



VHF-I Amplifier 1000 WATT

CONTROL SYSTEM MANUAL

VHF-I Amplifier 1000 Watt Control System Manual

Revision 1.1

12/28/2021

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Important Notices

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Revision	Description	Date	Signed
1.0	Initial Release	December 2018	SRW
1.1	Modified 1K VHFI	Sept 2021	BT
1.2			
1.3			
1.4			
1.5			
2.0			



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1. Monitor and Control Interface

The control system is used for a variety of functions, the most important of which is ensuring that the amplifier system continues to operate properly. The control system also allows the user to monitor and control the amplifier via front panel, and remotely through the parallel DB25 Connector and Ethernet UI.

1.1. Network User Interface

In order to access the network interface, the Power Meter unit must be connected to the local network or accessed directly using an Ethernet cable connected to the top of the controller. The default network configuration is:

IP Address	10.0.0.10
Subnet Mask	255.255.255.0
Gateway	10.0.0.1
Nameserver	10.0.0.1

By default, the network interface is available at <http://10.0.0.10>

Login Page

BE Network Interface

Not secure | 10.0.0.10

BE

Site Name Site Location

1KW VHF-I Amplifier Network Interface

Username

Enter Username

Password

Password

LOGIN

Default Login Information

Username: admin
Password: admin



MAIN PAGE

BE Network Interface

← → ↻ ⚠ Not secure | 10.0.0.10/index.php

Site Name Site Location

1KW VHF-I Amplifier Network Interface

MAIN

NETWORK

ALERTS

REPORTS

SETUP

SMTP

SNMP

USERS

LOG OUT

AMPLIFIER
FWD PWR: 2.67 kW
RFL PWR: 0 W
VSWR: 1.0:1
TOTAL CURRENT: 27 A
CURRENT 1: 7 A
CURRENT 2: 9 A
CURRENT 3: 7 A
CURRENT 4: 3 A
VOLTAGE: 45 V
TEMP Heatsink: 4 C
TEMP Ambient: 14 C

EXCITER
FWD PWR: 14 dBm

FAULT STATUS
NONE

EXCITER CONTROL

ON OFF

FWD PWR CONTROL

RAISE

LOWER

INPUT PROTECT

RESET

CONTROLLER

RESET

Network Configuration



The Ethernet card is provided with a static IP address. The default address is 10.0.0.10. If the default IP address does not fit with the local network configuration connect an Ethernet cable from a computer directly to the device in order to update the network settings. Configure the computers IP address to any available IP address in the range 10.0.0.2 – 10.0.0.254 in order to access the web interface. Once connected, use the Network Configuration link from the main page to access and update the network settings.

The Network configuration page provides access to set the IP address, Subnet Mask, Gateway, and DNS. The current network setup is shown in the Network Information box. Input the desired values and then click on the submit button to confirm the change. DNS is optional. All other fields are required.

The screenshot shows a web browser window with the address bar displaying "10.0.0.10/network.php". The page features the BE logo and a navigation menu with options: MAIN, NETWORK (highlighted), ALERTS, REPORTS, SETUP, SMTP, SNMP, USERS, and LOG OUT. The main content area is titled "1KW VHF-I Amplifier Network Interface" and contains a "Network Configuration" section. This section includes a caution message: "Caution: Changing the network configuration could render the system unreachable. IP address changes will not redirect automatically." Below the caution are four input fields: "IP Address" (10.0.0.10), "Subnet Mask" (255.255.255.0), "Gateway" (10.0.0.1), and "DNS" (10.0.0.1). A "SUBMIT" button is located at the bottom of the form.

WARNING – Changing the network configuration could render the system unreachable. IP address changes will not redirect automatically.

Once the IP address change has occurred, access to the web interface is now available from the new IP address specified in the network configuration page. Note: The computer network configuration may need to be edited to reflect the new IP address.



Alerts Page

The Alerts page allows for configuration of threshold levels required for fault conditions. A checkbox allows for the SMTP notification email to be enabled or disabled. (check = enabled).

