TELEX®

VEGA SIGNALING PRODUCTS

Model HB-3Plus
Headset Adaptor Panel

Technical Manual

For use with Software Versions 2.00 or Higher

November 28, 2007 **P.N. 804138 Rev D**

Table of Contents

Table of Figures

1 General

The Vega HB-3Plus Headset Interface Box is a reliable method for connecting a desk microphone, headsets and footswitch controls to any computer running Vega's C-Soft program or any Vega dispatch console. A bi-color front panel LED indicates power (green) or active PTT (red).

The HB-3Plus connects directly to the handset jack of the dispatch control console or a PC operating with the Vega C-Soft dispatch software. In the console mode, an RJ11 4 conductor cable provides the connection from the HB-3Plus to the console. Connections to the PC serial port and sound card provide PTT, monitor, relay and Aux input control in the PC mode.

The HB-3Plus also provides a connection to any telephone device with a NENA I/O port, allowing for a single headset to be shared by the radio and phone system. When the phone set is taken off-hook, the headset microphone audio is routed to the phone system and selected radio is transferred back to the SELECT speaker. Telephone audio is routed to the headset as long as the system is off-hook.

The HB-3Plus Features:

- 2 Dual ¼' headset jacks
- Independent SELECT volume controls
- Switch selectable headset on/off
- 1 Desk microphone input
- 3 Independent footswitch inputs
- Power and PTT LED indicator
- 1 NENA I/O port
- 2 AUX relays (Form C contacts)
- 2 AUX IN TTL inputs
- Balanced common recorder output
- Separate balanced UNSELECT audio recorder output
- +9VDC 50mA output

Jumper Selectable Options:

- PC/Console Mode
- C-Soft mic output level set (Mic/Line)
- Electret/Dynamic desk mic select
- Route UNSELECT audio to headsets
- Route UNSELECT audio to common recorder output
- +9VDC/GND (Pin 6 of footswitch terminal block)

1.1 Accessories

Several optional accessories are available for the HB-3Plus.

Part Number:	Description:
0108024	FS-1 Footswitch.
24901611	Stereo Headset with Microphone and inline PTT switch.
302070100	DH2000 Dispatcher Headset – Mono
302070200	DH2200 Dispatcher Headset – Dual sided Mono
302068000	LC1500 Lower cord, 15 ft.
302068001	LC2500 Lower cord, 25 ft.
0118022	MD-MS Electret Desk Microphone
301905000	6513C Dynamic Desk Microphone
PRD00089001	Desktop Gooseneck w/ electret mic
PRD00089000	Monitor Mount Gooseneck w/ electret mic

2 Installation

2.1 HB-3Plus Mounting

The HB-3Plus may be mounted either under or along the side of a dispatch position, choose a location that allows for easy headset connection and is free of direct hits from chair arms and personnel knees.

2.2 HB-3Plus Setup

2.2.1 HB3*Plus* Jumper Positions

Jumper	Function	Factory Set Position
JMP1	PC Mode Mic Output Level Set – Mic/Line Level	A – Mic Level
JMP2	Electret/Dynamic Desk Mic Set	A – Electret Desk Mic
JMP3	SELECT/UNSELECT Headset II Audio	B – SELECT Audio Only to Headset
JMP7	Pin 6 Relay Block Function – GND/+9VDC	A – GND
JMP8	PC/Console Mode Select	A – PC Mode
JMP9	Route UNSELECT Audio to Common Recorder	A – UNSELECT Audio to Recorder
JMP12	SELECT/UNSELECT Headset I Audio	B – SELECT Audio Only to Headset

Table 1 HB3Plus Jumpers

2.2.2 PC/Console Mode

Operation of the HB-3Plus with Vega C-Soft or tone remote consoles is set by JMP8.
A – PC Mode
B – Console Mode

Note: The HB3Plus Must Be Reset When Changing Modes.

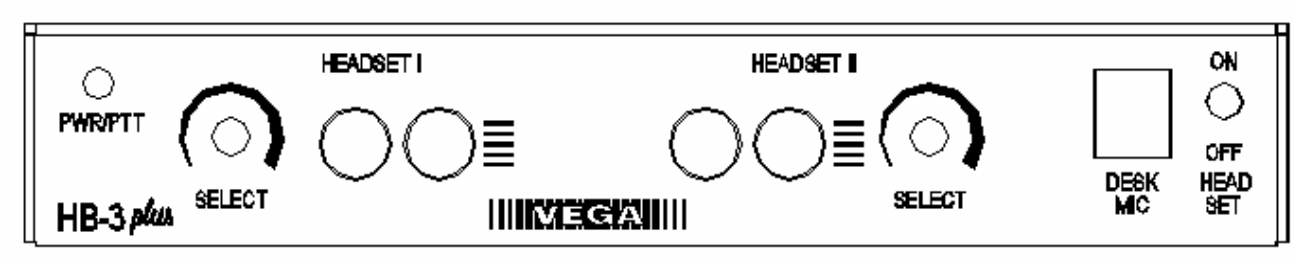


Figure 1 HB-3Plus Front View

2.2.3 Headset I and II Connections

The HB-3Plus operates with either 4 or 6 wire Dual ¼" Phone Jack plugs. The standard configuration for the HB-3Plus is for operation with a 6-wire plug configuration. The horizontal lines adjacent to the right phone jack of each headset pair indicate the negative polarity of the mic bias.

