



# Using Teletics WKSU-PA Over BGAN

Extending BGAN  
Coverage

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## 1 Overview

Many BGAN systems provide services to sites with multiple buildings or temporary structures in close proximity, such as oil and gas camps, or emergency responder sites. Today, the “distribution” of the BGAN communications services at this type of site is provided by running cable from the BGAN terminal to various locations.

The Teletics Wireless Key System eliminates the need to run hard cable, by providing the essential telephone, internet and public address links between the satellite communications equipment and all of the buildings and structures at the site.

The Teletics WKSU-PA provides phone (RJ11), internet (RJ45), and an option for a wireless public address connection at each location on the site. This will provide a wireless POTS Line functionality and internet capability to up to 20 buildings or structures. Teletics also manufactures phone line voice interfaces. These interfaces enable users to access a remote satellite link that can support up to 20 outside lines, as well as receive direct dial calls from the rest of the world. The Teletics WKSU-PA is an ideal compliment to satellite or cellular communications systems, eliminating hard wire and allowing plug and play set up and tear down.

## 2 Product Range

The Teletics WKSU-PA System is made up of the following components:

- Up to 20 WKSU-PA radios. Each WKSU-PA radio provides telephone, network, and (optionally) PA capability to one location/trailer/building at the site.
- Each WKSU-PA requires RF cable and a suitable antenna. If PA is used, an 8 ohm PA speaker is also required. The customer typically furnishes their own telephone and computer.
- If PA is a requirement, the Teletics Feature Server is needed to provide “multicast” logic.
- (optional) 2LVOICE units provide POTS interfaces to provide distribution of 2 POTS lines to any WKSU-PA connected phone in the system. Up to 10 2LVOICE units may be daisy chained on a system, for 20 lines total.

## 3 Typical Users

- Oil Well Drilling Camps
- Public Safety Responders
- Constuction Sites
- Any site which has multiple trailers/buildings which moves frequently.

## 4 Key Features

- Standard RJ11 Telephone connection at each location
- Standard RJ45 Internet connection at each location
- Fully encrypted radio links
- Programming software is included

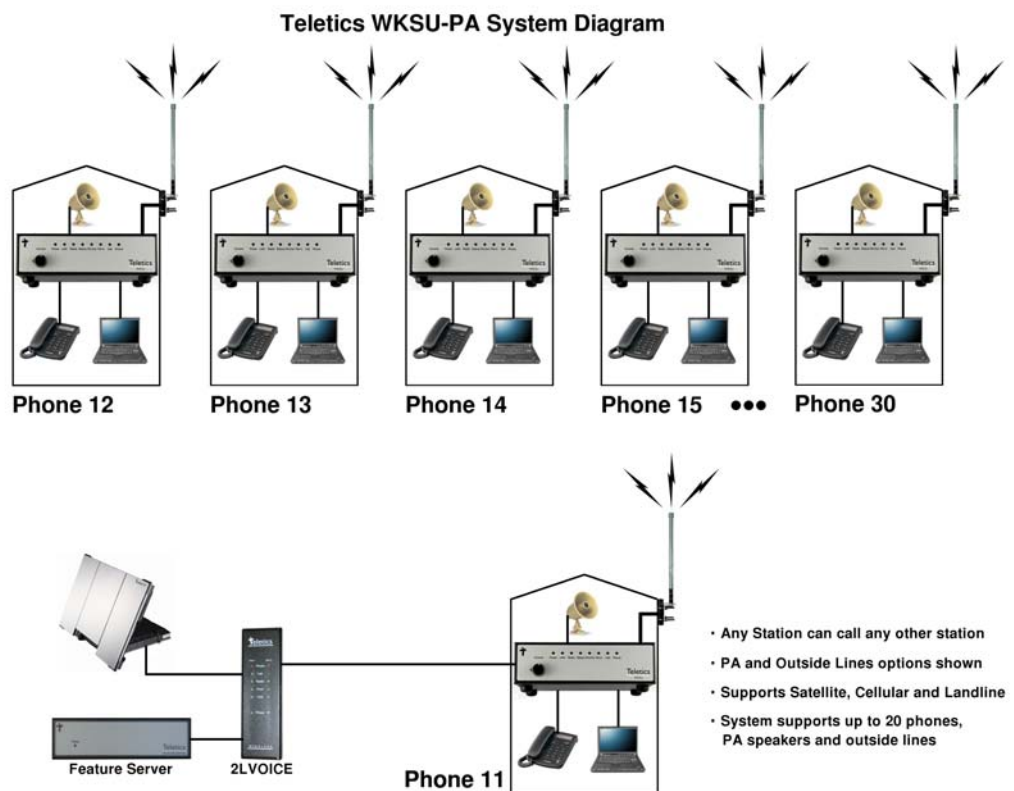
- Each system has a unique “GroupID” to prevent unauthorized access, even from other WKSU-PA systems
- Wireless Public Address at each location with individual or group paging.
- 5.8 GHz operation provides interference free operation
- Any station can call any other station at any time without incurring satellite cost
- Outside lines may be assigned to any phone in the system
- Teletics equipment is designed to withstand harsh environments

