

AMPLIFIED ENGINEERING

FATBOX GPRSV2 MANUAL

VERSION 2.1

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COLOR LEGEND

This manual is color-coded for your ease of reference.

normal text

actions

product specs

windows commands

web console headers

table info

critical!

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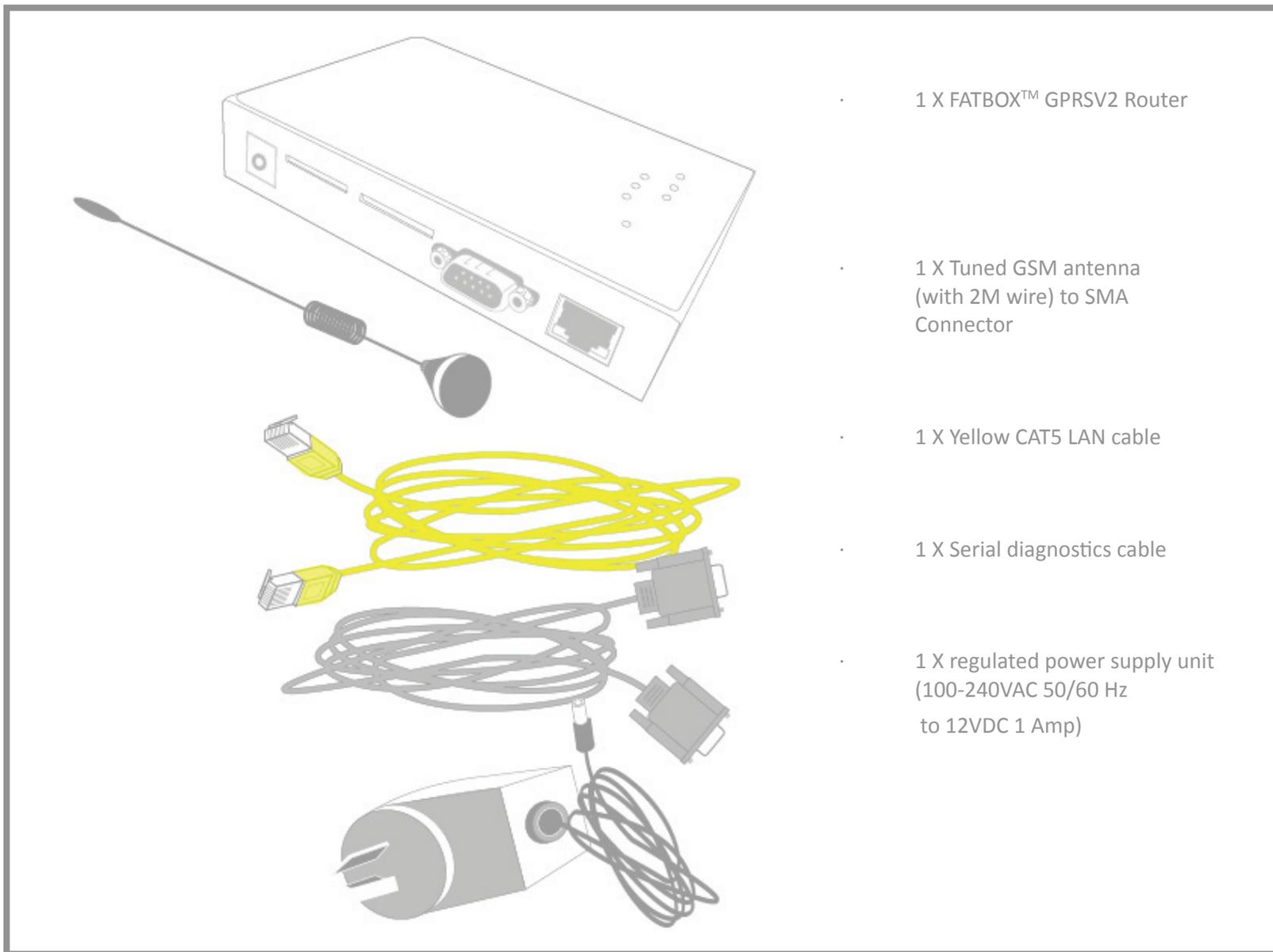
Delivering **Optimized Wireless Solutions** is our motto.

If you have any help requirements, please do not hesitate to contact our **Solution Partners or the FATBOX Head Office ;)**

CONTACT DETAILS ON PAGE **42**.

Please download latest user manuals at www.amplified.com.au

Thank you for purchasing the FATBOX GPRSv2 cellular router. Inside your FATBOX packaging, you will find:



- 1 X FATBOX™ GPRSv2 Router

- 1 X Tuned GSM antenna (with 2M wire) to SMA Connector

- 1 X Yellow CAT5 LAN cable

- 1 X Serial diagnostics cable

- 1 X regulated power supply unit (100-240VAC 50/60 Hz to 12VDC 1 Amp)

▶ IMPORTANT SAFETY NOTICE

All specialist electronic devices must be operated with due care to avoid damage or injuries and should be installed and operated by a trained personnel.

DO NOT OPERATE THIS EQUIPMENT IN ENVIRONMENTS CONTAINING POTENTIALLY EXPLOSIVE GASES OR LIQUIDS, EXAMPLE, GAS STATIONS AND CHEMICAL PLANTS AND EXPLOSIVE STORES.

1. PRODUCT SPECIFICATIONS

The FATBOX GPRSV2 model CRGV2 integrates a robust Motorola G24 series module and a powerful ARM7 processor. Its rugged industrial design is fit for demanding remote and mobile data connectivity applications.

Wireless Cellular Interface

- GPRS Class 10 for maximum 85.6kbps downlink
- Quad Band GSM 850/900/1800/1900
- SMS and CSD 14.4kbps supported
- Dual SIM with PPP connection failure auto-switching with SIM1 priority mode
- Motorola G24 Wireless module integrated
- SIM PIN for SIM card security
- Reboot on SIM Failure

LAN Interface

- 10/100BaseT Ethernet port
- DHCP server on default

RS232 Serial Interface

- To operate as serial modem (e.g. for SMS, CSD)
- For TCP/UDP transparent transport mode
- As a back-up route (e.g. a PSTN modem)

Power and Operating Conditions

- Power: 5 – 30VDC (200mA~150mA @12VDC)
- Operating Temperature: -10°C to +65°C
- Physical dimensions: 130mm x 92mm x 25mm
- Weight: 420gm

Operating System

- LINUX OS on ARM7 microprocessor
- Kernel and Firmware update over LAN or Serial

Other Features

- Wake on LAN/Serial data
- Wake on Incoming call
- Connect on Serial burst detected
- SSHv2 for secure remote management
- SNMPv1 for Network Management Systems
- Supports VPN [IPSEC (PSK), PPTP and L2TP]
- DDNS
- DMZ & NAT
- IP Firewall
- CHAP and/or PAP authentication
- Configurable PPP keep alive function
- Configurable ON/OFF Timer
- Backup route using serial to external modem

In the Box

- FATBOX GPRSV2 Router
- GSM antenna (with 2 meter wire to SMA Connector)
- CAT5 LAN cable
- RS232 Serial cable
- Regulated power supply unit (100-240VAC, 50/60Hz to 12VDC 1 Amp)

2.1 Power Supply Details

The power requirements for the FATBOX GPRSV2 are as follows:

| | |
|-------------|--|
| Supply | 5 – 30VDC regulated power supply recommended (e.g. 12VDC @ 1A) |
| Consumption | 100 ~ 150mA @ 12 VDC (Cellular network not connected) 200 ~ 250mA @ 12VDC (Cellular network connected and transmitting) |

- ▷ Inadequate current or dips in voltage may cause the device to fail to connect to data services even if the LEDs are lighted up.
- ▷ Supply over 30 VDC will damage the device.

2.2 Cellular Data Network Provider

The FATBOX GPRSV2 operates in any GSM network (850/900/1800/1900) and provides data connection via GPRS MS Class 10.

- ▷ Please ensure that the SIM card to be used has PIN disable and GPRS data plans enabled. You will need to check with your Network Operator for configuration information like APN, dial-number, username and password.

