



VIPER-8

Vega Interoperability Portable Emergency Response Unit



Technical Manual

November 2004

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1 General

The VIPER-8 (Vega Interoperability Portable Emergency Response) unit is housed in a rugged portable travel case. The unit is purchased in an 8-line configuration; the 8-line unit contains 4 IP-223's, a 2 unit high drawer for storage of accessories and an 8-port hub. The portable case contains a 19" rack with a detachable front and rear cover allowing for easy access to all components

In an emergency response application the VIPER-8 can be deployed to cross connect up to 8 radios allowing communication between numerous departments. Upon arriving at the emergency scene, each department on site connects one of their portable radios to a radio port on the back of the VIPER-8. Because all communications between radio channels is accomplished through the included Ethernet Hub, it is also possible to centrally monitor all communications with one or more dispatchers from within the site command post. Dispatch control of all of the VIPER-8 channels can be accomplished by connecting a C-6200, IP-1616 or C-Soft console.

Crosspatches can be handled in either of two ways. The IP-223, which is the radio interface unit, has an internal crosspatch capability that can connect up to 6 channels together. A field supervisor controls the crosspatch remotely by entering a DTMF sequence corresponding to a particular radio or radios. A DTMF PIN can be included in the sequence. The preferred method is to use a dispatch consoles to create and knock-down the crosspatch.

Additional VIPER-8 units can be added to the emergency deployment by simply connecting a Ethernet cable between the hubs of multiple VIPER-8s. This gives the ultimate in flexibility in that several units can be combined to handle larger emergency sites.

The VIPER-8 can be purchased in a more feature rich package, which comes in an 8U case and includes built in mobile radios, PC, speakers and WIFI Access Point. The VIPER variants can include complete customization. See your area Rep for details or contact the factory directly.

Radio specific cables are available for most popular radios. A generic 6 pin circular plug is used to connect the radio to the rear of each IP-223. The DB25 to 6 pin circular plug is pre-attached to the DB-25 radio connectors on the back of each IP-223. With the automatic gain control circuitry of the IP-223, crystal-clear audio can be setup with a minimum of adjustment.

The VIPER-8 provides the following features:

- Hardware and software gain control
- Local handset port for monitoring activity and transmission back to base or to radio
- Front panel test points and level set potentiometers
- Automatic Gain Control
- RX Audio Squelch
- Crosspatch capability
- ANI Over the Air - Decode and Display

1.1 Accessories

The VIPER-8 can be ordered with several optional accessories.

VIPER-8 interconnecting cable assemblies are available for the following handheld radios, contact factory for radios not listed

Com-Net Ericsson	Part number
MRK, Prism	400100139
KPC	400100143
LPE	400100154
Jaguar	400100160
Kenwood	
TK220, 320, 240, 248, 250,350, 260, 360, 270, TH91A, AT, E, TH25A	400100043

TK280, 380, 290, 480, 481	400100150
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King

LPX, LPU, LPH, 3142A, LMH, EPU, EPH	400100093
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ICOM

F3/F4	400100144
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F30GS/F40GS	400100156
-------------	-----------

A3	400100148
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F11/F21/F3GS/F4GS	400100159
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Motorola

HT600, MT300, MT1000,P200, MTX800, MTX9000	400100063
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SABRE, MX1000, ASTRO	400100069
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GP300, GTX, P110, HT1225, P1225, SP50, GP1250, LTS2000	400100130
--	-----------

HT1000, MT2000, MTS2000, MTX838, MTX2000, MTX8000, MTX9000, XTX3000, GP1200, JT1000	400100135
--	-----------

HT750, 1250	400100152
-------------	-----------

EX500	400100162
-------	-----------

Vertex-Standard-Yaesu

VX210	400100155
-------	-----------

VX800	400100153
-------	-----------

Other Cable Types

SINGARS	400100161
---------	-----------

6-Pin Quick Connect cable	400100163
---------------------------	-----------

Extension cables for extending the location of the radio away from the unit.