## 5 Benefits to BGAN users

- Teletics WKSU-PA offers you the following main benefits:
- Faster communications setup after site moves
- Much better reliability than hard wire between trailers/buildings
- Improved access to communications services provided on the site
- Enhanced communications between workers at the site
- Public Address Capability

## 6 Setting up

### 6.1 Setup Diagram



## 6.2 Equipment Needed

- Phones (if not supplied by the customer)
- Computers (if not supplied by the customer)
- 8 ohm PA speakers for each location requiring Public Address
- 5.8 GHz antennas (one for each WKSU-PA)
- Radio cable (one for each WKSU-PA and of sufficient length)
- Optionally, one small ethernet switch if any LAN connections are required at the master WKSU-PA
- In cases where power on site is not stable/reliable or of questionable quality, a UPS power supply capable of at least powering the Master WKSU-PA, the Feature Server, and (optionally) any 2LVOICE units.
- One open Ethernet port on the BGAN
- One or more open POTS interfaces on the BGAN
- Teletics TShop programmings software, from the Teletics website
- Teletics TRadio signal strength software, from the Teletics website
- Teletics TPeek interrogation software, from the Teletics website
- Laptop or Desktop Computer to run the Teletics Software

## 6.3 Using BGAN – Step by Step Setup

To set up your computer and BGAN terminal for Teletics WKSU-PA:

Assemble the BGAN terminal as you usually would. There will be a regular RJ11 jack for connecting a regular phone. This is where the beige ports for the Teletics 2LVOICE will be plugged into. You should read the Teletics 2LVOICE manual for details on which line is used by which phone on the system, programming, etc.

To download the Teletics TShop WKSU-PA 5.8 programming software, contact Teletics Technical Support for a user name and password. Make certain you specify that you are using the WKSU-PA system with a BGAN terminal, since there is a specific version of TShop for use with Inmarsat.

Program all the WKSU-PA units in the system with the Inmarsat version of TShop, as described in the TShop manual, and assemble the WKSU-PA system on a bench for testing.

## 6.4 Thrane & Thrane EXPLORER™ 300/500/700 and 527

Background IP service should be initiated from the BGAN terminal and can be configured from either the EXPLORER™'s built-in web server (via a laptop's web browser) or using the LCD MMI.

1. Open your internet web browser and type the following IP address in the address bar:  
192.168.0.1



2. Click on Settings and then LAN
3. Now you should see the web server interface. Use the default settings, i.e. Router mode, and automatic activation is enabled.
4. Now your terminal is configured to start a Standard connection after you register on the network.
5. Restart your terminal and click OK after properly pointing the terminal. Once the Explorer is register on the BGAN network you will be connected automatically with a Standard connection.

### Connecting to BGAN via LCD MMI

The screenshot below shows the settings required as configured via the EXPLORER™ LCD MMI.

To initiate a connection from the LCD MMI, go to the main view of the LCD.



Press Arrow Down button until CONNECT menu is selected

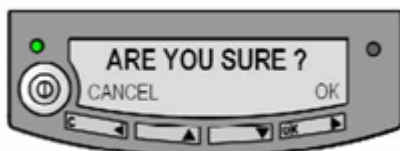


Press **OK**

Select Standard and press **OK** button



Select **START** and press **OK** button



Press **OK** button to confirm Standard connection and wait a minute or two to allow the EXPLORER™ to register the Packet Switched connection with the BGAN system. After registration the LCD main screen will show **DATA ACTIVE**.

## 6.5 Thrane & Thrane EXPLORER™ 110

Background service should be initiated from the BGAN terminal using the EXPLORER™110's built-in web server (via a PC's web browser).