Headset I

JMP12 – Routes SELECT or UNSELECT audio to the headset I
A – UNSELECT and SELECT audio to headset I
B – SELECT only audio to headset I

Cutting the small trace between JMP13 disables the PTT function for 4-wire headset operation

Headset II

JMP3 – Routes SELECT or UNSELECT audio to the headset II
A – UNSELECT and SELECT audio to headset II
B – SELECT only audio to headset II

Cutting the small trace between JMP6 disables the PTT function for 4-wire headset operation.

2.2.4 Desk Microphone Connection

The following microphones are designed to operate and connect to the HB-3Plus desk mic connector:

- Model MD-MS electret desk microphone
- Monitor Mount Gooseneck (PRD00089000 (w/ electret mic)
- Desktop Gooseneck (PRD00089001 (w/ electret mic)
- Model 6513C dynamic desk microphone

Internal jumper JMP2 selects the electret or dynamic microphone configuration.

A – Electret
B – Dynamic

When using a desk microphone the Headset On/Off switch should be in the OFF position to route SELECT audio to the speaker

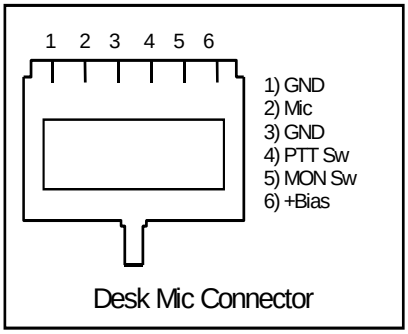


Figure 2 Desk Mic Connector

2.2.5 Headset ON/OFF switch

The headset ON/OFF switch is used to provide hook signaling to a Vega dispatch console or C-Soft application. When OFF, SELECT audio is routed from the headset to the speaker. When using a desk microphone the switch should be in the OFF position.

2.2.6 Radio Rx Mute w/PTT – Version 2.1 or Higher

With the release of software Version 2.1, the Windows ® HyperTerminal application may be used to set, as a programmable option, if radio Rx is muted with PTT. Usually, the radio Rx is muted when the radio PTT is active. However, full duplex and cell phone Direct Connect applications require audio (i.e. go ahead tones) to be heard by the user after PTT is pressed.

With the PC connected to the HB3Plus and HyperTerminal running, press "**M**" on the PC keyboard. The HB3Plus will respond with "**MUTE RADIO RX WITH PTT [Y/N]**" as shown in Figure 3.

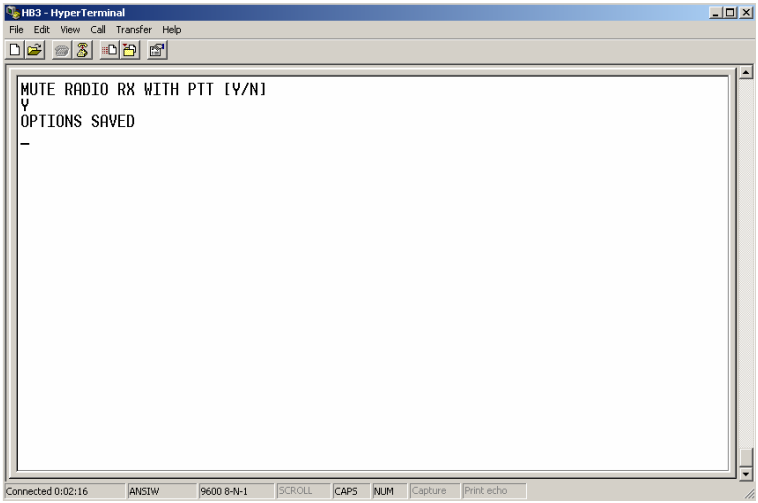


Figure 3 HyperTerminal Screen

Press "**Y**" or "**N**" (upper or lower case), depending on your application. The HB3Plus will save the selection, check for accuracy and, if saved with no errors, respond with "**OPTIONS SAVED**" Reset the HB3Plus.

2.3 Rear Panel Connections

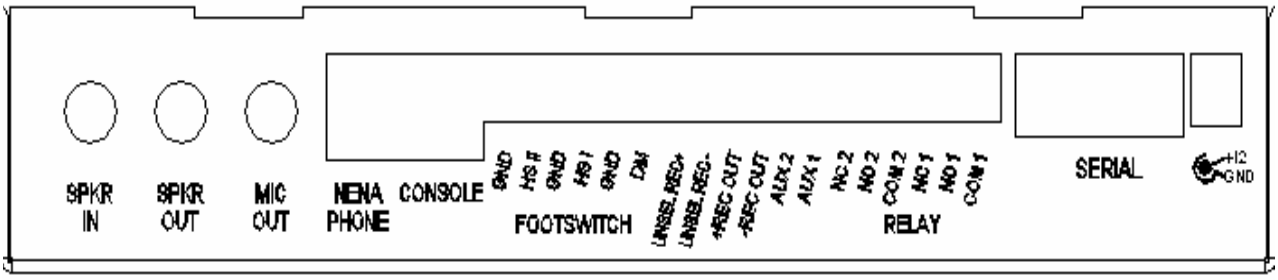


Figure 4 HB-3Plus Rear View

2.3.1 Power Supply Connection

The HB-3Plus power requirements are 12 to 16 VDC, 500mA. A wall mounted power supply is included with the HB-3Plus. Power connection is made via a 2.5mm plug receptacle on the rear panel of the unit. The positive terminal is the center conductor.

2.3.2 Serial Connection

The serial port is enabled in the HB-3Plus when the PC Mode is set by JMP8 (position A). The serial port is configured for 9600-baud, 1stop bit, no parity, and DCE connections. A serial cable is provided for connection to the PC.