2.3 Ethernet Devices

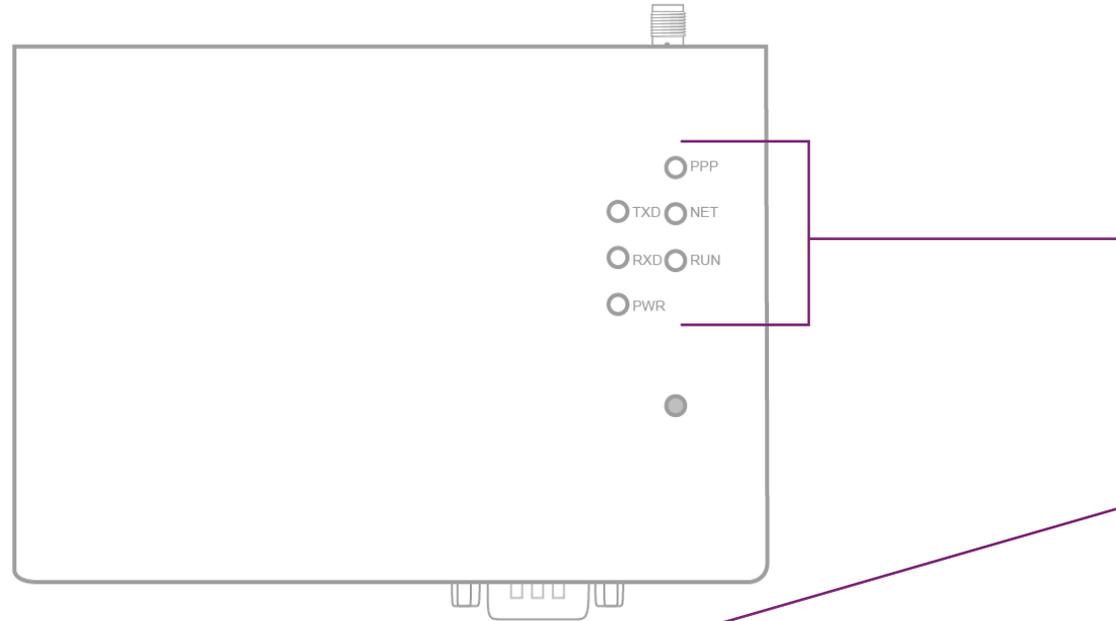
In the factory default, the FATBOX is configured as a Gateway with an IP address of 192.168.1.1 and a Subnet of 255.255.255.0.

You can either let the inbuilt DHCP server assign IP addresses to connected devices automatically (by default) or configure the attached hosts with fixed IP addresses. See Section 7.1.3 on page 20 for more information on how to do this.

2.4 Serial Devices

In the factory default, the FATBOX's serial port is designated as a serial terminal console that continuously sends a debug log. This helps to ease device troubleshooting.

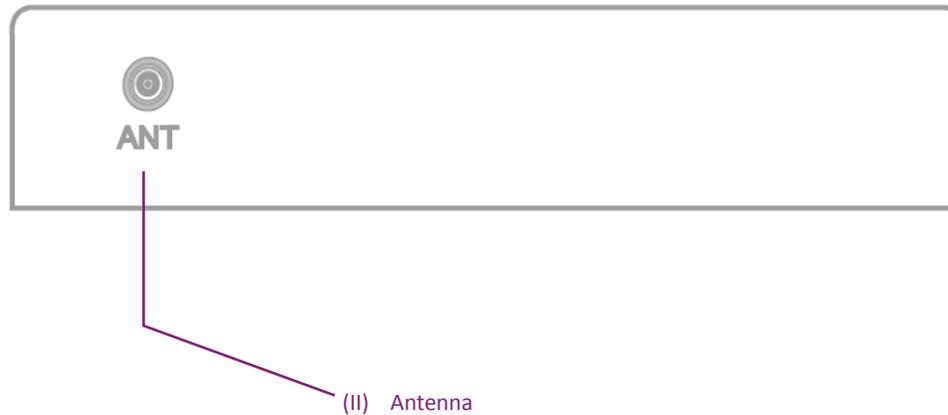
But the serial port can also be configured to function as a serial modem, back up route or a TCP/UDP transparent transport channel. See section 7.1.4 on page 21 for information on how to do this.



(I) LED Indicators

The FATBOX GPRSV2's LEDs are useful indicators of the unit's current operating status and should be used for initial setup and troubleshooting of the router.

| LED | Indication of | LED Status | Router Status |
|-------|---------------------|---------------------|--|
| PWR | Power Supply | LED ON | Power is supplied to router |
| RUN | Operation | Blinking at 1Hz | Operating Fine |
| NET | Ethernet Connection | Steady GREEN | Successful GSM Network Connection |
| | | No Light/Slow Blink | Unsuccessful GSM Network Connection |
| PPP | PPP Connection | Steady GREEN | Successful PPP Connection |
| RX/TX | Serial Activity | Lighted | Indicates Serial Port RX and TX activity |



The supported antenna is a 50Ω SMA Male. This antenna must be designed for the network frequency that the device is operating in.

For areas with weak signals, a high gain antenna (e.g. 6dBi) may be used. Please contact support@amplified.com.au or a reseller partner if you need to purchase a specialized antenna such as a high gain or outdoor antenna.

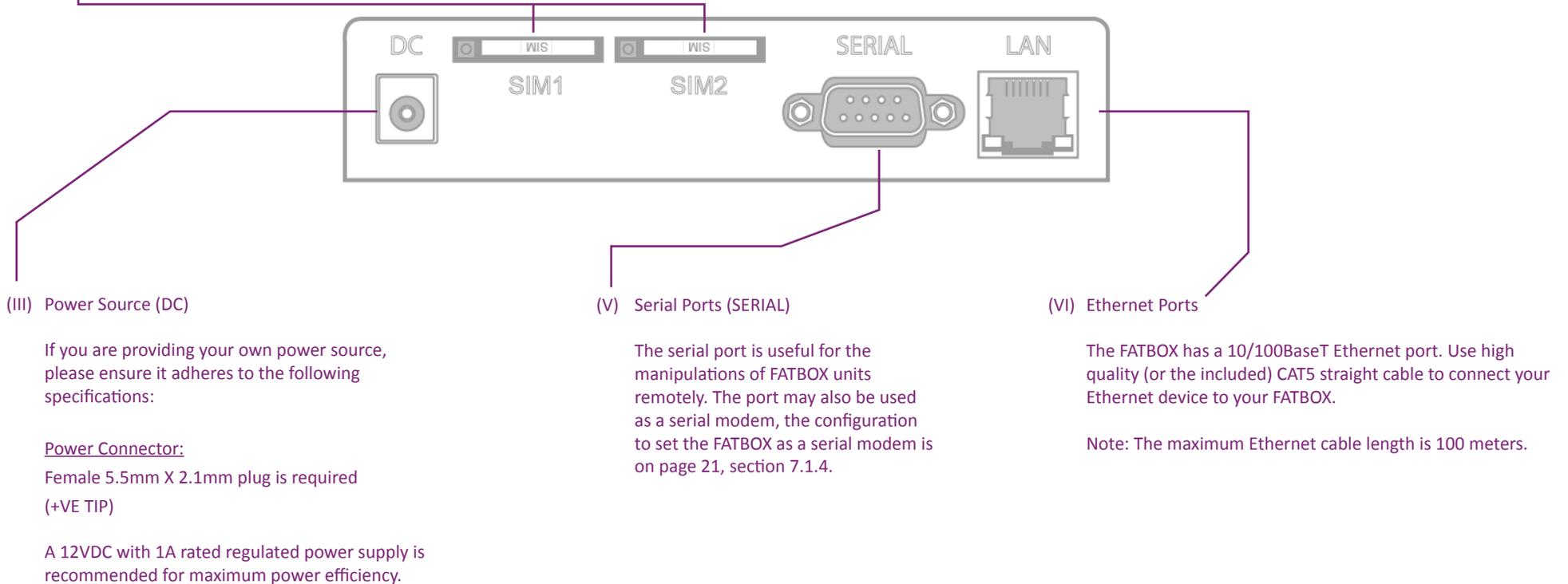
Note: The performances of the device is very much affected by the signal strength of the network operator.

(IV) SIM Card (or USIM)

The SIM card to be used is the 'mini' USIM type of ISO/IEC 7810:2003, ID-000 standard, i.e. 25 X 15mm. Push gently the yellow button to eject SIM carrier. SIM card should be inserted into the carrier as indicated.