1. Open your internet web browser and type the following IP address in the address bar:  
192.168.0.1



2. Now you should see the web server interface
3. Next, click on Data connections on the left hand side menu.
4. Change the connection type by clicking the dropdown box and select 'Standard Background'.
5. Make sure your Data Connection Activation is set to 'Automatic when any PC is connected to the Unit'.
6. Before you exit the web interface make sure you click 'Store Settings'.

You can connect to BGAN in two different ways, from the web server interface or by using the front panel.

### Using the front panel

1. Power on the terminal by pressing and holding the ACTIVATE for 1.5 seconds.
2. Obtain a GPS fix.
3. Find the best signal.
4. Press the Activate on the front panel of the terminal and you will automatically register to the network. Wait approx. 30 seconds and you will be on the internet. If you have a World Set you will see displayed 'Connected'.

### Using the Web Interface (if you set up 'Data connection Activation' to 'Manual')

1. Open your internet web browser and type the following IP address in the address bar:  
192.168.0.1



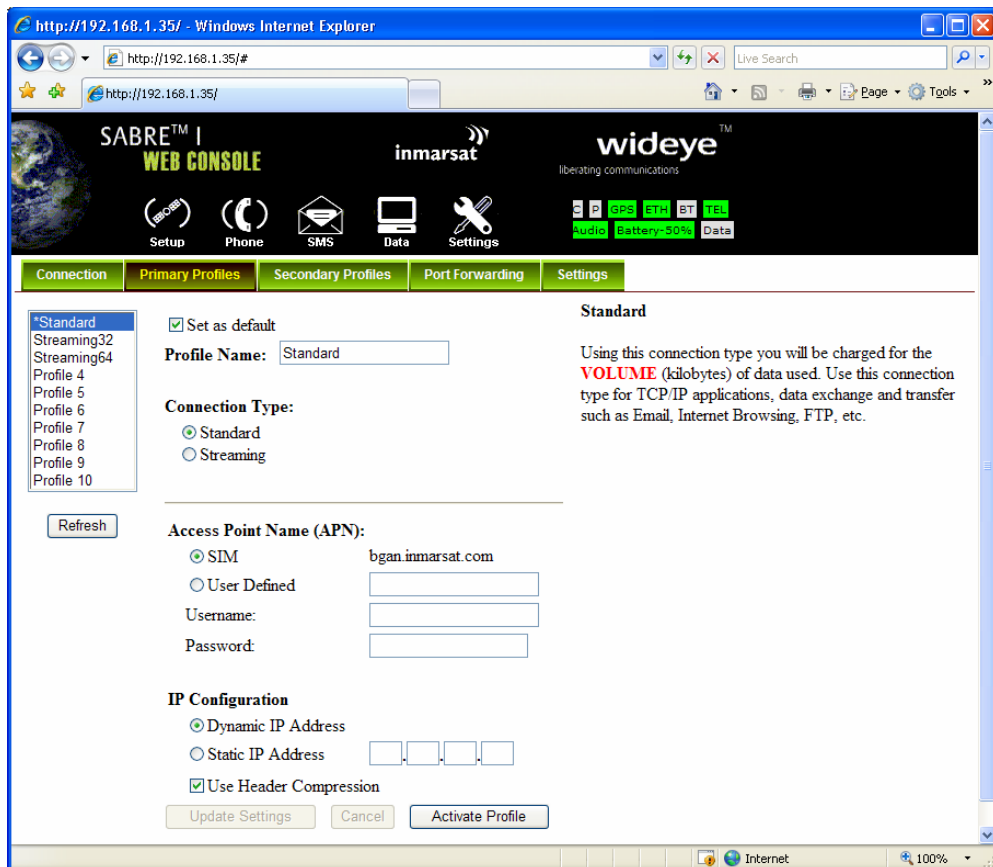
2. Next, click on Data connections on the left hand side menu.
3. Make sure the 'Manual' radio button is selected under connections
4. Finally, scroll down and click 'Connect' at the bottom of the page.

## 6.6 Sabre 1 Wideye

Background Standard service should be initiated from the BGAN terminal and needs to be configured from the Wideye™ Sabre I's built-in web server (via a PC's web browser).