In the PC Mode, the HB-3Plus provides the PC with serial data for PTT, Monitor, relay control and AUX input functions.

2.3.3 Relay Connections

The HB-3Plus provides two Form C relay contacts for general use. 1 Amp resettable fuses protect both sets of contacts. Each relay is controlled by the C-Soft application. Please refer to the C-Soft manual for use of this feature.

A 6-pin screw terminal block provides connection to the relays. Refer to Figure 5 Relay Connections

NOTE: The Relays Are Operational In The PC Mode ONLY

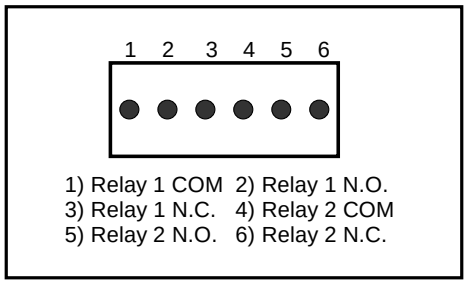


Figure 5 Relay Connections

2.3.4 AUX IN Connections

The AUX IN connections detect a contact closure to ground and send the information to the C-Soft application. Each input is diode protected from voltages above +5VDC.
The two AUX inputs are located at pins 1 and 2 of the middle 6-pin screw terminal block.
Please refer to the C-Soft manual for use of this feature. Refer to Figure 6 Recorder and AUX IN Connections.

NOTE: The AUX IN Inputs Are Enabled In The PC Mode ONLY

2.3.5 Recorder Connections

The HB-3Plus provides two balanced recorder outputs. The impedance of each balanced output is 600 ohms.

Common Recorder Output

The common recorder output sums and amplifies all sources of audio passing through the HB-3Plus to a balanced output for a single position recorder capability. Internal jumper JMP9 sets the routing of the UNSELECT audio to the common recorder output.

A – UNSELECT audio (all audio sources)
B – No UNSELECT audio (all audio sources except UNSELECT)

The Common Recorder Output is provided at pins 3 and 4 of the middle 6-pin screw terminal block marked RECORDER OUT.

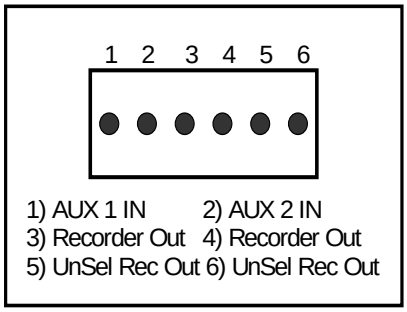


Figure 6 Recorder and AUX IN Connections

UNSELECT Audio Recorder Output

The UNSELECT Audio Recorder Output provides UNSELECT audio to a separate balanced output. The UNSELECT Recorder Output is provided at pins 5 and 6 of the middle 6-pin screw terminal block marked UNSEL REC Out.

2.3.6 Footswitch Connections

The HB-3Plus provides separate PTT footswitch inputs for the desk mic, Headset I and Headset II. The PTT function is activated by a contact closure to ground. Each input is diode protected from voltages above +5VDC. Pin 6 is a dual function pin providing a GND or +9VDC connection. Refer to section 2.3.7.

For 6513C desk microphones manufactured before October 2005, the microphone PTT switch gates mic audio. If PTT is generated from sources other than the desk microphone PTT switch (i.e. Instant PTT, footswitch or front panel PTT), TX audio is not passed to the HB3Plus for routing to the selected line. Refer to Vega Application Note MN-VEGA-13 for microphone rewiring instructions.

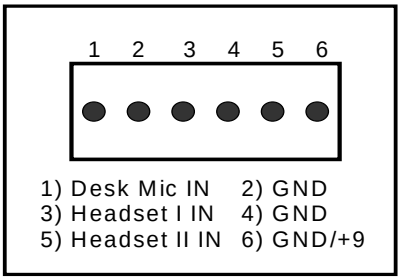


Figure 7 Footswitch Connections

2.3.7 +9VDC Output Connection

Pin 6 of the footswitch terminal block is a dual function pin. It may be configured to provide a +9VDC 50mA power output or GND. A resettable fuse protects the +9VDC output. Refer to Figure 7.
JMP7 sets the pin configuration.

A – GND
B – +9VDC@50mA

2.3.8 PC Sound Card Connections

Three Audio Cables are provided for connection of the HB-3Plus to the PC sound card and desktop speakers. The desktop speakers MUST be amplified. Refer to Figure 8.

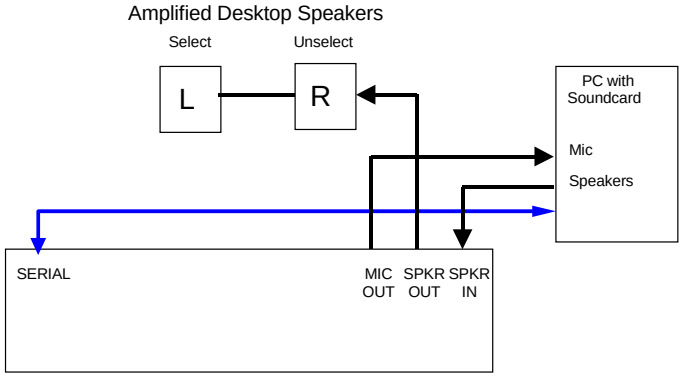


Figure 8 HB-3Plus to PC Connection Diagram

2.3.9 Console Connections

The HB-3Plus connects directly to the handset port of a Vega dispatch console (C-5000, C-1610, C-1616, C-2000, C-2002, IP1616 and C-6200) from the Console RJ11 CONSOLE connector when the CONSOLE MODE is set by JMP8. A 4-pin modular cable is provided for connection to the console.

