TELEX®
VEGA SIGNALING PRODUCTS

VIPER-MCU

Vega Interoperability Portable Emergency Response Unit

Technical Manual

December 2005 **P.N. 804116**

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1 General

The VIPER-MCU (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, a 2 unit high drawer for storage of the Command Console Laptop, 2 unit mobile radio installation tray and the general electronics tray. The unit also comes with select and unselect speakers built in. 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-MCU 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-MCU. 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-MCU channels can be accomplished by connecting a C-6200, IP-1616 or C-Soft console(included with Laptop).

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-MCU units can be added to the emergency deployment by simply connecting a Ethernet cable between the hubs of multiple VIPER-MCU's. This gives the ultimate in flexibility in that several units can be combined to handle larger emergency sites. A wireless access point can also be installed upon request.

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-MCU provides the following features:

CSoft Dispatch Console/Laptop included
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
Select and Unselect Speakers

1.1 Accessories

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

VIPER-MCU 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
King	
LPX, LPU, LPH, 3142A, LMH, EPU, EPH	400100093
ICOM	
F3/F4	400100144
F30GS/F40GS	400100156
A3	400100148
F11/F21/F3GS/F4GS	400100159
Motorola	
HT600, MT300, MT1000,P200, MTX800, MTX9000	400100063
SABRE, MX1000, ASTRO	400100069
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	
SINCGARS	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
Network Recorder	301699012
Wireless Access Point	
Customer Preferred Mobile Radios	

Figure 1 VIPER-MCU Front View

2 VIPER-MCU 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
6. IP223 Serial Radio control (Kenwood, Sepura, iDen, EFJohnson..etc.)

2.1 Default IP and Multicast Setup

Multicast Port Number Setup

Channel Number:	Enable via Ethernet:	Channel Type:	Channel Name:	Multicast Address:	RX Port:	Multicast Address:	TX Port:	TX Group Port:	Channel Hops:
1	☑	Local Mode	Channel 1	225.8.11.81	1054	225.8.11.81	1072	0	6
2	☑	Local Mode	Channel 2	225.8.11.81	1055	225.8.11.81	1073	0	6
Tape 1	☐	Tape Channel 1	Tape 1	225.8.11.81	2250				6
Tape 2	☐	Tape Channel 2	Tape 2	225.8.11.81	2251				6
Phone	☐	Ring Signal	Ring	225.8.11.81	2052				6

Submit

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

2.2 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-MCU. RX AGC is helpful in getting a stable level from the Radio. Normally, a portable 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.

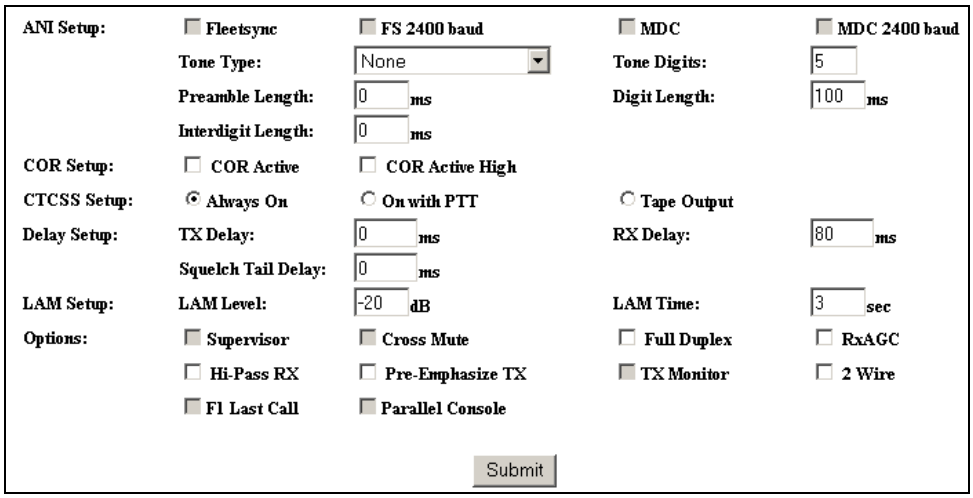


Figure 3 Default Per Line Settings

2.3 Default Jumper Settings

Each IP223 is generally configured in Single Ended Mode, depending on the radio interface. This results in a single Rx, Tx and Ground connection. With PTT Relay for radio control. This may vary for installed mobile radios.

Line 1	Jumper setting	Line 2
J33, J34	**"B"=4-wire**	J5, J6
J16, J21	**"A"=Single Ended**	J19, J20
J14	**"Hanging on center pin"= 10K Ohm**	J24
J3, J9, J11	**"A"=Single Ended**	J25, J28, J29
J13	**"B" High**	J27
J17, J22	**"B"= 600 ohms**	J10, J15
J35	**"A" = RS232 serial data**	J26
R377	**Solder bridge the pads together**	R381

3 Rear Panel Connections

3.1 Ethernet Connection

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

3.2 Power Connection

The VIPER-MCU power entry module requires a standard power cord. The power requirements are 90-240VAC 50/60 Hz.

3.3 Radio Connectors

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. Note, if mobile radios are installed, external ports one and two are disconnected and used internally.

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:

Unit A, Line 1 = Rear Panel Radio 1 (NC if internal mobile installed)
Unit A, Line 2 = Rear Panel Radio 2 (NC if 2nd internal mobile installed)
Unit B, Line 1 = Rear Panel Radio 3
Unit B, Line 2 = Rear Panel Radio 4
Unit C, Line 1 = Rear Panel Radio 5
Unit C, Line 2 = Rear Panel Radio 6

4 VIPER-MCU Quick Start Guide

Please read through the items below. Many of the topic will be completed at the factory, but some are required for "out of the box" operation.

4.1 Quick Start Questions:

- Do you have the CSoft and IP223 Operators Manual available?
  - If not, you can download it from www.vega-signaling.com.
- Are there Radios built into the VIPER?
  - Make sure the antenna cables or loads are attached.
- Are there Portable Radios connected to the rear of the unit?
  - Make sure the Radios are on.
  - Make sure the volume controls on the portables are set to half way. (or a level that provides good Rx audio)
- Is a PC being used?
  - The PC login password is "vega".
- Is C-Soft and Network Recorder being used?
  - Make sure the Parallel or USB dongles are plugged into the PC.
- Is a custom C-Soft Designer screen being used?
  - Make sure the custom .veg file is saved as C6200F_Default.veg.
  - Make sure the file is saved in the same directory as CSoftRuntime.exe

- Is a Wireless Access Point (WAP) being used?
    - Make sure the PC connects with the WAP.
    - If not, find the Ethernet cable bundled above the top drawer and connect the PC. Two additional Ethernet ports are on the rear.

4.2 Getting Started:

1. Both the VIPER and the PC should be powered on and connected as suggested in the Quick Start Questions.
2. Remove the headset from the equipment drawer and plug into PC speaker and microphone ports.
3. If used, the WAP connection Status and Signal Strength will be indicated in the Toolbar after Start-Up of PC.
4. Start C-Soft and verify that the screen displayed is the correct design.
5. Verify Operation by Turning on the Portables. Use Channel 1 on the Portable radio(s). Volume of Portables should be ½ way.
6. If a built in Mobile radio is selected for Tx testing, make sure C-Soft shows that radio on channel one (FREQ 1). This must correspond to the portables channel setting.
7. Using the C-Soft Console, place the mouse pointer on the Radio Channel of choice in the "PTT" box, and Key by Clicking the left button bar of the PC. Speak into the Headset Mic, and you will hear Transmit Audio from the Mobile in the VIPER to the appropriate Portable Radio. Verify Receive Audio by Keying the Portable Radio, and you should hear Receive Audio in the Right Ear of the Headset.
8. Remember, if the radio channel in C-Soft shows "SELECTED" in the green Select button, the audio will play in the left ear, otherwise the right.
9. The levels of the installed Mobile radios will be set at the factory, any portable radio connected will be volume dependent. If there are any level issues, make sure the steps are reviewed, then follow the more detailed alignment procedures below.

4.3 General Alignment:

The IP-223 has a TX Alignment tone and RX Alignment VU meter that can be access from the front panel of the unit. By pressing and holding the line button, then momentarily pressing the IC button twice, the 1Khz 0dB TX alignment tone will be generated on both lines. By pressing the IC button once more, the RX VU meters are displayed and a relative RX level can be seen.

4.4 Radio TX Level:

Radio 1 TX test points (TP2 & TP6) and Radio 2 TX test points (TP8 & TP9) located on the front panel of the IP223 provide a point to measure the actual value being placed into the radio or balanced TX line. The front panel accessible adjustment Radio 1 TX potentiometer (R47) and Radio 2 (R61) can be used to adjust these levels. To align TX, turn on the TX Alignment tone and adjusting the TX output to such that an undistorted tone is heard, or conduct a talk test where no syllables are clipped.

NOTE: IP-223 General Gain Setup output TX levels can also be adjusted if the portable radio side connector inputs are easily over-driven. This is symptomatic of TX cutting out when the operator starts talking. See Figure 4 below.

