VEGA ®

TELEX ® Signaling Product Company

Technical Manual

DSP-223 Tone Remote Panel

to

Kenwood Series TK-x150/x180

Adaptor Kit

P/N 301896000

1. Description

The Kenwood TK-x150/x180 Series Adaptor Kit configures the DSP-223 for control of PTT, scan, monitor, channel change and FleetSync® applications of the Kenwood TK-x150/x180 series radios. DSP-223 operating software version 2.6 or higher is required to control the Kenwood radio. This software and the updated Windows® application may be down loaded from www.vega-signaling.com/dspsoftware.htm. The DSP-223 requires the Kenwood Series TK-x150/x180 Adaptor Kit (P/N 301896000) to be installed.

The Adaptor Kit includes:
- 1 EA Serial Adaptor Board (P/N 879274)
- 1 EA DSP-223 to Kenwood 150 Interface Cable (P/N 880137)
- 1 EA Programmed PLD (U27) for DSP-223 (P/N 760673 PS)

2. DSP-223 Setup

Refer to DSP-223 Technical Manual P/N 803274 for complete setup and operating instructions for the DSP-223.

***BEFORE INSTALLATION OF THE SERIAL ADAPTOR BOARD NOTE THE REVISION LEVEL
IF REV "A" REFER TO SECTION 3 – SERIAL ADAPTOR BOARD MODIFICATION***

- Remove the six screws and lift the cover from the DSP-223.
- Align the Serial Adaptor PCB over J3 and J4 and press into place.
- Replace U27 PLD. Pry out old part slowly and push in the new PLD.
  NOTE PLD ALIGNMENT
- Solder JP2 closed
- Set jumpers J14, J15, J22, J23, J24, J25 and J27 to "A" position
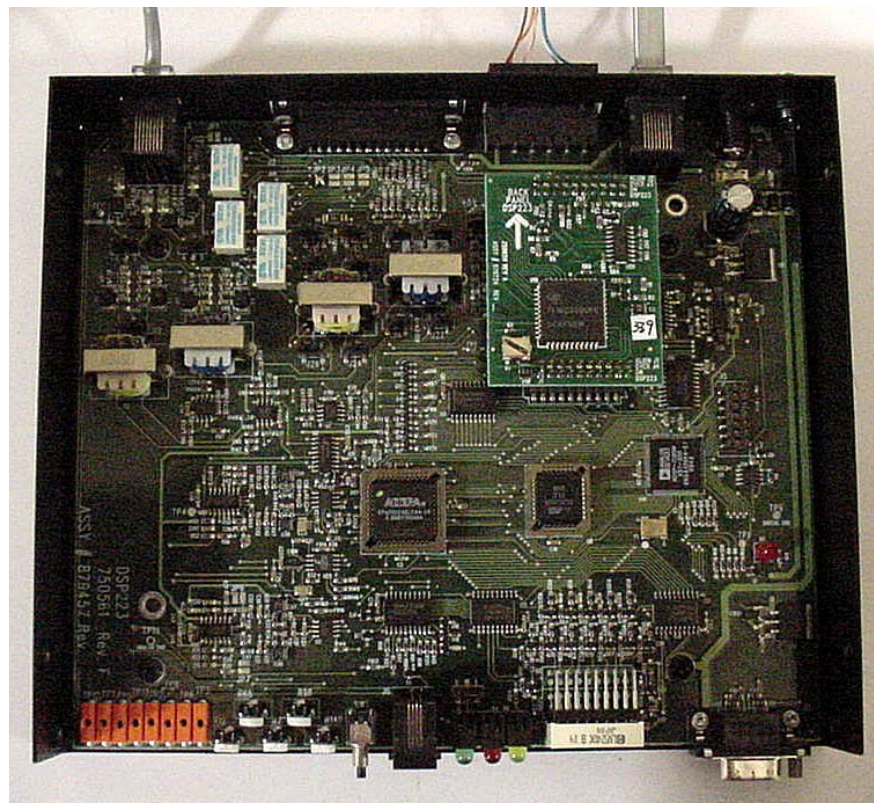- Set jumpers J12, J13 and J26 to "B" position

Fig 1 - DSP-223 w/Serial Adaptor Board Installed

3. Serial Adaptor Board Modification

Rev A *Serial Adaptor boards* - Remove the zero ohm resistor from the R7 position and place it in the R8 position.