50ft Extension	650374-1
----------------	----------

100ft Extension	650374-2
-----------------	----------

200ft Extension	650374-3
-----------------	----------

Un-Terminated Cables

6 ft coiled cable with flying ends one side	400100100
---	-----------

15 ft coiled cable with flying ends one side	400100099
--	-----------

Other

Alignment Handset, Black	2490248
--------------------------	---------

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2 VIPER-8 Front Panel View



Figure 1 VIPER-8 Front View

2.1 VIPER-8 IP223 Default Configurations

Please refer to the IP223 Technical Manual for specific IP223 information. This includes:

- 1 IP223 Front Panel Alignment
- 2 IP223 Handset Interface
- 3 IP223 I/O and DISPLAY
- 4 IP223 RX/TX Gain Controls
- 5 IP223 Crosspatch Setup

2.1.1 Default IP and Multicast Setup

Channel Number:	Enable via Ethernet:	Multicast Address:	RX Port:	Multicast Address:	TX Port:	Channel Hops:
1	☒	225.8.11.81	1054	225.8.11.81	1072	6
2	☒	225.8.11.81	1055	225.8.11.81	1073	6

Figure 2 Multicast Setup screen

IP223 Location	"A" Top Left	"B" Top Right	"C" Bottom Left	"D" Bottom Right
Static Address	10.6.100.224	10.6.100.225	10.6.100.226	10.6.100.227
Multicast	224.8.11.81	224.8.11.81	224.8.11.81	224.8.11.81
Ch 1 Port(Rx:Tx)	1054 : 1072	1056 : 1074	1058 : 1076	1060 : 1078
Ch 2 Port(Rx:Tx)	1055 : 1073	1057 : 1075	1059 : 1077	1061 : 1079

Default Gateway and Subnet Mask for all the IP223's are:

Gateway: 10.6.0.1
Subnet: 255.255.0.0

2.1.2 Default Per Line Setups

Each IP223 is set in Local mode with no serial control. Radio Rx level control is generally controlled at the handheld connected to the VIPER-8. RX AGC is helpful in getting a stable level from the Radio. Normally, a radio volume control setting of Half is adequate.

Refer to Figure 3 for the default settings. For further options, see the Per Line Setup Parameters of the IP223 Manual.

OPTIONS:	☐ Supervisor	☐ Cross Mute	☐ Full Duplex	☒ RxAGC
	☐ Hi-Pass RX	☐ Pre-Emphasize TX	☐ TX Monitor	☐ 2 Wire
LAM Level:	-20 dB	LAM Time: 2 sec	☒ Fleetsync ANI	☒ 2400 baud
CTCSS Mode:	☐ Always On	☒ On with PTT	☒ MDC ANI	☒ MDC 2400 baud
COR:	☐ COR Active	☐ COR Active High		
TX Delay:	0 ms	RX Delay: 80 ms	Squelch Tail Delay:	0 ms

Figure 3 Default Per Line Settings

2.1.3 Default Jumper Settings

Each IP223 is configured in Single Ended Mode. This results in a single Rx, Tx and Ground connection. With PTT Relay for radio control.

Radio #1:

A Position J3, J9, J11, J16 and J21
 B Position J13, J17, J22, J33 and J34
 Center Position J14
 Soldered close R377

Radio #2

J19, J20, J25, J28 and J29
 J5, J6, J10, J15 and J27
 J24
 R381

3 Rear Panel Connections



Figure 4 IP223 Rear View

3.1 Ethernet Connection

There are two Bulk Head Ethernet connectors on the rear panel. These are used to daisy chain the VIPER-8 chassis and/or simply to connect an IP based console to the unit.

3.2 Power Connection

The VIPER-8 power entry module requires a standard power cord. As shown on Figure 4, 110-120v AC 5 Amps is required. For units that may ship overseas, the power requirement will be 110-240 volts. This will be based on the customer requirements. DC power entry is also available.

