TKR-740/840

VHF/UHF FM Repeater-Base Units

High-performance features, repeater mode, 32 channel simplex/full-duplex base mode, flash memory, DSP-based tone decoding, PC programmability, PC tuning, interface ports, test ports and programmable auxiliary ports make Kenwood's Systems utilizing the embedded TKR-740/840 receiver-exciter units the first choice for demanding industrial and public service applications.

32 Channel Simplex/Full-Duplex Base Mode & Priority Scan

The 32 channel simplex/full-duplex base mode provides a perfect platform for high-end conventional base station systems. The priority scan capability permits multiple channel usage full-time or on command while monitoring a primary dispatch channel. The remote control and programmable ports permit full dispatch console access to all base station controls and functions. The front panel programmable function-keys (PF keys) with status LED's provide full equipment room/on-site control and can be concealed and/or disabled all together. The two-digit LED display provides channel display. operational status, programming status and fault indications.

Repeat Mode & Internal Controller

The TKR-740/840 repeater systems posses all the remote control, programmability and site control attributes as in base mode. Front panel PF key functions as Takeover (remote disable), TX Disable and Repeater On/Off can be assigned for site setup and maintenance use.

The internal conventional repeater mode supports up to 16 user groups (16 QT/DQT) using Digital Signal Processing techniques. This also Supports the traditional CW-ID, time-out timer, hang time, reverse burst squelch tail elimination, etc., repeater operations. The internal controller can be bypassed and an external conventional or trunking logic controller option used in its place.

Multi-Tone/Code Tables & DSP Processing

THere are 16 programmable multi-tone/code tables each with 16 QT/DQT tone/code pairs that can be assigned on a per channel basis. This provides multi-channel base stations up

to 16 users groups per channel. This feature can also be used for fail-safe standby base or repeater units that can be activated into use in the event of a system failure (additional fail-safe systems engineering and components required).

Low Profile Design and Die-Cast Chassis

The low profile design saves site rack for other system components on multi-channel base systems and repeaters. The all metal encased panels and die-cast chassis with integrated heat sink are key to the TKR-740/840's durability, superior service level and reduced weight. The unit is sealed to provide long-term protection from dust, moisture and foreign ingress even in the most abusive operating conditions.

Auxiliary Macro Ports

The 25-pin D-Sub controller interface port also provides six AUX Outputs and three AUX Inputs. The AUX Outputs are software programmable with functions such as PLL unlock, transmit sense, supply voltage sense, RSSI, exciter temperature, etc., for site monitoring equipment and backup power and environmental systems. These AUX Outputs are programmable for active high or low and can be controlled by the AUX Input ports using signals from remote console termination panels or site control equipment. The AUX Inputs are programmable active high or low and can be programmed for any front panel PF function, perform direct channel access or AUX Output port control (turned on, turned off or toggled on/off the AUX output). Each AUX input has a "macro" capability and can control up to three AUX Output ports simultaneously. The 12-pin accessory connector has 5 macro-capable AUX I/O ports that are programmable for either AUX Input or Output functions.

Continuous Duty/High Stability RF Power Output

The 100% duty cycle, 1.5 PPM high stability RF power output is continuously adjustable from 100mw to 5W. The filtered impedance-matched output is the heart of the TKR-740/840 Series systems as the exciter stage for high-power systems or for direct output low power applications.

Flash Memory Advantage

Flash memory permits updates, advanced feature sets and system architectural changes to be made electronically without ever opening the unit. This means faster modifications for system operators and less down time for users.

LED Indicators

The LED indicators provide clear system status information at a glance, including transmit, receive, external standard input and power. If the transmitter or receiver syntheizer become unlocked, the LEDs flash for quick problem assessment.

Wide/Narrow Channel Spacing

The TKR-740/840 are programmable for wide/narrow channel spacing* on a per channel basis [TKR-740: 25 (30) kHz wide/12.5 (15) kHz narrow; TKR-840: 25 kHz wide/12.5 kHz narrow]. The enhanced synthesizer PLL channel step programmability accommodates channel allocations now and in the future.

*Both models operate with no less than 25 kHz wide and 12.5 kHz narrow channel bandwidth.

PC Programming and Tuning

The TKR-740/840 can be programmed/tuned quickly and efficiently without ever opening the case. Programming/tuning can be done though front panel microphone/handset jack with the KPG-47D software, KPG-46 interface cable, and any PC-compatible computer. The same can also be done via the rear panel 25-pin connector. The PC tuning parameters available are shown below:

- **Squelch (analog/RSSI)**
- **RX audio signal output (RA)**
- **RX detector signal output (RD)**
- **RF output power**
- **Maximum Deviation**
- **TX audio input (TA)**
- **Remote TX audio input (RTA)**
- **Signaling Deviation (TD)**
- **Signaling balance**
- **QT deviation**
- **DQT deviation**
- **Test tone deviation**
- **CW ID deviation**
- **Repeat gain**
- **Voting tone level**
- **Digital pager shift level**
- **Digital pager wave balance**

Manual tuning is available for the following settings: RX helical resonator block bandwidth, MCF waveform, Quad detector coil, and MIC sensitivity.

External Reference Input

The internal oscillator already provides an excellent ±1.5 PPM stability figure, but for more demanding applications such as simulcast or paging systems, you can inject an external oscillator standard to obtain a much higher stability factor. The "REF" LED on the front panel changes from green to red when the external signal is applied.

Local Speaker & Microphone/Test Switch

The built-in front panel speaker provides excellent audio for on-site monitoring and can be controlled via the volume on/off knob. The TEST switch allows you to activate the transmitter and the supplied hand microphone for air checks and the Intercom function.

