

# TKR-740/ TKR-840

# KENWOOD

KENWOOD CORPORATION

## INSTRUCTION MANUAL

ID: ALH30633130  
2.1033(c)(3) MANUAL

### THANK YOU!

We are grateful you purchased this **KENWOOD** repeater. We believe this easy-to-program repeater will be highly effective in your communications system, and will keep personnel operating at peak efficiency.

**KENWOOD** incorporates the latest in advanced technology into all of our products. As a result, we feel strongly that you will be pleased with the quality and features of this product.

### FEATURES

- You can easily program channel data using the KPG-47D version 2.00 or later (optional) on a PC.
- You can recall 1 of 32 preset channels using either a PF key or the external control line.
- The firmware can be written to the Flash memory through an external source.
- QT/DQT signalling can be programmed on each channel. It decodes up to 16 different QT/DQT tones at one time.
- When using the KPG-47D version 2.00 or later (optional), RX PLL lock voltage, RX input signal strength, TX PLL lock voltage, TX output power, and the power supply voltage can be monitored on a PC.
- The interface port can be used with external equipment, such as a repeater controller.
- The repeater has multi-mode capability.  
Wide: 30 kHz, 25 kHz/ Narrow: 15 kHz, 12.5 kHz (TKR-740)  
Wide: 25 kHz/ Narrow: 12.5 kHz (TKR-840)
- You can adjust the following functions from a PC:
  - Squelch (Analog/ RSSI)
  - Signalling Balance
  - Digital Pager Balance
  - Maximum Deviation
  - Signalling Deviation (TD)
  - QT Deviation
  - DQT Deviation
  - CW Deviation
  - Digital Pager Deviation
  - Test Tone Deviation
  - Remote TA
  - RF Power
  - RX Audio Signal Output (RA)
  - RX Detector Signal Output (RD)
  - TX Audio Input (TA)
  - Voting Tone Level

### PRECAUTIONS

- Do not expose the unit to rain or moisture; to prevent fire or electric shock.
- Do not open the unit under any circumstances; to avoid risk of electric shock.
- Do not expose the unit to long periods of direct sunlight, nor place it close to heating appliances.

- Do not place the unit in excessively dusty and/or humid areas, nor on unstable surfaces.
- If you detect an abnormal odor or smoke coming from the unit, disconnect the power from the unit immediately. Contact your **KENWOOD** service center or dealer.

### NOTICES TO THE USER

#### FCC WARNING

*This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.*

#### WARNING:

- ◆ GOVERNMENT LAW PROHIBITS THE OPERATION OF UNLICENSED RADIO TRANSMITTERS WITHIN THE TERRITORIES UNDER GOVERNMENT CONTROL.
- ◆ ILLEGAL OPERATION IS PUNISHABLE BY FINE OR IMPRISONMENT OR BOTH.
- ◆ REFER SERVICE TO QUALIFIED TECHNICIANS ONLY.

### UNPACKING AND CHECKING EQUIPMENT

*Note: The following unpacking information is for use by your **KENWOOD** dealer, an authorized **KENWOOD** service facility, or the factory.*

Carefully unpack the repeater. We recommend that you identify the items listed in the following table before discarding the packing material. If any items are missing or have been damaged during shipment, file a claim with the carrier immediately.

Item	Part Number	Quantity
Front glass	B10-2590-X4	1
Fuse (4 A)	F06-4027-X5	1
Handles and screw set	K01-0421-X5	1
Power cable assembly	E30-3344-X5	1
Lead wire with connector	E31-3228-X5	1
Square plug	E59-0410-X5	1
Dressed screw	N08-0543-X4	1
Instruction manual	B62-1136-XX	1

### INSTALLATION

To install the handles onto the front panel of the receiver, align the handles with the holes on the front panel, then secure the handles using the supplied screws.

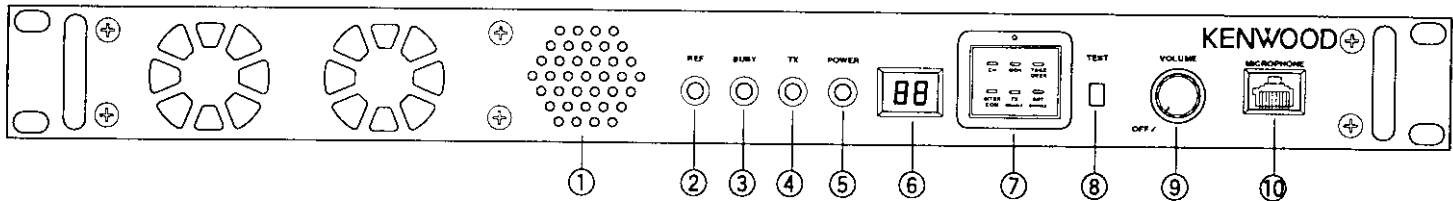
Please consult your dealer for installing the repeater and antenna.