BE Network Interface

Site Name Site Location

1KW VHF-I Amplifier Network Interface

MAIN NETWORK **ALERTS** REPORTS SETUP SMTP SNMP USERS LOG OUT

Threshold Values

FWD PWR Upper 1: 4 kW

FWD PWR Upper 2: 5.8 kW

RFL PWR Upper 1: 20 W

RFL PWR Upper 2: 50 W

VSWR: 2.85:1

CURRENT Upper 1: 25 A

CURRENT Upper 2: 30 A

VOLTAGE Lower: 5 V

VOLTAGE Upper: 65 V

TEMP 1 Upper 1: 20 C

TEMP 1 Upper 2: 30 C

TEMP 2 Upper 1: 20 C

TEMP 2 Upper 2: 30 C

EXCITER FWD Upper 1: 20 dBm

EXCITER FWD Upper 2: 40 dBm

Set Threshold Value AND Enable/Disable Email Notification

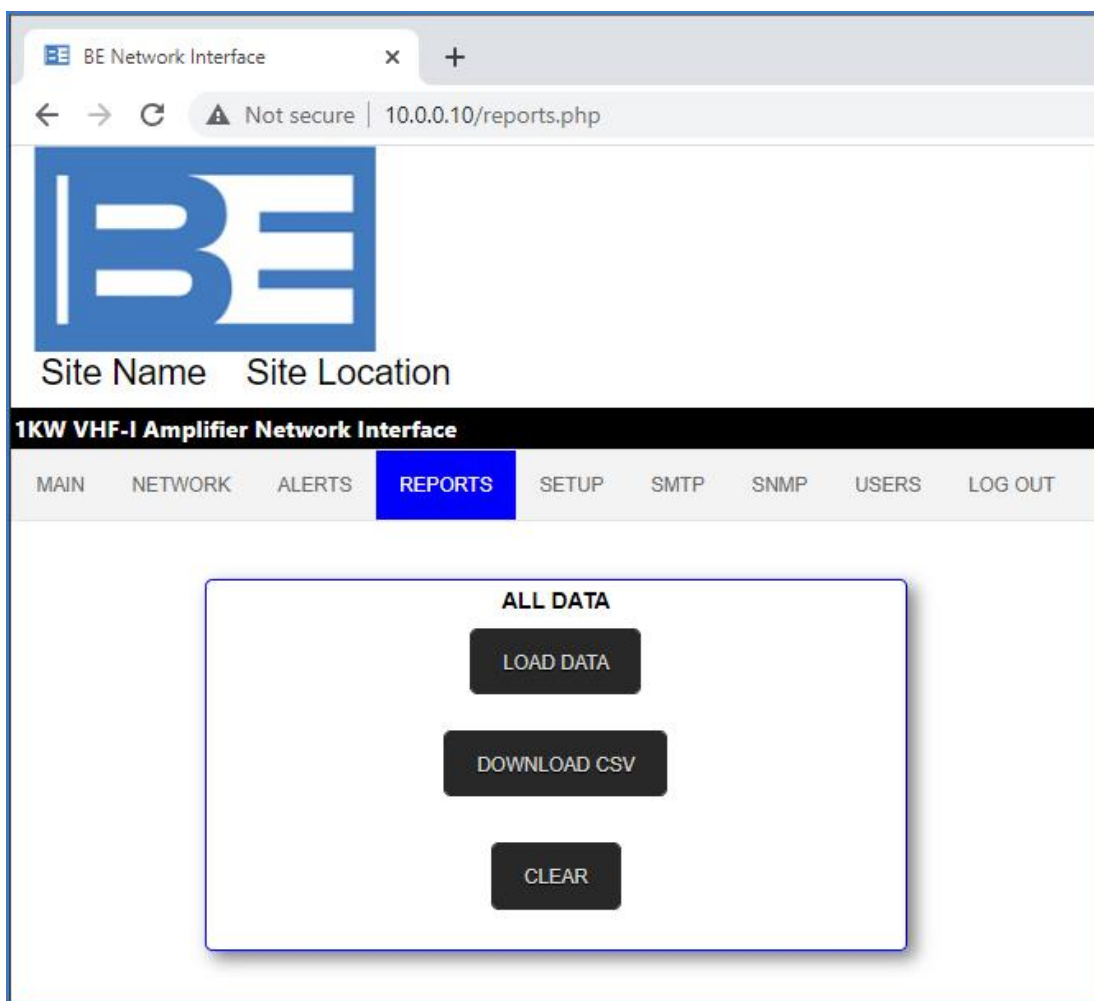
IO	Email	Threshold	Save	Fault Condition
FWD PWR Upper 1:	<input type="checkbox"/>	<input type="text"/> kW	<input type="button" value="Submit"/>	FWD PWR ELEVATED: <i>fault (if FWD PWR > FWD PWR Upper 1 Threshold)</i>
FWD PWR Upper 2:	<input type="checkbox"/>	<input type="text"/> kW	<input type="button" value="Submit"/>	FWD HIGH Tx OFF: <i>fault (if FWD PWR > FWD PWR Upper 2 Threshold)</i>
RFL PWR Upper 1:	<input type="checkbox"/>	<input type="text"/> W	<input type="button" value="Submit"/>	RFL PWR ELEVATED: <i>fault (if RFL PWR > RFL PWR Upper 1 Threshold)</i>
RFL PWR Upper 2:	<input type="checkbox"/>	<input type="text"/> W	<input type="button" value="Submit"/>	RFL PWR HIGH Tx OFF: <i>fault (if RFL PWR > RFL PWR Upper 2 Threshold)</i>
VSWR High:	<input type="checkbox"/>	<input type="text"/> :1	<input type="button" value="Submit"/>	VSWR HIGH: <i>fault (if VSWR > VSWR High Threshold [use 0 to DISABLE])</i>
CURRENT Upper 1:	<input type="checkbox"/>	<input type="text"/> A	<input type="button" value="Submit"/>	CURRENT ELEVATED: <i>fault (if CURRENT > CURRENT Upper 1 Threshold)</i>