1. Open your internet web browser and type the following IP address in the address bar: 192.168.1.35
2. Then you will prompt for the User Name: sabre1 Password: wideye.
3. On the web interface, Click on the Data Icon
4. Click on Primary Profiles
5. Select the connection Type as Standard
6. Check mark 'Set as default'
7. Click 'Update Settings'

Your configuration should look like this



8. Click on the Settings Tab
9. Select '**Router Mode (Multi User)**'
10. Check the box for 'Auto PDP context Activation'. This will make the terminal start the Standard connection automatically after you register on the network.
11. Save settings

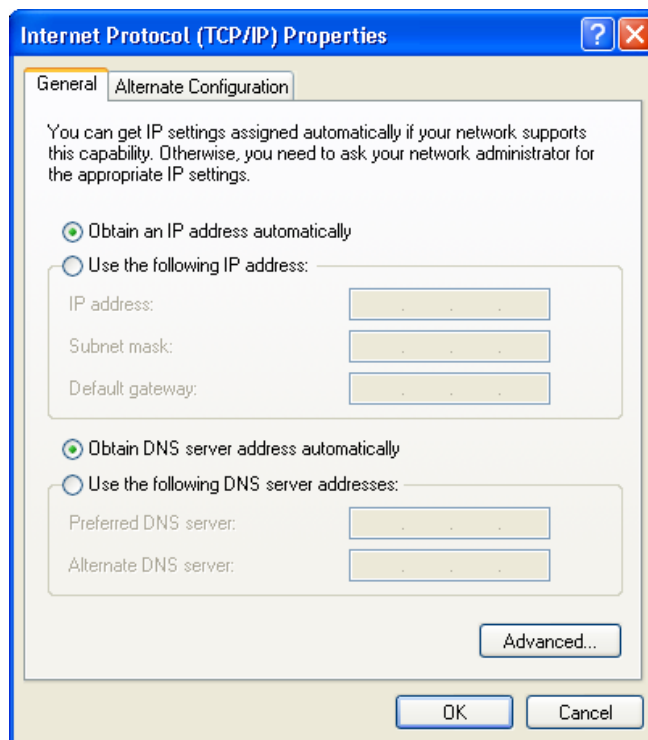


12. Reboot the terminal
13. Accept the signal strength by pressing Enter on the LCD screen. Now your Standard connection should start in a minute or so.

## 6.7 HNS 9201, 9250 and 9350

Standard service should be initiated from the BGAN terminal and needs to be configured from the Hughes™ HNS9201's built-in web server (via a PC's web browser).

1. Open your internet web browser and type the following IP address in the address bar:  
192.168.128.100
2. Click on ACA on the menu on the left.
3. Select **ACA settings for TEs using DHCP assigned IP address 'ON'**
4. Click Apply
5. Then Click Restart Terminal
6. Next, configure the PC TCP/IP setting to Obtain an IP address Automatically (Start->Control Panel -> Network Connections. Right click on the LAN interface and select Properties. Select 'Internet Protocols' from the list, and select Properties).



7. Now register the terminal by pressing the Audio button until the signal strength lights go off or by clicking the Register with the Network button on the Properties page of the web interface.
8. The terminal will automatically recognize the DHCP Request and start the Background service automatically.

## 7 Teletics WKSU-PA setup and configuration

(complete WKSU-PA installation instructions are available on the Teletics website [www.teletics.com/support](http://www.teletics.com/support))

The WKSU-PA system is architected to be a “star topology”. In each system, there needs to be one master (Unit 11), and up to 19 stations numbered 12 through 30. A system may contain as few as 2 WKSU-PA units, or as many as 20.

- Each WKSU-PA station needs to have radio line of sight to the WKSU-PA master.
- WKSU-PA Stations do not have to have RF line of sight to each other, only the master.
- It does not matter which WKSU-PA station or master the Teletics Feature Server is plugged into. It simply needs to be connected somewhere on the system.
- By the same rule, it also does not matter where the 2LVOICE units are plugged into.

Here is an example WKSU-PA installation scenario:

An oil drilling rig operation has one BGAN terminal with 2 outside lines, plus an internet connection for the camp, located in one of the trailers. There are 5 trailers in total, plus a phone on the drilling rig “doghouse” and one other outside phone on the mud separator platform. There is a requirement for a PA connection at each location, plus a requirement to have phones 12, 15, 16 and 17 to be able to dial out over the BGAN system.

