
VH7400 Voice Highway™

User Guide



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1. Introduction

The VH7400 Voice Highway is an external two-channel adapter for use with the VIC E&M analogue voice interface in Cisco routers and provides connection to legacy AC15A PBX signalling. No user configuration is required and all connections to the host router (including power) are made with the two supplied cables that plug direct into the Cisco voice module. An RJ45 socket on the unit is provided for connection of each AC15A circuit.

2. Statutory Information

This product has been tested to the standard BS EN300386-2:1997 to demonstrate compliance with the EMC Directive 89/239/ECC and is an EMC class A product.

The VH7400 Voice Highway carries the CE mark and has been tested to the standard BS EN60950:1998 to demonstrate compliance with the Low Voltage Directive 73/23/EEC. Failure to follow the instructions in this user guide notes will make the unit non-compliant.

Connection to the VIC E&M interface of the host Cisco router must be made using the screened cables supplied. Both cables from the adapter must be connected at the Cisco end as power is derived from the SG and the SB leads of each channel.

The VH7400 must be installed in a restricted access location by a qualified service person having appropriate technical training.

The AC15A ports are classified as TNV (Telecommunications Network Voltage). These ports should only be connected to other TNV ports.

Input power rating of adapter: -30 to -60V dc @ 500mW max.

Power output available from the host Cisco router VIC E&M interface is inherently limited to significantly less than 1 amp and complies with the relevant LVD requirements.

This unit is designed to be installed and operated in a normal office or equipment room environment within the temperature range 0 to 40dec C and relative humidity not exceeding 60%.

This product does not contain any field serviceable parts and should be returned to the manufacturer or his authorised agent for repair.

3. System considerations

This adapter when connected to a host Cisco voice router equipped with a VIC E&M interface configured for Type 1 signalling is suitable for connection to point to point circuits or equipment which use AC15A signalling at a normal frequency of 2280Hz.

Simple call setup and clear-down using dtmf routing digits is supported by this unit.

Any input signalling state-change is subject to a 250ms persistence check before it is reflected as a state-change at the corresponding output.

The Voice Highway will not support either pulse dialling or the time break recall (TBR) signal.

The use of wink-start, proceed to send or any other timed auxiliary signal is not possible.

When programming both the Cisco equipment and the attached telephone systems it is important to remember that the audio path from the Cisco voice channel through the adapter to an AC15A port is disconnected during the idle condition, and, following a seize (Cisco to AC15A), audio is connected through after a short delay (approx. 650ms).

If the router is generating digits there should be a programmed delay in its configuration of 1 second between the seize being applied and dtmf digits sent out to the PBX.

If the routers are set for transparent operation the PBX systems should be programmed so that DTMF digits are not sent until 2 seconds after circuit is seized or 1 second after dial tone is detected from the distant end. In this configuration if dial tone detection is being used by the PBX it will probably be necessary to change a timer in the PBX configuration so that it looks for dial tone for up to 1 second. More information on Cisco and PBX configuration appears in section 6.

4. Installation

The VH7400 must be installed in a restricted access area by a qualified service person having appropriate technical training.

After unpacking check the unit for any obvious physical damage. If units are found to be faulty, do not use and refer to supplier.

For correct operation of the Voice Highway VH7400 the voice ports of the Cisco router must be set for 4-wire 600 ohm audio and E&M to Type 1.

The two supplied leads terminated with RJ45 plugs must be used for connection to the Cisco VIC E&M module.

To ensure correct powering of the adapter connect both leads into the VIC module even if only one circuit is to be used.

A suitable length of CAT 5 cable with one end terminated in an RJ45 plug has to be provided by the installer for connection of each AC15A circuit. The RJ45 plug end is inserted into the socket on the VH7400 and the other end of the lead terminated on a suitable wiring frame for connection to the AC15A equipment. Pin connections and standard wire colour are shown below:-

Signal	Comment	RJ45 pins	Wire colour
AC15A RX	Signal from external equipment to VH7400	3 & 6	green, white / green
AC15A TX	Signal from VH7400 to external equipment	4 & 5	blue, white / blue

5. Signalling States

The VH7400 takes power from the SB (signal battery) lead associated with each voice channel on the Cisco VIC E&M module when the signalling is configured for Type 1.

A led indicator associated with the E&M leads connecting to the VIC module indicates the signalling states in each direction.

Cisco to AC15A

Signalling State	Cisco E-lead (output) to VH7400 E-lead (input)	E-lead LED	AC15A TX
Idle	Open	OFF	Tone ON
Seize / answer	Ground	ON	Tone OFF

AC15A to Cisco

Signalling State	AC15A RX	VH7400 M-lead (output) to Cisco M-lead (input)	M-lead LED
Idle	Tone ON	Open	OFF
Seize / answer	Tone OFF	SB	ON

The E-lead led indicator for each channel is adjacent to pin 1 of the RJ45 socket for the router connection on the VH7400, the M-lead led is adjacent to pin 8.

6. Configurations

6.1 Cisco VoicePort, key settings and changes from default

	Default	Change to
Type of VoicePort is	E&M	
Administrative State is	UP	
In Gain is Set to	0 dB	
Out Attenuation is Set to	0 dB	
Connection Mode is	normal	normal or trunk, as required
Connection Number is	not set	
Region Tone is set for	US	GB
Analogue Info Follows:		
Impedance is set to	600r Ohm	
Voice card specific Info Follows:		
Signal Type is	wink-start	Immediate
Operation Type is	4-wire	
E&M Type is	V	1
Dial Type is	DTMF	
Dialout Delay for immediate start is	300 ms	1000 ms

6.2 PBX AC15A tie-line port

Configuration changes when connected to Cisco voice network with point to point transparent voice operation.

In this mode of operation the Cisco voice network and VH7400 adapters will introduce a delay during call setup between seize and the establishment of audio paths in both directions.

To permit successful call setup the PBX systems should be programmed so that DTMF routing digits are not sent until 2 seconds after seize (if dialling blind) or 1 second after dial tone is detected from the distant end.

When the PBX dialtone detector is enabled the wait-time for dialtone should be increased to 1 second.

7. History

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