Other Features

- COMPANDED AUDIO
- EIGHT CW MESSAGE MEMORIES
- VOTER TONE GENERATION
- DIGITAL PAGING ENCODER INPUT (bi-level type; e.g. POCSAG)
- VOICE SCRAMBLER PORT/CONTROL

Specifications

	TKR-740	TKR-840
GENERAL		
Frequency range	RX: Type 1: 146~162MHz Type 2: 158~174 MHz Type 3: 136~150 MHz TX: Type 1: 136~174 MHz Type 2: 136~174 MHz Type 3: 136~174 MHz	RX: Type 1: 450~480MHz Type 2: 480~512 MHz Type 3: 400~430 MHz TX: Type 1: 450~480 MHz Type 2: 480~512 MHz Type 3: 400~430 MHz
Number of Channels	32	
Channel Spacing	30, 25 kHz (wide) 15, 12.5 kHz (narrow) (PLL channel stepping 2.5, 5, 6.25 kHz)	25 kHz (wide) 12.5 kHz (narrow) (PLL stepping 5, 6.25 kHz)
Operating Voltage	2.5, 5, 6.25, 7.5 kHz	5, 6.25 kHz
Current Drain **Standby** **Receive** **Transmit/Receive**	Less than 1.0 A Less than 1.5 A Less than 3.5 A	
Duty Cycle	Receive: 100%, Transmit: 100%	
Frequency stability	±0.00015% (-22°F ~ +140°F)	
Operating Temperature Range	-22°F ~ +140° F (-30° C ~ +60° C)	
Dimensions (W x H x D)	19 x 1-3/4 x 12 in. (483 x 44 x 305 mm)	
Weight (net)	8.8 lbs. (4kg)	

FCC ID	Type 1: ALH30633110 Type 2: ALH30633120 Type 3: ALH30633130	Type 1: ALH30643110 Type 2: ALH30643120 Type 3: ALH30643130
FCC compliance	Type 1: 22, 74, 90 Type 2: 90 Type 3: 90	Type 1: 2, 74, 90, 95 Type 2: 90 Type 3: 90
CANADA IC (RSS119)	Type 1: 282195598A Type 2: 282195598A Type 3: 282195598A	Type 1: 282195600A Type 2: none Type 3: 282195600A

	TKR-740	**TKR-840**
RECEIVER (Measurements made per EIA/TIA-204-D)		
Antenna Impedance	50 Ω	
Sensitivity **12dB SINAD** **20 dB quieting**	0.3 µV 0.4 µV	
Selectivity	95 dB at ±30 kHz (wide) 89 dB at ±15 Khz (narrow) 87 dB at ±12.5 kHz (narrow)	90 dB at ±25 kHz (wide) 82 dB at ±15 (narrow)
Intermodulation	90 dB at +30, 60 kHz (wide) 85 dB at +15, 30 kHz (narrow)	85 dB at +25, 50 kHz (wide) 80 dB at +12.5, 25 kHz (narrow)
FM Hum & Noise	60 dB (wide) 55 dB (narrow)	
Audio Output **(Ext. Speaker)**	4 W 9at 4Ω, less than 5% distortion)	
Spurious & Image Rejection	100 dB	
Audio Distortion **(Ext. Speaker)**	Less than 2% at 1000 Hz	
Band Spread	Type 1: 3 MHz Type 2: 3 MHz Type 3: 3 MHz	Type 1: 5 MHz Type 2: 5 MHz Type 3: 5 MHz
TRANSMITTER (Measurements made per EIA-152-C)		
RF power output	5 W adjustable to 0.1 watts	
Antenna Impedance	50 Ω	
Type of Emission	16KØF3E (wide) 11KØF3E (narrow)	
Spurious Response	70 dB	70 dB (60 dB at 100 mW)
FM Hum & Noise	55 dB (wide) 50 dB (narrow)	
Microphone Impedance	600 Ω	
Audio Distortion	Less than 0.5% at 1000 Hz	Less than 1% at 1000 Hz
Band Spread	Type 1: 38 MHz Type 2: 38 MHz Type 3: 38 MHz	Type 1: 30 MHz Type 2: 32 MHz Type 3: 30 MHz

	TKR-740	TKR-840
REPEATER CONTROL (Measurements made per TIA/EIA-603)		
Signaling (simultaneously) Maximum number of tones	16	
QT decoder/encoder **Tone frequency** **Response Time** **Squelch Tail Elimination Time** **Encoder Frequency Error** **Sensitivity**	67.0-210.7Hz (0.1 Hz step) 250 ms or less 140 to 200 ms +0.3% or less SINAD 8 dB or less	
DQT decoder/encoder **DQT code** **Decoder Respose Time** **Turn-off code transmission time** **Sensitivity**	23 bits total: a 3-digit octal number (0-7,12 bits) with error correction (11 bits) 250 ms or less 140 to 200 ms SINAD 8 dB or less	
Time-out Timer	Off - 30 min.	
Repeater Hold Time	Off - 10 sec.	
EXTERNAL CONTROL		
CW ID **Maximum modulation** **CW Tone Frequency** **Morse Code Speed** **Maximum Character Memory**	Maximum deviation of 40% +10% 400Hz to 2000Hz, (default 800 Hz) 5 to 30 word per minute, (default 20 WPM) Up to 20 characters	
CW Massage **Maximum Character** **Number of Bank**	Up to 20 characters per bank 8 banks	
Test Tone **Maximum Modulation** **Test Tone Frequency**	Maximum deviation of 60% 300 Hz to 3000 Hz (default 1000 Hz)	
Volting Pilot Tone **Tone Frequency** **Output Level (RA Terminal)**	1950 Hz, 2175 Hz, 2700 Hz, (default 1950 Hz) 400 mVrms at 1950 Hz	

Kenwood follows a policy of continuous advancement in development.
For this reason specifications may be changed without notice.

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