This example system requires the following equipment:

- 7 WKSU-PA units, one programmed as a Master, the other 6 as stations
- 1 Teletics Feature Server units
- 2LVOICE unit
- TShop WKSU-PA 58 Programming Software

## **7.1 Obtaining / Installing Teletics TShop WKSU-PA 58 software:**

To assist you in deciding which computer you would like to load TShop WKSU-PA 58 on at your shop, you should be aware that TShop WKSU-PA 58 performs best on a dedicated desktop computer with one Ethernet port and Windows XP Professional, Service Pack 2. It can run on machines as slow as 1GHz effectively. It is often better just to put an older (but reliable) computer on the bench and dedicate it to running TShop WKSU-PA 58. However, you can still run it on a new laptop, assuming you follow the following setup procedure:

## 7.2 Laptop setup

1. Ensure that the Ethernet port is the only network device that Windows XP can use. You MUST disable any wireless networking or other network devices that are built into the laptop.
2. Ensure that the laptop that you are using is not putting the Ethernet port to sleep as a power saving feature. If the Ethernet port goes to sleep during programming, it will cause TShop WKSU-PA 58 to hang.
3. In rare cases, it is necessary to turn off the automatic cable detection feature in the Laptop chipset's drivers. The Ethernet port on the WKSU-PA units have this feature turned on, and occasionally the WKSU-PA and laptop will both attempt to switch back and forth and neither will ever settle on the correct setting.

## 7.3 Downloading the software

Once you have a computer ready, preferably with Windows XP Service Pack 2 installed, you should obtain the software by doing the following:

1. Open up "My Documents" in windows.
2. Enter <ftp://ftp.teletics.com> in the address bar. Press the enter key, or hit the "go" button.
3. You will be asked for a User Name and Password. You will need to either get these from your distributor, or directly from Teletics technical support. The reason that we do not give out the User Name and password in this manual is to ensure that you download the correct version of the TShop WKSU-PA 58 software for your equipment.
4. Once you have entered in the correct User Name and Password, you can obtain a manual about how to download and install TShop WKSU-PA 58 under the Manuals folder, and then the correct version of TShop WKSU-PA 58 in the Software folder.

Complete installation and use instructions for TShop WKSU-PA 58 are in the TShop WKSU-PA 58 manual.

## 7.4 Configuration topology: Working Example

For any WKSU-PA system to correctly operate, you will need to program one WKSU-PA as unit 11. The rest can be programmed as any number from 12 through 30, however you cannot have two WKSU-PA units with the same number in one system. A system may contain up to 20 WKSU-PA units.

Each WKSU-PA unit has its own serial number that is assigned at the factory. This is on the label of each unit. Additionally, the TShop WKSU-PA 58 programming software allows you to set a Group ID as well, which is a common identity code which is used to group units into one system together. The Group ID can be any alpha numeric sequence you would like, up to 10 characters or numbers.

When Teletics WKSU-PA systems leave the factory, they are tested and shipped as systems with one master and 4 stations. They are numbered 11, 12, 13, 14, and 15, and the Group ID for the system is the Teletics WKSU-PA 58 Installation and User Guide Page 10 same as the serial number for the Unit 11 master. The factory default channel is channel A and the LAN and dial 9 features are also turned on by default during factory programming. These systems may be deployed right out of the carton as a 5 station system.

However, for example, let's assume that we have a brand new WKSU-PA system in its carton in our shop, and we have two additional "loose" units that we want to make into one 7 station system. For our example let's assume that they have the following serial numbers:

	Unit	Serial Number	Group ID
Complete System:	Unit 11	0805-0360	0805-0360
	Unit 12	0805-0361	0805-0360
	Unit 13	0805-0362	0805-0360
	Unit 14	0805-0363	0805-0360
	Unit 15	0805-0364	0805-0360
Loose Units:	Unit 12	0802-0301	unknown
	Unit 14	0802-0303	unknown

Therefore, the fastest way to program our example system is to program the loose units to Unit 16 and Unit 17 using TShop WKSU-PA 58, using the Group ID of the new, complete system, which is 0805-0360. Also, keep in mind that you should use the TShop factory default channel of Channel A. If you wish, you can disable the LAN port on the unit, so that your customer cannot connect a computer to the unit. Setting the dial 9 option to off simply speeds up the return of a busy signal to WKSU-PA units which do not have an outside line assigned to a 2LVOICE line.

One other way to accomplish the same thing is to reprogram all of the units using a serial number of your choice, such as A1B2C3D4, or SITE4567.

Keep in mind that all serial numbers are case sensitive!

It is noteworthy that Teletics Feature Server units do not require any kind of programming. They will only talk to the system that they are physically connected to. 2LVOICE units also do not need to know the Group ID of the system. They only need to be programmed to the phone number of the WKSU-PA units that each line is paired to.