### MICROPHONE

Connect a **KENWOOD** optional microphone to the **MICROPHONE** jack on the front panel.

# CONTROLS AND FUNCTIONS

## ■ Front Panel



① **Speaker**

② **REF (reference) indicator**

Lights red when using an external reference frequency. Lights green when using the internal reference frequency.

③ **BUSY indicator**

Lights green while a signal is being received.

④ **TX (transmit) indicator**

Lights red while transmitting.

⑤ **POWER indicator**

Lights green when power is applied.

⑥ **Display**

Two, 7-segment digits display the channel number or status.

⑦ **Programmable Function keys**

Press these keys to activate their programmable functions.

⑧ **TEST switch**

Press to transmit an unmodulated signal with no external microphone connected.

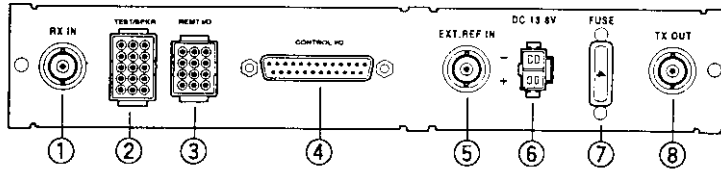
⑨ **VOLUME control**

Turn clockwise until a click sounds, to unmute the volume. Rotate to adjust the volume. Turn counterclockwise fully to mute the volume.

⑩ **MICROPHONE jack**

Connect a microphone to this 8-pin modular jack.

## ■ Rear Panel



① **RX IN jack**

Connect a RX antenna or a duplexer to this BNC receptacle.

② **TEST/SPKR jack**

Test input/output jack. Connect an external speaker to this jack.

③ **REMT I/O jack**

Connect an external remote controller to this jack.

④ **CONTROL I/O jack**

Connect an external programming device or repeater controller to this DB-25 interface.

⑤ **EXT. REF IN jack**

Connect an external reference frequency (10 MHz, -10 dBm or higher) to this BNC receptacle.

⑥ **DC 13.8V jack**

Connect a 13.8 V DC power supply to this jack.

⑦ **FUSE**

Insert a 4 A blade fuse into this fuse holder.

⑧ **TX OUT jack**

Connect a TX antenna or a duplexer to this BNC receptacle.

## REPEATER OPERATION

*Note:* Please consult your dealer for programming the repeater.

When power is applied to the unit, the **POWER** indicator lights green.

Turn the **VOLUME** control clockwise until a click sounds, to unmute the volume. Rotate to adjust the volume. Turn the **VOLUME** control counterclockwise fully to mute the volume.

The **BUSY** indicator lights green while receiving a signal, and the **TX** indicator lights red while transmitting.

## TRANSCEIVER OPERATION

### ■ Receive

Adjust the volume to your desired level. You may need to readjust the volume when you receive a message from your dispatcher or another member in your fleet.

- The **BUSY** indicator lights while a signal is being received.

### ■ Transmit

- 1 Listen to the channel before transmitting, to make sure it is not being used.
- 2 Press the **PTT** switch and speak in your normal speaking voice.
  - FCC regulations require that you identify the station you are calling as well as your own station (your assigned call sign).
  - The **TX** indicator lights while transmitting.

