

fatbox G3

IOT GATEWAY

PROGRAMMABLE INDUSTRIAL
LTE/4G/3G IOT GATEWAY ROUTER
FOR MODBUS TCP/RTU,
CAN BUS, ETHERNET, BLUETOOTH
4.0 & ZIGBEE DEVICES

EDITION 4.4 / SEPTEMBER 2020 /
FIRMWARE VERSION 4.4.5

DESIGNED IN AUSTRALIA.
ASSEMBLED IN USA.

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fatbox G3

SAFETY OF USE

**ALL CONDITIONS**

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.

POWER SETUP

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.

SIM CARD

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.

**CONFIGURING THE
ROUTER**

Do not reboot/power-down the device until the writing process is acknowledged as completed.

ABOUT

1. 1 G3 SPECIFICATIONS

G3 DUO FOCUS

ADAPT

The core thinking behind the G3 platform design is to allow developers to build solutions quickly with our management features & script library.

ITERATE

Agnostic device connectivity & a range of modular hardware accessories for signal strength, climate type & mounting allows the solutions you have built to be redeployed into other applications easily.

CELLULAR INTERFACE

- HSPA+ 14.4Mbps downlink and 5.76Mbps uplink over 850/900/1900/2100MHz bands
- GSM 850/900/1800/1900 for GPRS and EDGE
- LTE (EU/Asia) version available as option. LTE Band supported : B1 (2100), B2 (1900), B3 (1800), B4 (AWS), B7 (2600), B8 (900), B20 (800DD), B5 (850)
- RX Diversity antenna for optimum performance

OPERATING SYSTEM

- Linux on ARM Cortex-A9 (IMX6 Solo/Dual/Quad options)

SERIAL INTERFACE

- RS-232/RS-485 ±15kV ESD Protected
- Integrated TCP Serial server and client mode

LAN INTERFACE

- 2 X 10/100BaseT Ethernet port
- 24VDC POE (Passive Input)

OPERATING CONDITIONS

- | | |
|-------------|---|
| POWER | · 12~24VDC (0.4/0.2A/0.1A @12VDC Peak/Nominal/Idle) |
| TEMPERATURE | · - 40°C ~ +75°C Operating Temperature |

MANAGEMENT

NETWORK ROBUSTNESS

- Designed for maximum uptime from available network
- End-to-End PING connectivity testing with Reboot
- Configurable PPP keep-alive function

NETWORKING

- Dynamic DNS and Port Forwarding

MANAGEMENT

- Azure IoT Hub Client for I(loT) gateway
- Ubidots IoT Hub Client for I(loT) gateway
- AWS IoT via MQTT for I(loT) gateway
- Data pre-processing to remove duplicate/drop repeated values data for sending
- SSH for Remote LINUX Management
- AT over Ethernet LAN
- AT over serial
- SMS to reboot
- OTA firmware & configurations update
- SNMPv2
- On-board RTC
- Ethernet WAN to 3G Failover

USER CUSTOM PROGRAMMING

- Run Python (2.7.15 & 3.6.5)/ LUA/ BASH scripting
- Available 2GB of on-board flash data storage

WARRANTY

- 5 year manufacturer warranty

ABOUT

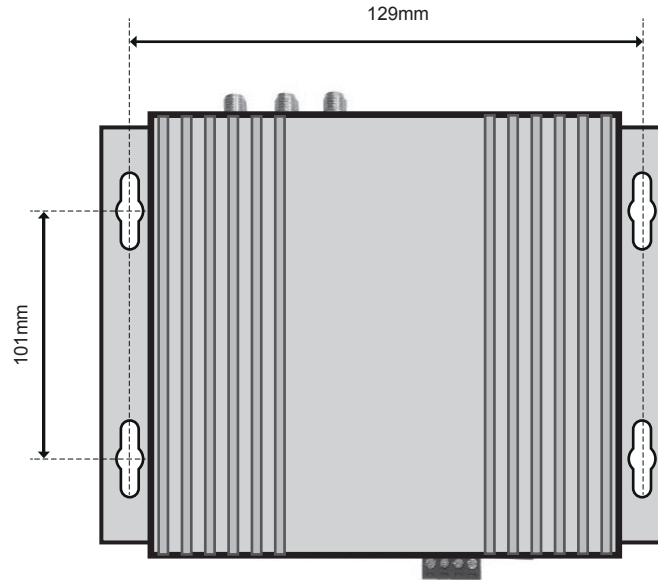
1.2
HARDWARE

STANDARD VERSION

With rugged anodised aluminium chassis



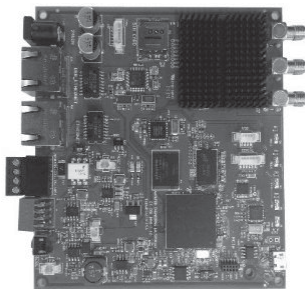
NOTE: The client is required to have their own mounting screws (M3 size) to suit the surfaces the G3 will be on.



VERSION SPECIFICATIONS

	OEM	STANDARD
INTERFACE		
- LAN	●	●
- SERIAL	●	●
- I/O	●	●
- USB	●	●
DIMENSION		
- L	114mm	149mm
- W	108mm	111mm
- H	19mm	37mm
INTEGRATED MOUNTING		●
WEIGHT	110g	375g

OEM VERSION



WEATHER RESISTANT ENCLOSURE



PERIPHERALS INCLUDED

- GSM antenna (with 2M wire)
- CAT-5 LAN cable (3M)
- Power supply unit (230/110VAC to 24VDC 0.5A)