The FATBOX GPRSV2 supports DUAL SIM for redundancy in critical applications. You will need 2 data SIMs from different operators - the router will switch from one SIM to the other upon failure to reconnect to the GPRS service. The number of retries and the wait period for each retry can be user configured. See Section 7.1.5 - Timer Configure on page 22 to do this.

▶ NEVER remove or insert SIM card when device has PWR switched in "ON" position. Damage caused to device or SIM in such case will not be warranted.



(III) Power Source (DC)

If you are providing your own power source, please ensure it adheres to the following specifications:

Power Connector:

Female 5.5mm X 2.1mm plug is required (+VE TIP)

A 12VDC with 1A rated regulated power supply is recommended for maximum power efficiency.

(V) Serial Ports (SERIAL)

The serial port is useful for the manipulations of FATBOX units remotely. The port may also be used as a serial modem, the configuration to set the FATBOX as a serial modem is on page 21, section 7.1.4.

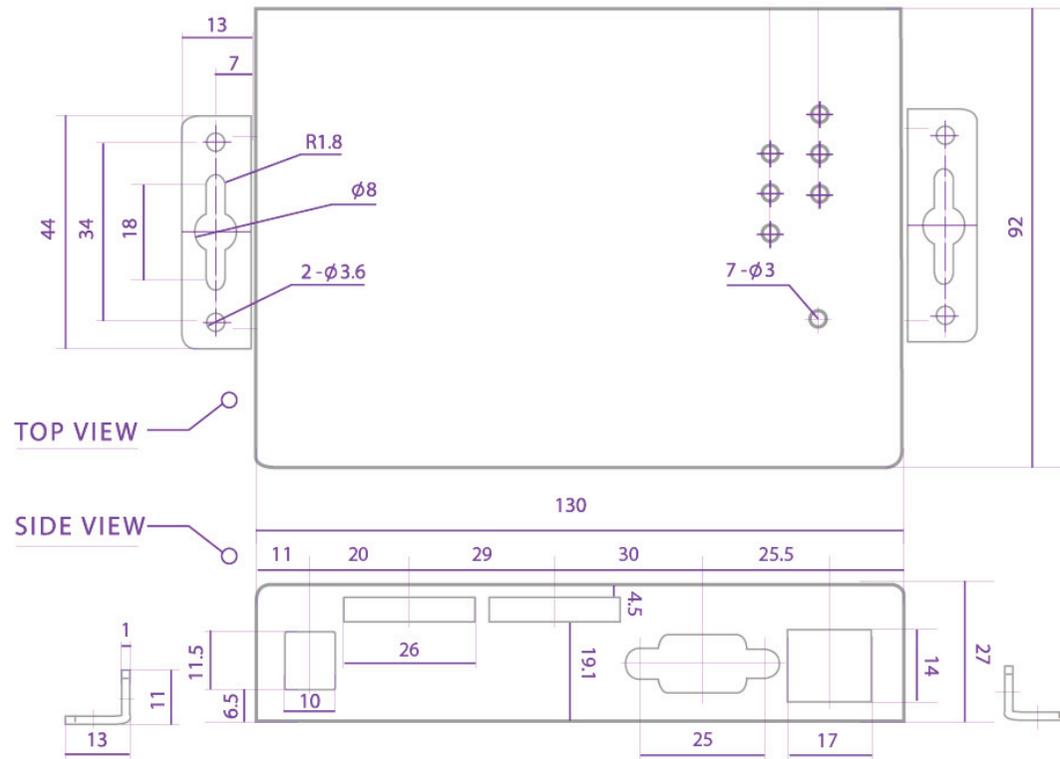
(VI) Ethernet Ports

The FATBOX has a 10/100BaseT Ethernet port. Use high quality (or the included) CAT5 straight cable to connect your Ethernet device to your FATBOX.

Note: The maximum Ethernet cable length is 100 meters.

The case of the FATBOX is made with sheet steel that provides sturdy protection for the electronics and serves as an EMR Shield at the same time. The removable “L” mounting plates should be used to mount the router to a secure structure or a mounting plate within an electronic enclosure.

- ∴ Installation Orientation: For most efficient cooling, the router should be mounted vertically with the antenna-side facing up to allow for natural convection.
- ∴ Antennas must be mounted external of any shielded metal enclosure and secured to a large metal plane for best performance. A good example is the middle of a vehicle’s metal roof.
- ∴ Vibration – in conditions where strong vibrations are expected (for example in locomotives) the FATBOX should be mounted with a vibration dampening material in between the box and the mounting surface. This isolation helps to dampen the transmission of shocks that may otherwise damage the device over time.

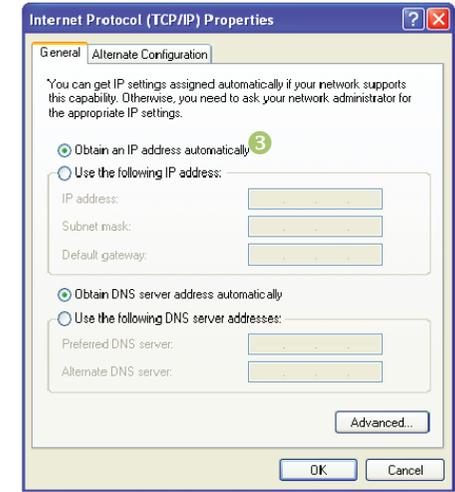
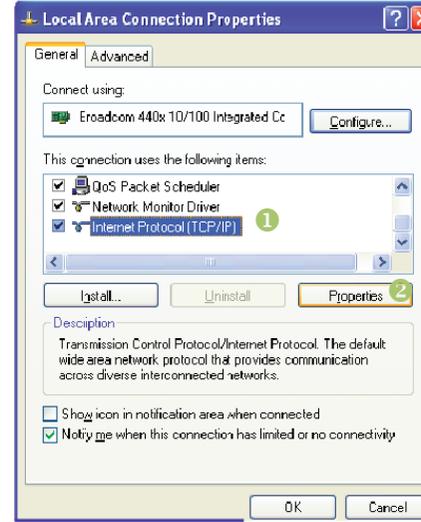


5.1 Ethernet Device Settings

5.1.1 Using the DHCP to deploy addresses automatically

The FATBOX's DHCP server is enabled by default and its IP address is **192.168.1.1**

For your initial setup, we suggest setting your computer's LAN Internet Protocol (TCP/IP) to automatic. Do this by going to: *Control Panel*> *Network and Sharing Center*> *LAN Configure*> *TCP/IP (IPv4)* ① *Properties* ②> *Obtain IP address automatically* ③.



5.1.2 Setting host addresses manually

Alternatively, you may choose to manually configure your device so it has a fixed local IP address. Input the IP address following this format.

| | |
|------------------------------------|---|
| IP address | · 192.168.1.XXX¹ |
| Subnet Mask | <i>Usually automatically set to 255.255.255.0</i> |
| Default Gateway | · 192.168.1.1 |
| Preferred and Alternate DNS Server | <i>Obtain DNS server addresses automatically or Choose your own DNS Servers</i> |

1. The host ID XXX should be a number between 2 to 254 and should not be duplicated within the same local network.

5.2 Serial Device Settings

If you are connecting a serial device to the FATBOX for Serial Log Monitoring, Serial DTU (Transparent Transport) or Serial Modem, you will need to set the device's serial port to the following setting to initiate a connection.

| | |
|--------------|-------------------------------|
| Baud Rate | 115200 bps |
| Data Bits | 8 Data Bits |
| Stop Bits | 1 Stop Bit |
| Parity Check | No Parity Bit (None) |
| Flow Control | No Flow Control (None) |

6.1 Logging in to the FATBOX GPRSV2

Connect your computer to port LAN on the FATBOX with the Ethernet CAT5 cable provided. Wait a few moments for your computer to register the device then open your web browser and type in “192.168.1.1” into the URL tab.

Enter as following in the LOGIN page:

USERNAME: admin
PASSWORD: 12345

You may change the username and password from within the console.

The DHCP server is activated by default. It will assign a local IP address of 192.168.1.2.

6.2 Saving Parameter Changes

After the making changes to your FATBOX’s configuration, you have to go to [System Manage > System Tools](#) and Save the parameter changes to Flash and RESET as following.

Choose “Save Parameters to Flash” ① and click on SET ②.

Then you may reset the system by choosing “Reset System” ③ and then click “SET” ②. Alternatively you may choose to reset by unplugging the power cord for a few seconds. The new settings will be in place when the B.A.S.E reboots.