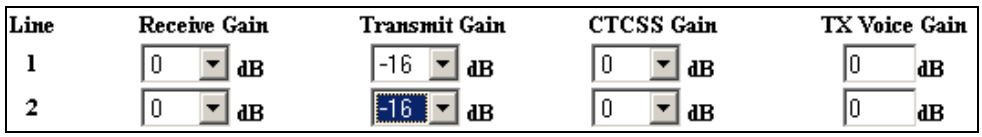


Figure 4 General Gain Setup - Transmit attenuation example

4.5 Radio RX Level:

RX levels are adjusted at the factory. If level adjustments are absolutely required, they can be adjusted in C-Soft, or in the IP-223 General Gain Setup Page.

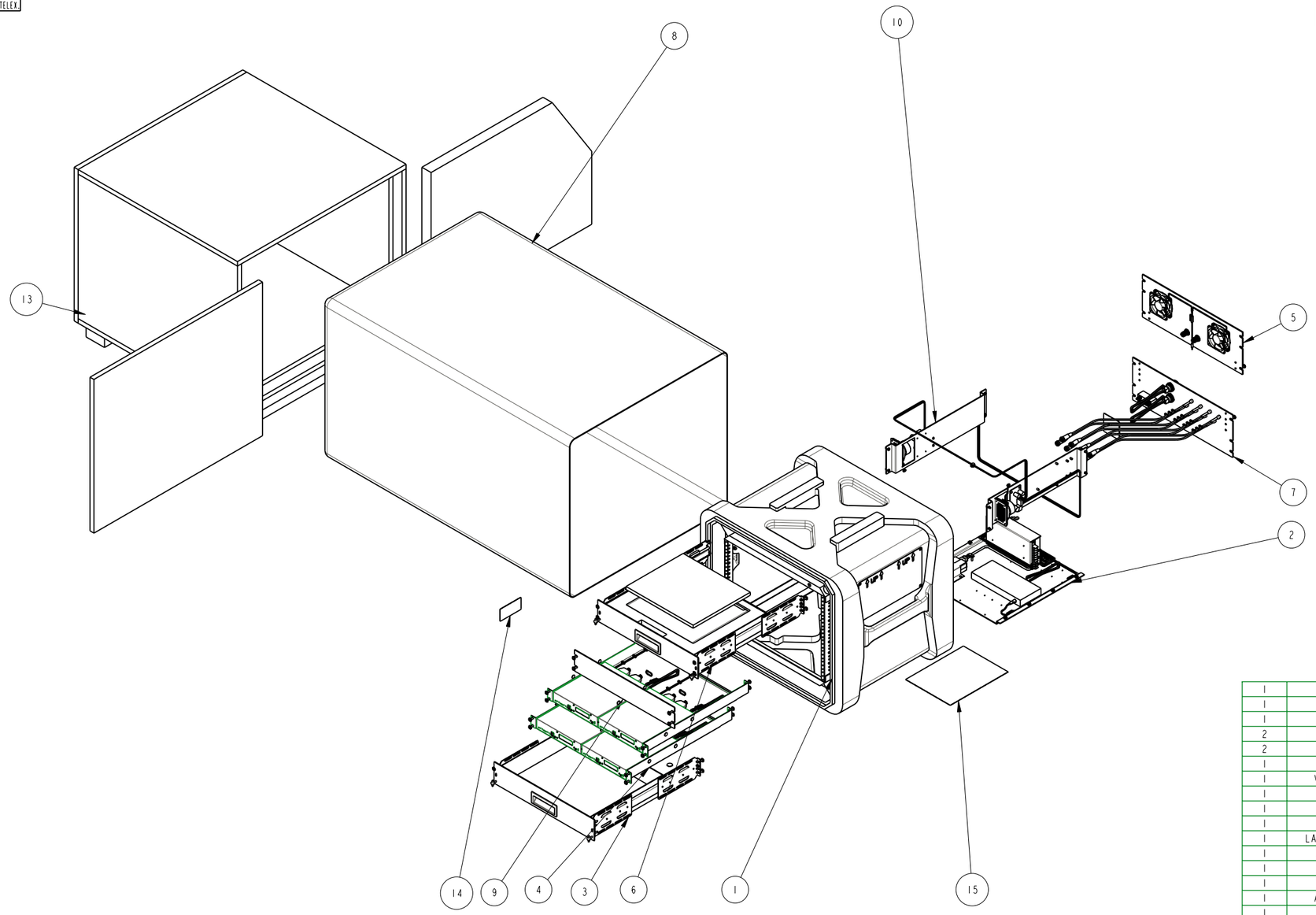
1 Transmit to the Radio connected to the Rear Panel. RX Fx should appear on the IP223 display associated with that Rear Panel port.
   a. On the console, the level of the audio can be replayed to indicate if the level needs adjusting.
   b. From the front panel, the RX VU meter can be displayed. By pressing 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.

2 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.

5 Schematics and Parts Lists

301713000

REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD
-	A	RELEASE FOR PRODUCTION	12/20/04	PBH
41-000159	B	804134 WAS 804116 MANUAL	3/3/05	KR
41-000172	C	VIPER MCU WAS VIPER II	4/4/05	KR
41-000223	D	CHANGE WIRING DETAIL ON SHEET 2	5/24/05	PBH
41-000252	E	576241005 WAS 910526	9/7/05	KH



QTY	DESCRIPTION	ITEM	PART NUMBER	SPECIFICATION
1	CD, VEGA PRODUCT INFORMATION	21	804134	
1	CABLE, RJ-45, CAT 5 7 FT	20	6750070	
1	SCREWDRIVER, TRIMMER	19	450367	
2	CAP SCREW, 10-32 X 5/8 LONG	18	50W096	
2	KNOB, #10 THUMB SCREW CAP	17	530068	
1	BAG, 10 X 12 POLY	16	450522	
1	VIPER II PACKING CHECK OFF LIST	15	804069-9	
1	LABEL, VIPER II BOX	14	804120	
1	WOOD CRATE, VIPER MCU	13	576241005	
1	LABEL, IP SERIAL NUMBER REF	12	804117	
1	LABEL, VIPER IDENTIFICATION NUMBER	11	804121	
1	ASSEMBLY, VIPER II SPEAKER SET	10	880067-1	
1	ASSEMBLY, OPEN RADIO TRAY	9	880066-1	
1	BAG, 30 X 26 X 60, 4 MIL POLY	8	920205	
1	ASSEMBLY, VIPER CONNECTOR PANEL	7	880069-1	
1	ASSEMBLY, COMPUTER DRAWER	6	880068-1	
1	ASSEMBLY, VIPER FAN PANEL	5	880070-1	
2	ASSEMBLY, VIPER DUAL IP-223 TRAY	4	880065-1	
1	ASSEMBLY, VIPER EQUIPMENT DRAWER	3	880064-1	
1	ASSEMBLY, STD VIPER II POWER SUPPLY	2	880063-1	
1	ASSEMBLY, STANDARD CASE	1	880062-1	

NOTES: UNLESS OTHERWISE SPECIFIED

1 CASE LIDS ARE NOT SHOWN IN DRAWING FOR CLEARITY

2 SEE SHEET 2 FOR WIRING

3 ITEMS 17 TO 21 ARE TO BE PLACED IN BAG (ITEM 16) AND TAPE INTO THE EQUIPMENT DRAWER

NEXT ASSY	USED ON
APPLICATIONS	

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
.X ± .030 IN
.XX ± .010 IN
.XXX ± .005 IN
MACHINED FINISH 64
ANGLES ± 1°, BENDS ±2°
STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
CONCENTRICITY
UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°
THREADS - EXT. CLASS 2A
INT. CLASS 2B

