

# Using the 7E Talking Head TH-4 over BGAN

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This document provides recommendations on the use of the 7E Communications Talking Head TH-44 unit (called the Talking Head TH-4 in this document) over the BGAN network. It explains the features and benefits of the unit, how to set up the Talking Head TH-4 for use over BGAN, the equipment needed and customization required for use with BGAN.

## Talking Head TH-4 overview

The 7E Talking Head video reporter units are rugged, portable and suitable for use anywhere in the world over BGAN. Housed in a waterproof case and using tried and tested technology, the unit can be used in the harshest of environments with complete confidence.

The TH-4 unit offers the latest H.264 compression and IP connectivity in a unit that weighs under 5kg. The unit can be powered from the local mains source (90-264VAC), or a nominal 12V DC source, such as a broadcast camera battery.

## Typical users

- Media broadcasters
- Freelance correspondents/stringers
- Military, government and surveillance
- Special interest groups

## Key features

The Talking Head TH-4 DVC-2000 offers the following main features over the BGAN network:

- Support for a variety of audio and video protocols including AES and DES encryption for secure calls. The protocols supported are listed in the following table:

Protocol/Standard	Notes
Support call initiation protocol	H.323/RTP and SIP (SIP requires a SIP server)
Video protocols	H.264 and H.263
Audio protocols	Audio has precedence over video, and always takes a certain amount of bandwidth (indicated below) from the data channel.  G.711 – 56kbps G.728 – 16kbps G.722 – 56kbps G.722.1 – 24-32kbps AACLD – 64-128kbps

## Benefits to BGAN users

The Talking Head TH-4 offers you the following main benefits:

- Rugged.
- Portable.
- Waterproof housing, suitable for location work anywhere in the world where there is an ISDN line, Internet connection or a suitable Inmarsat terminal(s).

## Set-up

This section describes how to set up BGAN for use with the Talking Head TH-4, and gives an example of a configuration.

### Before you start

You can connect the Talking Head TH-4 directly to a BGAN terminal. Note that the Talking Head TH-4 relies on a network connection being present when a call is made. Therefore, Inmarsat recommends that you set up your terminal to auto-connect on start up; both the HNS 9201 and EXPLORER 500/700 can be configured to start up in an auto-connect mode. You will also need an external camera and microphone to use the Talking Head TH-4 over BGAN.

**TIP:** If you use the Talking Head TH-4 with the HNS 9201, and set the terminal to operate in auto-connect mode, make sure the Talking Head TH-4 has a static IP address of 192.168.128.101, with a Gateway of 192.168.128.100. This is because the HNS 9201 can only automatically activate the first IP context, and map that to the IP address 192.168.128.101. The Talking Head TH-4 can be configured to obtain an address via DHCP from the terminal, or you can set a static IP address in the terminal's address range.

### Setting up for BGAN

Do the following to set up the Talking Head TH-4 for use on a BGAN terminal:

1. If you have not already done so, configure the terminal to auto-connect with the network.
2. Make sure that Error correction is switched **On** for a streaming IP Data connection. (Testing indicates that the TH-4 performs better with error correction switched on, although in general Inmarsat recommends that you switch error correction off over BGAN.)

3. Power on the Talking Head TH-4, and select the **Control Panel** icon using the remote control.
4. Select **Administrator Settings > Network**.
5. Under Network, select **LAN Settings > IP Settings**.
6. If you are using the HNS 9201, select the **Static** radio button, then enter the following settings:
  - **192.168.128.101** (IP Address).
  - **255.255.255.0** (IP Subnet Mask).
  - **192.168.128.100** (Gateway).
 If you are using the EXPLORER 500/700, select the **DHCP** radio button.
7. Return to **LAN Settings**, and open the **H.323** menu. (If you are not using the H.323 gateway, select **Direct**).
8. In the H.323 menu, select **Advanced H.323 Settings**, and then do the following:
  - Switch NAT to **Off**.
  - Set H.323. ports to **Dynamic**.
9. Return to **LAN Settings**, then select **SIP Settings**.
10. Set Mode to **Off** (unless you are using a SIP gateway).
11. Return to **Administrator Settings**, then select **Security**.
12. Make sure encryption is **Off** (or set to Auto). Encryption must be switched off at both the fixed and mobile ends, or the connection will not be successfully established.
13. Return to **Administrator Settings**, then select **Call Quality**.
14. Set the Maximum Stream Rate as follows:
  - BGAN 256kbps Streaming IP Data connection – 210kbps on the TH-4.
  - BGAN 128kbps Streaming IP Data connection – 110kbps on the TH-4.
 BGAN 64kbps Streaming IP Data connection (or lower) is not recommended for the TH-4.
 

