

# KENWOOD

## TKR-751/851

VHF/UHF FM Repeater-Base Units

The versatile TKR-751/851 is ready for deployment as a 16-user group conventional repeater, a simplex or full-duplex base station, or as the RF core of a trunking system. Advanced features such as the DSP audio processing, 5-Tone/DTMF over-the-air remote control and programmable auxiliary I/O's combined with round-the-clock reliability add up to a superlative performing unit.



### REPEATER OPERATION

The TKR-751/851 is "community repeater-ready" with the internal 16 QT/DQT group controller and programmable repeater functions such as 5-Tone access codes, CW Transmitter ID, Hang-Timer, Time-Out-Timer and Repeat Enable/Disable Key. The 1W-to-25W adjustable power output is ideal for on-site, exciter or repeater applications. (DC power supply not included)

### CONVENTIONAL OR TRUNKING SYSTEM USE

The TKR-751/851 can serve as the core element of any conventional or trunking repeater system. The basic internal conventional controller can be bypassed and an external conventional or trunking logic controller unit can be easily interfaced for advanced systems.

### SIMPLEX OR DUPLEX BASE STATION OPERATION

The TKR-751/851 can be operated in simplex or full-duplex base station mode with up to 16 channels and priority scan. Internal solid state antenna switching is provided for simplex single-antenna base station operation (requires internal modifications; see service manual). The accessory connectors provide DC or tone remote control interface. Also programmable are the six PF function keys, LED indicators, volume knob, local speaker, control/warning/alert/power-on tones and tone volume for facilitating any local, equipment room or remote site installation.

### 5-TONE SELECTIVE CALL, REPEATER OPEN/CLOSE

The built-in 5-Tone encoder/decoder (up to 3-frame) is compatible with a wide range of European protocols – EEA, EIA, CCIR, ZVEI, ZVEI-2, as well as the Kenwood tone format – while allowing detailed adjustment of parameters. There is also a 5-Tone decode function to open or close the repeater; this can be used in conjunction with QT/DQT.

### 5-TONE/DTMF OVER-THE-AIR REMOTE CONTROL

All front panel PF Key functions and AUX Input functions can be remotely activated and deactivated over-the-air via 5-Tone or DTMF codes and provide an acknowledgement single tone or custom 5-Tone/DTMF

transpond code. Also AUX outputs, upon activation and deactivation will encode unique 5-Tone/DTMF codes for monitoring and alarm purposes (examples: COR, fan status, low DC power supply, RF power down, PLL unlock, TOR and TX sense). For external analogue sensor and switch sensing, AUX inputs not assigned a programmable function can encode unique active and inactive 5-Tone/DTMF codes (examples: air conditioning failure, open door/gate).

### LED DISPLAY & INDICATORS

The enhanced 7-segment/2-character front panel LED provides a high-visibility 2-character alphanumeric channel designator and scan indicator for base station operation, a PLL unlock indicator and a PC program mode status for both base and repeater modes. Front panel dual-colour LED's provide Transmit, Busy, Primary/Backup DC Power indications.

### BACKUP POWER FEATURES

The Backup Battery Warning Tone transmits an over-the-air 5-second tone after DC supply has switched from "main" to "backup" power. Optionally a reminder Operation Tone can be transmitted while on backup power. These tones can be triggered when either DC power is connected to the backup DC input line or when the supplied voltage is lower than the programmed Power Supply Level DC voltage setting.

### WINDOWS® PROGRAMMING AND TUNING SOFTWARE

Windows® compatible PC programming and tuning provides easy setup and alignment using the optional KPG-91D software and KPG-46 programming interface cable. The most common tuning parameters\* are adjustable without opening the unit or using tools.

\*Receiver helical resonator bandwidth, MCF waveform, and quadrature detector coil require manual tuning.  
Windows® is a registered trademark of the Microsoft Corporation, U.S.A.

### REPEATER FEATURES

• Full-Duplex Operation • Built-in 16 QT/DQT Tone/Code Pair Community Repeater Operation • External Controller Interface • Conventional or Trunking Controller Compatible • Courtesy Tone • Repeat Enable/Disable • 8 CW Transmitter IDs • Repeat Hold Timer (hang timer) • Time-Out-Timer

### BASE STATION FEATURES

• 16 Channels • Simplex or Full-Duplex Operation • Antenna Switch for Simplex/Single Antenna Operation • Priority Scan • Remote Control Inputs • 7-Segment 2-Character Channel & Scan LED Indicator • 2-Character Alphanumeric Channel Designator • Power/Transmit/Busy LED Indicators • 6 Lighted PF Keys • Local Takeover/Remote PF Key • Channel Up/Down PF Keys • Volume Control Knob • Front Microphone Jack • Front Panel Speaker • Voice Encryption Option Port

### GENERAL

• Adjustable 1-25 W setting • Continuous Transmit Duty (100% @ 1-25W) • 19" Rack Mount Design • Wide/Narrow Channel Spacing • Primary DC Input Connector (AC-to-DC power supply optional) • Auto-Switched Back-up DC Input Connector • Backup Battery Warning/Operation Tones • Rear External Speaker Output (4 W Audio) • Rear Accessory/Logic Controller Connector (25-Pin) • Rear Test-Speaker-AUX Connector (15-Pin) • Built-in Cooling Fan (temperature- or carrier-controlled) • Programmable AUX Input /Output Functions • BCD Remote Channel Selection (3 lines) • Macro-Function AUX Inputs • Selectable Toggle or Momentary Operation on AUX Input Ports • DTMF/5-tone Over-the-Air Remote Function & Auxiliary Output Control • Pre-Emphasis On/Off Control (at TA AUX Input) • External PTT Input at Power On • DSP-Processed QT/DQT • DSP-Processed Companded Audio (simplex base operation) • QT/DQT Squelch-Tail Elimination • Beep Function for Control, Warning, Alert & Power On Tones • Electronic Serial Number (ESN) • Embedded Message with Password Protection • High-Stability Oscillators (TCXO) • Windows® 98/2000/Me/XP compatible PC programming & tuning • Flash Memory



# Options



■ **KMC-30**  
Microphone



■ **KMC-9C**  
Desktop Microphone



■ **KES-5**  
External Speaker

\* Not all accessories may be available, please contact dealers for details.