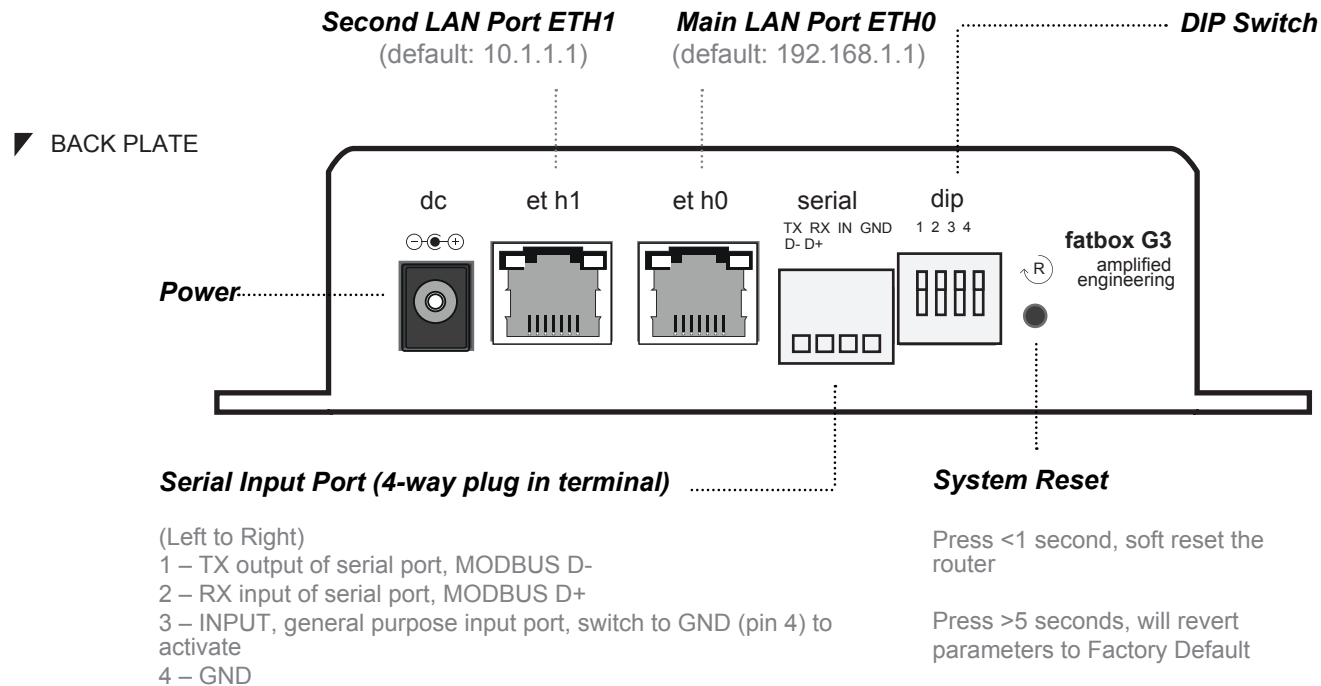
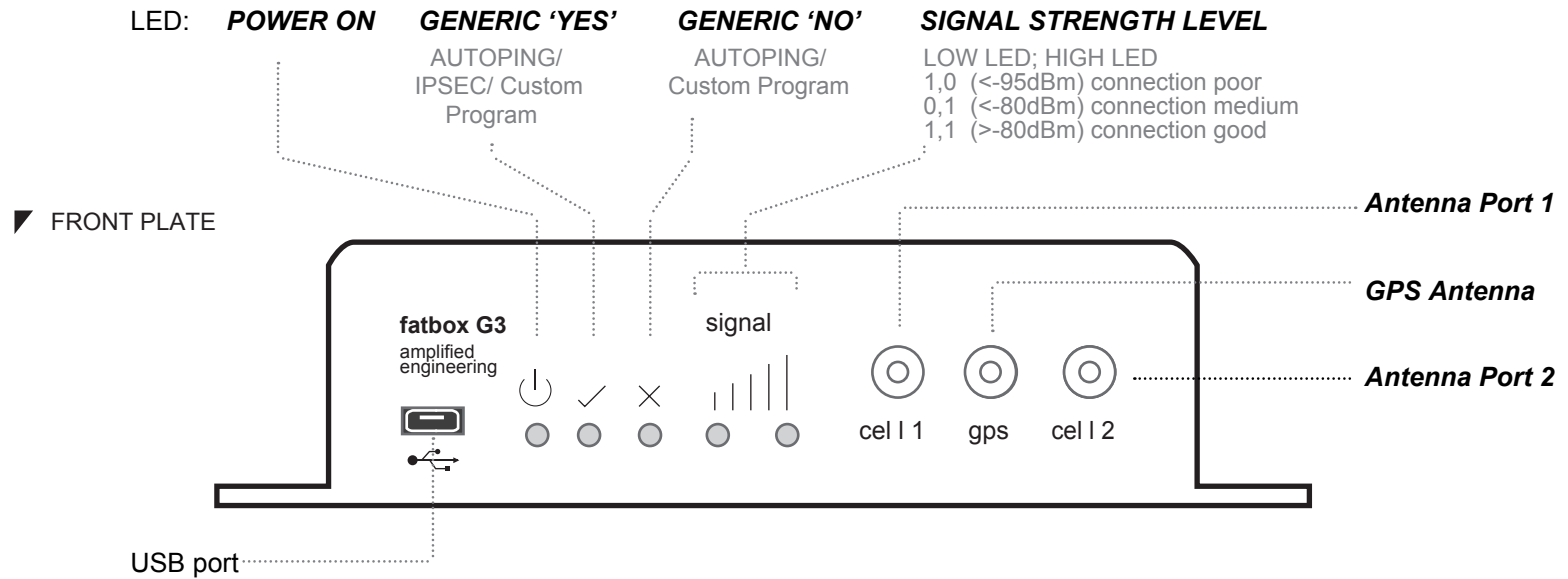
OPTIONAL ACCESSORIES

- High-gain outdoor antenna (wall mounted)
- High-gain outdoor antenna (pole mounted)
- DIN rail mounting
- Weather resistant enclosure

ABOUT

1.3 BOARD INTERFACE

(See page 26 for the optional CAN bus interface)



This is a 4-way general purpose switch available to user application program. DIP #4 (right-most) is dedicated as 'TEST MODE' * which is activated when DIP #4 is in 'OFF/down' position during power up.

* During 'TEST MODE', after power up is stable (e.g. 1 minute) a program will monitor a switch (contact between #3 and #4 of Serial Input Port)

Press #1, if INPUT (#3 of Serial Input Port) is working, LED 'YES' will blink once
Press #2, with a 'loop back' wire connected between #1(TX) and #2(RX) of the Serial Input Port. The LED 'YES' will blink twice
Press #3, once a 3G/GPRS/EDGE session is established, LED 'YES' will blink three times

(Left to Right)
1 – TX output of serial port, MODBUS D-
2 – RX input of serial port, MODBUS D+
3 – INPUT, general purpose input port, switch to GND (pin 4) to activate
4 – GND

Press <1 second, soft reset the router
Press >5 seconds, will revert parameters to Factory Default

SETTING UP

2. 1 SIM INSTALLATION

WHAT YOU'LL NEED

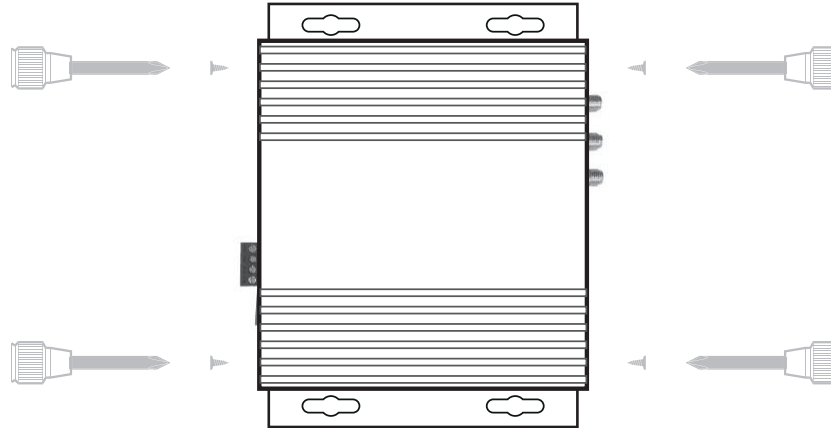
①
3G Data Enabled micro SIM Card

②
PC/Laptop with an Ethernet port

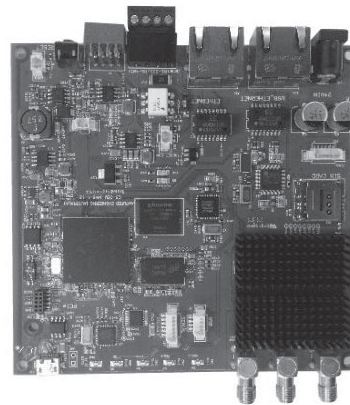
③
SIM card network details – APN/USERNAME/PASSWORD. You would need to get this information from your operator.

INSERTING THE SIM CARD

STEP 1 of 6 - Dismantle the casing cover and slide out the PCB. Avoid touching the electronics, handle the board by the edges.



STEP 2 of 6 - Insert your micro SIM card into the SIM card slot. Push the metal latch left/right to lock/unlock. Reassemble the metal casing.