The HB-3Plus provides the audio paths for radio Tx from the headset or desk mic and SELECT audio. System PTT and SELECT audio routing are also controlled by the HB-3Plus. SELECT audio is routed to the console speaker when the Headset Switch in the OFF position or when the NENA system is off-hook. UNSELECT audio is NOT available to the HB-3Plus from the console.

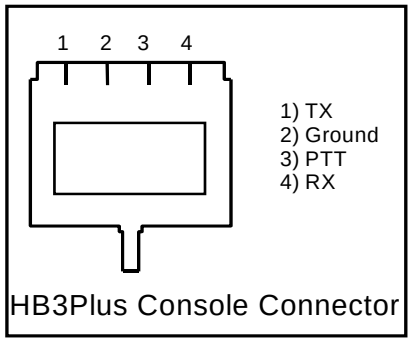


Figure 9 HB-3Plus To Console Connector Pin-out

NOTE: The Handset Port On The Console Must Be ENABLED.
Refer To The Console Technical Manual For Instructions

2.3.10 NENA Phone Connections

The HB-3Plus connects to a NENA device from the RJ-12 NENA PHONE connector. The NENA Tx and RX are balanced 600-ohm audio connections to eliminate DC differences or ground loops between the systems. The off-hook condition is triggered by a contact closure to ground. The hook switch input is diode protected from DC voltages above +5VDC.

Refer to Figure 10 for the Wiring diagram and connector pin-out.

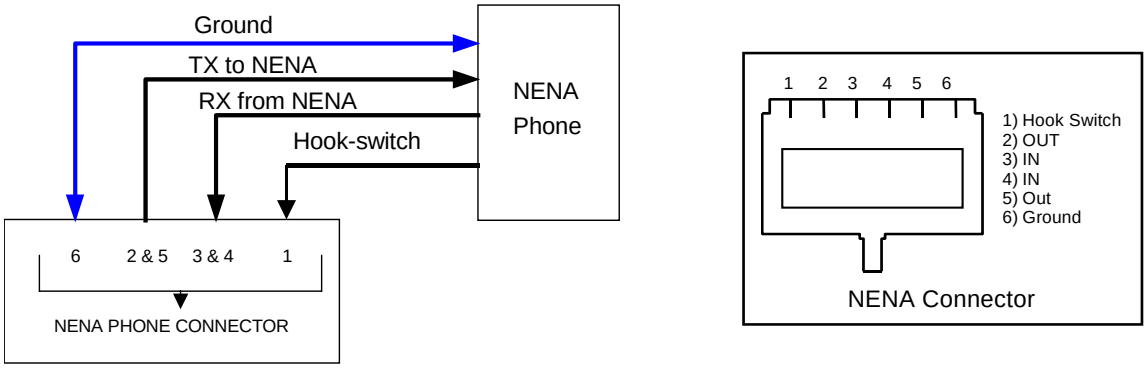


Figure 10 NENA to HB3Plus Connections and Pinout

2.4 Software Version

2.4.1 Software/Hardware Match Up

Updates to the PCB require the software to include a "Legacy" mode that allow it to operate in older circuit board layouts. Circuit boards with part number **750728 REV "B"** or higher **MUST** have a jumper installed across pins 1 and 2 of connector J12. See Figure 11for jumper location.

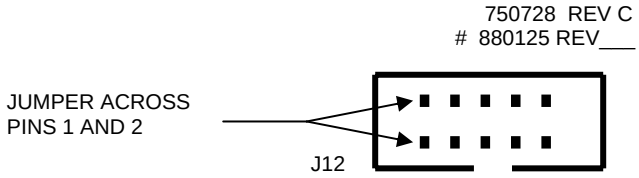


Figure 11 HB3Plus Hardware Identification Jumper

2.4.2 Determine The Software Version

The software version of the HB-3Plus may be determined by connecting the HB-3Plus serial port to a PC with Windows® HyperTerminal running. Set the HyperTerminal parameters to 9600 baud, 1stop bit, and no parity. Place JMP8 in the "A" position to set the PC mode.
Press "V" on the PC keyboard, the HB-3Plus will respond with the software version number (i.e. VER 1.12).

NOTE: This Feature Is Available On Versions 1.12 Or Higher

3 Audio Level Adjustments

The HB-3Plus provides five internal adjustments for setting various levels of operation:

- Desk Mic Level
- NENA In
- NENA Out
- Recorder Out
- Recorder Unsel Out

The internal adjustments may be set after the HB-3Plus is mounted. All five adjustments are accessible from the bottom of the enclosure and do not require the HB-3Plus to be open for adjustment.

Headset I and II receive volume levels are user adjustable by the SELECT controls on the front panel.

3.1 Desk Microphone TX Level

The desk microphone level may be adjusted from the DESK MIC LEVEL access point on the bottom of the enclosure.

The MD-MS electret desk mic has a level adjustment located on the bottom plate of the mic. The nominal position of this control is mid-range.

3.2 NENA Phone Level

The NENA phone levels may be adjusted from the NENA IN and NENA OUT access points on the bottom of the enclosure. Nominal input level to the NENA Rx inputs is -20dBm.

3.3 Recorder Level

Each recorder output level (Common Recorder and Unsel Recorder) may be adjusted from the access points on the bottom of the enclosure.