▶ **IMPORTANT:** Please wait till the message “Parameters Save Success” is displayed before resetting the FATBOX. A premature reset may corrupt the unit’s configuration. If this happens you will need to use the serial console to load the default settings to the box. (See section 9.3 on page 40 to do this.)

Welcome to the FATBOX Web-Console menu. If you are already logged in, the following segment will run you through the various settings and configurations you can make through your web browser. Please ensure that you have covered segment 6.2 on saving parameter changes before you continue. The web console is recommended for users who prefer having an intuitive interface to manage their routers.

7.1 System Parameters

The FATBOX GPRSv2 is smartly designed so that a single product may be deployed in a variety of ways around your network in a cost effective manner. Section 7.1 covers how to set up the unit to the way that you'll like to use it.

7.1.1 Services Configuration

To begin connecting to a cellular data network you will need to set up the Services Configuration menu found in System Parameters. Note that much of the information required here would have to come from your cellular operator.

| | | |
|-----------------------------------|--|--|
| SIM1 Access Point Name | APName | Ask service provider. It's something like "telstra.internet" or "tmobile". |
| SIM1 Service Number | *99***1# | Ask service provider. Usually it is "*99#" or "*99***1#". |
| SIM1 User name and Password blank | <input type="checkbox"/> | Ask service provider. |
| SIM1 User Name | username | |
| SIM1 Password | password | |
| Enable SIM2 | <input type="checkbox"/> | Enable DUAL SIM redundancy. |
| SIM2 Access Point Name | APName | If SIM 2 is enabled, user can choose to enable "SIM 1 Primary Connection". This will configure the FATBOX to check SIM 1's network availability periodically whilst it is connected to SIM 2. The FATBOX will disconnect the current connection to check SIM 1's network status. If that test fails, the FATBOX will reconnect back to SIM 2 until the next "Checking Period" elapses. |
| SIM2 Service Number | *99***1# | |
| SIM2 User name and Password blank | <input type="checkbox"/> | |
| SIM2 User Name | username | |
| SIM2 Password | password | |
| SIM1 Primary Connection | <input type="checkbox"/> Checking Period 10 Mins | |

If you want the FATBOX to be always on operation click the “SET” button to confirm the settings now. Otherwise continue to configure the following section.



The screenshot shows a settings table with the following content:

| | | |
|--------------------------|--|--|
| Dial Mode | <input type="radio"/> Always Online | <input checked="" type="radio"/> Data Trigger(Serial Data) |
| Remote Wake-up Manner | <input checked="" type="checkbox"/> Ring | <input checked="" type="checkbox"/> Check Caller ID When Wake-up |
| Offline When LAN is Idle | <input checked="" type="checkbox"/> | Wait Time: 1 Minutes |

Callouts from the right side of the image point to the following elements:

- Data Trigger(Serial Data)**: Check Data Trigger if you want the FATBOX to **only** go online when there is incoming serial data or if it receives a *Wake Up* call.
- Ring**: Check “RING” to allow incoming call to *Wake Up* unit for PPP reconnection.
- Check Caller ID When Wake-up**: Check “CALLER ID WHEN WAKE ” if you want authentication against the caller’s number (Set in Section 7.1.8 - Advanced Parameters)
- Offline When LAN is Idle**: Check to disconnect PPP and *Sleep* when the Ethernet port is idle longer than the “Wait Time” set. This saves costs for users with infrequent data transmissions on metered data plans.

7.1.2 Application Configure

Application Configure configures the mode of the GPRSV2 router.

| | | |
|-------------------------|--|---|
| Device Name(ID) | GPRSV2 | Sets the device name. |
| Application Mode | Point to Multipoint | Sets up the FATBOX GPRSV2 to one of the following modes: - Gateway (Point to Multipoint) - Peer to Peer - TCP Transparent Transport - UDP Transparent Transport - Reserve - Modem (via Serial Port) |
| Application Rule | <input type="radio"/> Client <input checked="" type="radio"/> Server | To configure as Client or Server. |
| Work as Router | <input checked="" type="checkbox"/> | Checking activates the router function. |
| Enable NAT | <input checked="" type="checkbox"/> | Checking activates the NAT function. See section 7.2.1 on pg. 24 for more on Network Address Translating with the GPRSV2. |
| Local Port | 1903 | |
| Opposite Peer Name | 0.0.0.0 | |
| Opposite Peer Port | 0 | |
| Check OOB(TCP) | <input type="checkbox"/> | |
| Enable Private Protocol | <input type="checkbox"/> | |
| Local IP after Dial-up | | |
| Remote IP after Dial-up | | |
| DNS1 | | |
| DNS2 | | |

| | |
|-------------------------|--|
| Device Name(ID) | GPRSV2 |
| Application Mode | Point to Multipoint |
| Application Rule | <input type="radio"/> Client <input checked="" type="radio"/> Server |
| Work as Router | <input checked="" type="checkbox"/> |
| Enable NAT | <input checked="" type="checkbox"/> |
| Local Port | 1903 |
| Opposite Peer Name | 0.0.0.0 |
| Opposite Peer Port | 0 |
| Check OOB(TCP) | <input type="checkbox"/> |
| Enable Private Protocol | <input type="checkbox"/> |
| Local IP after Dial-up | |
| Remote IP after Dial-up | |
| DNS1 | |
| DNS2 | |

Indicate the port number for the local router for the device.

Indicate the settings for the opposite peer when you are configuring for Peer-to-Peer, TCP or UDP Transparent Transport modes.

The local IP assigned to the router after registration to a data network.

The remote IP assigned to the router after registration to a data network.

The Primary DNS address assigned to the router after registration to a data network

The Secondary DNS address assigned to the router after registration to a data network

7.1.3 Ethernet Configure

In most cases the Ethernet configuration (gateway and DNS servers) will be automatically assigned when network registration is completed. However you may choose to manually configure the settings via this menu.

| | |
|-------------|---------------|
| Device IP | 192.168.1.1 |
| Subnet Mask | 255.255.255.0 |
| Gateway | |
| 1st DNS | |
| 2nd DNS | |

7.1.4 Serial Configure

The serial port may be used for one of three operations

- By default, as a “COM” port for making configurations, to do flash uploading or for the unit to run as a lite data logger
- As a Transparent TCP or UDP port (e.g. a DTU) in “COM” mode - See also Section 7.1.8, Output Debug Info on Serial Port.
- As a “MODEM” Serial Port (e.g. for Dial Up networking or for Sending/Receiving SMS)

| | | |
|---------------------------------|--------|---|
| Baud Rate | 115200 | The factory default settings. |
| Data Bits | 8 | |
| Stop Bits | 1 | |
| Parity Check | none | |
| Flow Control | none | |
| Max Packet Size(1-30000) | 30000 | This condition sets the buffer size (30KB in this case). If the size of the data received by the Serial Port is more than this value, the data will be sent out |
| Max Data Send Interval(1-60000) | 1000 | This condition sets the time limit between the reception of bytes before the FATBOX sends the data out the socket. In the given example, if no new data is received after the interval of 1 second, the data will be sent out. |
| Max Data Wait Time(20-6000000) | 600000 | This condition sets a regular interval for the FATBOX to send out the data received. If neither of the above-mentioned conditions occur, the FATBOX will be receiving data all the time but will only send this data out once that value set here has been reached (in this case 10 minutes). |

These 3 types of serial parameters control the transfer conditions of serial port. If any one of these 3 conditions happens, the data received from serial port will be sent out to socket.

7.1.5 Timer Configure

Here you can set the router to automatically reconnect PPP sessions or reboot.

| | | |
|--|----|---|
| PPP Wait Time (10-60) | 15 | Configures the dwell time between 'Retry-to-Connect' PPP sessions with Data Service Provider. Configure between 10 to 15 seconds. |
| PPP failure retry times(0,1-60)(0 for no reboot) | 0 | Configures the number of times the FATBOX tries to connect PPP sessions with the Data Service Provider before it reboots. Set between "1~60" times or "0" for infinite retries without rebooting (default). |
| Heartbeat Cycle(10-600) with RSC | 20 | |
| Register ACK Wait Time(10-60) | 10 | |
| Auto Offline Wait Time(10-600) | 30 | |
| Cycle of Echo Sending(0,5-600) | 10 | |
| Failures of the Echo(1-5) | 5 | |
| Cycle of Online Keeper(0,1-1800) | 0 | |

The other settings in this segment are for specific network operations and we do not advise the normal user to make any modifications there.