DATE	12/13/04
DR BY	S K LLOYD
CHK BY	PBH 12/20/04
APPR'D	PBH 12/20/04
PROD	KR 12/20/04
MAT'L	SEE TABLE

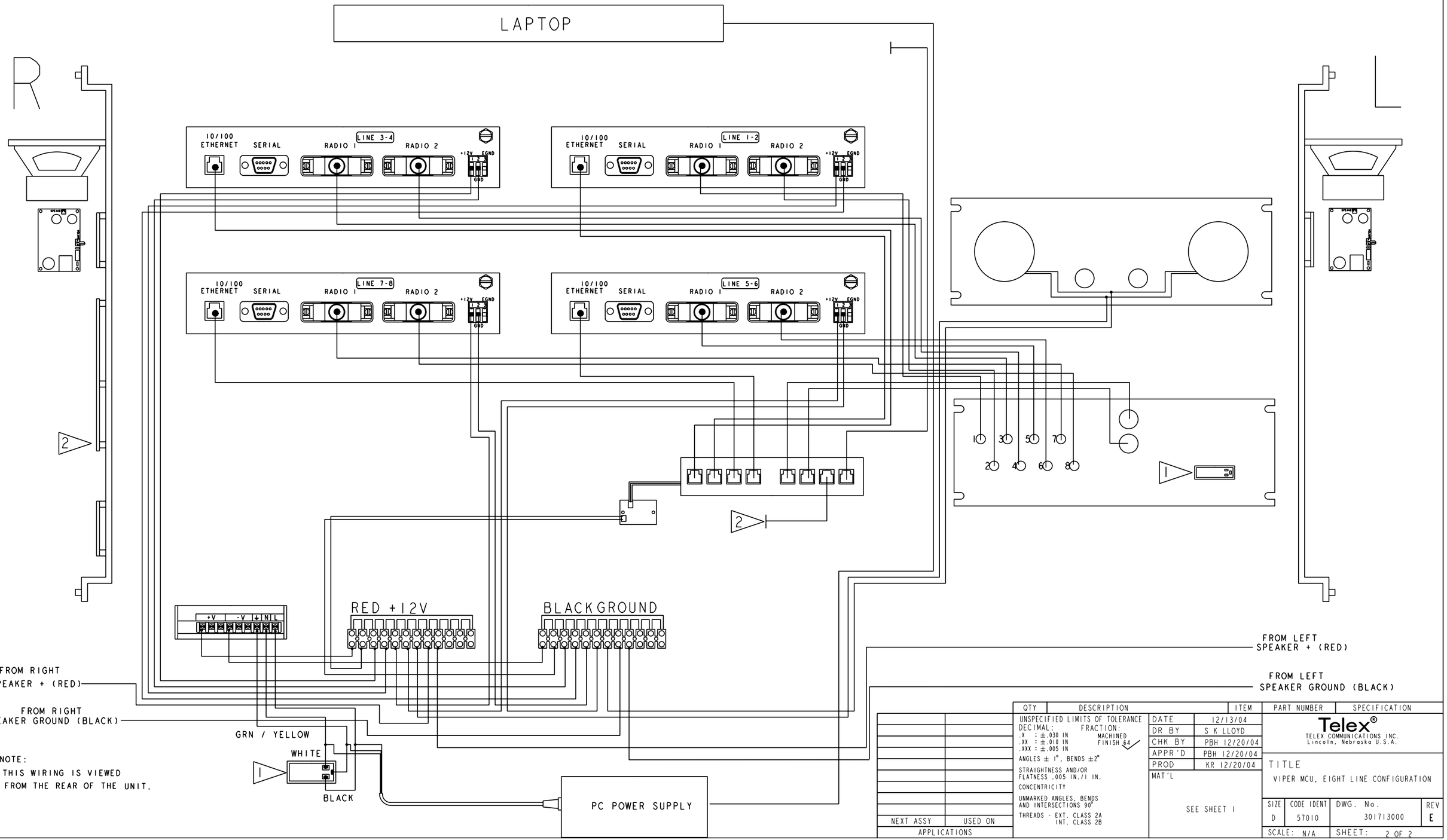
Telex®
TELEX COMMUNICATIONS INC.
Lincoln, Nebraska U.S.A.

TITLE
VIPER MCU, EIGHT LINE CONFIGURATION

SIZE	CODE IDENT	DWG. No.
D	57010	301713000
SCALE: N/A		SHEET: 1 OF 2

301713000

REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD
-	-	SEE SHEET 1	-	-



NEXT ASSY	USED ON
APPLICATIONS	

QTY	DESCRIPTION	ITEM	PART NUMBER	SPECIFICATION

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: .X = ±.030 IN, .XX = ±.010 IN, .XXX = ±.005 IN
FRACTION: MACHINED FINISH 64
ANGLES ± 1°, BENDS ±2°
STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
CONCENTRICITY
UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°
THREADS - EXT. CLASS 2A, INT. CLASS 2B

DATE	12/13/04
DR BY	S K LLOYD
CHK BY	PBH 12/20/04
APPR'D	PBH 12/20/04
PROD	KR 12/20/04
MAT'L	SEE SHEET 1

Telex®
TELEX COMMUNICATIONS INC.
Lincoln, Nebraska U.S.A.

TITLE
VIPER MCU, EIGHT LINE CONFIGURATION

SIZE	CODE IDENT	DWG. No.	REV
D	57010	301713000	E

SCALE: N/A SHEET: 2 OF 2

880062-1

REVISIONS				
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-	A	RELEASE FOR PRODUCTION	12/20/04	PBH
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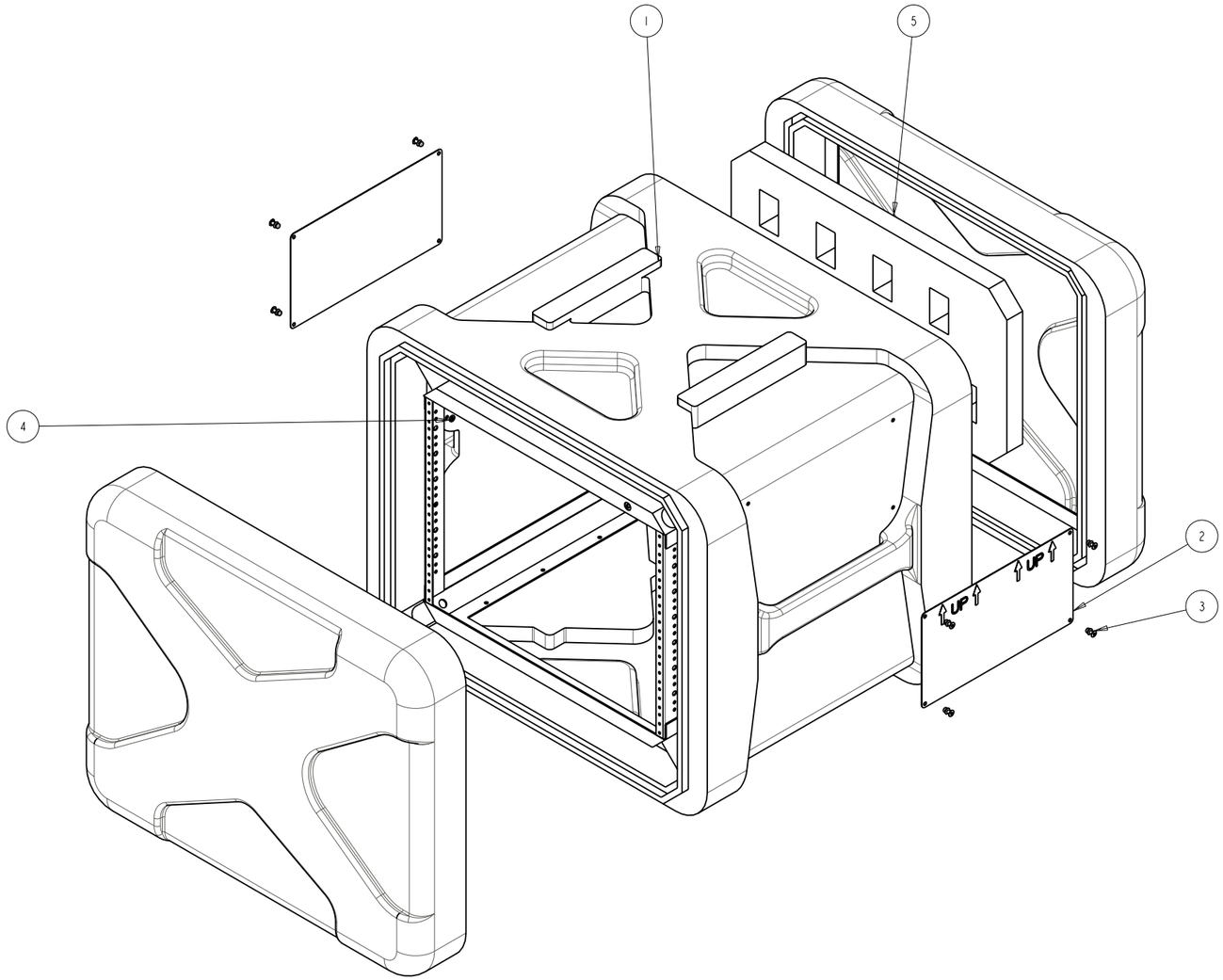
41-000214	C	ADDED 470386	5/10/05	KR



NOTES: UNLESS OTHERWISE SPECIFIED

1 USE 3M 3051 DOUBLE SIDE TAPE OR HOT MELT GLUE TO AFFIX FOAM INSERT INTO THE REAR LID PANEL

QTY	DESCRIPTION	ITEM	PART NUMBER	SPECIFICATION
1	INSERT, LID FOAM	5	470386	
8	WASHER, 3/8 RIVET BACKING	4	38801	
8	RIVET, 3/16D X 3/8 POP	3	20522	
2	VIPER II NAME PLATE, FINISHED	2	170306-1	
1	CASE, MODIFIDIED 8U SHOCK MOUNT	1	880076	

NEXT ASSY	USED ON
APPLICATIONS	

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
.X = ±.030 IN
.XX = ±.010 IN
.XXX = ±.005 IN
MACHINED FINISH 64

ANGLES ± 1°, BENDS ±2°

STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.