**NOTE: For H.323 connections, this settings limits the outgoing (transmit) bandwidth, whilst retaining the maximum incoming (receive) bandwidth. To set this up, go into “Default Call Settings”, and enter the following:**

  - **Network – H.323**
  - **Bandwidth – 192kbps (if you are using the BGAN 256kbps streaming IP Data connection).**
  - **Restrict (56K) – Off.**
15. Return to **Administrator Settings**, then select **General**.
16. Switch Autoanswer **On**.
17. Power down the Talking Head TH-4.
18. Connect the TH-4 unit to your BGAN terminal using an Ethernet cable.
19. Power up the BGAN terminal, then power up the Talking Head TH-4. You are now ready to make a live audio/video call over BGAN.

**NOTE: If the Ethernet cable does not work, check the cable, then reboot the TH-4.**

You can choose what call rate you want to use in the **Control Panel > Administrator settings > Call Quality** menu. Additionally you can choose how this video and audio quality is balanced within this rate. Under Call quality you can also select which audio algorithm you can use. The rates are outlined in the table in “Key Features” on page 2 of this document.

Note the following:

- On the HNS 9201 – If you use an external router, you can use BGAN LaunchPad on a computer to initiate the connection, which can then be shared by the Talking Head TH-4 to make a call. Router ports NAT and PAT must be configured to allow inbound video calls from the fixed to mobile direction. See the documentation supplied with your router for details. On the EXPLORER 500/700 – It is possible to connect the Talking Head TH-4 and a computer to a hub or switch so that the devices share a single PDP context. You can use BGAN LaunchPad on a computer to initiate the connection, which can then be shared by the Talking Head Th-4 to make a call.

- On the EXPLORER 500/700 - For inbound calling or single device deployment, set the terminal to operate in Modem mode with a static IP address, and configure the Talking Head TH-4 with a DHCP IP address for both inbound and outbound calling. Once the EXPLORER terminal is connected to the BGAN network, the terminal will use DHCP to send the network static IP address to the Talking Head TH-4.

## Recommendations

- Set the Maximum upstream rate, as described in step 11 above.
- A dedicated “last mile” connection is important for the delivery of consistent video over the Talking Head TH-4. The TH-4 uses variable bit rate, and if traffic is routed over the Internet it may result in reduced throughput and degraded video quality.
- Switch on error correction (packet retransmission) using BGAN LaunchPad for a streaming IP Data connection, before opening the data connection.
- Switch off encryption.
- Open the required ports in the corporate firewall to allow end-to-end transmission.
- If the BGAN terminal is in auto-connect mode, you must switch off the terminal to disconnect the streaming IP data connection once you have finished video call.

## Test results

### Resources used over BGAN – TH-4 to TH-4

Test	Results	Notes
256kbps Streaming connection	Video: 192kbps (H.264) Audio: 24kbps (G.722.1) Good quality audio/video achieved in both directions.	192kbps call rate.
128kbps Streaming connection	Video: 110kbps (H.264) Audio: 24kbps (G.722.1) Good quality audio/video achieved in both directions.	110kbps call rate.
64kbps Streaming connection	n/a	TH-4 designed for 256kbps and 128kbps, and does not work well over 64kbps.

TH-4 Firmware used: F4.IPAL, SECURITY

## Customization required

No customization is required.

## Further details and support

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