3.4 Headset Transmit Level

Each headset TX circuit uses a clipper/filter circuit that does not require any adjustment. The level is designed to match the requirements of the Vega dispatch consoles or the C-Soft application.

4 Component Location and Parts Lists

Telex Communications INC.

Lincoln, Nebraska USA

PART NO: **880125**

APPROVALS:	DR BY: SBC DATE: 01/25/2005	CHK: SBC DATE; 03/04/05	APPD: JRL DATE: 03/04/05	PROD:	REV LEVEL:	**D**

TITLE: # PCB ASSY, HB3 PLUS

REVISIONS

REV	DESCRIPTION		ECO NO	DATE	APPD
1	PROTOTYPE		41-000146	01/25/05	SBC
	UPDATED REV 1	REMOVED JMP6 AND JMP13		01/28/05	SBC
A	ITEM 59 CHANGE PART NUMBER TO 7302831		41-000174	03/04/05	JRL
	ITEM 1 QTY TO 26	ITEM 8 QTY TO 10			
	ITEM 32 QTY TO 97	ITEM 35 QTY TO 3			
	DELETED ITEM 46	ITEM 47 QTY TO 10			
	ADDED ITEM 65	ADDED ITEM 66			
	ADDED ITEM 67	ADDED ITEM 68			
	ITEM 53 CHANGED PART NUMBER				
	ITEM 40 QTY TO 5	ITEM 10 QTY TO 23			
B	SHEET 4 UPDATED TO REFLECT CORRECT ORIENTATION OF D13 AND D14		41-000197	04/04/05	JRL
C	ITEM 34 QTY TO 96	ADDED ITEM 69	41-000210	04/26/05	JRL
D	CHANGE MIC BIAS TO HIGH SIDE BIAS AND DO ROHS CHANGES		41-000361	03/31/06	JRL
	PCB TO REV C	ROHS CHANGES			
	ITEM 1 QTY TO 24	ITEM 6 QTY TO 21			
	ITEM 7 QTY TO 20	ITEM 10 QTY TO 23			
	ITEM 12 QTY TO 0	ITEM 15 QTY TO 4			
	ITEM 17 QTY TO 8	ITEM 19 QTY TO 11			
	ITEM 29 QTY TO 7	ITEM 30 QTY TO 7			
	ITEM 31 QTY TO 20	ITEM 32 QTY TO 94			
	ITEM 40 QTY TO 3	ITEM 42 QTY TO 0			
	ITEM 47 QTY TO 10	ITEM 56 CHG PART # QTY TO 2			
	ITEM 57 QTY TO 0	ADDED ITEM 69 QTY TO 2			
	ADDED ITEM 70 QTY TO 1	ADDED ITEM 71 QTY TO 2			
	ADDED ITEM 72 QTY TO 1				

Telex Communications INC.