(SIM card's orientation fits as shown)

STEP 3 of 6 - Connect the power adapter/antenna and plug the Ethernet cable to your pc.

STEP 4 of 6 - Power up the FATBOX G3.

SETTING UP

STEP 5 of 6 - Launch your browser and enter address as 192.168.1.1

STEP 6 of 6 - Log in.

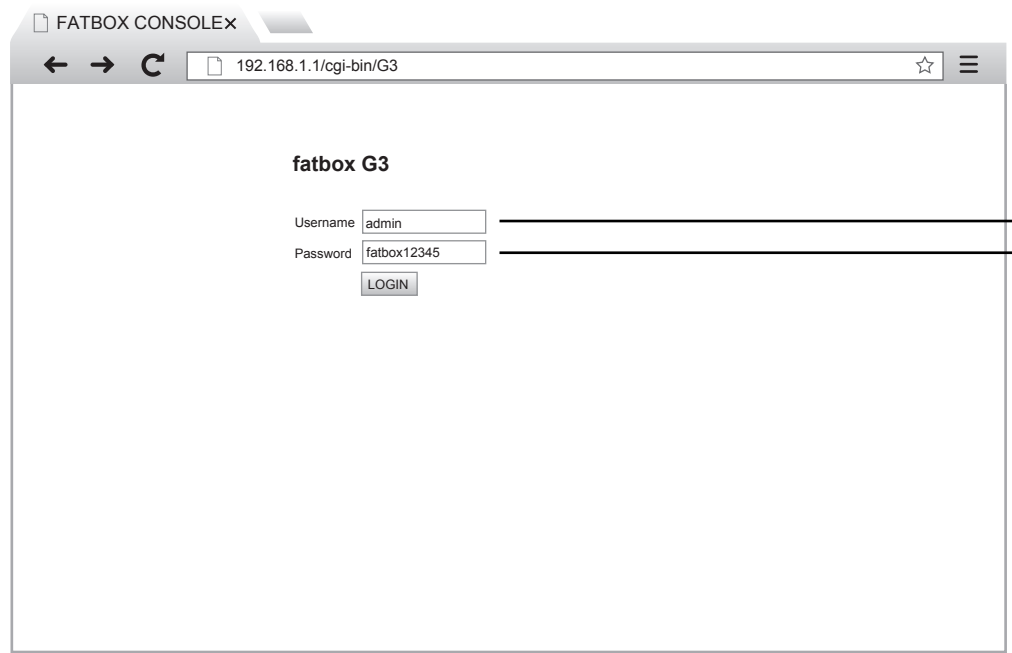
2. 2

LOGGING IN

When you have connected up the hardware to the box, the web console can be accessed at the address

192.168.1.1

For Security, after your first successful log in, you will be prompted to change your username & password.



The default username is:
admin

The default password is:
fatbox12345

WEB
MANAGEMENT

FATBOX_G3

3. 1
QUICK START

▶ The Quick Start tab brings together all the settings you need to establish an immediate connection in one page.

MENU OPTIONS Basic Settings for FATBOX 3G Router for 3G/4G Internet access

- Quick Start** [Quick Start Guide v1.0.pdf](#)
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client
- SNMP
- Management
- System Status
- Logout

LAN (eth0) Port Settings

LAN IP Address

LAN Netmask

Cellular Settings

APN

User Name (PAP/CHAP only)

Password (PAP/CHAP only)

SIM PIN Code (If required only)

Password Management

Current Password

New Password

Confirm New Password

192.168.1.1

255.255.255.0

your_apn

UPDATE

CHANGE PASSWORD

Click to open our Quick Start Guide to assist you with getting a connection

Sets the IP address of LAN port on FATBOX G3

Mask for setup range of subnet IP addresses

Please check with your telco/service provider to obtain these settings

Setup the PIN code (usually 4-8 digit numerics) if SIM PIN lock is enabled

This saves the settings onto the G3.

Please do not use default password for your deployed unit. Change it to a default password.

Passwords are never stored directly but as a hash string to increase device security.

WEB MANAGEMENT

3.2 LAN ETHERNET

FATBOX_G3

MENU OPTIONS LAN Port Settings

- Quick Start
 - LAN Settings**
 - WiFi & BT Settings
 - WAN Settings
 - Port Forwarding
 - Dynamic DNS
 - IPsec VPN
 - Port Settings
 - IoT Hardware
 - IoT Client
 - SNMP
 - Management
 - System Status
 - Logout
- ETH0 IP Address
 - ETH0 Netmask
 - DHCP Enable
 - DHCP Start
 - DHCP Limit
 - ETH1 IP Address
 - ETH1 Netmask
 - ETH1 Gateway

192.168.1.1

255.255.255.0

Enabled

100

e.g. xxxxxxxxStart

150

Limit no. of IPs to assign

10.1.1.1

255.255.255.0

For Ethernet WAN Option

Sets the IP address of LAN port on FATBOX G3

Setup the FATBOX G3 to automatically assign IP addresses to your connected LAN devices.

This would be the starting address for connected devices. For the example above, the first device connected would be assigned 192.168.1.100.

This would be the limit for number of connected devices. For the example above, the last device connected would be assigned 192.168.1.150

Advanced Settings

- LAN Masquerade
- Specific LAN device Masquerade (eth0)
- ETH0 MAC Spoofing
- ETH1 MAC Spoofing

Disabled

xxxxxxxxxxxx

1c:bd:0e:00:00:01

xxxxxxxxxx

1c:bd:0e:00:00:01

xxxxxxxxxx

UPDATE

This is to enable/disable masquerade

IP masquerading allows internal machines that don't have an officially assigned IP addresses to communicate to other networks and especially the Internet. Set this to the specific device on your network.

Sets the ETH0 MAC address of the FATBOX G3

Sets the ETH1 MAC address of the FATBOX G3

WEB
MANAGEMENT

3.3
WIFI &
BLUETOOTH
SETTINGS

FATBOX_G3

MENU OPTIONS

- Quick Start
- LAN Settings
- WiFi & BT Settings**
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client
- SNMP
- Management
- System Status
- Logout

WiFi-over-usb Settings

WiFi mode

WiFi SSID

WiFi Password

IP Address

Bluetooth-over-usb Settings

Enable

Click to enable WiFi backhaul mode

Enter in the SSID of your local WiFi

Enter in the WiFi Password

Enter in the client side IP Address (i.e. G3 WiFi dongle)

Enable or Disable Bluetooth

Click on Update to save your changes

WEB MANAGEMENT

FATBOX_G3

3.4 WAN CELLULAR

MENU OPTIONS 3G/4G Cellular Settings

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings**
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client
- SNMP
- Management
- System Status
- Logout

SIM1 Settings

APN

Dial Number

Username (PAP/CHAP only)

Password (PAP/CHAP only)

SIM PIN Code (If required only)

Service

Assigned DNS

PPP Keepalive

SIM2 Settings

SIM2 Enable

APN

Dial Number

User Name (PAP/CHAP only)

Password (PAP/CHAP only)

SIM PIN Code (If required only)

Service

Assigned DNS

PPP Keepalive

Advanced Settings

yourapn

*99#

LTE_UMTS Preferred

LTE is model dependent

8.8.8.8

To override network assigned DNS

5

No. of connection failures before reconnection

Disabled

yourapn

*99#

LTE_UMTS Preferred

LTE is model dependent

8.8.8.8

To override network assigned DNS

5

No. of connection failures before reconnection

Please check with your telco/service provider to obtain these settings

Setup the PIN code (usually 4-8 digit numerics) if SIM PIN lock is enabled

"LTE_UMTS" (Default/Preferred) - Toggles automatically between LTE, 4G and 3G

"LTE Only" - will always try to connect to LTE, disregards 3G networks

"UMTS Only" - will always try to connect to UMTS, disregards LTE/GPRS networks

"GPRS Only" - will always try to connect to GPRS, disregards LTE/UMTS networks

To override domain name server (e.g. Google DNS server 8.8.8.8)

This enables the SIM2 redundancy feature

Likewise input settings for SIM2 if necessary

WEB MANAGEMENT

FATBOX_G3

3.4 WAN CELLULAR

MENU OPTIONS 3G/4G Cellular Settings

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings**
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client
- SNMP
- Management
- System Status
- Logout

In the example, the FATBOX G3 would send a PING to Google's public DNS every 15 seconds.

