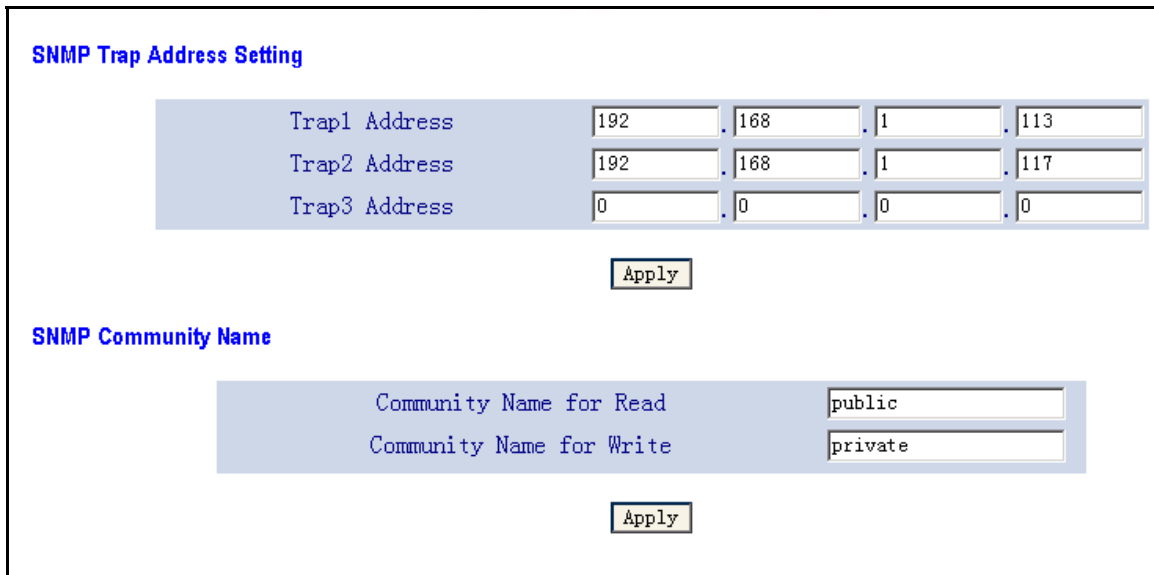
In fig.6-8, click the  button to open pump, click the  button to close pump.

SNMP: Click [SNMP] to view the SNMP setting.

SNMP trap Address Setting: IP address of the trap host to which a trap is issued (three trap hosts are supported). The system enter into force upon setting.

SNMP Community Name: SNMP read/write communities to which the system belongs. The default name is CON. When the setting has been successfully completed, reset your system.

Note: If Snmp trap address setting and SNMP community name options are succeeded to set up , " setting success " will appear.



The screenshot shows a web-based configuration interface for SNMP settings. It is divided into two main sections: 'SNMP Trap Address Setting' and 'SNMP Community Name'.

SNMP Trap Address Setting: This section contains three rows of IP address input fields. Each row is labeled 'Trap1 Address', 'Trap2 Address', and 'Trap3 Address'. Each IP address is entered in four separate boxes separated by dots. The values are: Trap1 (192, 168, 1, 113), Trap2 (192, 168, 1, 117), and Trap3 (0, 0, 0, 0). Below these fields is an 'Apply' button.

SNMP Community Name: This section contains two rows of text input fields. The first is labeled 'Community Name for Read' with the value 'public'. The second is labeled 'Community Name for Write' with the value 'private'. Below these fields is another 'Apply' button.

Fig.6-11

Basic: Network setup and user related settings.

Network Setting: Click [Apply] button to set IP address, netmask, gateway.

Other Setting: Click [Apply] button to set location, administrator, telephone.

Network Setting

IP Address	192	168	1	202
Netmask	255	255	255	0
Gateway	0	0	0	0

Apply

Other Setting

Location	aaaaaaaaaaaaaaaa
Administrator	bbbbbbbbbbbbbbbb
Telephone	1111111111111111

Apply

Fig.6-12

Log out: Operator exit system and return to log in window.

FAQ

Q: Why communication is failed between management server and SNMP agent.

A: Please try the following steps first.

- 1). Make sure Physical link is connected.
- 2). Test the connection to the administrative station through ping orders.
- 3). Check your IP setting (IP address, sub netmask and broadcasting address) make sure it is correct. If SNMP administrative station is in different networks, make sure to establish a suitable gateway IP address.
- 4). If SNMP can't communicate to management server and SNMP agent, please check SNMP parameter.
- 5). Check read community and write community.
- 6). If traps are not received , check whether the address of the administrative station is trap address, and whether IP address and community are correct.

IF the problem can not be solved through above steps, please contact us.