Lincoln, Nebraska USA

PART NO: **880125**

REV LEVEL: **D**

APPROVALS:	DR BY: SBC	CHK: SBC	APPD: JRL	PROD:
	DATE: 01/25/2005	DATE; 03/04/05	DATE; 03/04/05	

TITLE: **PCB ASSY, HB3 PLUS**

ITEM	NEW	QTY	TYPE	DESCRIPTION	SMT or T/H	Telex PART NO.	DESIGNATOR	Manufacturer	Manufacurer's part #	Manufacturer's RoHS part #
1		24	CAP	1UF 0805 10V +/-10%	SMT	102881875T	C1 C9 C11 C13 C15 C20 C26 C30 C41 C42 C43 C48 C49 C54 C57 C58 C62 C63 C65 C69 C72 C77 C80 C93	Nic Components	NMC0805X7R105K10TRPLP3K	NMC0805X7R105K10TRPLP3KF
2		2	CAP	.001UF 0603 50V +/-10%	SMT	102881717T	C103 C110	Nic Components	NMC0603X7R102K50TRP	NMC0603X7R102K50TRPF
3		1	CAP	1000UF 25V LEADED	T/H	51821526	C124	Nic Components	NRSS102M25V 10X20	NRSS102M25V 10X20F
4		2	CAP	6800PF 0603 50V +/-5%	SMT	102881708T	C14 C83	Nic Components	NMC0603X7R682K50TRP	NMC0603X7R682K50TRPF
5		2	CAP	100PF 0603 50V +/-5%	SMT	723482130T	C16 C78	Nic Components	NMC0603NPO101J50TRP	NMC0603NPO101J50TRPF
6		21	CAP	0.1UF 0603	SMT	723489101T	C19 C28 C52 C76 C86 C88 C100 C104 C106 C108 C111 C112 C113 C115 C116 C125 C36 C50 C51 C92 C102	Nic Components	NMC0603Y5V104Z25TRP	NMC0603Y5V104Z25TRPF
7		20	CAP	47PF 0603	SMT	723482126T	C2 C4 C10 C17 C21 C25 C29 C34 C40 C44 C47 C53 C67 C68 C74 C121 C122 C123 C126 C127	Nic Components	NMC0603NPO470J50TRP	NMC0603NPO470J50TRPF
8		10	CAP	3.3UF TANT 10V B(3528)	SMT	102877021T	C3 C18 C22 C39 C64 C66 C75 C91 C109 C114	Nic Components	NTC-T335K25TRB	NTC-T335K25TRBF
9		2	CAP	2200PF 0603 50V +/-5%	SMT	723483107T	C31 C82	Nic Components	NMC0603X7R222K50TRP	NMC0603X7R222K50TRPF
10		23	CAP	10uf 16vTANT 3528 B	SMT	102877065T	C24 C32 C33 C45 C46 C55 C56 C87 C89 C90 C94 C96 C98 C99 C101 C105 C107 C117 C118 C119 C120 C37 C38	Nic Components	NTC-T106K16TRB	NTC-T106K16TRBF
11		18	CAP	470PF 0603 50V +/-5%	SMT	723482138T	C5 C6 C7 C8 C12 C23 C27 C35 C59 C60 C61 C70 C71 C73 C79 C84 C95 C97	Nic Components	NMC0603NPO471J50TRP	NMC0603NPO471J50TRPF
12										
13		2	CAP	33PF 0603	SMT	723482124T	C81 C85	Nic Components	NMC0603NPO330J50TRP	NMC0603NPO330J50TRPF
14		13	DIODE	MMBD914 SOT-23	SMT	58711000T	D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D16	On Semiconductor	MMBD914LT1	MMBD914LT1G
15		4	DIODE	SMT 4004 1A DIODE (S1G-13)	SMT	760621-4	D13 D14 D17 D18	Diodes Inc	MRA4004T3	MRA4004T3G
16		1	LED	RT ANG. LED RED/GRN	T/H	508088000	D15	Dialight	550-3005	550-3005F
17		8	THYRISTOR	TVB170SA	SMT	710106	F1 F3 F5 F9 F10 F14 F16 F18	Raychem/Tyco	TVB170SA	TVB170SA-L
18		1	FUSE	FUSE AND HOLDER 3 AMP	SMT	710105T	F13	Littlefuse	154003T	154003T
19		11	FUSE	F1250T Teccor Fuse	SMT	710109T	F2 F4 F6 F7 F8 F11 F12 F15 F17 F19 F20	Littlefuse	04611.25	04611.25
20		2	FERRITE	0805 FERRITE BEAD	SMT	723511T	FB1 FB2	Fair-Rite	2508056017Y0	2508056017Y0
21		3	CONN	1/4" STEREO JACK RN112BPC	T/H	21-01-028713	J1 J3 J5	Switchcraft	RN112BPC	RN112BPC
22		1	CONN	HEADER, 10 PIN SHROUDED	T/H	650381	J12	Amp	103308-1	1761602-3
23		1	CONN	RT ANG DB9 TH	T/H	640149	J13	Tyco	747844-6	5747844-6
24		1	CONN	2.5MM LEADED POWER	T/H	59697000	J16	Kycon	16PJ032	KLDX-0202-B
25		2	CONN	RJ11 TELCO RECEPT	T/H	59946000	J2 J7	Tyco	520250-3	5520250-3
26		4	CONN	3 Pin Locking Header	T/H	2861870	J4 J6 J14 J15	Molex	22-23-2031	22-23-2031
27		1	CONN	RT ANGLE 4 PIN HANDSET JACK	T/H	640123	J8	Tyco	520249-2	5520249-2
28		3	CONN	6 PIN RT ANGLE TERMINAL	T/H	2862056	J9 J10 J11	Wieland	25.332.3653.1	25.332.3653.1
29		7	CONN	3 PIN T/H HEADER	T/H	8800124519	JMP1 JMP2 JMP3 JMP7 JMP8 JMP9 JMP12	Framatome (FCI) Connectors	68000-403	68000-403LF
30		7	CONN	JUMPER CAP		2515001001	FOR JMP1 JMP2 JMP3 JMP7 JMP8 JMP9 JMP12	Samtec	SNT-100-BK-G	SNT-100-BK-G
31		20	TRANSISTOR	MMBT3904	SMT	54671200T	Q1 Q2 Q3 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21	On Semiconductor	MMBT3904LT1	MMBT3904LT1G