4 Installation and Level Settings

4.1 Radio Connectors

As seen in Figure 4, the Rear panel has two rows of Hirose connectors that connect to our standard 400100 cable assemblies. Please refer to Section 1.1 for a complete list of the cable assemblies.

4.2 Setting levels

After the radio is connected properly to the Rear Panel the levels can be tested. The IP223's are aligned and configured at the factory. However, based on the customer radio, some adjustment may be required. A handset (PN 2490248) or a VEGA IP based dispatch console will be require to monitor the flow of audio.

To adjust the levels to the radio, follow these steps:

RX Alignment:

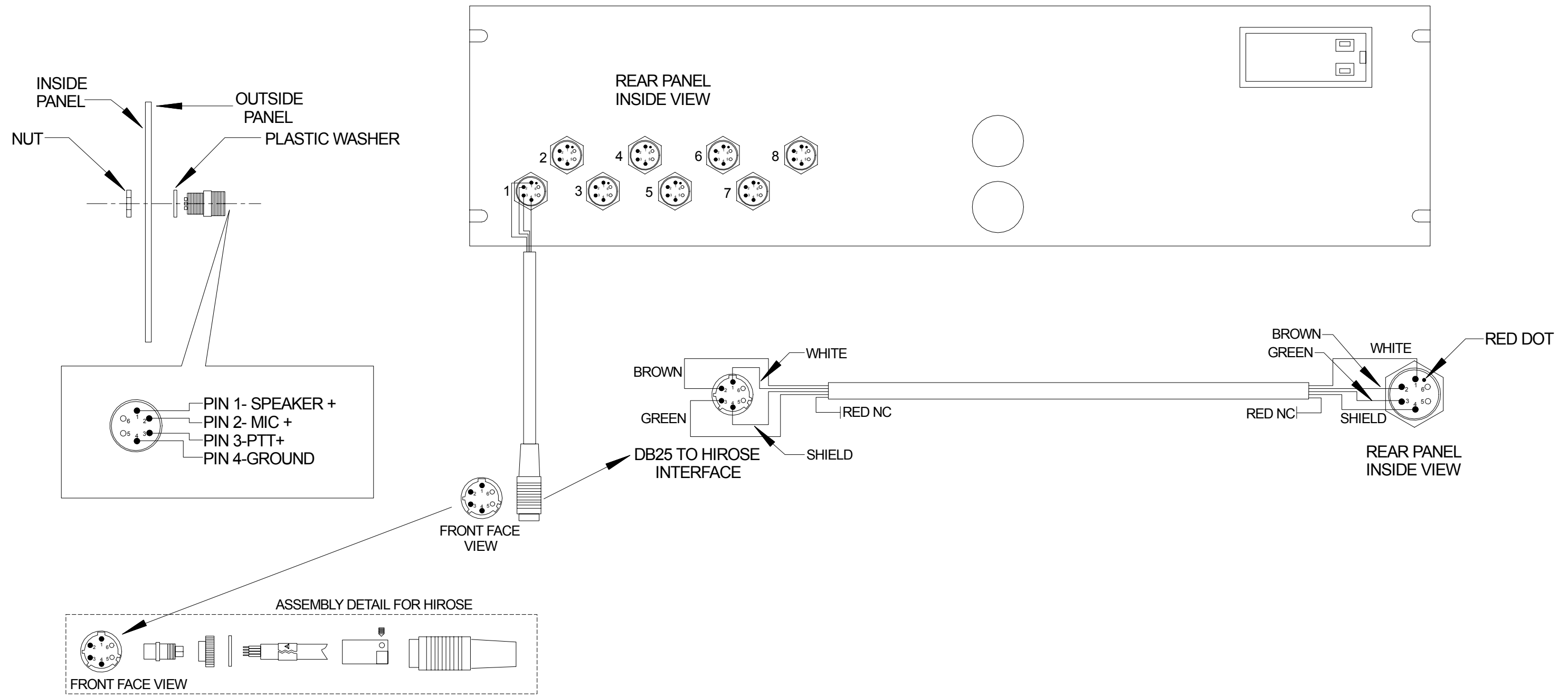
- 1 Make sure you've connected the radio adapter cable to the Rear panel radio port associated with the IP223 you will be monitoring. For Example:
 - a. Unit A, Line 1 = Rear Panel Radio 1.
 - b. Unit C, Line 2 = Rear Panel Radio 6
- 2 Transmit to the Radio connected to the Rear Panel. RX Fx should appear on the IP223 display associated with that Rear Panel port.
 - a. On the console, the level of the audio can be replayed to indicate if the level needs adjusting.
 - b. From the front panel, the RX VU meter can be displayed. By pressing and holding the LINE button, then pressing the IC button three times, the VU meter function can be displayed. Here the inbound level can be seen. 3-5 bars is usually adequate.
 - c. If a handset is used, the level can be set audibly.
- 3 To change the level of RX, the volume control for the radio will need to be adjusted. If the level is fixed, then the software gains controls can be employed. Please refer to the General Gain Setup Page in the IP223 manual.