If 4 consecutive PING failures occur, the FATBOX G3 would attempt to re-establish a connection.

If it fails to establish a connection after 5 tries, the G3 will reboot itself.

PPP Keep Alive

Advanced Settings

Enable Reboot on Ping Failure

PING Remote Host

PING Interval

PING Retries

Primary WAN Interface

PPP Fail Reboot

SMS Reboot Settings

Enable SMS Reboot

Controller 1

Controller 2

Reboot Command

Before SMS Reboot

After SMS Reboot

Note: Please disable 'Signal LEDs' in System Management

Send SMS to active controller before reboot

Send SMS to main controller after reboot

This enables the FATBOX to reboot upon the failure to PING your selected IP address

Enter the IP address/ website which you would ping

This is the time taken before each ping would be sent

This is the number of times it retries before the FATBOX G3 would attempt to re-establish a connection

"Cellular" : Operates internet connectivity through a cellular network

"Ethernet" : Operates internet connectivity through ETH1 with an existing network connection (You will also be required to set the 'ETH1 IP Address' and 'ETH1 Gateway' in the 'LAN Ethernet' page to do this)

Click to enable PPP Fail Reboot

Enable/disable the SMS reboot function

Input an authorised number as main controller

Input an authorised number as controller 2

Select your command to reboot the G3

Select your confirmation message from the G3 before it carries out the reboot.

Select your confirmation message from the G3 after it carries out the reboot.

UPDATE and restart FATBOX

WEB
MANAGEMENT

FATBOX_G3

3. 5
PORT
FORWARDING

The port forwarding function enables remote connections to specific devices (like IP cameras) or services within a private local-area network (LAN).

▶
An IP Camera Example

An IP Camera is connected to the G3 via ethernet. Its details are

IP address : 10.1.1.100.
Webserver port : 1500.

The device is set up to forward ports 1000-2000 from the FATBOX and route any data from those ports to 10.1.1.1000.

Alternatively you can set it as a single port instead of a range.

- MENU OPTIONS** Port Forwarding
- Quick Start Add a new Port Forwarding Rule
 - LAN Settings
 - WiFi & BT Settings
 - WAN Settings
 - Port Forwarding**
 - Dynamic DNS
 - IPsec VPN
 - Port Settings
 - IoT Hardware
 - IoT Client
 - SNMP
 - Management
 - System Status
 - Logout

1000-2000 Single Port: XXX or Range of Ports: XXX-XXX

10.1.1.100

1000-2000

TCP and UDP ▾

ADD Can take up to 5 minutes

Enter the source port. This is the port to access the device from outside. You can also enter a range of ports as the example below

Enter the destination IP address of where you would want to forward the incoming data from sent to the ports you set up earlier

Enter the port number of your device where you would want the incoming data to go to. If you entered a range of ports, you would need to enter the same range here. You would need to check on the ports for this depending on your application/ device.

Select a Protocol to be used for your device. Common options found are UDP, TCP or Both. In most cases you will need to select the protocol option "TCP and UDP". This will associate both protocols to the port(s) being forwarded.

After clicking ADD, the details of your settings will be shown automatically.

If you have Dynamic DNS set up (refer to page 13), you can use a regular PC with an internet connection and input "<yr_hostname>.dyndns.org:1500" into the browser. You would be able to access the webserver on the IP Camera.

Current Port Forwarding Rules

Index	Source Port	Destination IP	Destination Port	Protocol
-1	1000-2000	10.1.1.100	1000-2000	tcp/udp
-2				
-3				
-4				

WEB
MANAGEMENT

FATBOX_G3

3. 6
DYNAMIC DNS

The Dynamic DNS feature helps to keep a standard domain name pointed to theFATBOX even if its assigned IP changes during reboot/ reconnection.

WHAT YOU'LL NEED TO USE
DYNAMIC DNS

①

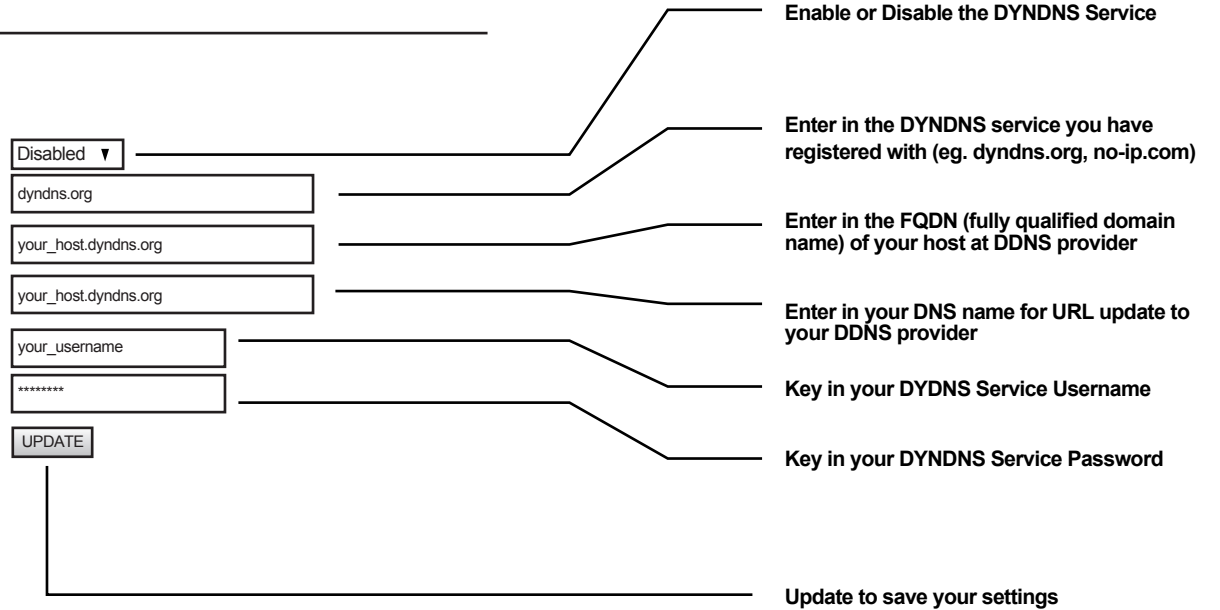
A data sim card with a public IP [You can check this with your operator.]

②

An account with dyndns.org/ no-ip.com

MENU OPTIONS Dynamic DNS Settings

Quick Start	Enable
LAN Settings	
WiFi & BT Settings	Service Name [list]
WAN Settings	
Port Forwarding	Lookup Host
Dynamic DNS	Domain
IPsec VPN	
Port Settings	DDNS Service Username
IoT Hardware	
IoT Client	DDNS Service Password
SNMP	
Management	
System Status	
Logout	



The FATBOX G3 would connect to your account and point the domain you set to the FATBOX after you reboot.