CONCENTRICITY

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°

THREADS - EXT. CLASS 2A
INT. CLASS 2B

DATE	10/21/04
DR BY	S K LLOYD
CHK BY	PBH 12/20/04
APPR'D	PBH 12/20/04
PROD	KR 12/20/04
MAT'L	SEE TABLE

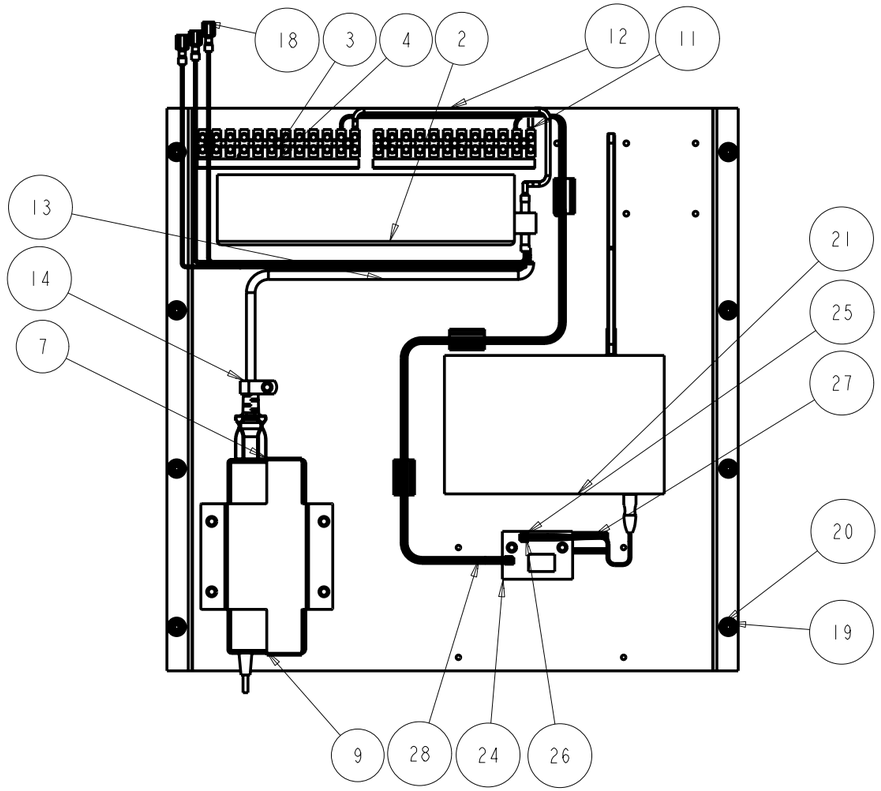
Telex®
TELEX COMMUNICATIONS INC.
Lincoln, Nebraska U.S.A.

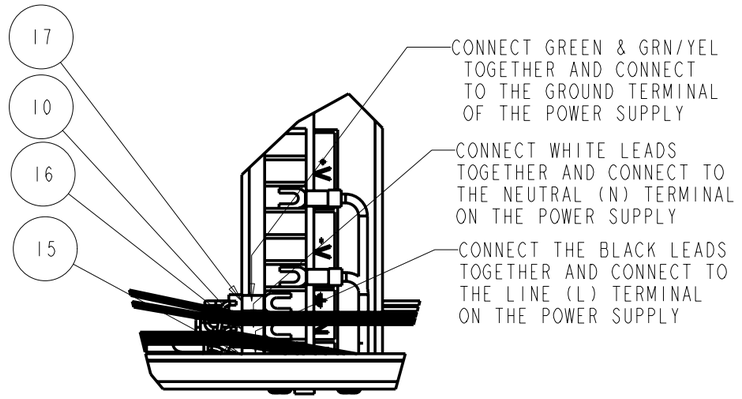
TITLE
ASSEMBLY, STANDARD CASE

SIZE	CODE IDENT	DWG. No.
D	57010	880062-1

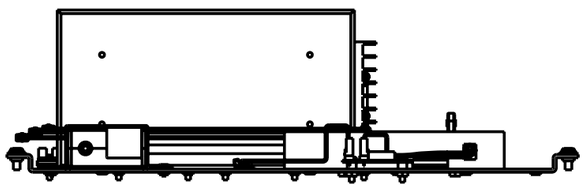
SCALE: 1/4X SHEET: 1 OF 1

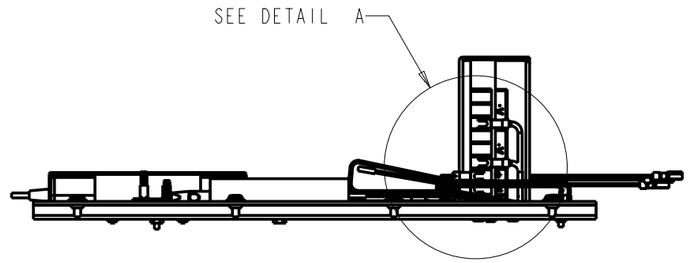
REVISIONS				
CHANGE #	REV	DESCRIPTION OF CHANGE	DATE	CHK BY
	A	ENGINEERING RELEASE FOR PRODUCTION	12/20/04	PBH
41-000209	B	SEE ECR FOR CHANGES	4/25/05	PBH





DETAIL A
SCALE 0.750





UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
.X = ±.030 IN
.XX = ±.010 IN
.XXX = ±.005 IN
MACHINED FINISH 64
ANGLES ± 1°, BENDS ±2°
STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
CONCENTRICITY
UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°
THREADS - EXT. CLASS 2A
INT. CLASS 2B

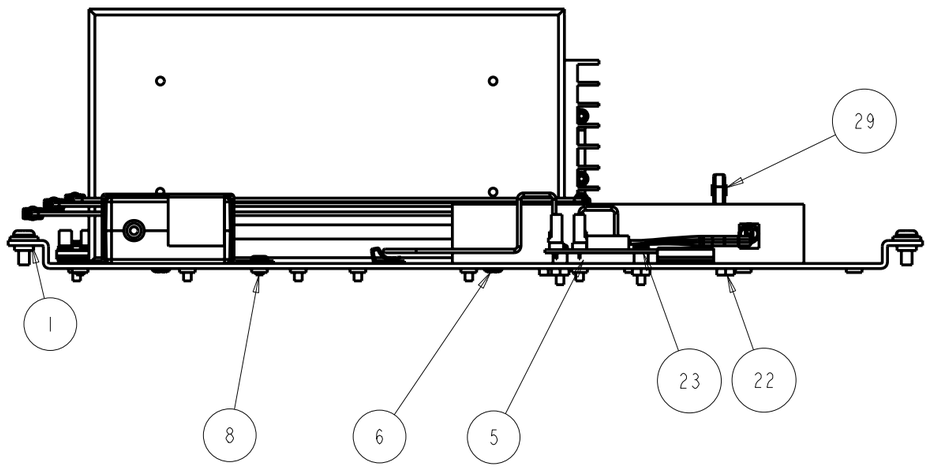
DR BY	JJS
CHK BY	SKL
APPR'D	PBH
PROD	KR

Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

TITLE
VIPER MCU POWER TRAY

MAT'L	SIZE	CODE IDENT	DWG. No.
SEE BOM TABLE ON SHEET 2	C	57010	880063-1
	SCALE: NONE		SHEET: 1 OF 2

REVISIONS				
CHANGE #	REV	DESCRIPTION OF CHANGE	DATE	CHK BY
41-000209	A	SEE SHEET 1	4/25/05	PBH



QTY	DESCRIPTION	ITEM	PART NUMBER	ADDITIONAL INFORMATION
1	CABLE, RJ-45, CAT 5 7 FT	29	6750070	
1.666	WIRE, RED/BLACK TWISTED PAIR	28	8800305404	
4	CLIP, FLAT CABLE GRAY ADHESIVE BACK	27	450715	
4	CONTACT, MOLEX	26	54460001	
2	CONNECTOR, 2 PIN KEYED MOLEX	25	52264002	
1	ASSEMBLY, PTN78000 PCB	24	880147	
2	SPACER #6 X 3/16 L	23	5610639	
4	NUT, #6-32 KEPS	22	5380076	
1	8 PORT FAST ETHERNET SWITCH	21	591665000	
8	SCREW, 10-32 X 1/2 PHMS	20	500113	
8	WASHER, #10 FLAT NYLON	19	560117	
3	FEMALE QUICK CONNECT .250	18	670074	
1.458	WIRE, 18 Ga GRN/YEL HOOL-UP	17	620188	
1.458	WIRE, 18 Ga WHITE HOOK-UP	16	499938105	
1.458	WIRE, 18 Ga BLACK HOOK-UP	15	499938110	
1	CLAMP 3/16 CABLE	14	5670348	
REF	MODIFIED COMPUTER POWER CORD	13	591688001	
0.967	WIRE, 12 Ga RED HOOK-UP	12	550247000	
0.450	WIRE, 12Ga BLACK HOOK-UP	11	550247001	
5	CONNECTOR, FORK	10	670212-2	
REF	MODIFIED COMPUTER POWER SUPPLY	9	591688001	
7	SCREW, 6-32 X 1/4" PH	8	5280022	
1	BRACKET, PC POWER SUPPLY FINISHED	7	170308-1	
4	SCREW, 4-M4 X 6 mm LONG	6	59000110	
8	SCREW, #6-32 X .625 PH	5	5280027	
2	TERMINAL TAB, JUMPER 12 POLE	4	543028001	
2	TERMINAL, PANEL MOUNT EUROSTRIP	3	543028000	
1	POWER SUPPLY, AC/DC 12VDC 25A	2	532087000	
1	BRACKET, POWER TRAY, FINISHED	1	170307-1	

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
.X = ±.030 IN
.XX = ±.010 IN
.XXX = ±.005 IN
MACHINED FINISH 64

ANGLES ± 1°, BENDS ±2°

STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.