No.	Item	Condition	Measurement point	Method	Equipment	Spec
0	Set up	Install a I F jig and power supply				
1	RD output Level(wide)	Ch4, 154.1MHz / -53dBm(0-10) Ch4, 166.1MHz / -53dBm(0-11) Ch4, 143.1MHz / -53dBm(0-12) 1kMOD / 3kDEV	ANT SG D-Sub RD terminal(10pin)	PC Adj.	Radio tester	80mV ± 3mV
2	RD output Level(narrow)	Ch10, 154.1MHz / -53dBm(0-10) Ch10, 166.1MHz / -53dBm(0-11) Ch10, 143.1MHz / -53dBm(0-12) 1kMOD / 1.5kDEV	ANT SG D-Sub RD terminal(10pin)	PC Adj.	Radio tester	80mV ± 3mV
3	RA output Level(wide)	Ch4, 154.1MHz / -53dBm(0-10) Ch4, 166.1MHz / -53dBm(0-11) Ch4, 143.1MHz / -53dBm(0-12) 1kMOD / 3kDEV	ANT SG D-Sub RA terminal(11pin)	PC Adj.	Radio tester	400mV ± 20mV
4	RA output Level(narrow)	Ch10, 154.1MHz / -53dBm(0-10) Ch10, 166.1MHz / -53dBm(0-11) Ch10, 143.1MHz / -53dBm(0-12) 1kMOD / 1.5kDEV	ANT SG D-Sub RA terminal(11pin)	PC Adj.	Radio tester	400mV ± 20mV
5	RRA output Level(wide)	Ch4, 154.1MHz / -53dBm(0-10) Ch4, 166.1MHz / -53dBm(0-11) Ch4, 143.1MHz / -53dBm(0-12) 1kMOD / 3kDEV	ANT SG Remort I/O terminal (1pin)	Check	Radio tester	400mV ± 20mV
6	RRA output Level(narrow)	Ch10, 154.1MHz / -53dBm(0-10) Ch10, 166.1MHz / -53dBm(0-11) Ch10, 143.1MHz / -53dBm(0-12) 1kMOD / 1.5kDEV	ANT SG Remort I/O terminal (1pin)	Check	Radio tester	400mV ± 20mV
7	Voting Tone Level(wide)	f-Center Ch4 Voting Tone: 1950Hz	Remove SG D-Sub RA terminal(11pin)	PC Adj.	Radio tester	400mV ± 20mV
8	Voting Tone Level(narrow)	f-Center Ch10 Voting Tone: 1950Hz	Remove SG D-Sub RA terminal(11pin)	PC Adj.	Radio tester	400mV ± 20mV
9	Max Dev(wide)	VCO-A(Lo) Ch1 1kHz/50mV load	MIC terminal 6pin	PC Adj.	MODANA AG	4.1kHz ± 0.2kHz
10		VCO-A(Center) Ch2			MODANA AG	
11		VCO-A(Hi) Ch3			MODANA AG	
12		VCO-B(Lo) Ch4			MODANA AG	
13		VCO-B(Center) Ch5			MODANA AG	
14		VCO-B(Hi) Ch6			MODANA AG	
15	Max Dev(narrow)	VCO-A(Lo) Ch7 1kHz/50mV load	MIC terminal 6pin	PC Adj.	MODANA AG	1.7kHz ± 0.1kHz
16		VCO-A(Center) Ch8			MODANA AG	
17		VCO-A(Hi) Ch9			MODANA AG	
18		VCO-B(Lo) Ch10			MODANA AG	
19		VCO-B(Center) Ch11			MODANA AG	
20		VCO-B(Hi) Ch12			MODANA AG	
21	Mic Dev(wide)	VCO-A(Center) Ch2 1kHz/4.5mV load	MIC terminal 6pin	Check	MODANA AG	3 ± 0.25kHz
22		VCO-B(Center) Ch5			MODANA AG	
23	Mic Dev(narrow)	VCO-A(Center) Ch8 1kHz/5.5mV load	MIC terminal 6pin	Check	MODANA AG	1.5 ± 0.1kHz
24		VCO-B(Center) Ch11			MODANA AG	
25	DOT balance (wide)	VCO-A(Center) Ch2 50Hz/0.5Vpp square wave	D-Sub TD terminal (8pin)	PC Adj.	MODANA AG	Make the demodulation wave square
26		VCO-B(Center) Ch5			MODANA AG	
27	DOT balance (narrow)	VCO-A(Center) Ch8 50Hz/0.5Vpp square wave	D-Sub TD terminal (8pin)	PC Adj.	MODANA AG	Make the demodulation wave square
28		VCO-B(Center) Ch11			MODANA AG	
29	TD Dev(wide)	VCO-A(Center) Ch2 100Hz/0.5Vpp sine wave	D-Sub TD terminal (8pin)	PC Adj.	MODANA AG	0.75kHz ± 0.05kHz
30		VCO-B(Center) Ch5			MODANA AG	
31	TD Dev(narrow)	VCO-A(Center) Ch8 100Hz/0.5Vpp sine wave	D-Sub TD terminal (8pin)	PC Adj.	MODANA AG	0.75kHz ± 0.05kHz
32		VCO-B(Center) Ch11			MODANA AG	
33	TA Dev(wide)	f-Center Ch4 1kHz/280mV sine wave	D-Sub TA terminal (9pin)	PC Adj.	MODANA AG	3 ± 0.1kHz
34	TA Dev(narrow)	f-Center Ch10 1kHz/280mV sine wave	D-Sub TA terminal (9pin)	PC Adj.	MODANA AG	1.5 ± 0.05kHz
35	TA Dev(wide)	VCO-A(Center) Ch2 1kHz/280mV load	D-Sub TA terminal (9pin)	Check	MODANA AG	3 ± 0.1kHz
36		VCO-B(Center) Ch5			MODANA	