EXAMPLE

In the above example, the Hostname is set as:

[your_host.dyndns.org](#)

You can access the FATBOX using the domain name "[your_host.dyndns.org](#)" on the browser of any regular PC with an Internet connection.

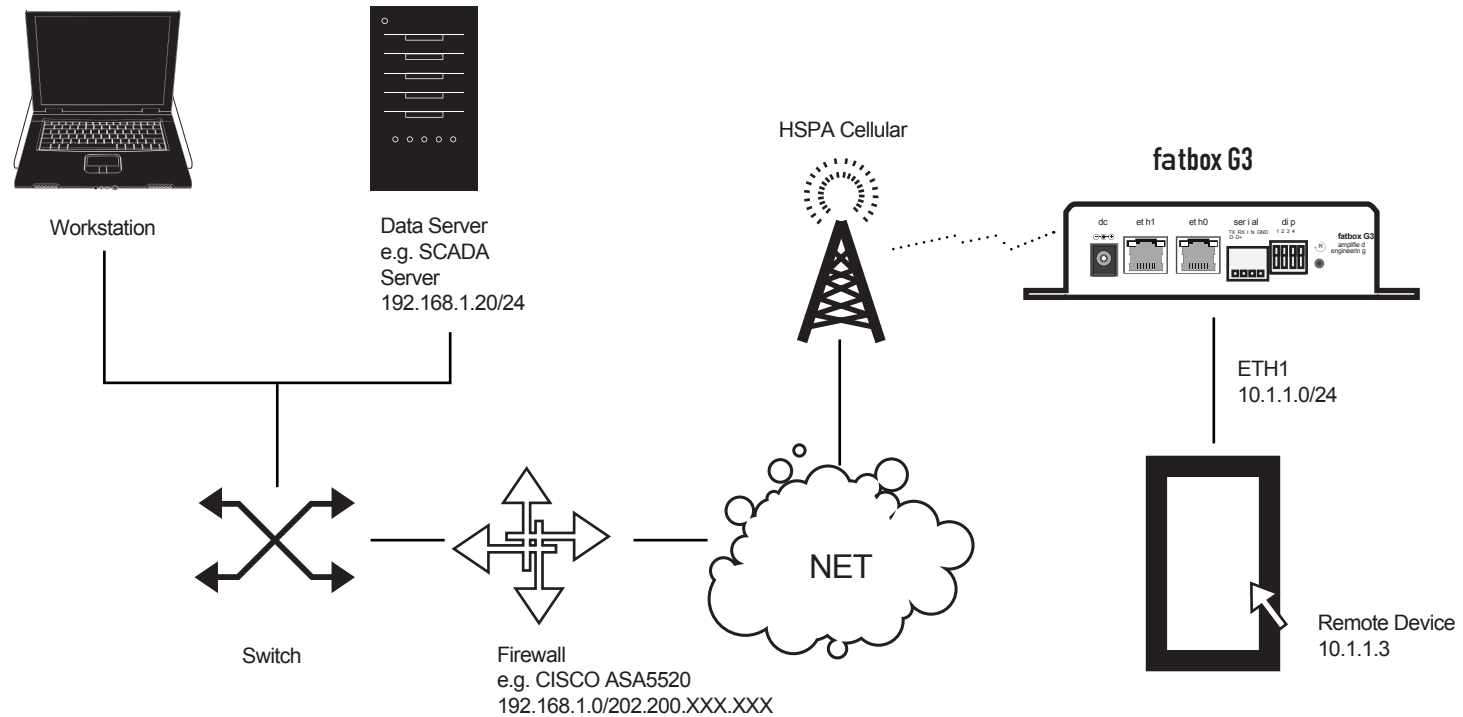
WEB
MANAGEMENT

3.7
IPSEC VPN

FATBOX G3 integrates **Strongswan 5.0** IPSEC VPN client to enable secure encrypted networking and communications to your remote Ethernet devices.

▼
EXAMPLE. (Site-to-Site (L2L) IPSEC VPN Tunnel 192.168.1.0/24 -- 10.1.1.0/24)

After the remote end-point (e.g. a CISCO ASA520 security appliance with internet access and connected to the customer's SCADA or payment processing server) is configured to accept remote IPSEC site-to-site connections.



WEB
MANAGEMENT

FATBOX_G3

3.7
IPSEC VPN

FATBOX G3 configuration for Site-to-Site IPSEC VPN (as of the example in the previous page)

MENU OPTIONS Site-to-Site IKE PSK IPSEC Settings

- Quick Start 3G IPSEC
- LAN Settings IPSEC NATP
- WiFi & BT Settings NATP DMZ Host
- WAN Settings VPN Server IP address
- Port Forwarding VPN Server Subnet IP Address/ Mask
- Dynamic DNS Local VPN Subnet IP Address/ Mask
- IPsec VPN** VPN Server Subnet IP Address/ Mask
- Port Settings Local VPN Subnet IP Address/ Mask
- IoT Hardware PSK Phasephrase
- IoT Client SNMP
- Management Start Mode (auto)
- System Status
- Logout

ISAKMP Phase 1

- Encryption AES 128
- Hash Algorithm SHA1
- D-H Group 14

Phase 2

- Encryption AES 128
- Authentication (HMAC) SHA1
- IKEv1 Mode main mode

IKE SA Lifetime (s) 3600 120 - 86400 Sec

IPSEC Lifetime (s) 3600 120 - 86400 Sec

DPD Action Restart

DPD Delay (s) 60 10 - 240 Sec

DPD Timeout (s) 180 10 - 240 Sec

Enabled

Disabled

yourvpnhost

yourvpngateway

192.168.1.0/24

10.1.1.0/24

Start

AES 128

SHA1

14

AES 128

SHA1

main mode

3600 120 - 86400 Sec

3600 120 - 86400 Sec

Restart

60 10 - 240 Sec

180 10 - 240 Sec

UPDATE

Enable or Disable IPSEC

Enable or Disable redirecting all traffic to DMZ host

Enter the IP address of the DMZ host

Key in the outward-facing (public) IP of the remote server

Key in the IP subnet set for the LAN on the remote server side (i.e. 192.168.1.0/24)

Following this, your 'Local VPN subnet IP Address/Mask (ETH1)' and 'ETH1 IP Address' in the LAN Ethernet page must also correspond (For example if your 'ETH1 IP Address' is 10.1.1.1, then your 'Local VPN subnet IP Address/Mask (ETH1)' must be 10.1.1.0/24

10.1.1.0/24 (according to network settings)

Set to match remote end settings
start = IPSEC tunnel will automatically be connected;
route = IPSEC tunnel will be connected when data is present

Input these settings to correspond with your remote end settings

UPDATE and restart FATBOX

WEB
MANAGEMENT

FATBOX_G3

3. 8
PORT SETTINGS

FATBOX G3 has built in TCP Serial server and client mode.

In the server mode it allows remote devices (e.g. a meter reading server) to connect over cellular network* to device(s)** attached to the serial port of the FATBOX.