CONCENTRICITY

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°

THREADS - EXT. CLASS 2A
INT. CLASS 2B

DR BY	JJS
CHK BY	SKL
APPR'D	PBH
PROD	KR

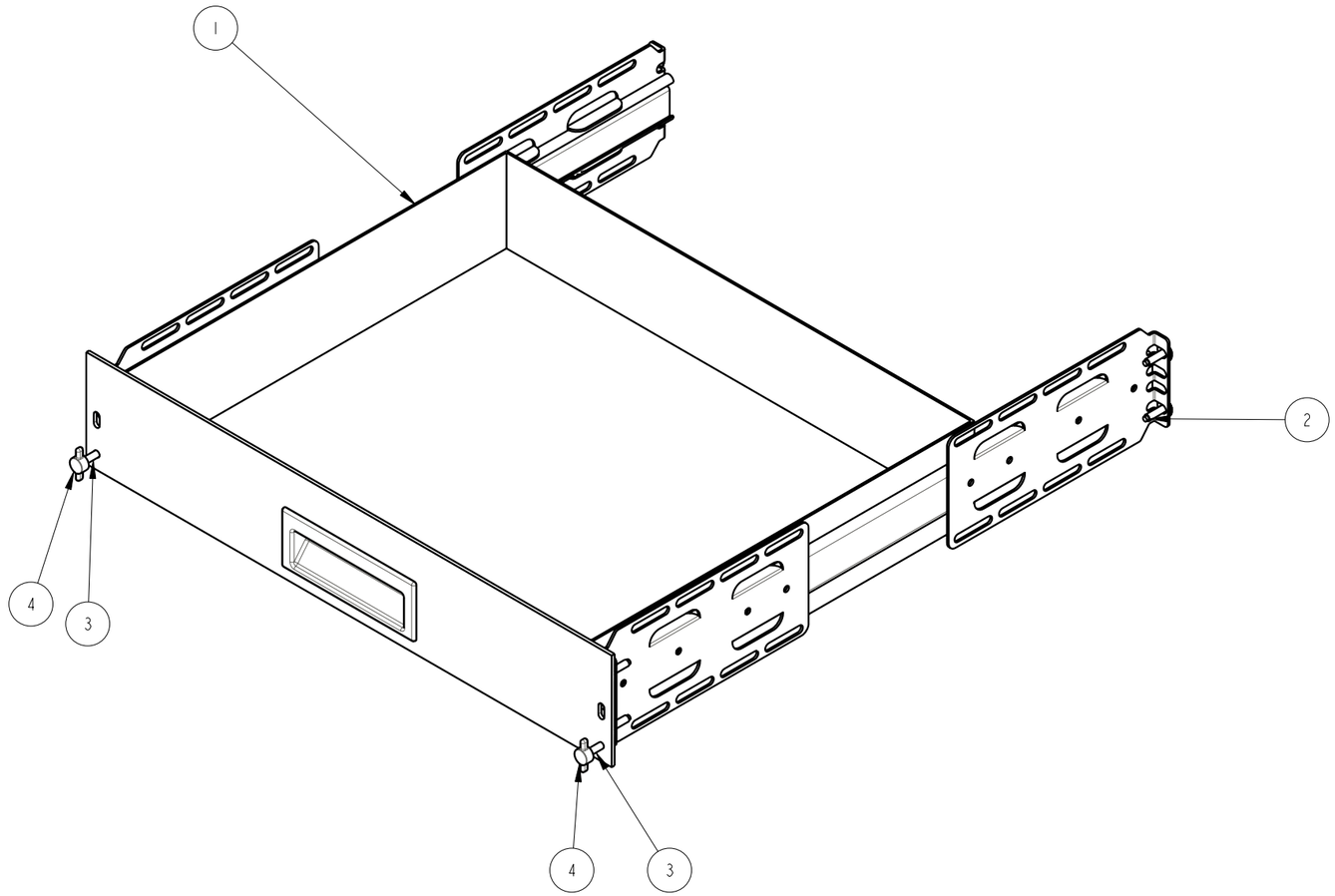
Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

TITLE

MAT'L	SIZE	CODE IDENT	DWG. No.
SEE BOM TABLE	C	57010	880063-1
	SCALE: NONE		SHEET: 2 OF 2

880064-1

REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD
41-000121	A	ENGINEERING RELEASE FOR PRODUCTION	11/24/04	PBH
41-000169	B	500335 WAS 500113 & 560117	3/21/05	KR



QTY	DESCRIPTION	ITEM	PART NUMBER	ADDITIONAL INFORMATION
2	KNOB, #10 THUMB SCREW CAP	4	530068	
2	CAP SCREW, 10-32 X 5/8 LONG	3	50W096	
8	SCREW, 10-32 X 3/4" BLACK RACK MOUNTING	2	500335	
1	ASSEMBLY, MODIFIED DRAWER	1	880080	

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
.X = ±.030 IN MACHINED
.XX = ±.010 IN FINISH 64
.XXX = ±.005 IN

STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
ANGLES ± 1°, BENDS ±2°

CONCENTRICITY

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°

THREADS - EXT. CLASS 2A
INT. CLASS 2B

DATE	10/25/04
DR BY	S K LLOYD
CHK BY	PBH 12/2/04
APPR'D	PBH 12/2/04
PROD	KR 12/2/04
MAT'L	SEE TABLE

Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

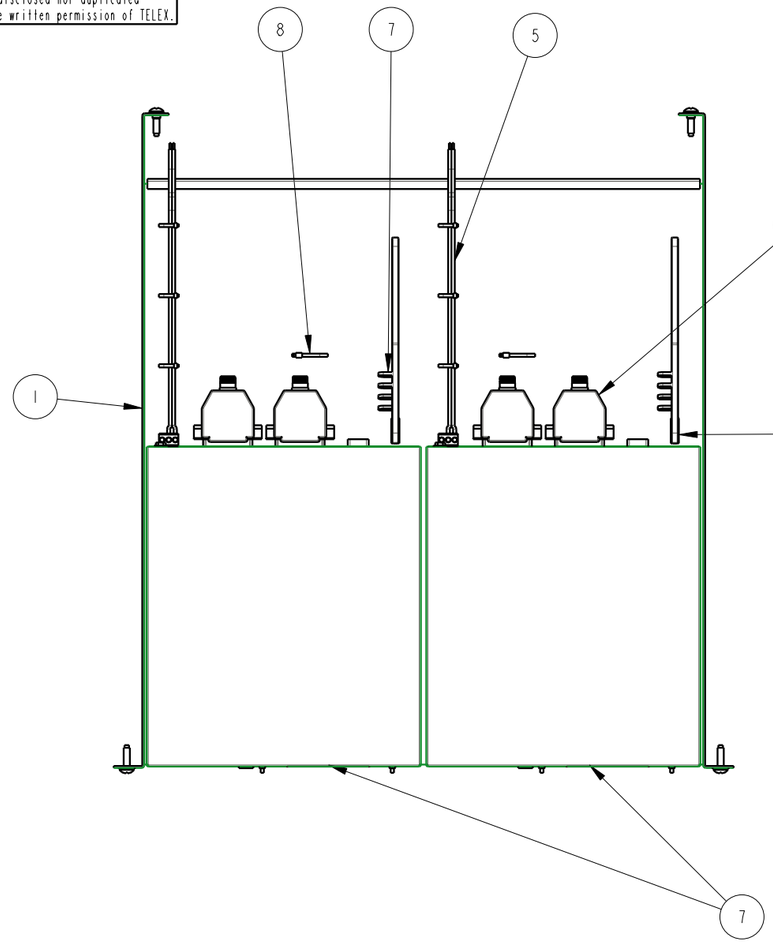
TITLE
ASSEMBLY, VIPER EQUIPMENT DRAWER

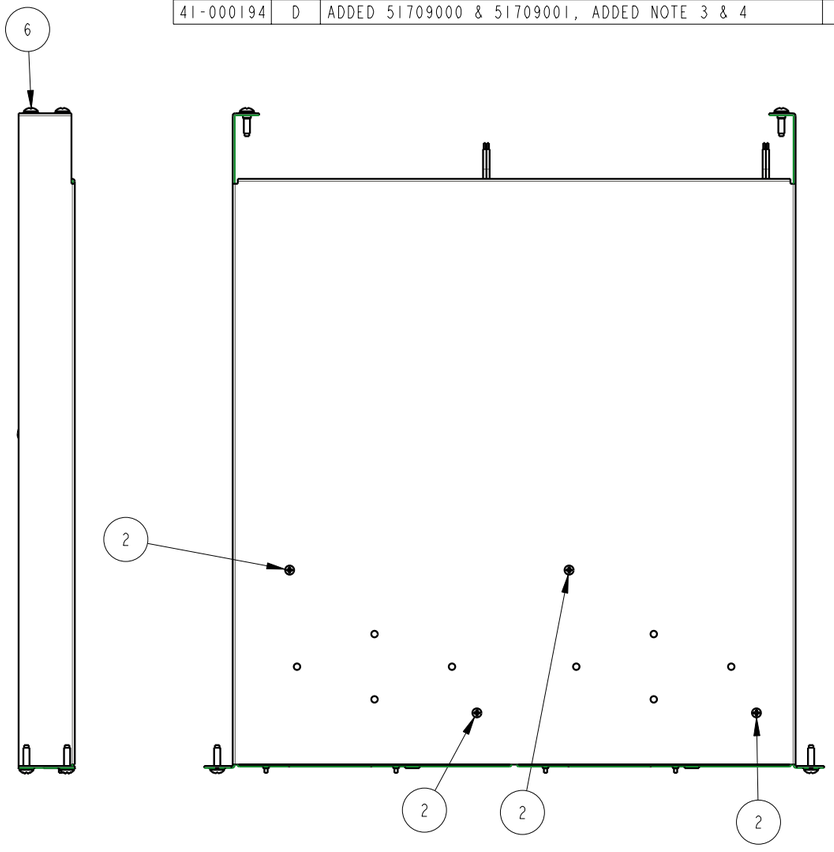
SIZE	CODE IDENT	DWG. No.
C	57010	880064-1