TX Alignment:

- 1 From the Handset or Console, transmit on the radio of interest. The alignment is done by a service monitor or simply determining the audible level at the far end.
- 2 On the front panel of the IP223 there are TX adjustment pots. Refer to the Radio you are aligning and adjust the TX POT through the face plate of the IP223, until the desired level is achieved.

Once the general hardware levels are set, any of the software gain settings can be modified. It is standard practice to leave the software gains settings at default, align as shown above. Then, if necessary, the audio levels can be changed remotely via the software settings.

5 Schematics and Parts Lists

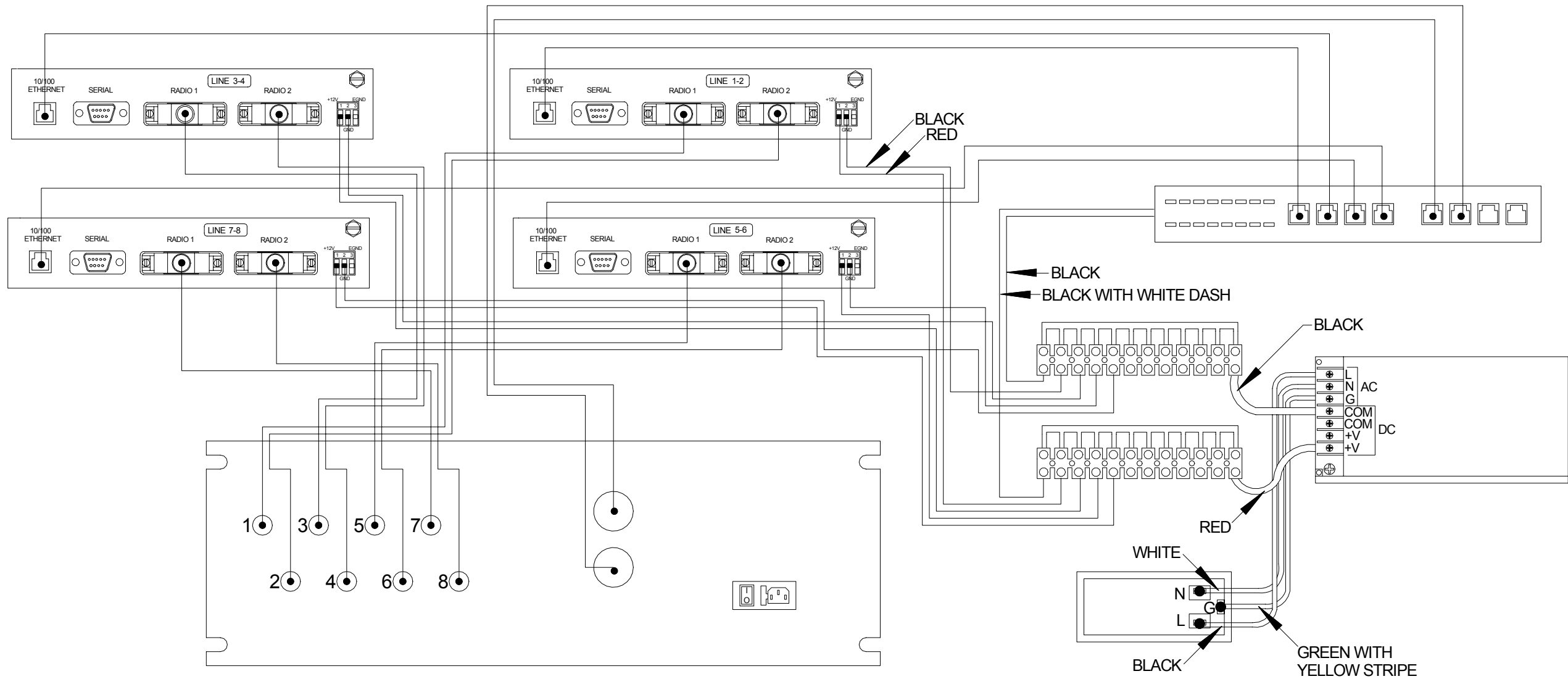


NOTE:

ASSEMBLY, V.I.P.E.R.
CONNECTOR PANEL

This drawing, written description or specification represents a proprietary product of TELEX Lincoln, NE., and shall not be released, disclosed, nor duplicated without the written permission of TELEX

REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD



NOTE:

QTY		DESCRIPTION		ITEM	PART NO.	SPECIFICATION		
		UNSPECIFIED LIMITS OF TOLERANCE DECIMAL: FRACTION: ±1/4 .X = ±.050 IN. MACHINED .XX = ±.030 IN. FINISH: 64 ✓ .XXX = ±.010 IN. ANGLES ±1°, BENDS ±2° STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN. CONCENTRICITY .010 TIR UNMARKED ANGLES, BENDS AND INTERSECTIONS 90° THREADS- EXT. CLASS 2A INT. CLASS 2B		DATE		TELEX TELEX COMMUNICATIONS INC. Lincoln Nebraska U.S.A.		
				DR BY	jjs			
				CHK BY				
				APPD.		TITLE VIPER 8 WIRING		
				PROD.				
				MATERIAL:				