In the client mode, the G3 will connect out to a public server on internet which can be an IP address or dnsname (eg www.myserver.org)

* Requires public IP SIM

** Note that only in the RS-485 mode can you connect multiple devices to the FATBOX.

MENU OPTIONS Serial Port Parameters

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings**
- IoT Hardware
- IoT Client
- SNMP
- Management
- System Status
- Logout

- Port Mode Selection
- Speed
- Data Bits
- Parity
- Stop Bits
- Serial to TCP Transport
- Enable
- Mode
- Server IP
- Listening Port
- No Activity Timeout
- AT over Ethernet
- Enable
- Listening Port
- Serial AT
- Enable
- CAN Port Parameter
- Baudrate

RS-232

115200 E.g. 9600, 19200, 38400, 57600, 115200

8 E.g. 7, 8

None

1

Disabled

Server

0.0.0.0

70 E.g. 70 (default)

0 secs (0=no timeout)

Disabled

77 E.g. 77 (default)

Disabled

500000 E.g. 50000, 100000, 125000, 250000, 500000, 1000000

UPDATE

Choose the mode of Serial Port

Setting to match attached serial device

Enable or Disable TCP Transport

Select Serial server or client mode

If you have selected to the client mode, input the IP Address or DNS name of the server here

If you selected the server mode, input your listening port (default port 70) here

When there is no data activity, port connection is terminated on timeout

FATBOX G3 also allows messages (e.g. modem AT commands) to be send and received from the cellular modem via the LAN port (e.g. port 77). For example, an Ethernet attached Data Concentrator can send AT commands to the FATBOX (e.g. 192.168.1.1:77) to query signal strength (AT+CSQ) or to send custom SMS.

Click to enable AT commands over serial port

Enter CAN Bus system baudrate

Update and reboot FATBOX.

WEB
MANAGEMENT

FATBOX_G3

3.9
IOT HARDWARE

MENU OPTIONS

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware**
- IoT Client
- SNMP
- Management
- System Status
- Logout

HARDWARE :: Setting

Modbus mode [\[iotasset.pdf\]](#)

CAN bus mode [\[iotasset.pdf\]](#)

Zigbee mode [\[iotasset.pdf\]](#)

COMeth mode [\[iotasset.pdf\]](#)

Event Drop Type

Poll Period

Poll Time Out

Query Pause

Time Stamp Offset

Disabled ▼

Disabled ▼

Disabled ▼

Disabled ▼

Repeated Values ▼

secs

secs

secs (pause between query required for Modbus)

eg +8 or -6.5 (offset from UTC+0)

UPDATE

_____ OBD/C2Q: Query mode || C2R: Read Mode

_____ ZBR: Query mode || ZBQ: Read Mode

Choose 'Modbus Master' to send request packet & read response value from the slaves

Choose 'Query mode' to send request packet & read response values. Choose 'Read mode' when slaves auto report their status/values. J1939 users will also need to choose that CAN Bus option here.

Com/Eth BOT supports query and reading of on-board digital input

When you choose 'Repeated Values', you will only send data to the cloud when there are changes from the previous read value.

Select the time interval of reading data/ events of the iotasset listing. If you wish have a different polling periods for different assets, you can set it in your iotasset.txt configuration file. Refer to our iotasset.txt configuration guide or web FAQ for detailed instructions.

The timeout specifies the time period to accept responses after each network request. The timeout setting must be adequate for the network, taking into account network traffic and network latency. Inadequate timeout settings can cause communication failures

If you require a pause between separate poll queries set it here

Set your local timezone for event timestamp

Update and reboot FATBOX.

WEB
MANAGEMENT

FATBOX_G3

3.9
IOT HARDWARE

MENU OPTIONS

HARDWARE :: Setting

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware**
- IoT Client
- SNMP
- Management
- System Status
- Logout

Diagnostics :: [JSON Data](#)

DELETE

Warning : Will delete all user sensor data

Diagnostics :: [Check File](#)

UPLOAD IOTASSET.TXT FILE

IMPORTANT ::

Please upload to FATBOX G3 gateway folder /user the following
iotasset.txt (Settings for hardware devices e.g. Modbus addresses)
connstr.txt (Azure only, Azure IoT device id token)
Using SCP/Putty or via USB drive from Management tab.

DELETE ALL JSON MESSAGE

Ensure that the gateway HTTPS console must be accessible before proceeding with this steps.

1. Click on the 'UPDATE IOTASSET.TXT FILE' button.
2. In the new window, click on 'CHOOSE FILE' and select from your local folder the updated iotasset.txt file.
3. Click 'UPLOAD FILE'. If the upload has been successful you will get the following message:

"RESULT: The file iotasset.txt was uploaded successfully"

4. After closing the page, you will need to log in again for security purposes.

If the update failed, check that the connection to the gateway is stable. Or else please contact support@amplified.com.au

Click to see the current configurations file in a new web page

▶
OTA Configurations Updating

Over the air updating gives ease of management to add new configurations without physically accessing the box. Firmware updates can also be made remotely via the <management> tab.

WEB
MANAGEMENT

FATBOX_G3

3. 10
IOT CLIENT

For Developers:

The FATBOX G3 enables developers to build their own application on AZURE IoT Hub and AWS IoT to manage remote industrial devices.

End-to-End IoT Solution:

Managing your device with UBIDOTS IoT is simple as Click, Configure & Drop.

MENU OPTIONS IOT Client Setup

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client**
- SNMP
- Management
- System Status
- Logout

[G3 Azure IoT Quick Start Guide.pdf](#)

Client Setup :: Azure IoT

DeviceId

YourAzureDeviceId

Enable client

Enabled

Message Type

JSON: Single Data

per Azure message

[G3 ubidots IoT Quick Start Guide.pdf](#)

Client Setup :: ubidots

Device Token

BBFF-5Pq01wWj4AmonUB

Device Name

fatboxg3

Enable client

Enabled

Open Azure IoT Quick Start Guide PDF for step by step instructions on designing, wiring and setting up a simple Modbus device-to-Azure report on PowerBI

Enter your DeviceId you use to set up in your Microsoft Azure IoT account

Enable or Disable the FATBOX as an AZURE IOT Hub

Select the number of events that constitute as a single Azure message. Azure IoT uses JSON format.

Open Ubidots IoT Quick Start Guide PDF for step by step instructions on designing, wiring and setting up a simple Modbus device-to-Ubidots

Enter the Device Token that you copy from your Ubidots account

Give your Fatbox G3 a unique device name (no spaces or special characters)

Enable or Disable the FATBOX as an Ubidots IOT gateway

FATBOX_G3

3. 10
IOT CLIENT

MENU OPTIONS IOT Client Setup

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client**
- SNMP
- Management
- System Status
- Logout

- IOT Client Setup
- Client Setup :: AWS IoT

Thing Name

meter001

Topic

data

AWS Endpoint

a33rz5dlue817h-ats.iot.us-west-2.am

AWS Port

8883

Enable client

Enabled ▾

Client Setup :: MQTT Gateway

Broker IP

13.229.18.17

Broker Port e.g.1883

1883

Publish Topic

mqtt

Enable Client

Enabled ▾

UPDATE

Please upload to FATBOX the connstr.txt and iotasset.txt using a USB drive /user via Management>User Files Management>Download to FATBOX

Open AWS IoT Quick Start Guide PDF for step by step instructions on designing, wiring and setting up a simple Modbus device-to-AWS

Add your Thing Name, Topic, AWS End Point and AWS Port as per the settings in your AWS account

Enable or Disable the FATBOX as an AWS IOT gateway

Enter in the MQTT Broker IP that you want to connect up to

Add your Broker Port as per the settings in your MQTT Broker

Add your Topic as per the settings in your Broker/ to describe the data set

Enable or Disable the FATBOX as a MQTT IOT gateway

Update and reboot FATBOX.