# Specifications

	TKR-751	TKR-851
<b>GENERAL</b> (Measurements made per EN300 086)		
Frequency Range Type 1:	146 ~ 174 MHz	440 ~ 470 MHz
Number of Channels	16	
Channel Spacing Wide Narrow (PLL channel stepping)	25, 20 kHz 12.5 kHz (5, 6.25 kHz)	
Operating Voltage	13.2 V DC $\pm$ 15%	
Current Drain Standby Standby (w/power save) Receive Transmit/Receive	0.8 A 0.3 A Operating mode: DC-IN: Backup, FAN: Temp, SAVE: On, DISP: Off 1.2 A Less than 8 A	
Duty Cycle	Receive: 100%, Transmit: 100%	
Frequency Stability	$\pm$ 0.0002% (-30° C ~ +60° C)	$\pm$ 0.00015% (-30° C ~ +60° C)
Operating Temperature Range	-30° C ~ +60° C	
Dimensions (W x H x D)	483 x 88 x 340 mm	
Weight (net)	9.7kg	
Applicable Standard	EN300 086, 219, 113, EN301 489, EN60065, 60950, 60215	
<b>RECEIVER</b> (Measurements made per EN300 086)		
Antenna Impedance	50 $\Omega$	
Sensitivity: 20 dB SINAD	0.45 $\mu$ V	
Adjacent Channel Selectivity	85 dB at $\pm$ 25 kHz 82 dB at $\pm$ 20 kHz 77 dB at $\pm$ 12.5 kHz	83 dB at $\pm$ 25 kHz 80 dB at $\pm$ 20 kHz 75 dB at $\pm$ 12.5 kHz
Intermodulation	72 dB	
Hum & Noise Wide Narrow	50 dB at 25 kHz 48 dB at 20 kHz 45 dB at 12.5 kHz	
Audio Output (Ext. Speaker)	4 W (at 4 $\Omega$ , less than 5% distortion)	
Spurious & Image Rejection	90 dB	
Audio Distortion (Ext.Speaker)	Less than 2.5% at 1000 Hz	
Band Spread Type 1:	3 MHz	5 MHz

	TKR-751	TKR-851
<b>TRANSMITTER</b> (Measurements made per EN300 086)		
Antenna Impedance	50 $\Omega$	
RF Power Output Hi Low	25 W (default) 1 W (default) (100% duty at 1-25 W)	
APC Variable Range	1-25 W 25 W adjustable to 1 W	
Type of Emission	16K0F3E, 14K0F3E, 8K50F3E, 14K0F2E, 12K0F2D, 7K50F2D	
Modulation Limiting	$\pm$ 5 kHz at $\pm$ 25 kHz $\pm$ 4 kHz at $\pm$ 20 kHz $\pm$ 2.5 kHz at $\pm$ 12.5 kHz	
Spurious Emission	-36 dBm $\leq$ 1 GHz -30 dBm > 1 GHz	
FM Noise (EIA) Wide Narrow	50 dB at 5 kHz 48 dB at 4 kHz 45 dB at 2.5 kHz	
Microphone Impedance	600 $\Omega$	
Modulation Distortion Type 1:	Less than 3% at 1000 Hz	
Band Spread	28 MHz	30 MHz
<b>REPEATER CONTROL</b> (Measurements made per TIA/EIA-603)		
Signaling (simultaneously) Max. Number of Tones	16	
QT Decoder/Encoder Tone Frequency Decoder Response Time Squelch Tail Elimination Time Encoder Frequency Error Sensitivity	67.0 – 210.7Hz (0.1Hz step) 250 ms or less 140 to 200 ms $\pm$ 0.3% or less SINAD 8dB or less	
DQT Decoder/Encoder DQT Code Decoder Response Time Turn-off Code Transmission Time Sensitivity	23 bits total: a 3-digit octal number (0 – 7, 12 bits) with error correction (11bits) 250 ms or less 140 to 200 ms SINAD 8dB or less	
Time out Timer	Off to 30 min.	
Repeat Hold Time	Off to 10 sec.	
<b>EXTERNAL CONTROL</b>		
CWID Maximum Modulation CW Tone Frequency Morse Code Speed Maximum Character Memory	Maximum deviation of 40% $\pm$ 10% 400Hz to 2000Hz, (default 800Hz) 5 to 30 words per minute, (default 20WPM) Up to 32 characters (includes space)	
CW Message Maximum Character Number of Banks	Up to 32 characters per bank (includes space) 8 banks	
Test Tone Maximum Modulation Test Tone Frequency	Maximum deviation of 60% 300Hz to 3000Hz (default 1000Hz)	
5-Tone Standard	EEA, ZVEI, CCIR, ZVEI-2, EIA, Kenwood	

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



**CE0168**

**KENWOOD ELECTRONICS UK LIMITED**  
Kenwood House, Dwight Road, Watford, Herts, WD18 9EB, United Kingdom  
www.kenwood-electronics.co.uk  
comms@kenwood-electronics.co.uk