Once you have the WKSU-PA units programmed, it is a good idea to test them as a system to ensure that each unit can call the other units in the system. You connect one of the units to the Teletics Feature Server unit, and once you have antennas and phones connected to each unit, you

should apply power to all of them. You can refer to the “Powering Up” section on what the LEDs on the front panel mean.

Once all of the WKSU-PA units can call each other, you can attach PA speakers to their outputs and try doing a PA message across the system. Be warned that the volume produced by multiple WKSU-PA units on one bench can be a bit overwhelming. You should start with the Volume at about a quarter and go from there.

Finally, once the complete system is working on a phone to phone or PA basis, you can then attach the 2LVOICE unit and test the functionality of the outside phone lines.

## 8 Using Teletics TShop software

When you start up TShop, you will see the following screen:

Once TShop is initialized, you may program a WKSU or 2LVOICE simply by plugging it in to the Ethernet port of your computer using a standard (straight through) Ethernet cable. There are two main sections to the TShop screen:

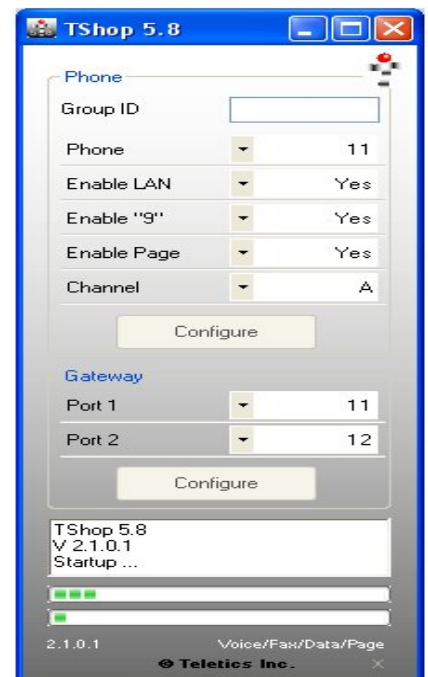
Phone – used to program WKSUs

Gateway – used to program 2LVOICE units

The GroupID field is like a “system identifier”. All units in one system are given this ID so that they will communicate with each other, but not another system.

You may program any WKSU-PA with any Phone number from 11 to 30. This is provided as a drop down choice in the software.

Complete installation instructions on using TShop may be obtained from the TShop Manual available at <ftp://ftp.teletics.com>.



## 9 Hints and tips

When a phone connected to the WKSU-PA dials an outside line, the WKSU-PA system strips off the leading “9” and presents the rest of the phone number to the BGAN.

## 10 Technical Summary

The Teletics WKSU-PA technical feature sets are summarized below: see example below.

	<b>WKSU-PA</b>	<b>Feature Server</b>	<b>2LVOICE</b>
Interfaces	RJ11 (1), RJ45 (1) 2W /8 Ohm PA (1) 600 Ohm PA (1) RF "N" connector	RJ45 (1)	RJ45 (2) RJ11 (2)
Power	12VDC / 2.5A (Universal Wall Cube included)	12VDC / 1A (Universal Wall Cube included)	12VDC / 2.0A (Universal Wall Cube included)
Operating Temperature Range	-40C to +55C -40F to +130F	-20C to +50C -5F to +125F	-0C to +40C 32F to +104F
Software Included	TShop TPeek TRadio	TShop TPeek TRadio	TShop TPeek TRadio
Weight	3.8 kgs / 8.4 lbs	3.4 kgs / 8.1 lbs	3.3 kgs / 8.0 lbs
Dimensions	7.6" x 6.1" x 2.25"	7.6" x 6.1" x 2.25"	8" x 10" x 3"

## 11 Customization required

A regular phone cable will need to be installed between the 2LVOICE unit and the POTS interface on the BGAN terminal – This is the port on the BGAN terminal where you can plug in a regular phone.

You also need to ensure the BGAN terminal will accept phone calls on this port. The best way to check if the BGAN terminal is properly programmed is to plug a regular phone into this port and make a phone call to check its operation.

## 12 Further details and support

### **Inmarsat Contact:**

Customer\_care@inmarsat.com

### **Teletics Products:**

Mike Fraser – VP of Sales (USA) 800 511 7813 or 916 267 3320

email USASales@teletics.com

[www.inmarsat.com/bgan](http://www.inmarsat.com/bgan)

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