FATBOX_G3

3. 11
SNMP

MENU OPTIONS SNMP Settings

- Quick Start [SNMP Guide.pdf](#)
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client
- SNMP**
- Management
- System Status
- Logout

- Enable Agent [\[OID List\]](#)
- SNMP access from WAN
- Read Community
- Write Community
- SNMP Version

- TRAP Host Setting
- Host Domain or IP
- Host Port
- TRAP Interval

Enabled ▾

Disabled ▾

public

private

v1 ▾

192.168.1.255

162

15 secs (0=no trap)

UPDATE

- Enable or Disable SNMP
- Enable or Disable SNMP via WAN port 161
- SNMP v2c read community string
- SNMP v2c write community string
- SNMP v1 and v2c is supported
- Enter the SNMP Trap Host domain or IPV4 public address
- Enter the SNMP Trap Host listening port, default =162
- Enter interval time to send trap message to host
- Update and reboot FATBOX.

WEB
MANAGEMENT

3. 12
MANAGEMENT

Note that from the internet, the FATBOX can only be accessed via HTTPS (secure) to ensure all data between user and FATBOX web configuration page is encrypted.

We give our clients the choice to install their own signed certificate (e.g. Veri-sign or Digicert) via SSH to FATBOX console. Since there is no packaged signed SSL certificate in each FATBOX, a complaint of error might be issued from the browser. Note that this does not affect the secure encryption of data to configure the FATBOX via HTTPS.

FATBOX_G3

MENU OPTIONS	System Management
Quick Start	System Hostname
LAN Settings	Web Login Username
WiFi & BT Settings	Enable https access from WAN
WAN Settings	Enable Secure Shell (SSH)
Port Forwarding	Enable Log
Dynamic DNS	Enable Signal LEDs
IPsec VPN	System Time reference
Port Settings	
IoT Hardware	
IoT Client	
SNMP	
Management	
System Status	
Logout	

Set Up RTC (hardware clock)

Password Management

Current Password

New Password

Reconfirm New Password

fatbox

Enabled

Enabled

Disabled

Disabled

ntp

UPDATE

Set RTC using current system time

Change Password

Enter your system hostname if necessary

This login name is only used for web. SSH always login as root

Enable or disable remote https access via WAN port 443. Do note that non secure https access via WAN is not allowed.

Disabled by default. If enabled, will provide root access using the Password above.

If enabled, you can download/view the log page from the 'System Status' page.

Enables Signal LEDs.
Note: They must be set to '0' if AT-over-Ethernet is enabled.

Choose a system time source reference as ntp (online time server) or rtc (on-board battery-backed hardware clock).

Click to update hardware clock using current time system.

Please do not use default password for your deployed unit. Change it to a default password.

Passwords are never stored directly but as a hash string to increase device security.

WEB MANAGEMENT

FATBOX_G3

3. 12 MANAGEMENT

MENU OPTIONS System Management

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client
- SNMP
- Management**
- System Status
- Logout

Configuration Parameters Management

Please insert usb drive labelled'FATBOX'. Configuration files located in /config folder.

Upload /config from FATBOX

Download /config to FATBOX

User Configuration and Scripts Management

Please insert usb drive labelled'FATBOX'. Files (e.g. firewall.user, user.lua, user.py or connstr.txt) must be in /user folder.

Download /user to FATBOX

Execute user.lua Script

[G3 Lua.pdf]

Delete User files

Execute user.py Script

[G3 Python.pdf]

To allow 'cloning' of parameter settings to multiple FATBOX in production environment, we utilise USB flash drives. This ensure only with physical access to the device and the settings (with sensitive data) be uploaded from a production FATBOX.

1. Format a USB thumb-drive (e.g. FAT32) and label it 'FATBOX'
2. After FATBOX is powered up and stable condition (e.g. signal strength LEDs are functioning), insert the thumb-drive into USB port (at antenna end of box)
3. Click 'Upload from FATBOX', wait 5 sec, remove thumb-drive
4. Insert thumb-drive into new FATBOX (in stable operating condition) and click 'Download to FATBOX', wait 5 sec and remove thumb-drive
5. Check in new FATBOX that parameters from other FATBOX has been copied over

To input your own LUA or Python program:

1. Write your LUA or Python program and name it as 'user.lua' or 'user.py'
2. Save the program in /user folder in your thumb-drive (drive labelled 'FATBOX')
3. Insert the thumb-drive into FATBOX (in stable operating condition)
4. Click 'Download /user to FATBOX', wait 5 sec, and remove thumb-drive
5. You can click 'Execute Program' to test you program

Your program will automatically be executed after complete boot-up of the FATBOX.

CROSS COMPILE C CODE

The FATBOX G3 is an open Linux platform where user can deploy their own portable codes e.g. in C or Python or LUA to run on an industrial cellular (3G or 4G/LTE) and ethernet WAN connected gateway device.

WEB
MANAGEMENT

FATBOX_G3

3. 12
MANAGEMENT

MENU OPTIONS System Management

- Quick Start
- LAN Settings
- WiFi & BT Settings
- WAN Settings
- Port Forwarding
- Dynamic DNS
- IPsec VPN
- Port Settings
- IoT Hardware
- IoT Client
- SNMP
- Management**
- System Status
- Logout

Firmware Update:: Please check with support@amplified.com.au

UPDATE FIRMWARE

System Recovery Management

FACTORY SETTINGS

REBOOT SYSTEM

Ensure that the gateway HTTPS console must be accessible before proceeding with this steps.

1. Click on the 'UPDATE FIRMWARE' button.
2. In the new window, click on 'CHOOSE FILE' and select from your local folder the specific firmware update .zip file. (Please check with support@amplified.com.au for any assistance).
3. Click 'UPLOAD FIRMWARE FILE'. If the firmware has been successful you will get the following message:

"RESULT: The firmware update has been applied"

4. After closing the page, you will need to log in again for security purposes.

If the update failed, check that the connection to the gateway is stable. Or else please contact support@amplified.com.au

OTA Firmware Updating

Over the air updating gives ease of management to add new firmware patches without physically accessing the box. Asset configuration updates can also be made remotely via the <IoT Hardware> tab.

Click 'Reboot' to soft reset the FATBOX device.

Click 'Factory Settings' to revert all parameters to factory default.