CURRENT Upper 2:	<input type="checkbox"/>	<input type="text"/> A	<input type="button" value="Submit"/>	CURRENT HI Tx OFF: <i>fault (if CURRENT > CURRENT Upper 2 Threshold)</i>
VOLTAGE Lower:	<input type="checkbox"/>	<input type="text"/> V	<input type="button" value="Submit"/>	VOLTAGE LOW: <i>fault (if VOLTAGE < VOLTAGE Lower Threshold)</i>
VOLTAGE Upper:	<input type="checkbox"/>	<input type="text"/> V	<input type="button" value="Submit"/>	VLT HI Tx OFF: <i>fault (if VOLTAGE > VOLTAGE Upper Threshold)</i>
TEMP 1 Upper 1:	<input type="checkbox"/>	<input type="text"/> C	<input type="button" value="Submit"/>	TEMP1 ELEV: <i>fault (if TEMP 1 > TEMP 1 Upper 1 Threshold)</i>
TEMP 1 Upper 2:	<input type="checkbox"/>	<input type="text"/> C	<input type="button" value="Submit"/>	TEMP1 HI Tx OFF: <i>fault (if TEMP 1 > TEMP 1 Upper 2 Threshold)</i>
TEMP 2 Upper 1:	<input type="checkbox"/>	<input type="text"/> C	<input type="button" value="Submit"/>	TEMP2 ELEV: <i>fault (if TEMP 2 > TEMP 2 Upper 1 Threshold)</i>
TEMP 2 Upper 2:	<input type="checkbox"/>	<input type="text"/> C	<input type="button" value="Submit"/>	TEMP2 HI Tx OFF: <i>fault (if TEMP 2 > TEMP 2 Upper 2 Threshold)</i>
EXCITER FWD Upper 1:	<input type="checkbox"/>	<input type="text"/> dBm	<input type="button" value="Submit"/>	EXC ELEVATED: <i>fault (if EXCITER FWD > EXCITER FWD Upper 1 Threshold)</i>
EXCITER FWD Upper 2:	<input type="checkbox"/>	<input type="text"/> dBm	<input type="button" value="Submit"/>	EXC HI Tx OFF: <i>fault (if EXCITER FWD > EXCITER FWD Upper 2 Threshold)</i>

Descriptions to the right of the input boxes provide details of the fault displayed and the condition that causes it to occur. Faults are available on the Ethernet network interface (GUI and SNMP), and the DB9 Remote Connection.