7.1.6 Timer Up-Down

If the GPRS or NTP time sync² is reliable upon power up, the FATBOX can be programmed to have specific PPP connection and disconnection times each day.

Enable Time Up-Down

| DEL | NUM | Up Time | Down Time |
|--------------------------|-----|----------|-----------|
| <input type="checkbox"/> | 1 | 09:30:00 | 18:00:00 |

Add Del

Check to Enable,

Enter [Hour : Minute : Second] to set PPP reconnection time for each day.

Enter [Hour : Minute : Second] to set PPP disconnection time for each day.

2. See Section 7.2.8 on page 28 for NTP

7.1.7 Reboot Redial Conditions

This is a custom application specific function. Please contact support@amplified.com.au for advanced user application support.

7.1.8 Advanced Parameters

You can use this menu to configure some of the specific parameters outlined below.

| | |
|--------------------------------------|-------------------------------------|
| Web Manage System Port | 80 |
| PPP Authentication Mode | Chap first, then pap ▼ |
| Control Host IP Address | 0.0.0.0 |
| Console Phone Number | 13312345678 |
| Register IP After Update | <input type="checkbox"/> |
| Enable PPP Parameter Configured | <input type="checkbox"/> |
| Output Debug Info to Serial Port | <input checked="" type="checkbox"/> |
| Debug Output Level(0-9,0 Output All) | 0 |

Web Manage System Port: By default it is set to 80. You may change it to improve security if the router is on a public IP network.

PPP authentication mode: Please ask Network Service Provider or else leave as it is. It can be configured to "PAP Only", "CHAP Only" or "CHAP first and then PAP" (default).

Control Host IP address: Registers the IP address of the host that controls the PPP connection.

Console Phone Number: Configures the Caller ID to authenticate incoming calls for the "Remote Wake Up Manner: RING" (See Services Configuration, Section 7.1.1).

Output Debug Info on Serial Port: The default Serial Setting [115200/8/1/NoneParity/NoneFlowControl] is configured to "0" (i.e. Serial Port Debug Mode). If the router's serial port is used for data transmission (e.g. TCP Serial Mode), this box must be unchecked

Advanced troubleshooting of PPTP/IPSEC and DYNDNS registration settings can be configured via Serial Console mode only.

7.2 Network Configuration

7.2.1 NAT

For flexible LAN setups, FATBOX supports both DMZ and NAT (Network Address Translation) configurations.

Check to enable DMZ to a specific host

Enter DMZ host address that will be exposed to the public network

∴ DMZ must be DISABLED in order to allow Port Forwarding (NAT)

Choose an appropriate protocol (TCP or UDP).

Enter in the Source port as well as the destination address and port.

Adds a new port forwarding function

Deletes a selected port forwarding function

In the cited example, if a public IP (whether static or resolved by DDNS) of 222.222.222.222 is assigned by the network service provider, then pointing a remote application to 222.222.222.222:88 will connect it to local device 192.168.1.2's port number 80 (web server).

7.2.2 IfConfig

The router can be accessed through an additional IP address via its LAN port if IfConfig is set up.

| Del | Num | Ethernet Alias | Second IP | Subnet Mask |
|--------------------------|-----|----------------|-------------|---------------|
| <input type="checkbox"/> | 1 | eth0:1 | 192.168.0.1 | 255.255.255.0 |

Check to enable Ifconfig

Adds a an additional alias and IP address

Deletes a selected alias and IP address

In the example given, Ethernet Alias is formatted as "eth0:xxx" to give an additional interface to access the router.

7.2.3 Static Route

If you are set up for PPTP or IPSEC VPN, it is a typical requirement to configure your Static Route table to route VPN address packets via the VPN gateway and interface instead of an unsecured cellular gateway.

You can view the system route table via telnet by using cmd "route".

| Del | Num | Destination Address | Subnet Mask | Gateway | Interface |
|-----|-----|---------------------|-------------|---------|-----------|
|-----|-----|---------------------|-------------|---------|-----------|

7.2.4 Auto PING

The Auto PING function reboots the FATBOX after the maximum number of PING failure from the target server IP. This is useful as in many cases the reboot frees a 'locked' PPP session.

| | | |
|--|-------------------------------------|---|
| Enable Auto Ping | <input checked="" type="checkbox"/> | Enables Auto PING function |
| Packets Every Auto Ping(0-50) Notice: If 0 will ping always | 0 | |
| Auto Ping Packets Size(1-10248) | 56 | |
| Auto Ping interval(1-6005) | 1 | |
| Use Peer IP Addr As Auto Ping Dest IP | <input type="checkbox"/> | |
| Auto Ping Dest IP | 222.222.222.222 | Target server's external IP address |
| Auto Ping Max Failures(5-100) | 5 | FATBOX reboots after this number of PING response failures from the target server |

7.2.5 DHCP

By default the inbuilt DHCP server automatically assigns IP addresses to the connected devices.

In the factory default, the DNS addresses are configured to point to OpenDNS server addresses.

| | |
|-------------------------|--------------------------|
| DHCP Rule | Server |
| DHCP Start IP | 192.168.1.2 |
| DHCP End IP | 192.168.1.254 |
| DHCP Subnet Mask | 255.255.255.0 |
| DHCP Gateway | 192.168.1.1 |
| Get DNS from Operator | <input type="checkbox"/> |
| DNS Primary Address | 208.67.222.222 |
| DNS Secondary Address | 208.67.220.220 |
| DHCP IP Lease Time(day) | 10 |

7.2.6 Backup Routing (Serial Port)

The FATBOX GPRSV2 can be configured to switch data connection from the cellular to the serial port modem (e.g. a PSTN or a Satellite SBD modem) in situations where redundancy is required.

Note that the PPP retry must not be set to "0" (infinite retry no reboot) or else the FATBOX will not switch over to connecting the backup route.

The image shows a configuration interface for Backup Routing. It consists of a main form with several fields and a linked 'Script Table' window below it.

Backup Routing Configuration Fields:

| | | |
|--|--------------------------|--|
| Enable Backup Routing | <input type="checkbox"/> | Check to enable back up function. |
| Service Number | #777 | Enter dial up networking number. |
| User Name | card | Enter Username and Password for dial up service. |
| User Password | card | |
| Time Return to Default Routing(120-900s) | 160 | |
| PPP Failure Retry Times(1-60) | 0 | |
| Enable Script | <input type="checkbox"/> | Enables custom scripting for modems. |

Script Table:

| Del | Num | AT Command |
|-----|-----|------------|
|-----|-----|------------|

Buttons: Add, Del

A dotted line connects the bottom-left corner of the main configuration form to the top-left corner of the Script Table window.

7.2.7 DDNS (Dynamic DNS)

In many cellular data networks, the provisioning of static and public IP is a difficult and often expensive exercise. If public IP is available, FATBOX can be configured to register its assigned remote public IP address to a DDNS service provider (e.g. dyndns.org) so that its session's temporary IP can be resolved by a unique domain name.

| | |
|--------------------|-------------------------------------|
| Enable DDNS client | <input checked="" type="checkbox"/> |
| DDNS SERVER | dyndns.org |
| Hostname | fatbox.dyndns.org |
| Username | test |
| Password | test |

∴ Troubleshooting: Serial connection is required to access the serial console (See section 9). Enter "set advanced" and configure the DDNS debug information setting.

When DDNS (and PPTP) serial debug mode is ON, the serial terminal must be connected to enable sessions to be completed.

After troubleshooting is completed, please disable the debug to allow the FATBOX to operate without a serial device attached.