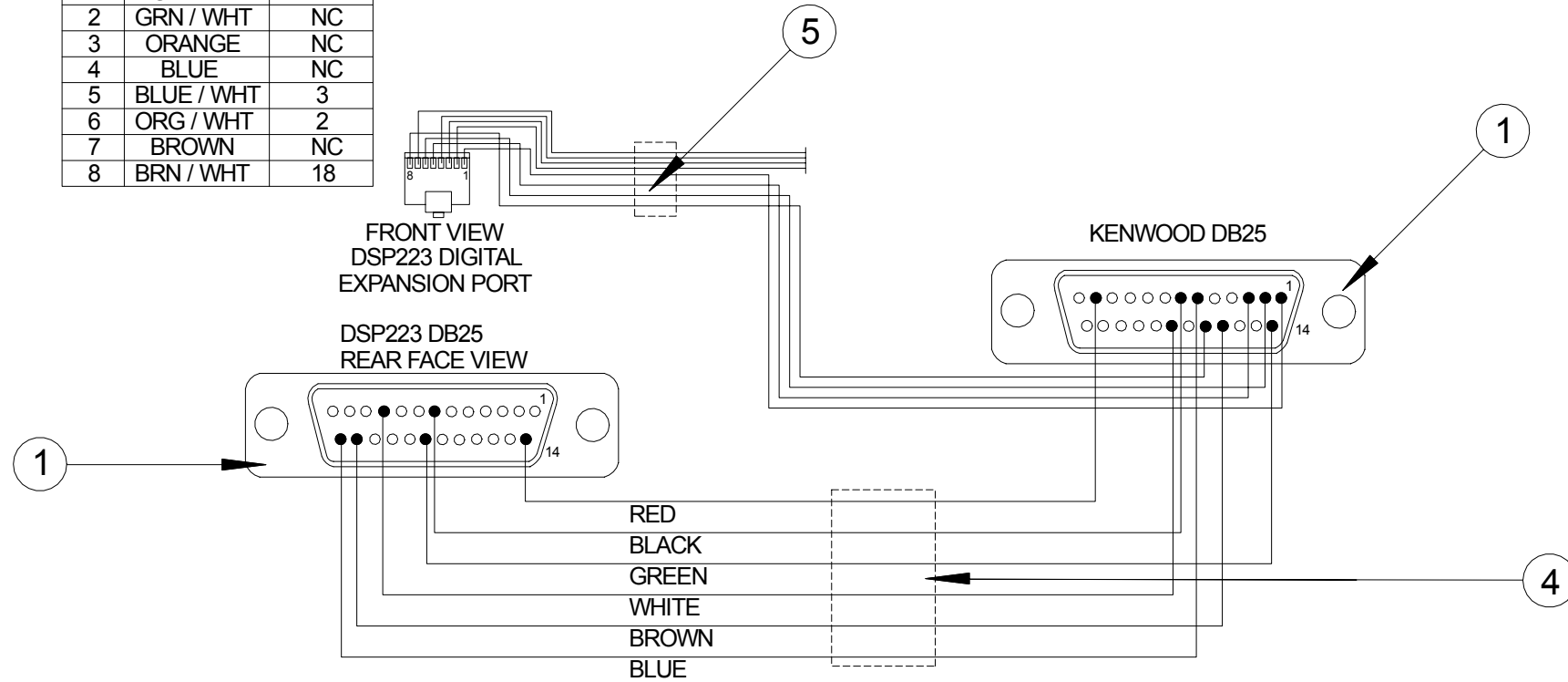***CAUTION – RESISTOR POSITIONS R7 AND R8 MAY NOT BE POPULATED AT THE SAME TIME***