**WEB
MANAGEMENT**

FATBOX_G3

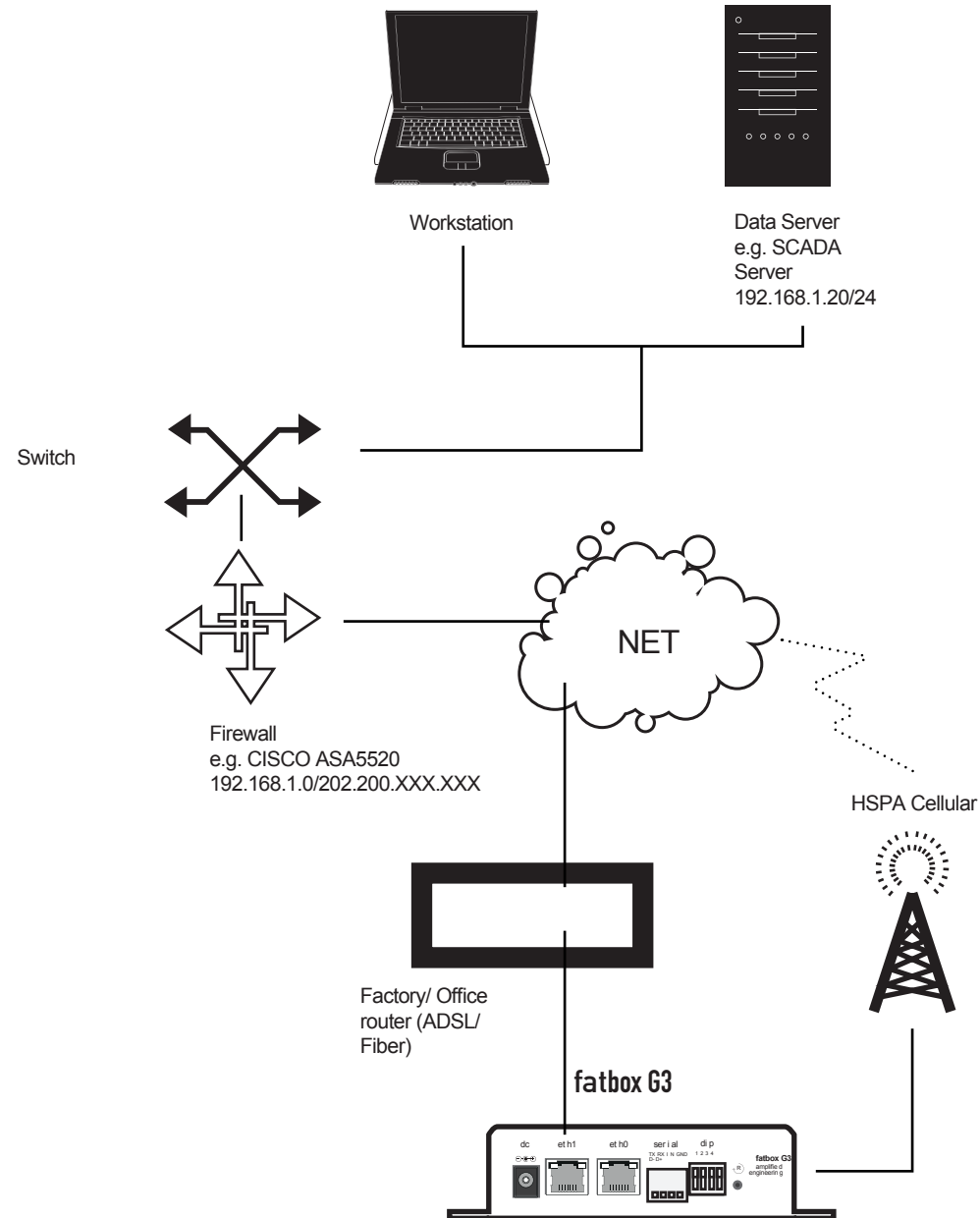
**3. 13
SYSTEM STATUS****MENU OPTIONS** System Status

Quick Start	Main	
LAN Settings	Firmware Version	fw_G3_2_4_16rc1 3.0.35
WAN Settings	System Date & Time	Fri Nov 23 02:08:21 UTC 2018
Port Forwarding	Upload and CPU Load (1,5,15m)	02:08:21 up 19 min, load average 0.53, 0.59, 0.58
Dynamic DNS	Temperature	50 C
IPsec VPN		
Port Settings		
IoT Hardware	WAN	
IoT Client	Module model	ME909s-120
SNMP	Module revision	11.617.01.00.00
Management	IMEI	867377020578708
System Status	Interface	ppp0
Logout	SIM (1=primary, 0=backup)	1
	SIM APN	yourapn
	IP address	
	Roam Status:	
	Service Mode:	
	Signal Strength:	
	RSSI:	
	WCDMA_RSCP:	
	WCDMA_ECIO:	
	LTE_RSRP:	
	LTE_RSRQ:	
	LTE_SINR:	
	Cellular Data (since bootup)	
	IPSEC	
	Tunnel	
	SA	
	System Log:	System Log File

WEB
MANAGEMENT

3. 14
WAN FAILOVER TO 3G

When it is critical to maintain consistent connection with remote stations or applications, the FATBOX G3 gateway provides a way to automatically switch to a 3G failover when AUTOPING sequence fails in the Ethernet WAN connection. This greatly increases the stability and reliability of online systems. The G3 will also persistently check back with the status of the original Ethernet connection and if its back online, the box will reboot and revert back to primary Ethernet WAN mode.



WEB
MANAGEMENT

3. 14
WAN FAILOVER TO 3G

To set up WAN failover to 3G, first go to the **WAN Settings** page of the web console and input the following settings.

FATBOX_G3

MENU OPTIONS	Advanced Settings		
Quick Start	Enable Reboot on Ping Failure	Enabled ▼	Enable the FATBOX to reboot upon the failure to PING your selected IP address
LAN Settings	SIM2 Enable	Disabled ▼	
WAN Settings	Remote PING Host IP address	8.8.8.8	
Port Forwarding	PING Retry Time Period(s)	15	
Dynamic DNS	PING retries	4	
IPsec VPN	Primary WAN Interface	Ethernet ▼	Set "Ethernet" as the Primary WAN Interface
Port Settings			
IoT Hardware			
IoT Client			
IoT Client			
SNMP			
Management			
System Status			
Logout		UPDATE	UPDATE the FATBOX

Then set in **LAN Settings** page, your device IP as client in local Ethernet network as per below example. Note that some firewall will block unregistered device with manual IP setting.

FATBOX_G3

MENU OPTIONS	ETH1 IP Address	100.10.10.10	
Quick Start	ETH1 Netmask	255.255.255.0	
LAN Settings	ETH1 Gateway	100.10.10.1	For Ethernet WAN Option
WAN Settings			
Port Forwarding			
		UPDATE	UPDATE and restart FATBOX

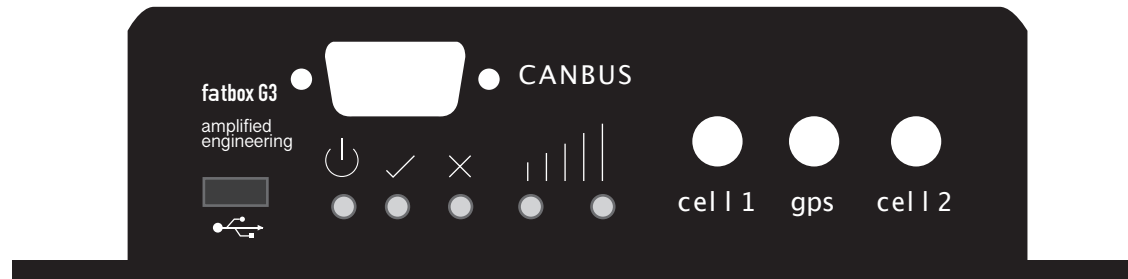
When G3 powers up, internet will be routed thru ETH1 to the Gateway. When auto-ping fails, the box will reboot and switch to 3G/4G as backup. In 3G/4G backup mode, the box will test ETH1 for ping (as set in AUTOPING) every 60s. If the ping test passes, the box will reboot and go back to ETH WAN.

CAN BUS

The FATBOX G3 supports a CAN bus interface (option), for example to read OBD2 ISO15765 (road vehicles) and J1939 (heavy vehicles) data for on-board vehicle diagnostics. Data can then be processed on-board or sent to a server or cloud IoT back-end platform.

4. 1 CAN Bus

CAN Bus Version End Plate



Male 9-pin D-sub connector Diagram

PIN	SIGNAL
7	CAN_HI
-	-
3	CAN_GND
-	-
-	-
2	CAN_LO

CONTACT US

Our Service Support means that we make the security and integration of the network our responsibility.

SERVICE
SUPPORT

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