7.2.8 NTP

NTP (Network Time Protocol) is a protocol to synchronize the clocks of computers over a network. The FATBOX router can update its internal clock upon power up and connection to the Internet. This clock can be used to control the router's PPP connection and disconnection and is also used for some VPN protocols.

| | |
|---------------|-------------------------------------|
| Enable NTP | <input checked="" type="checkbox"/> |
| NTP Server IP | 203.117.180.36 |
| Time zone | 8 |

7.2.9 PPTP

Please configure PPTP settings to match your PPTP VPN server settings. In some cases you will also need to configure the router's Static Route (see section 7.2.3) to enable proper routing of VPN traffic via the PPTP tunnel.

| | | |
|-----------------------|-------------------------------------|--|
| Enable PPTP | <input checked="" type="checkbox"/> | Check to enable PPTP tunneling |
| PPTP Server IP | 222.222.222.222 | Enter the PPTP server that the router will connect to (E.g 222.222.222.222) |
| PPTP Client User Name | test | Enter the Username and Password for the PPTP authentication |
| PPTP Client Password | test | |
| Enable MPPE | <input type="checkbox"/> | Enable MPPE encryption (Check with PPTP VPN server) |
| Remote Subnet | | Enter the IP Address of the subnet on the server side (E.g. 100.168.1.0) Note: You should use different subnets on the Server and Client side. |
| Remote Subnet Mask | | Enter the Subnet Mask on the server side (E.g. 255.255.255.0) |
| Enable Appont IP | <input type="checkbox"/> | Check to assign VPN IP address to both client and server sides of the PPTP. The PPTP server should also be configured with this option also. If unsure leave unchecked to let the PPTP server auto assign. |
| PPTP Local IP | | Enter the Client side IP address of the PPTP |
| PPTP Remote IP | | Enter the Server side IP address of the PPTP |

7.2.10 L2TP

FATBOX can support L2TP tunneling either as a Client or a Server.

The screenshot shows a web console configuration page for L2TP. The form contains the following fields and callouts:

| | | |
|-------------------------|-------------------------------------|--|
| Enable L2TP | <input checked="" type="checkbox"/> | Check to enable L2TP tunneling |
| Mode | L2TP client | Select FATBOX as a L2TP Client or Server |
| Server IP Address | 0.0.0.0 | Enter the IP Address of the L2TP Server (FATBOX as a L2TP Client) |
| Client Start IP Address | 0.0.0.0 | Enter the IP addresses that the FATBOX will assign to L2TP Clients (FATBOX as L2TP Server) |
| Client End IP Address | 0.0.0.0 | |
| Local IP Address | 0.0.0.0 | |
| Username | | Enter the Username for L2TP tunnel authentication |
| Password | | Enter the Password for L2TP tunnel authentication |
| Remote Subnet | 0.0.0.0 | Enter the L2TP server side subnet IP Address L2TP tunnel |
| Remote Subnet Mask | 0.0.0.0 | Enter the L2TP server side subnet mask |

7.2.11 IPSEC Tunnel

FATBOX supports IPSEC (PSK) tunnels to an IPSEC VPN Server configured to the following settings.

Using IKE

Exchange Mode: Main Mode

Remote Identity Type: IP Address

Using Pre-Shared Keys (PSK)

Encryption Algorithm: MD5

Configurable MTU, SA and IKE Lifetime

Enable/Disable PFS

Enable IPsec Tunnel

Enable PFS IKE Lifetime(100-86400) 3600 SA Lifetime(100-86400) 3600 MTU(100-60000) 1500

IPsec Tunnel Table

SN:Subnet GW: Gateway

| Del | Number | Mode | Name | Local Subnet | Mask | Opp Gateway | Opp Subnet | Mask | PSK |
|-----|--------|------|------|--------------|------|-------------|------------|------|-----|
|-----|--------|------|------|--------------|------|-------------|------------|------|-----|

Add Del

The configuration and deployment of IPSEC is exact and expected to be configured by expert networking engineers with working knowledge of their IPSEC VPN servers at their back-office. Please contact support@amplified.com.au for further information.

7.2.12 SNMP Parameter Configure

The FATBOX supports SNMP v1 to allow Network Management Systems (NSM) to monitor system parameters and also receive TRAP messages periodically from the FATBOX.

| | |
|-------------------------------|-------------------------------------|
| Enable SNMP | <input checked="" type="checkbox"/> |
| Snmp manager address | 58.108.200.100 |
| Snmp manager port | 162 |
| Snmp agent local port | 161 |
| TRAP Interval(s),(0: No TRAP) | 60 |

TRAP message sends the following information,

- Device Name (ID), Device type, Device firmware version
- Signal strength (static on GPRS version and real-time on EDGE version)
- Up Time (Epoch time ticks)
- Attached cell ID
- Attached network type
- Assigned IP address

| | | | | | |
|---------------------------|---|-------------------|--------------------------------|----------------------|---|
| Source: | 20.125.198.0 | Timestamp: | 38 hours 25 minutes 20 seconds | SNMP Version: | 1 |
| Enterprise: | .iso.org.dod.internet.private.enterprises.FATBOX | | | | |
| Specific: | 16016 | | | | |
| Generic: | enterpriseSpecific | | | | |
| Variable Bindings: | | | | | |
| Name: | .iso.org.dod.internet.private.enterprises.FATBOX.FATBOXproducts.ngn.dtu.dtuMIB.s19011C.dtuSendTrap.dtuTrapPDU.0 | | | | |
| Value: | [OctetString] Device Name:BOX007,GPRSV2,V206&&Signal:21&&Up Time:1288994348&&Cell ID:1775F0E9&&Network:GPRS&&Assigned IP:202.81.75.35 | | | | |
| Description: | "TRAP message" | | | | |

7.3 Security Configure

FATBOX supports **Iptable** input and output table configuration. Iptable scripting is also supported.

7.3.1 Iptable In

Incoming to Firewall
For packets generated by remote server and going into the FATBOX router

Enable Iptable Input Chains

Iptable Input Chains

| Del | Num | Protocol Type | Source Address | Subnet Mask | Destination Address | Subnet Mask |
|-----|-----|---------------|----------------|-------------|---------------------|-------------|
| | | | | | | |

TCP ▼

OK Add Del

7.3.2 Iptable Out

Outgoing from Firewall
For packets generated locally and going out of the FATBOX router

Enable Iptable Output Chains

Iptable Output Chains

| Del | Num | Protocol Type | Source Address | Subnet Mask | Destination Address | Subnet Mask |
|-----|-----|---------------|----------------|-------------|---------------------|-------------|
| | | | | | | |

TCP ▼

OK Add Del

7.3.3 Iptable Script



Enable Iptable Scripting

Iptable Script Guidelines (supporting iptables v1.2.7a)

Usage: iptables **[-AD]** chain rule-specification [options]
 iptables **[-RI]** chain rulenum rule-specification [options]
 iptables **-D** chain rulenum [options]
 iptables **[-LFZ]** [chain] [options]
 iptables **[-NX]** chain
 iptables **-E** old-chain-name new-chain-name
 iptables **-P** chain target [options]
 iptables **-h** (print this help information)

Commands:

Either long or short options are allowed.

--append -A chain Append to chain
--delete -D chain Delete matching rule from chain
--delete -D chain rulenum
 Delete rule rulenum (1 = first) from chain
--insert -I chain [rulenum]
 Insert in chain as rulenum (default 1=first)
--replace -R chain rulenum
 Replace rule rulenum (1 = first) in chain
--list -L [chain] List the rules in a chain or all chains
--flush -F [chain] Delete all rules in chain or all chains
--zero -Z [chain] Zero counters in chain or all chains
--new -N chain Create a new user-defined chain
--delete-chain
-X [chain] Delete a user-defined chain
--policy -P chain target
 Change policy on chain to target
--rename-chain
-E old-chain new-chain
 Change chain name, (moving any references)

Options:

--proto -p [!] proto protocol: by number or name, eg. 'tcp'
--source -s [!] address[/mask]
 source specification
--destination -d [!] address[/mask]
 destination specification
--in-interface -i [!] input name[+]
 network interface name ([+] for wildcard)
--jump -j target
 target for rule (may load target extension)
--match -m match
 extended match (may load extension)
--numeric -n numeric output of addresses and ports
--out-interface -o [!] output name[+]
 network interface name ([+] for wildcard)
--table -t table table to manipulate (default: 'filter')
--verbose -v verbose mode
--line-numbers print line numbers when listing
--exact -x expand numbers (display exact values)
[!] --fragment -f match second or further fragments only
--modprobe=<command> try to insert modules using this command
--set-counters PKTS BYTES set the counter during insert/append
[!] --version -V print package version.

7.3.4 SIM LOCK Configure

For network requiring SIM PIN, please enable and configure SIM Lock code very carefully. Usually, after 3 unsuccessful SIM PIN tries, the SIM will be locked and can only be unlocked by the operator.

| | |
|----------------------|--------------------------|
| Enable SIM Lock | <input type="checkbox"/> |
| PIN Code | 12345 |
| PIN Limited Failures | 2 |

7.4 System Manage

7.4.1 Systems Tools

In this section are the system management tools for flash, kernel, parameters management and also the configuration of username and password to access the router. You can also find useful information about the cellular signal strength and basic connection of the device under the Device Status tag.