						SIZE	CODE IDENT	DWG. NO.
						B	57010	LN
NEXT ASSY.	USED ON					SCALE:		SHEET: 1 OF 1
APPLICATIONS								

6 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, Inc. manufactured 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: (402) 465-7026 / (800) 752-7560 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'd 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**

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

7 VIPER-8 Specifications

See individual spec sheets for information on the specific product specs. Product overviews are available for C-Soft, C-6200, IP-1616, and the IP-223.

Operating Temperature Range: 0 to 70°C for full specifications

Power Requirements: 110-120v AC 5 Amps.

Ethernet Speed: 10 BaseT or 100 BaseTX, 8 port auto-switching hub included. External port are available on the rear panel for daisy chain configurations.

Frequency Response: ± 1.5 dB, 300 to 3000 Hz

Audio Distortion: 2% THD maximum

VIPER-8 Size: 20" W, 19.25" D, by 12" H (Approx. 90lb)

Available Product Part Numbers:

VIPER-8: 8 Line version of VIPER, includes 4 IP-223s, 2U drawer, 8 port hub, power supplies, all mounting hardware included.

C-6200-18, 18 line VoIP console

IP-1616, 8 Line VoIP console

C-SOFT-12, 18, 50, or 100 line Windows Based PC console. Requires customer provided PC.

Radio Cables are available for most popular radios. See the website for a current listing.

Specifications are subject to change without notice

TELEX Communications, Inc.

Vega Signaling Products

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