Reports Page

Active fault conditions (see section 8.5) are stored by date and time of occurrence in the format: **YYYY-MM-DD HH:MM:SS.ms**. They can be viewed by clicking the '[Load Data](#)' button and downloaded to a .csv file by clicking the '[Download CSV](#)' button. Clear previously recorded history by clicking the '[CLEAR](#)' button.



Report Data Clear

Clicking the Clear button will load a confirmation page. Click the Clear button to confirm the Report Clear action. **WARNING** – Data is unrecoverable.

After the Report Data has been cleared a confirmation message will appear

Note: *If the report data does not display correctly clear the web browsers cache.*



1.2. SETUP

The SETUP page allows for the Site Name and Site Location to be updated. The Site Name and Location information is displayed on the GUI and will be sent out with SMTP email alert notifications.

System Date and Time will be picked up automatically from a network time server, however, if no time server or Internet connection is available, the user may set the time and date manually.

BE Network Interface

Not secure | 10.0.0.10/setup.php

BE

Site Name Site Location

1KW VHF-I Amplifier Network Interface

MAIN NETWORK ALERTS REPORTS **SETUP** SMTP SNMP USERS LOG OUT

Current Settings

Site Name: **Site Name**

Site Location: **Site Location**

Site Information

Site Name:

Site Location: **SUBMIT**

System Date and Time

Current Local Date and Time: 09/15/21 12:56 PM

Set Local Date and Time:

SUBMIT



1.3. SMTP PAGE

Broadcast Electronics provides a setup-free SMTP option via SMTP2GO. Modifications to this page are only required if you would like to use your own email server to send SMTP Email.

Default SMTP2GO login information

Username: bdcast@smtp2go.com

Password: NTI6NzAzbmtieDMw

Connecting via SMTP2GO (Pre-configured)

SMTP Server: mail.smtp2go.com

SMTP Port: 2525

Alternative ports: 8025, 587, 80 or 25. TLS is available on the same ports.

SSL is available on ports 465, 8465 and 443.

BE Network Interface

Not secure | 10.0.0.10/settings.php

BE

Site Name Site Location

1KW VHF-I Amplifier Network Interface

MAIN NETWORK ALERTS REPORTS SETUP **SMTP** SNMP USERS LOG OUT

SMTP Settings

Username
bdcast@smtp2go.com

Password
Password

Server address
mail.smtp2go.com

Port
2525

☒ TLS
☐ SSL

SAVE TEST

ADDITIONAL SAMPLE SMTP CONFIGURATIONS

****Google less secure apps and SMTP Settings.****

Server Address: smtp.gmail.com

Username: your Gmail account (e.g. user@gmail.com)

Password: your Gmail password

Port: 465 (SSL required) or 587 (TLS required)

<https://myaccount.google.com/lesssecureapps>

****Outlook/Office365****

Server Address: smtp-mail.outlook.com

Username: Your Outlook Email Address (e.g. example@outlook.com)

Password: Your Outlook Password

Port Number: 587 (With TLS)



1.4. SNMP

The SNMP MIB file can be downloaded by accessing the page snmp.html from your assigned IP address. The default address is: <http://10.0.0.10/snmp.php>

BE Network Interface

Not secure | 10.0.0.10/snmp.php

BE

Site Name Site Location

1KW VHF-I Amplifier Network Interface

MAIN NETWORK ALERTS REPORTS SETUP SMTP **SNMP** USERS LOG OUT

SNMP Configuration

Enable SNMP ☒ Yes ☐ No

SNMP Version ☐ v3 ☒ v2c

SUBMIT

SNMP MIB FILE

[Download MIB File](#)

The SNMP page also allows for the SNMP service to be enabled and disabled. The user may also select between SNMP v2c and the more secure SNMP v3. Please note the user account created under the Users page will be used to access SNMP v3. The password requirement for SNMP is a minimum of 8 characters.