Check and Click "SET" to write the changes to the FATBOX's flash.

▷ Do not reboot/power-down the device until the writing process is acknowledged as completed (i.e 'Parameter Save Success').

(In order to run in an ETH-attached computer you will require a TFTP program such as tftpd32.) Check "Download Parameter" to save FATBOX Configuration parameters to a text file (e.g. parafile). You can then modify the file with a text editor and upload back to the FATBOX using the "Upload Parameter" feature. You will be required to indicate the computer's IP address and the parameter file name. When you are done, save the parameter to flash and reset the router.

System Tools

Download Success!

| | |
|---|--|
| <input type="radio"/> Save Parameter to Flash | <input type="radio"/> Load Default Parameter |
| <input type="radio"/> Upload Parameter | <input type="radio"/> Download Parameter |
| <input type="radio"/> Update Software | <input type="radio"/> Download Software |
| <input type="radio"/> Update Kernel | <input type="radio"/> Download Kernel |
| <input type="radio"/> Reset System | <input type="radio"/> Goto Bootloader Mode |

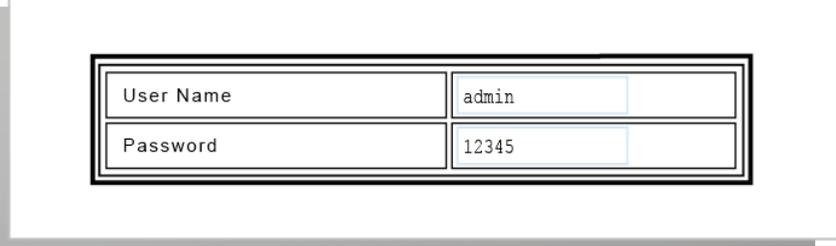
Tftp Sever IP File Name

Allows uploading of the FATBOX parameters to Factory Default. Note that if the flash is corrupted, access to the Web Console may not be possible and the Factory Default will have to be load via the Serial Console. (See section 9.3)

▷ DO NOT EXECUTE unless under guidance of an Amplified Engineering technical support staff as the device's flash kernel or firmware could be corrupted if not done correctly.

7.4.2 User Manage

You may change the FATBOX's log in page's Username and Password settings for better security. To revert back to factory default see section 9.3 on page 40.



| | |
|-----------|-------|
| User Name | admin |
| Password | 12345 |

7.4.3 Device Status

This page provides *real time* update of the router's operation and network status, e.g. network signal strength and status, assigned IP addresses and VPN status.

The table below will be able to give you some helpful tips regarding the level of Signal Strength

| Quality of Signal | Levels | Description |
|--------------------------------|-------------------|---|
| Marginal | -95dBm or lower. | At these sort of levels, it is very likely that you may suffer low throughput and disconnects due to cell loading/breathing even with an outdoor antenna. |
| Workable under most conditions | -85dBm to -95dBm. | Probably worth considering an outdoor gain type antenna. Could suffer poor throughput and disconnects due to cell loading/breathing. |
| Good | -75dBm to -85dBm | Normally no problem holding a connection with this sort of level (even with cell breathing) without the use of an external antenna. |
| Excellent | Above -75dBm | Should not be affected by cell breathing/loading and should not require an external antenna. |

In the case that your browser is unable to connect to the FATBOX, you can still configure the device via TELNET.

∴ You must be able to 'ping' the device in order to TELNET.

8.1 Logging In

```

Welcome to CR36 Telnet Server
Amplified Engineering Pty Ltd(Australia)
support@amplified.com.au

>>cfg

-----
Welcome to system parameter and configuration console
Device Model: CR36
Firmware: Version 2.00 built on Feb 24 2008 15:05:44
-----

Please input username and password in 10 seconds!
Username:admin
Password:
Login successfully!
DTU>

```

Open a new command prompt session (*Windows START>Run> Type "cmd" <Enter>*).

Enter "telnet 192.168.1.1" and the screen on the left will be shown. Log in by entering User Name and Password.

Enter "cfg" and complete the log in within 10 seconds (The default Username is "admin" and password is "12345").

8.2 Configuring Cellular Operator Settings

```

-----
Welcome to system parameter and configuration console
Device Model: CR36
Firmware: Version 2.00 built on Feb 24 2008 15:05:44
-----

Please input username and password in 10 seconds!
Username:admin
Password:
Login successfully!
DTU>set msc
Please set network register type<0-Auto,1-GSM,2-UMTS>[0]:
Set radio band<0-no,1-yes>[0]:
Please input access point[calstra.internet]:
Please input dial number[*99***1#]:
Please input username[username1]:
Please input password[password1]:
Set userinfo blank<0-no,1-yes>[0]:
Enable the PDF Define in use<0-Disable,1-Enable>[0]:
Please set wakeup manner<0-Disable,1-ringing only,2- reserved,3-both>[3]:
:
Verify caller ID of the incoming call (incoming call waken up)<0-no 1-ye
s>:[0]
DTU>sa
Are you sure to save parameters to FLASH?[N]:y
Saving parameters to FLASH, please wait...
parameters have saved to FLASH successfully!
DTU>

```

Enter "set msc" at the "DTU>" prompt.

Enter the parameters provided by your cellular operator.

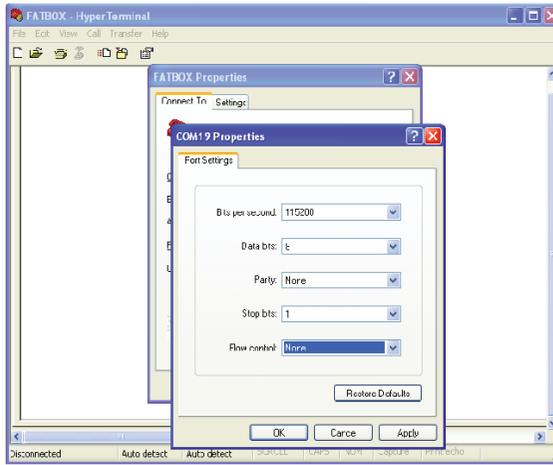
Enter "sa" to save changes to the router's Flash memory.

You can now reboot the box by entering "reset" or by switching off its power for a few seconds.

▷ **IMPORTANT:** Please wait till the acknowledgement message for saved changes is displayed before resetting the FATBOX. A premature reset may corrupt the unit's configuration. If this happens you will need to use the serial console to load the default settings to the box. (See section 9.3.3 to do this.)

9.1 Logging in via the Serial Port

If the FATBOX's firmware or parameters are corrupted, there is the possibility that the FATBOX may not respond to 'ping', TELNET or the web browser. You will need to access the box via its serial port to return the parameters in flash to the factory default.



Set the computer's serial port to the following configuration via a HyperTerminal program (refer to settings on page 15).

Once you are connected, keep the 'SPACE' key pressed while switching ON the FATBOX.

When prompted, please enter the username and password. If you have not changed the Log in settings the default username and password are as following.

USERNAME: admin
PASSWORD: 12345

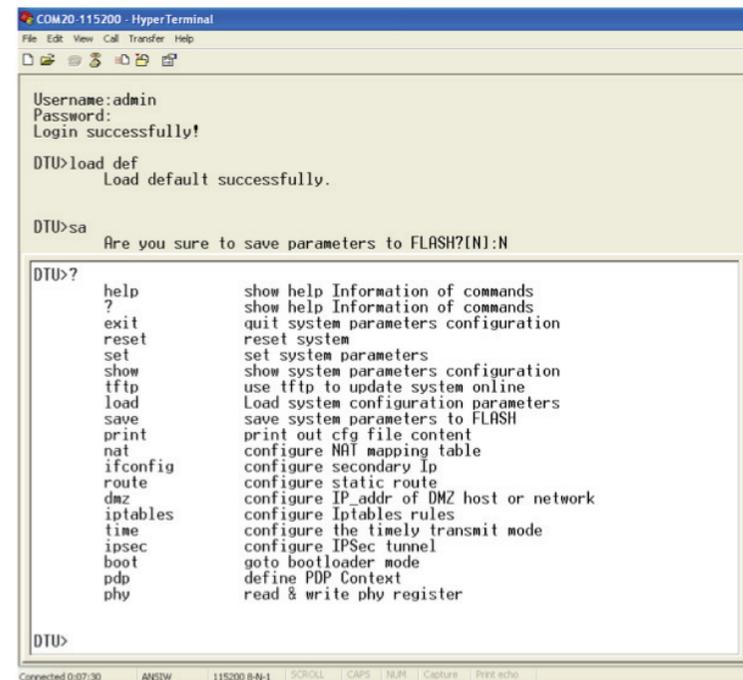
9.2 Serial Console Commands

All configuration commands are available via the Serial Console. As this mode is to be used by network professionals, this manual will not cover the usages of other commands.