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39	RTA Dev(wide)	f-Center Ch4 1kHz/280mV sine wave	Remort I/O terminal (2pin)	PC Adj.	MODANA AG	3±0.1kHz
40	RTA Dev(narrow)	f-Center Ch10 1kHz/280mV sine wave	Remort I/O terminal (2pin)	PC Adj.	MODANA AG	1.5±0.05kHz
41	RTA Dev(wide)	VCO-A(Center) Ch2 1kHz/280mV load	Remort I/O terminal (1pin)	Check	MODANA AG	3±0.1kHz
42		VCO-B(Center) Ch5			MODANA AG	
43	RTA Dev(narrow)	VCO-A(Center) Ch8 1kHz/280mV load	Remort I/O terminal (1pin)	Check	MODANA AG	1.5±0.05kHz
44		VCO-B(Center) Ch11			MODANA AG	
45	QT Dev(wide)	f-Center Ch4 QT: 67Hz	ANT Dummy	PC Adj.	MODANA	0.75kHz±0.05kHz
46	QT Dev(narrow)	f-Center Ch10 QT: 67Hz	ANT Dummy	PC Adj.	MODANA	0.35kHz±0.05kHz
47	DQT Dev(wide)	f-Center Ch4 DQT: 023N	ANT Dummy	PC Adj.	MODANA	0.75kHz±0.05kHz
48	DQT Dev(narrow)	f-Center Ch10 DQT: 023N	ANT Dummy	PC Adj.	MODANA	0.35kHz±0.05kHz
49	OT Dev(wide)	VCO-A(Center) Ch17 OT: 67Hz	ANT Dummy	Check	MODANA	0.75kHz±0.05kHz
50		VCO-B(Center) CH18				
51	QT Dev(narrow)	VCO-A(Center) CH19 OT: 67Hz	ANT Dummy	Check	MODANA	0.35kHz±0.05kHz
52		VCO-B(Center) CH20				
53	DQT Dev(wide)	VCO-A(Center) Ch21 DQT: 023N	ANT Dummy	Check	MODANA	0.75kHz±0.05kHz
54		VCO-B(Center) CH22				
55	DQT Dev(narrow)	VCO-A(Center) Ch23 DQT: 023N	ANT Dummy	Check	MODANA	0.35kHz±0.05kHz
56		VCO-B(Center) CH24				
57	Test Tone Dev(wide)	f-Center Ch4 Test Tone: 1kHz	ANT Dummy	PC Adj.	MODANA	3±0.1kHz
58	Test Tone Dev(narrow)	f-Center Ch10 Test Tone: 1kHz	ANT Dummy	PC Adj.	MODANA	1.5±0.05kHz
59	CW ID Dev(wide)	f-Center Ch4 CW ID: 800Hz	ANT Dummy	PC Adj.	MODANA	2±0.1kHz
60	CW ID Dev(narrow)	f-Center Ch10 CW ID: 800Hz	ANT Dummy	PC Adj.	MODANA	1±0.05kHz
61	Repeat Gain Level(wide)	f-Center Ch4 1kHzDev/1kHzMod	RX ANT SG TX ANT Dummy	PC Adj.	Radio tester MODANA	1±0.2kHz
62	Repeat Gain Level(narrow)	f-Center Ch10 1kHzDev/1kHzMod	RX ANT SG TX ANT Dummy	PC Adj.	Radio tester MODANA	1±0.2kHz
63	Pager Dev (wide only)	VCO-A(Center) Ch2	ANT Dummy	PC Adj.		Adj. 137
64	Pager balance (wide only)	VCO-A(Center) Ch2	ANT Dummy	PC Adj.	MODANA Oscilloscope	Make the demodulation wave square
65	Pager Dev (wide only)	VCO-A(Center) Ch2 1kHz/3Vpp/Square	PTT/D-Sub 5pin DATA IN/D-Sub 6pin	Check	SPEANA AG	±4.5kHz shift
66	TX S/N(Wide)	VCO-A(Center) Ch2 No modulation	D-Sub TA terminal (9pin)	Check	MODANA	Less than -55dB
67		VCO-B(Center) Ch5		Check	MODANA	Less than -55dB
68	TX S/N(Narrow)	VCO-A(Center) Ch8 No modulation	D-Sub TA terminal (9pin)	Check	MODANA	Less than -50dB
69		VCO-B(Center) Ch11		Check	MODANA	Less than -50dB
70	END	Remove I/F jix and powersupply				