Telex Communications INC.
Lincoln, Nebraska USA

PART NO: **880125**

APPROVALS:	DR BY: SBC DATE: 01/25/2005	CHK: SBC DATE; 03/04/05	APPD: JRL DATE; 03/04/05	PROD:	REV LEVEL:	D

TITLE: **PCB ASSY, HB3 PLUS**

ITEM	NEW	QTY	TYPE	DESCRIPTION	SMT or T/H	Telex PART NO.	DESIGNATOR	Manufacturer	Manufacurer's part #	Manufacturer's RoHS part #
32		94	RES	10K 0603 1%	SMT	723481300T	R1 R2 R3 R4 R6 R7 R8 R11 R12 R14 R22 R24 R27 R28 R29 R30 R31 R33 R34 R36 R37 R38 R39 R43 R44 R47 R48 R49 R52 R54 R55 R56 R58 R59 R60 R62 R64 R65 R66 R67 R69 R70 R71 R73 R74 R75 R76 R78 R81 R82 R84 R85 R86 R87 R88 R89 R90 R91 R92 R93 R103 R104 R105 R106 R109 R115 R116 R117 R118 R119 R120 R121 R123 R126 R129 R132 R133 R134 R136 R137 R140 R142 R143 R145 R146 R148 R149 R150 R152 R154 R155 R157 R158 R161	Nic Components	NRC06F1002TR	NRC06F1002TRF
33		1	POT	1MEG VERT. ADJ T/H LINEAR	T/H	57148413	R10	Piher	PT6WV-105A2020	PT6WV-105A2020
34		2	RES	301 OHM 0603 1%	SMT	723481146T	R112 R131	Nic Components	NRC06F3010TR	NRC06F3010TRF
35		3	RES	27K 0603 5%	SMT	723488273T	R83 R110 R147	Nic Components	NRC06J273TR	NRC06J273TRF
36		1	RES	332K 0603 100V 1%	SMT	723481450T	R153	Nic Components	NRC06F3323TR	NRC06F3323TRF
37		4	POT	100K VERT. ADJ T/H LINEAR	T/H	57148410	R17 R45 R107 R128	Piher	PT6WV-104A2020	PT6WV-104A2020
38		26	RES	0 OHM 0603 5%	SMT	723488000T	R18 R19 R21 R26 R77 R94 R96 R97 R98 R99 R100 R101 R102 R108 R111 R113 R127 R130 R135 R162 R163 R165 R166 R167 R168 R169	Nic Components	NRC06ZOTR	NRC06ZOTRF
39		1	RES	475K 0603 1%	SMT	723481465T	R20	Nic Components	NRC06F4753TR	NRC06F4753TRF
40		3	RES	100K 0603 1%	SMT	723481400T	R23 R53 R138	Nic Components	NRC06F1003TR	NRC06F1003TRF
41		2	RES	2.7K 0603 5%	SMT	723488272T	R32 R35	Nic Components	NRC06J272TR	NRC06J272TRF
42										
43		2	RES	47 OHMS 0603 5%	SMT	723488470T	R46 R151	Nic Components	NRC06J470TR	NRC06J470TRF
44		4	RES	150 OHMS 0603 1%	SMT	723481117T	R5 R79 R80 R95	Nic Components	NRC06F1500TR	NRC06F1500TRF
45										
46										
47		10	RES	1K 0603 1%	SMT	723481200T	R13 R25 R41 R68 R114 R125 R139 R141 R40 R50	Nic Components	NRC06F1001TR	NRC06F1001TRF
48		2	RELAY	SMT SPDT 12V RELAY	SMT	730142	RLY1 RLY2	Tyco/Axicom	V23026-D1022-B201	1393776-4
49		1	SWITCH	TOGGLE SPDT PC MNT	T/H	2990348	S1	C&K(ITT CANNON)	7101P4D9AV2BE	7101P4D9AV2BE
50		13	IC	NE-5532 SO-8 DUAL OP Amp	SMT	760268T	U1 U2 U3 U4 U6 U7 U11 U14 U15 U16 U17 U19 U21	Texas Instruments	NE5532AD	NE5532AD
51		2	IC	TLV2374ID QUAD OP AMP	SMT	511552000S	U10 U23	Texas Instruments	TLV2374ID	TLV2374ID
52		2	IC	LM339 QUAD COMPARATOR	SMT	59607100T	U12 U22	Texas Instruments	LM339DR	LM339DR
53		1	IC	89S8252 MICROCONTROLLER		5115560001PS	U18	Atmel	AT89S8253-JC	AT89S8253-24JU
54		1	IC SOCKET	PLCC44	SMT	539030044	SOCKET FOR U18	Tyco	822499-1	3-822516-1
55		1	IC	MAX3232 RS232 DRIVER SO16	SMT	760349S	U24	Maxim	MAX3232CSE	MAX3232CSE+
56		2	IC	LM317M	SMT	760250T	U25 U26	ON Semiconductor	NATL LM317MDTX OR ON SEMI LM317MDTRK SUGGESTED T&R	LM317MDTRKG
57										
58		5	IC	CD4053B ANALOG SWITCH	SMT	53266123T	U5 U8 U9 U13 U20	Texas Instruments	CD4053BMT	CD4053BMT
59		4	XFMR	600:600 AUDIO	T/H	7302831	XFMR1 XFMR2 XFMR3 XFMR4			
60		1	XTAL	XTAL 11.0592MHZ HC49	T/H	780196	Y1	ECS Inc	ECS-110.5-S-4	ECS-110.5-S-4X
61		1	INSULATOR	MYLAR MS49		59225500	TO BE USED WITH Y1	ECS Inc		700-9001
62		1	PCB	PRINTED CIRCUIT BOARD		750728				
63		0	SCH	SCHEMATIC		770952				
64		1	RES	4.7K 0603 5%	SMT	723488472T	R63	Nic Components	NRC06J472TR	NRC06J472TRF

Telex Communications INC.