SCALE: 0.400 SHEET: 1 OF 1

880065-1

REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD
-	A	ENGINEERING RELEASE FOR PRODUCTION	11/24/04	PBH
41-000154	B	REMOVED 879661 ADDED 0101240 & NOTES	2/15/05	KR
41-000169	C	500335 WAS 500113 & 560117	3/18/05	KR
41-000194	D	ADDED 51709000 & 51709001, ADDED NOTE 3 & 4	4/5/05	BH





NOTES: UNLESS OTHERWISE SPECIFIED

1 RETURN ALL NEGITIVE QUANTITY ITEMS ON PICK LIST TO STOCK

2 SEE ORACLE FOR RETURN PARTS LIST.

3 USE 51709000 TIE WRAPS TO ROUTE & DRESS CABLES.

4 USE 51709001 TIE WRAP TO SECURE IP223 DISPLAY.

QTY	DESCRIPTION	ITEM	PART NUMBER	ADDITIONAL INFORMATION
2	IP-223 ETHERNET REMOTE PANEL	7	0101240	
2	TIE WRAP, LONG	8	51709001	
8	TIE WRAP	7	51709000	
8	SCREW, 10-32 X 3/4" BLACK RACK MOUNTING	6	500335	
2	IP-223 POWER CABLE	5	880079	
2	CABLE, CAT 5 PATCH 3 FT	4	6750070-1	
4	INTERFACE ADAPTOR ASSEMBLY, VIPER	3	650370	
4	SCREW, 6-32 X 1/4 FH	2	5270269	
1	PANEL, IP223/RADIO RACK TRAY FINISHED	1	378400-1	

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
.X = ±.030 IN
.XX = ±.010 IN
.XXX = ±.005 IN
MACHINED FINISH 64

STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
ANGLES ± 1°, BENDS ±2°

CONCENTRICITY

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°

THREADS - EXT. CLASS 2A
INT. CLASS 2B

DATE	10/25/04
DR BY	S K LLOYD
CHK BY	PBH 12/2/04
APPR'D	PBH 12/2/04
PROD	KR 12/2/04
MAT'L	SEE TABLE

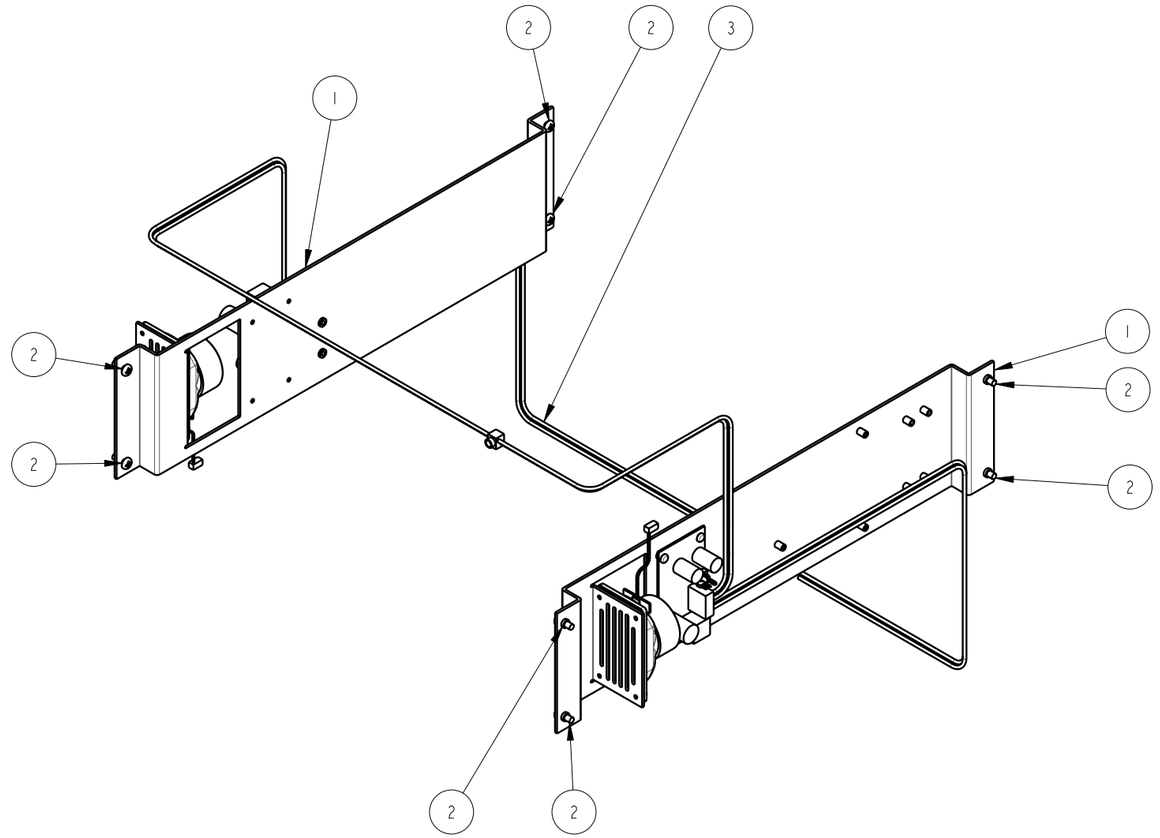
Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

TITLE
ASSEMBLY, VIPER DUAL IP-223 TRAY

SIZE	CODE IDENT	DWG. No.
C	57010	880065-1
SCALE: 0.333		SHEET: 1 OF 1

880067-1

REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD
-	A	ENGINEERING RELEASE FOR PRODUCTION	12/8/04	PBH



QTY	DESCRIPTION	ITEM	PART NUMBER	ADDITIONAL INFORMATION
1	CABLE, VIPER/PC VOLUME	3	880084	
8	SCREW, 10-32 X 1/2 PHMS	2	500113	
2	ASSEMBLY, VIPER SPEAKER	1	880081-1	

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
.X = ±.030 IN MACHINED
.XX = ±.010 IN FINISH 64
.XXX = ±.005 IN

STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
ANGLES ± 1°, BENDS ±2°

CONCENTRICITY

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°

THREADS - EXT. CLASS 2A
INT. CLASS 2B

DATE	10/28/04
DR BY	S K LLOYD
CHK BY	PBH 12/20/04
APPR'D	PBH 12/20/04
PROD	KR 12/20/04
MAT'L	SEE TABLE

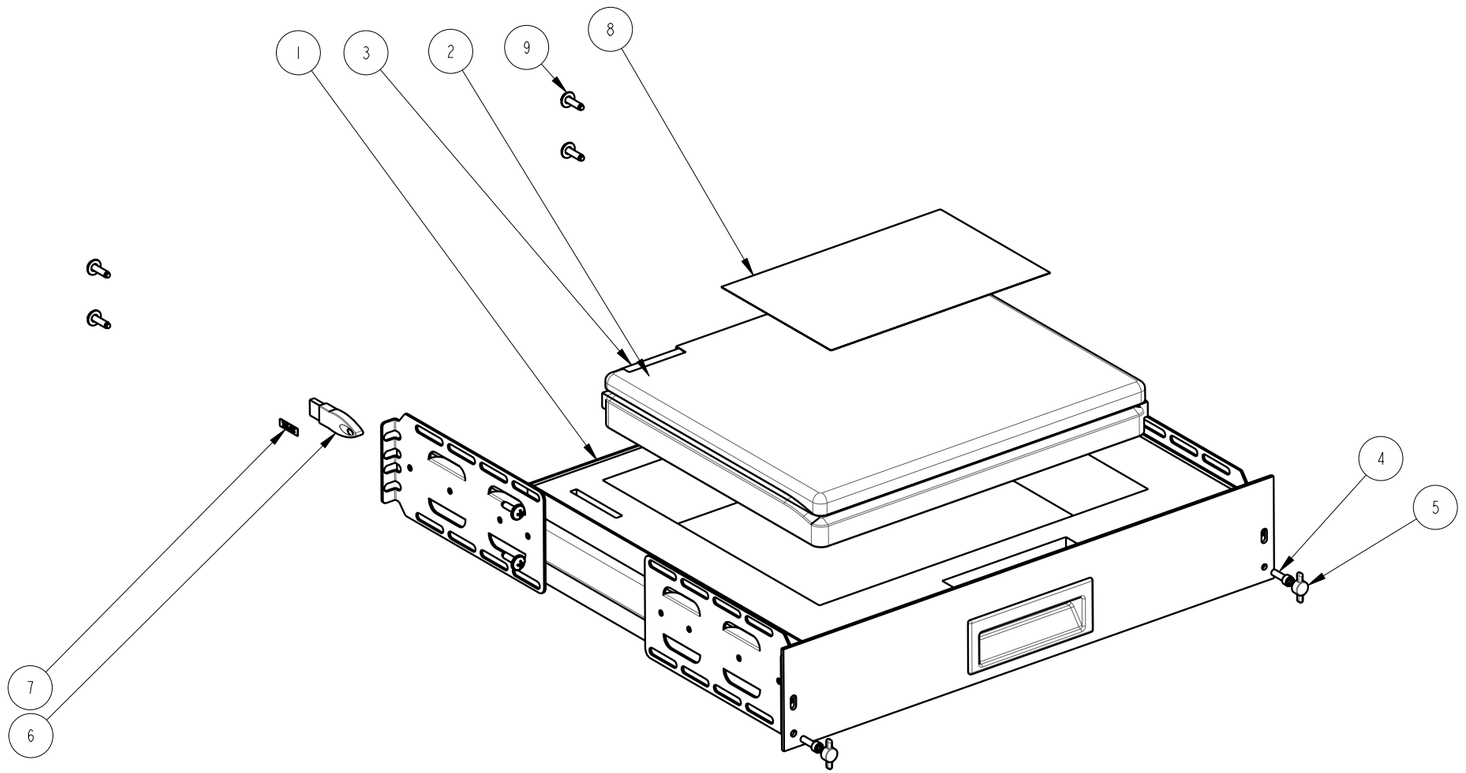
Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