To see a list of available commands type "?".

To display all settings and useful information for troubleshooting type "show all".

The Serial console configuration is for advanced users. Please email support@amplified.com.au for technical assistance.



9.3 Revert to Factory Default

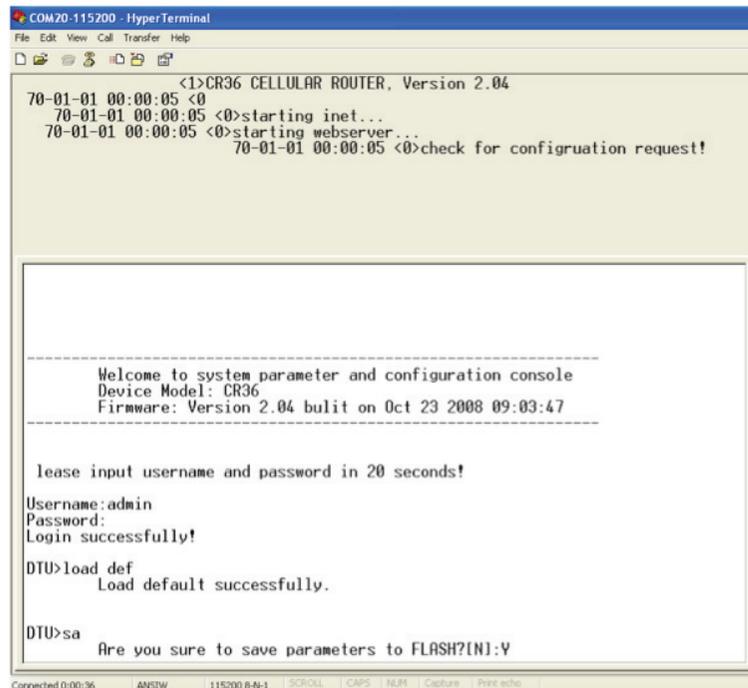
There are 3 ways to revert the FATBOX back to factory default settings (e.g. to setup for new project or when username/password is forgotten).

Method 1: Enter the device IMEI number via TELNET console as the 'Username' with password as 'X'. IMEI number can be found on the printed sticker on the bottom of the FATBOX.

Method 2: Do a "load default" from serial/TELNET console or via the web console

If you are able to access the FATBOX's web configuration pages, please go to section 7.4.1 to "Load Default Parameter" via the System Tools menu.

The FATBOX's Flash memory may have been corrupted if the box was powered down before it had completed saving changes. As the result the DHCP function may not work and the user would not be able to access the router via the web browser or by TELNET.



```
COM20-115200 - HyperTerminal
File Edit View Call Transfer Help
<1>CR36 CELLULAR ROUTER, Version 2.04
70-01-01 00:00:05 <0
70-01-01 00:00:05 <0>starting inet...
70-01-01 00:00:05 <0>starting webserver...
70-01-01 00:00:05 <0>check for configuation request!

-----
Welcome to system parameter and configuration console
Device Model: CR36
Firmware: Version 2.04 built on Oct 23 2008 09:03:47
-----

lease input username and password in 20 seconds!
Username:admin
Password:
Login successfully!
DTU>load def
Load default successfully.
DTU>sa
Are you sure to save parameters to FLASH?(N):Y
Connected 0:00:36 ANSIV 115200 8-N-1 SCROLL CAPS NUM Capture Print echo
```

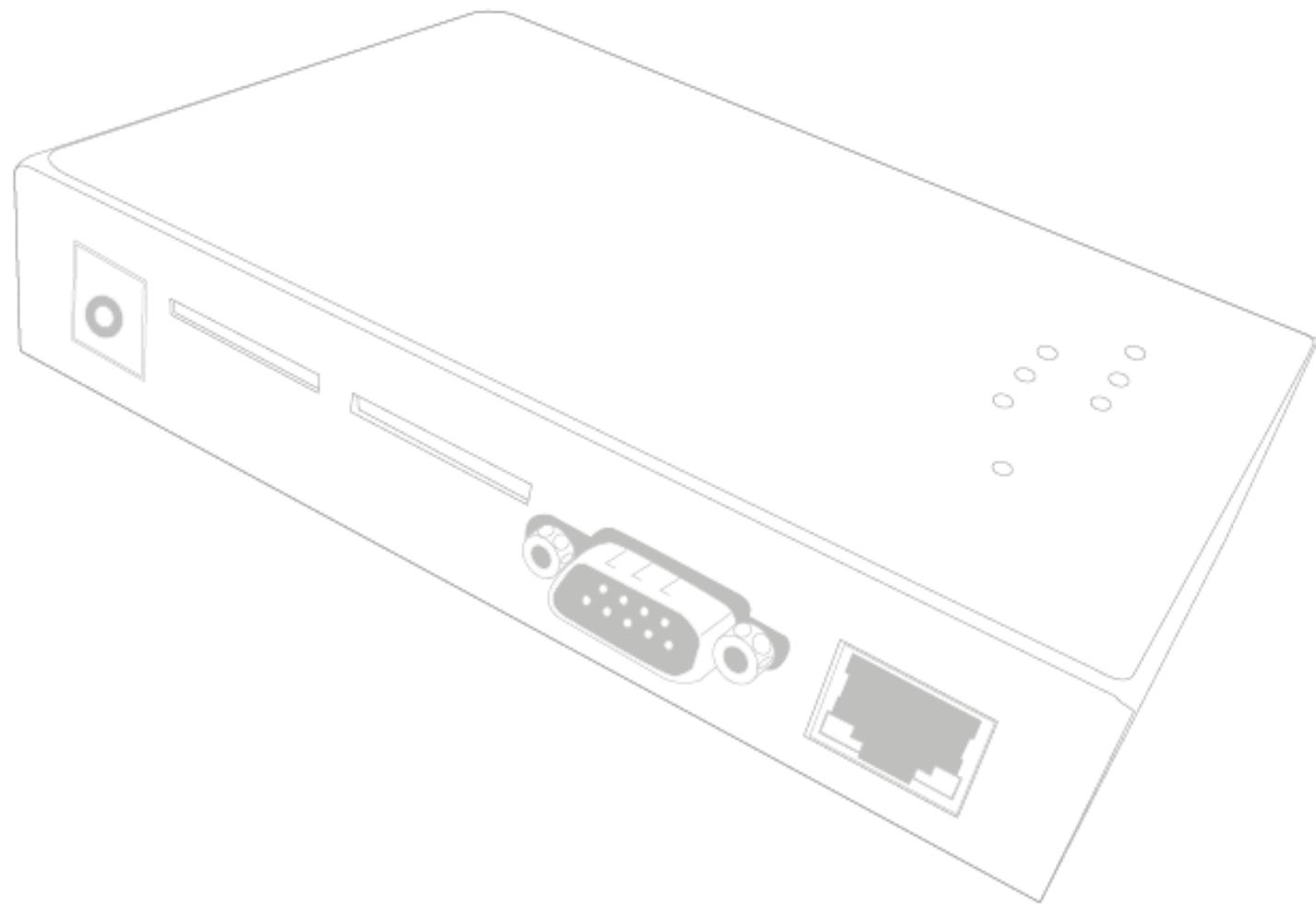
To revert the FATBOX to factory default via the serial port, complete the log in process described in section 9.1

After you are logged in enter the following commands

1. Enter "load def" to load default
2. Enter "sa" to save the changes to Flash
3. Wait for the acknowledgement to complete before rebooting the FATBOX GPRSV2.

Method 3: Enter "AMPLIFIED" via Serial Console as the 'Username'.

The above is designed to allow only persons physically handling the FATBOX to revert the unit back to factory default without the valid username/password combination.



Your first call for support should be your local FATBOX solutions partner. If that fails to solve your problems or answer your queries, please contact us via support@amplified.com.au and we will get back to you latest the next business day.

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