Lincoln, Nebraska USA

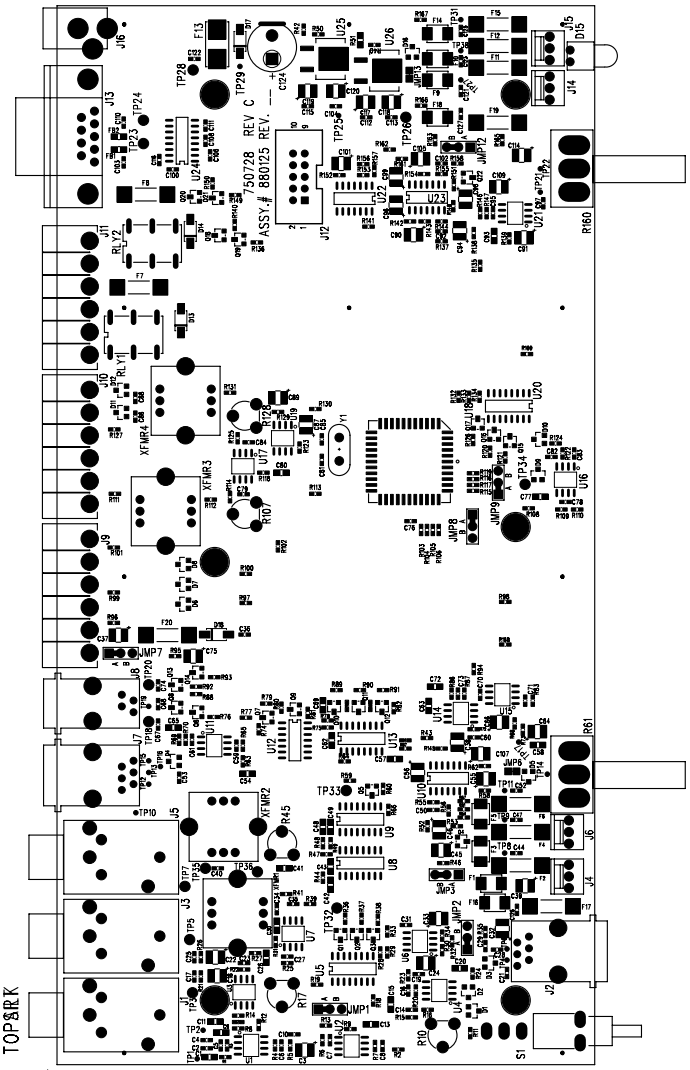
PART NO: **880125**

APPROVALS:	DR BY: SBC DATE: 01/25/2005	CHK: SBC DATE; 03/04/05	APPD: JRL DATE; 03/04/05	PROD:	REV LEVEL:	D

TITLE: **PCB ASSY, HB3 PLUS**

ITEM	NEW	QTY	TYPE	DESCRIPTION	SMT or T/H	Telex PART NO.	DESIGNATOR	Manufacturer	Manufacurer's part #	Manufacturer's RoHS part #
65		1	RES	5.6K 0603 5%	SMT	723488562T	R72	Nic Components	NRC06J562TR	NRC06J562TRF
66		4	RES	18.2K 0603 1%	SMT	723481229T	R15 R16 R122 R124	Nic Components	NRC06F2001TR	NRC06F2001TRF
67		1	RES	2.21K 0603 1%	SMT	723481233T	R9	Nic Components	NRC06F2211TR	NRC06F2211TRF
68		1	RES	47.5K 0603 1%	SMT	723481365T	R156	Nic Components	NRC06F4752TR	NRC06F4752TRF
69		2	TRANSISTOR	MMBT3906	SMT	54716200	Q4 Q22	On Semiconductor	MMBT3906LT1	MMBT3906LT1G
70		1	RES	6.98K	SMT	102515281T	R51	Nic Components	NRC10F7151TR	NRC10F7151TRF
71		2	RES	150K 0603 1%	SMT	723481417T	R57 R144	Nic Components	NRC06F1503TR	NRC06F1503TRF
72		1	RES	3.01K 0603 1%	SMT	723481246T	R42	Nic Components	NRC06F3011TR	NRC06F3011TRF

This drawing, written description or specification is a proprietary product of Telex, Lincoln, NE and shall not be released, disclosed, nor duplicated without the written permission of TELEX	Telex Communications Inc. Lincoln, Nebraska USA				PART NO: 880125	
APPROVALS	DR BY: SBC DATE: 01/25/2005	CHK: SBC DATE: 03/04/05	APPD: JRL DATE: 03/04/05	PROD:	REV LEVEL:	D
TITLE	PCB ASSY, HB3 PLUS					



DO NOT PLACE NUTS AND WASHERS ON THE 3 AUDIO CONNECTORS J1,J3 AND J5. THEY CAN BE DISCARDED.

TOP ASSEMBLY

BE,LN

5 Warranty, Service, Repair, and Comments:

Important!

Be sure the exact return address and a description of the problem or work to be done are enclosed with your equipment.

Warranty (Limited)

All Telex Communications, Vega Signaling products are guaranteed against malfunction due to defects in materials and workmanship for three years, beginning at the date of original purchase. If such a malfunction occurs, the product will be repaired or replaced (at our option) without charge during the three-year period, if delivered to the Telex factory. Warranty does not extend to damage due to improper repairs, finish or appearance items, or malfunction due to abuse or operation under other than the specified conditions, nor does it extend to incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives the customer specific legal rights, and there may be other rights which vary from state to state.

Factory Service Center

TELEX Communications, Inc.
Vega Signaling Products
8601 East Cornhusker Highway, Lincoln, Nebraska, 68507
Phone: (800) 553-5992 Fax: (402) 467-3279
E-mail: vega@telex.com , Web: www.vega-signaling.com

Claims

No liability will be accepted for damages directly or indirectly arising from the use of our materials or from any other causes. Our liability shall be expressly limited to replacement or repair of defective materials.

Suggestions or Comments

We would appreciate your input. Please send us your suggestions or comments concerning this manual, by fax (402-467-3279) or e-mail them to: **vega@telex.com**

Technical Support

Technical support is available by calling 800-898-6723 or emailing; **awttechsupport@us.telex.com**

Visit our web site at www.vega-signaling.com

6 HB-3Plus Specifications

Operating Temperature Range: 0 to 55°C for full specifications

Power Requirements: +12 to +16 VDC, semi-regulated, 500ma.

Serial Port: 9600-8-N-1 DCE Configuration

Relay Contact Ratings: 1A 125Vac - Form C Contacts

+9VDC Output: 50mA

Audio Distortion: 2% THD maximum

Frequency Response: ±1.5 dB, 300 to 3000 Hz

NENA Input/Output Impedance: 600Ω nominal

Dimensions: 11" W (28CM) x 5.63" D (14.3CM) x 1.75" H (4.4CM)

TELEX Communications, Inc.
Vega Signaling Products
8601 East Cornhusker Highway, Lincoln, Nebraska, 68507
Phone: (800) 752-7560 Fax: (402) 467-3279
E-mail: vega@telex.com , Web: www.vega-signaling.com