TITLE
ASSEMLBY, VIPER II SPEAKER SET

SIZE	CODE IDENT	DWG. No.
C	57010	880067-1
SCALE: 0.333		SHEET: 1 OF 1

880068-1

REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD
-	A	ENGINEERING RELEASE FOR PRODUCTION	10/28/04	PBH
41-000169	B	500335 WAS 500113 & 560117	3/18/05	KR



NOTES: UNLESS OTHERWISE SPECIFIED

1 THE DRAWER LID IS NOT SHOWN IN THIS DRAWING.

2 TOP FOAM IS TO BE GLUED TO THE DRAWER LID SO AS TO FIT IN LOWER FOAM OPENNING

3 USE HOT MELT GLUE TO AFFIX FOAM

QTY	DESCRIPTION	ITEM	PART NUMBER	ADDITIONAL INFORMATION
8	SCREW, 10-32 X 3/4" BLACK RACK MOUNTING	9	500335	
1	DATA SHEET, SOFTWARE LICENSE LETTER	8	803915	
1	LABEL, TELEX	7	803629	
1	USB KEY	6	790017	
2	KNOB, #10 THUMB SCREW CAP	5	530068	
2	CAP SCREW, 10-32 X 5/8 LONG	4	50W096	
1	COMPUTER, LAPTOP	3	591688001	TO BE PROGRAMMED WITH C-SOFT 18 LINES
1	INSERT, COMPUTER DRAWER FOAM	2	920204	
1	ASSEMBLY, MODIFIED DRAWER	1	880080	

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: .X = ±.030 IN, .XX = ±.010 IN, .XXX = ±.005 IN
FRACTION: MACHINED FINISH 64

STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
ANGLES ± 1°, BENDS ±2°

CONCENTRICITY

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°

THREADS - EXT. CLASS 2A
INT. CLASS 2B

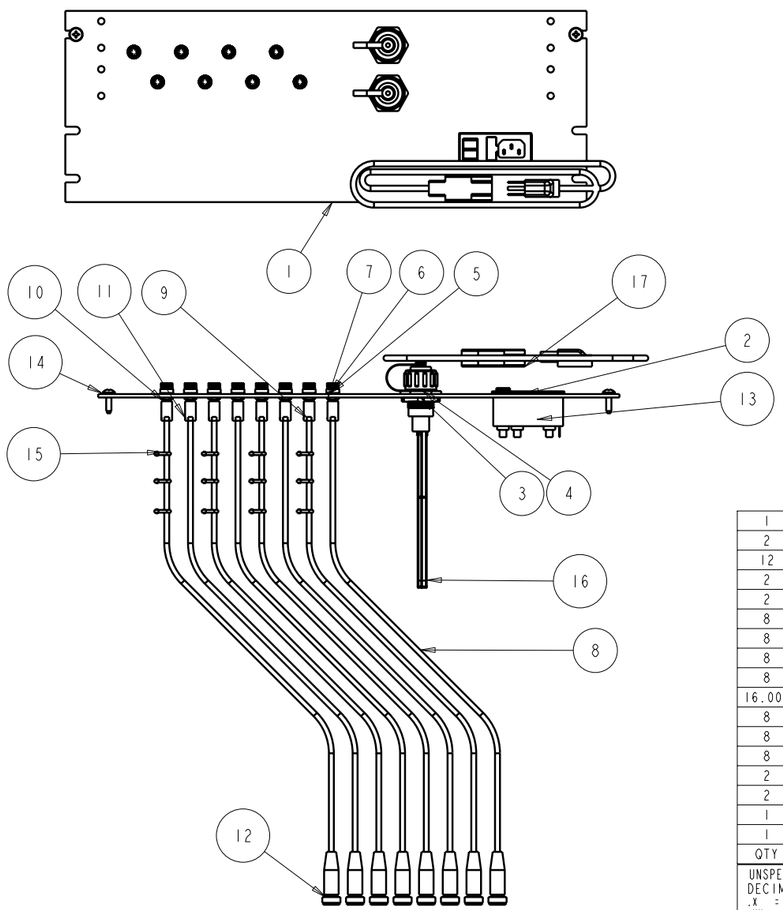
DATE	10/28/04
DR BY	S K LLOYD
CHK BY	PBH 12/20/04
APPR'D	PBH 12/20/04
PROD	KR 12/20/04
MAT'L	SEE TABLE

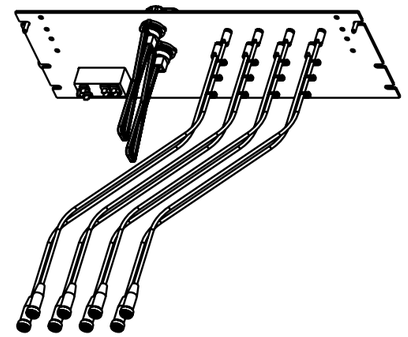
Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

TITLE
ASSEMBLY, COMPUTER DRAWER

SIZE	CODE IDENT	DWG. No.
C	57010	880068-1
SCALE: 0.333		SHEET: 1 OF 1

REVISIONS				
CHANGE #	REV	DESCRIPTION OF CHANGE	DATE	CHK BY
41-000121	A	ENGINEERING RELEASE FOR PRODUCTION	11/24/04	PBH
41-000169	B	500335 WAS 500113 & 560117	3/18/04	KR
41-000193	C	532012000 WAS 8800117313, ADDED 12 EA 51709000 & NOTES	4/4/05	KR
41-000222	D	591713000 WAS 59966000. DELETE HEATSHRINK WAS 411829.	5/12/05	PBH





SCALE 0.250

QTY	DESCRIPTION	ITEM	PART NUMBER	ADDITIONAL INFORMATION
1	POWER CORD, US DETACHABLE	17	550024013	
2	CABLE, CAT 5 PATCH 3 FT	16	6750070-1	
12	TIE WRAP	15	51709000	
2	SCREW, 10-32 X 3/4" BLACK RACK MOUNTING	14	500335	
2	FUSE, 6.3A SLO-BLO 5 X 20	13	536033	
8	6 PIN CONNECTOR, HIROSE	12	59965000	
8	SCREW, CONNECTOR	11	591713000	
8	BARREL, CONNECTOR	10	591713000	
8	CLAMP, CONNECTOR	9	591713000	
16.000	FUJIKURA CABLE	8	58401000	UNIT OF MEASURE IS FEET
8	NUT, CONNECTOR	7	591713000	
8	CONNECTOR SHELL	6	591713000	
8	WASHER, CONNECTOR	5	591713000	
2	DUST COVER, RJ-45 INLINE CAT 5 CONNECTOR	4	591683	
2	CONNECTOR, RJ-45 INLINE CAT 5 PANEL MOUNT	3	591682	
1	A/C ENTRY MODULE	2	532012000	
1	PANEL, VIPER CONNECTOR, FINISHED	1	170315-1	

NOTES: UNLESS OTHERWISE SPECIFIED

1. USE CABLE TIES TO ROUTE AND DRESS CABLES AS NEEDED

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
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.XX = ±.010 IN
.XXX = ±.005 IN
MACHINED FINISH 64
ANGLES ± 1°, BENDS ±2°
STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
CONCENTRICITY
UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°
THREADS - EXT. CLASS 2A
INT. CLASS 2B