Rev C *Serial Adaptor boards* – No modification required

880137

	REVISIONS				
CHG NO	LTR	DESCRIPTION		DATE	APPD
	A	RELEASE		3.05.2005	

DSP223 DIGITAL EXPANSION PORT

PIN	COLOR	KW DB25
1	GREEN	1
2	GRN / WHT	NC
3	ORANGE	NC
4	BLUE	NC
5	BLUE / WHT	3
6	ORG / WHT	2
7	BROWN	NC
8	BRN / WHT	18

5

FRONT VIEW
DSP223 DIGITAL
EXPANSION PORT

KENWOOD DB25

1

DSP223 DB25
REAR FACE VIEW

1

RED
BLACK
GREEN
WHITE
BROWN
BLUE

4

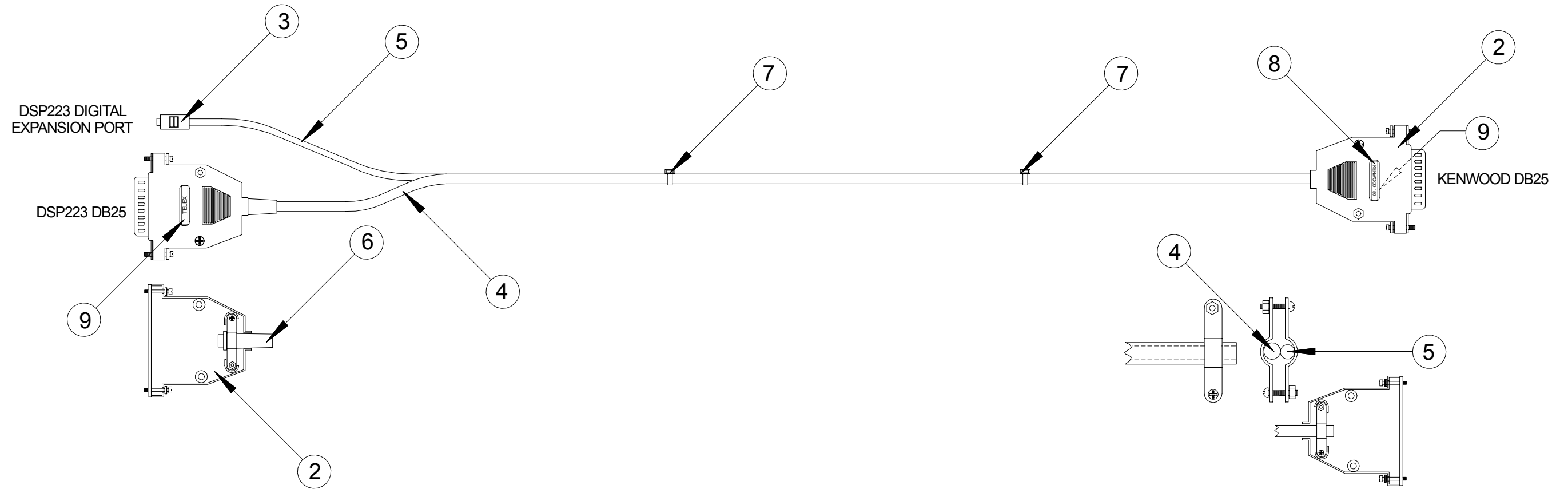| 2	LABEL, TELEX	9	803629	
1	LABEL, KENWOOD 150 / 180 CABLE	8	804142-1	
2	CABLE TIE	7	51709000	
1	BEND RELIEF	6	63351004	
3 FT.	CABLE 4PR GRAY ANIXTER 9D2404CLR5-09	5	620324	
3 FT.	CABLE, 9 CONDUCTOR	4	2511039500	
1	RJ45 CONNECTOR	3	499919014	
2	HOUSING, 25 POSTION D-SUB METALIZED HOOD	2	650369	
2	CONNECTOR, 25 PIN D-SUB	1	8800101954	
QTY	DESCRIPTION	ITEM	PART NO.	SPECIFICATION

NOTES: UNLESS OTHERWISE SPECIFIED

1. CUT CABLE INTO TWO 3' LONG PIECES
2. STRIP OUTER JACKET AND SHIELDING BACK 1.5" ON EACH END
3. TRIM ALL UNUSED CONDUCTORS BACK TO OUTER JACKET
4. STRIP REMAINING CONDUCTORS 3/16" AND TIN
5. SOLDER TO CONNECTOR AS SHOWN
6. ENCLOSE CONNECTORS IN HOUSING

UNSPECIFIED LIMITS OF TOLERANCE		DATE	3.5.2005
DECIMAL: .X = ±.050 IN. .XX = ±.030 IN. .XXX = ±.010 IN.	FRACTION: ±1/4 MACHINED FINISH: 64	DR BY	jjs
		CHK BY	
ANGLES ±1°, BENDS ±2°		APPD.	
STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.		PROD.	
CONCENTRICITY .010 TIR		MATERIAL:	

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

TITLE
DSP223 TO KENWOOD
150 / 180 INTERFACE CABLE

	NEXT ASSY.	USED ON

APPLICATIONS

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°

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

SIZE	CODE IDENT	DWG. NO.
B	57010	LN 880137

SCALE: SHEET: 1 Of 2

880137

	REVISIONS				
CHG NO	LTR	DESCRIPTION		DATE	APPD
	A	RELEASE		3.05.2005	

DSP223 DIGITAL EXPANSION PORT

DSP223 DB25

KENWOOD DB25

NOTE:

QTY			DESCRIPTION		ITEM	PART NO.	SPECIFICATION	
			UNSPECIFIED LIMITS OF TOLERANCE	DATE	3.05.2005			
			DECIMAL: FRACTION: ±1/4	DR BY	jjs		TELEX	
			.X = ±.050 IN. MACHINED	CHK BY			TELEX COMMUNICATIONS INC.	
			.XX = ±.030 IN. FINISH: 64	APPD.			Lincoln Nebraska U.S.A.	
			.XXX = ±.010 IN.	PROD.		TITLE		
			ANGLES ±1°, BENDS ±2°	MATERIAL:		DSP 223 TO KENWOOD		
			STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.			150 / 180 INTERFACE CABLE		
			CONCENTRICITY .010 TIR					
			UNMARKED ANGLES, BENDS AND INTERSECTIONS 90°			SIZE	CODE IDENT	DWG. NO.
NEXT ASSY.	USED ON		THREADS- EXT. CLASS 2A			B	57010	LN 880137
	APPLICATIONS		INT. CLASS 2B			SCALE:		SHEET: 2 Of 2

4. Interface Cable

The DSP-223 to radio interface cable assembly connects between the DB25 connector of the radio, the DSP-223 DB25 and RJ-45 digital expansion port. Power for the DSP-223 is provided by the radio via the interface cable. Refer to Table 1 for point-to-point connections.

Signal	Wire Color	DSP-223 DB25	DSP-223 Digital Expansion	TK-x150/x180 Radio DB25
Ground	Black	7		7
PTT	Red	14		12 (Aux Input 4 Programmable)
COR[1]	White	10 (DIG 4 input)		20 (Aux Output 1 Programmable)
RX+	Brown	24		17
TX+	Blue	25		6
+12VDC	Green	20		14 (Switched +12VDC)
TXD	Org/Wht		6	2
RXD	Blu/Wht		5	3
Ground	Brn/Wht		8	18
No Connection[2]			1, 2, 3, 4, 7	

Table 1 - TK-x150/x180 Radio Interface Cable Assembly

5. Operation

At power up, the DSP-223 will automatically detect the presence of the radio. The radio MUST be connected to the DSP-223 when power is applied. The DSP-223 provides operational control of various functions of the radio, including PTT, channel change, SCAN and MONITOR modes. The operator may control the radio with the following actions:

- Pressing a console **FUNCTION KEY** changes the radio channel (i.e. F1 = channel 1, F2 = channel 2, etc.).
- The SCAN mode is toggled on/off by sending a *0#9* DTMF string from the console
- Pressing the console **MONITOR** key sets the radio MONITOR mode. The MONITOR mode is reset as specified in the DSP-223 setup.
- The last FleetSync® ANI message received may be displayed by sending a *0#A* DTMF string from the console.

The DSP-223 will also decode the FleetSync® seven digit ANI format. Upon receipt of a valid FleetSync® ANI transmission, the DSP-223 will generate a DTMF string to the console corresponding to the seven-digit FleetSync format. If the Kenwoodx150/180 receives a FleetSync® **EMERGENCY** message, the DSP-223 will modify the DTMF string to trigger the ANI decoder into the **ALARM** mode. Radio audio is muted for the duration of the valid DTMF string.

A separate DTMF ANI decoder may be used to monitor and display the received ANI data. Connection to the RECORDER output of the console provides audio to the decoder. DTMF strings that do not conform to the specified format are not displayed. Refer to *Section 6 – ANI Decoder Setup* for specific model setup instructions.

6. ANI Decoder Setup

The following DTMF ANI decoders have been tested for use with the DSP-223/FleetSync® format

➢ *Communications Specialists Inc. Model ST-888*

- DTMF Signaling Rate – 20 Digits/Sec
- Sequence Length – 7
- ANI Start Digit – *
- Alarm Start Digit – #
- RCV Audio Input – LOW
- Other decoder parameters are user defined

The DSP-223 places a **DTMF #** as the start digit of an **EMERGENCY** ANI string. Detection of this digit triggers the alarm mode of the ST-888 sounding the audible alarm and flashes the display.

---

[1] COR input is not required for normal operation. Use for auxiliary relay functions only

[2] Pins 1, 2, 3, 4 and 7 are not connected and installed for connector stability only

7. 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

Please send items for repair to:

TELEX Communications, Inc.
Vega Signaling Products
8601 East Cornhusker Highway, Lincoln, Nebraska, 68507
Phone: 800-752-7560 Fax: (402) 467-3279

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 encourage 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

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.