SNMP Management Information Base (MIB)

The BE MIB file allows access to the following data via the SNMP protocol:

private/enterprise/be/beProducts/beTransmitter

The screenshot shows the iReasoning MIB Browser interface. On the left, a tree view displays the hierarchy: mgmt > private > enterprises > be > beMIB > setup > beCommon > beProducts > transmitter > beTransmitter. The beTransmitter folder is expanded, showing sub-entries: fwdPwr, rfIPwr, vswr, curTotal, cur1, cur2, cur3, cur4, voltage, temp1, temp2, excFwdPwr, and genFault. The main pane displays a 'Result Table' with the following data:

Name/OID	Value	Type	IP:Port
fwdPwr.0	5.89 kW	OctetString	10.0.0.10:161
rfIPwr.0	3 W	OctetString	10.0.0.10:161
vswr.0	1.05 :1	OctetString	10.0.0.10:161
curTotal.0	34 A	OctetString	10.0.0.10:161
cur1.0	8 A	OctetString	10.0.0.10:161
cur2.0	9 A	OctetString	10.0.0.10:161
cur3.0	8 A	OctetString	10.0.0.10:161
cur4.0	8 A	OctetString	10.0.0.10:161
voltage.0	57 V	OctetString	10.0.0.10:161
temp1.0	17 C	OctetString	10.0.0.10:161
temp2.0	5 C	OctetString	10.0.0.10:161
excFwdPwr.0	9 dBm	OctetString	10.0.0.10:161
genFault.0	1	OctetString	10.0.0.10:161

Below the table, a small table shows MIB details:

Name	beTransmitter
OID	.1.3.6.1.4.1.51550.4.2
MIB	aat
Syntax	
Access	
Status	
DefVal	
Indexes	

The status bar at the bottom shows the full OID path: .iso.org.dod.internet.private.enterprises.be.beProducts.beTransmitter

Read Only

fwdPwr	Forward Power in Watts
rfIPwr	Reflected Power in Watts
vswr	SWR to 1 ratio
curTotal	Total Current in Amps
cur1	Current 1 in Amps
cur2	Current 2 in Amps
cur3	Current 1 in Amps
cur4	Current 2 in Amps
cur5	Current 1 in Amps
cur6	Current 2 in Amps
voltage	DC Voltage in Volts
temp1	Temperature from sensor 1 in degrees Celsius
temp2	Temperature from sensor 2 in degrees Celsius
excFwdPwr	Exciter Forward Power in Watts
genFault	General Fault 0 = NO FAULT, 1 = FAULT PRESENT



1.5. LCD Display

The LCD display on the front panel provides operation information. Monitoring includes Forward Power (FWD), Reflected Power (RFL), Current (CUR), Voltage (VLT), Temperature (TMP1, TMP2) and FAULT Status. When a fault is not present the fault indication is “NONE”(no fault present). When a fault becomes active the LCD will display the fault, and depending on the condition, will implement corrective actions. See section 8.5 Fault Conditions.

Metering	Unit
FWD: Forward Power	Wattage
RFL: Reflected Power	Wattage
CUR: Current	Amps
VLT: Voltage DC	Volts
TMP1: Heatsink Temp	Degrees Celsius
TMP2: Ambient Temp	Degrees Celsius



1.6. Fault Conditions

Fault conditions are displayed on the web GUI and the front panel LCD. They are stored in the history and can be downloaded as a .csv log file.

Fault	Condition	Action
FWD ELEVATED	Forward power greater than first threshold	Lower Power
FWD HIGH Tx OFF	Forward power greater than second threshold	Transmitter Off
RFL ELEVATED	Reflected power greater than first threshold	Lower Power
RFL HIGH Tx OFF	Reflected power greater than second threshold	Transmitter Off
CURRENT ELEVATED	Current greater than first threshold	Lower Power
CURRENT HI Tx OFF	Current greater than second threshold	Transmitter Off
VOLTAGE LOW	Voltage less than low voltage threshold	Display and History Only
VLT HI Tx OFF	Voltage greater than high voltage threshold	Transmitter Off
TEMP HS ELEV	Heatsink temperature greater than first threshold	Lower Power
TEMP HS HIGH	Heatsink temperature greater than second threshold	Transmitter Off
TEMP AMB ELEV	Ambient temperature greater than first threshold	Lower Power
TEMP AMB HIGH	Ambient temperature greater than second threshold	Transmitter Off
VSWR HIGH	VSWR greater than VSWR High threshold	Display and History Only
EXC ELEVATED	Exciter forward power greater than first threshold	Lower Power
EXC HI Tx OFF	Exciter forward power greater than second threshold	Transmitter Off
OVERDRIVE	Input Protection Fault	Display and History Only





2.2. Expansion Board