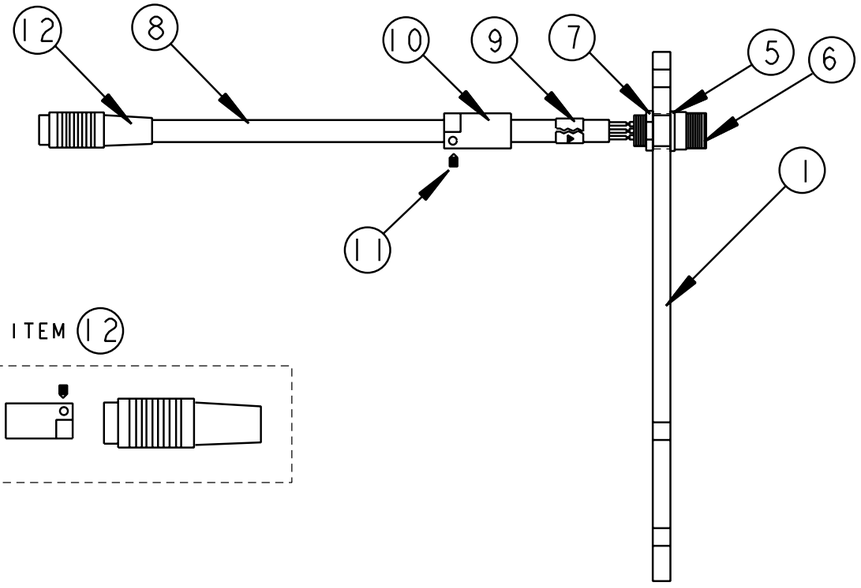
DR BY	JJS
CHK BY	SKL
APPR'D	PBH
PROD	KR

Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

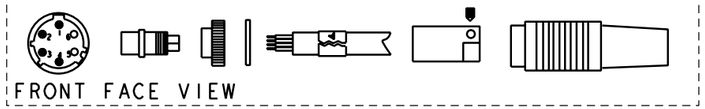
TITLE
ASSEMBLY, VIPER CONNECTOR PANEL

MAT'L	SIZE	CODE IDENT	DWG. No.
SEE BOM TABLE	C	57010	880069-1
	SCALE: NONE		SHEET: 1 OF 2

REVISIONS				
CHANGE #	REV	DESCRIPTION OF CHANGE	DATE	CHK BY
	A	ADD SHEET 2 , TO SHOW WIRING DETAIL OF CONNECTORS	5/12/05	PBH



ASSEMBLY DETAIL FOR ITEM (12)



FRONT FACE VIEW

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
.X = ±.030 IN
.XX = ±.010 IN
.XXX = ±.005 IN
MACHINED FINISH 64
ANGLES ± 1°, BENDS ±2°
STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.
CONCENTRICITY
UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°
THREADS - EXT. CLASS 2A
INT. CLASS 2B

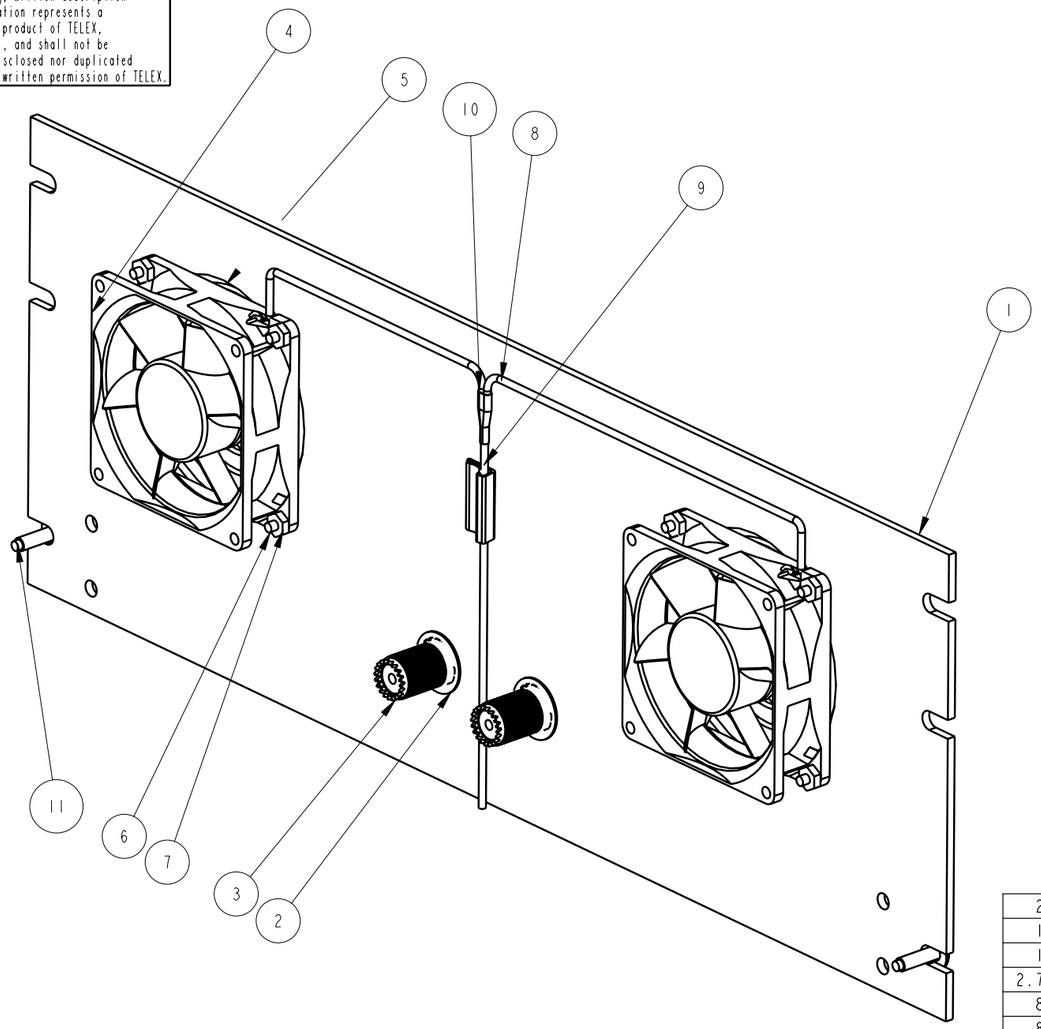
DR BY	JJS
CHK BY	SKL
APPR'D	PBH
PROD	KR

Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

TITLE
ASSEMBLY, VIPER CONNECTOR PANEL

MAT'L	SIZE	CODE IDENT	DWG. No.
SEE BOM TABLE	C	57010	880069-1
	SCALE: NONE		SHEET: 2 OF 2

880070-1



REVISIONS				
CHG NO	LTR	DESCRIPTION	DATE	APPD
	A	ENGINEERING RELEASE FOR PRODUCTION	12/8/04	PBH
41-000169	B	500335 WAS 500113 & 560117	3/18/05	KR
41-000223	C	DELETE PLUG, 2.5mm MONO P/N 35172000 . WAS ITEM 11	5/24/05	PBH

QTY	DESCRIPTION	ITEM	PART NUMBER	ADDITIONAL INFORMATION
2	SCREW, 10-32 X 3/4" BLACK RACK MOUNTING	11	500335	
1	HEAT SHRINK TUBING	10	25254000	
1	CLIP, FLAT CABLE GRAY ADHESIVE BACK	9	450715	
2.742	CABLE. FAN POWER	8	8800305404	
8	NUT, #6-32 KEPS	7	5380076	
8	SCREW, #6-32 X .625 PH	6	5280027	
2	SCREEN, FAN	5	358846	
2	FAN, 12V	4	740035	
2	UHF BULKHEAD ADAPTER, JACK-JACK	3	539223	INCLUDES NUTS
4		2	585025000	
1	PANEL, VIPER FAN	1	170314-1	

UNSPECIFIED LIMITS OF TOLERANCE
DECIMAL: FRACTION:
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.XXX = ±.005 IN

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ANGLES ± 1°, BENDS ±2°

CONCENTRICITY

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°

THREADS - EXT. CLASS 2A
INT. CLASS 2B

DATE	10/29/04
DR BY	S K LLOYD
CHK BY	PBH 12/20/04
APPR'D	PBH 12/20/04
PROD	KR 12/20/04
MAT'L	SEE TABLE

Telex®
TELEX COMMUNICATIONS INC.
Lincoln Nebraska U.S.A.

TITLE
ASSEMBLY, VIPER FAN PANEL

SIZE	CODE IDENT	DWG. No.
C	57010	880070-1
SCALE: 0.750		SHEET: 1 OF 1

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**

Technical Support:

email address: acttechsupport@us.telex.com phone #:1-800-898-6723

7 VIPER-MCU 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: 90-240 AC. Power requirement may significantly change based on the installation of mobile radios. Auxiliary power supplies(internal) may be required.

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-MCU Size: 24" W, 24" D, by 24" H (Approx. 150lb drawers empty)

Available Product Part Numbers:

VIPER-MCU: 8 Line version of VIPER, includes 4 IP-223s, 2x2U drawers, 8 port hub, power supplies, Laptop with CSoft and all mounting hardware. Internal Mobile radios not 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. Pre-installed on Laptop.

Network Recorder: Optional

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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E-mail: vega@telex.com, Web: www.vega-signaling.com