



IP-224
IP Radio Gateway

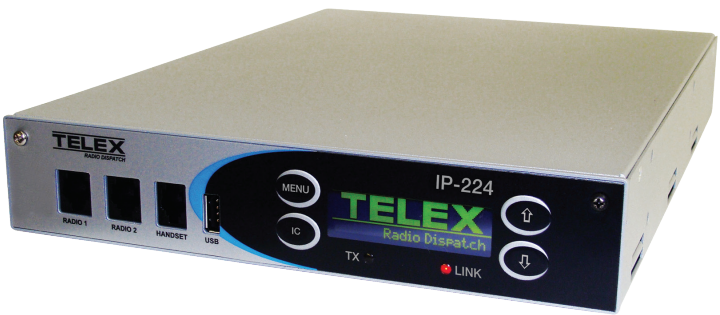
Product Information

Base Hardware	
SAP #	Description
F.01U.306.547	IP-224 adaptor (no options)
F.01U.306.548	IP-224 adaptor w/ factory installed options
Software Options	
F.01U.165.550	IP-224 FltSync decode SW factory installed
F.01U.165.551	IP-224 FltSync decode/encode SW factory installed
F.01U.165.552	IP-224 MDC1200 decode SW factory installed
F.01U.165.553	IP-224 MDC1200 decode/encode SW factory installed
F.01U.165.556	IP-224 EFJ 5300 SW & cable factory installed
F.01U.296.145	IP-224 DMR Interface for Hytera, Tait, and MOTOTRBO factory installed
F.01U.304.800	IP-224 TETRA interface for Hytera, Sepura, PowerTrunk factory installed
F.01U.306.541	IP-224 P25 conventional interface, Kenwood TK-5-5x10, Tait Tm91xx factory installed
F.01U.306.544	IP-224 NXDN interface Kenwood NX-x00, ICOM IC-Fx06x factory installed
F.01U.296.148	IP-224 Sprint Direct Connect interface factory installed
F.01U.217.158	IP-224 FltSync decode SW field installed
F.01U.217.159	IP-224 FltSync decode/encode SW field installed
F.01U.217.160	IP-224 MDC1200 decode SW field installed
F.01U.217.161	IP-224 MDC1200 decode/encode SW field installed
F.01U.217.162	IP-224 EFJ 5300 SW & cable field installed (per-line)
F.01U.296.144	IP-224 DRM interface for Hytera, Tait, and MOTOTRBO field installed

This specification information is subject to change without notification.
* Brand names mentioned are the property of their respective companies.
** MOTOROLA, MOTOTRBO, and stylized 'M' logo are registered in the U.S. Patent and Trademark Office.

F.01U.296.147	IP-224 Sprint Direct Connect interface field installed
F.01U.306.538	IP-224 TETRA interface for Hytera, Sepura, PowerTrunk field installed
F.01U.306.542	IP-224 P25 interface for Kenwood TK-5k-5x10, Tait Tm91xx field installed
F.01U.306.545	IP-224 NXDN Int. Kenwood NX-x00, ICOM IC-Fx06x field installed
F.01U.306.551	IP-224 iDEN interface factory installed R2
F.01U.306.552	IP-224 iDEN interface field installed R2

Accessories	
F.01U.319.163	IP-224 to Hytera DMR interface cable
F.01U.165.538	IP-224 mounting brackets (dual)
F.01U.165.539	IP-224 mounting brackets (single)
F.01U.165.540	IP-224 cable - Kenwood TK-X150/X180, 5X10 and NXDN radios
F.01U.165.541	IP-224 cable - Kenwood TK-X90 radio
F.01U.165.544	IP-224 DB-37 cable assembly to 4-Wire tone cable
F.01U.165.545	IP-224 Motorola CDM/PRO cable interface
F.01U.165.548	IP-224 EFJ 5300 radio interface (cable only)
F.01U.165.554	IP-224 MTRBI radio interface (includes cables)
F.01U.165.542	IP-224 to Sepura interface cable
F.01U.306.539	IP-224 to Hytera Tetra interface cable
F.01U.306.540	IP-224 to PowerTrunk TETRA interface cable
F.01U.306.543	IP-224 to Tait P25 and DMR interface cable
F.01U.306.546	IP-224 to ICOM IDAS interface cable
F.01U.306.549	IP-224 to MOTOTRBO interface cable
F.01U.117.426	Alignment handset



IP-224 is the next generation of IP radio gateway to form the heart of the Telex Radio Dispatch System.

Based upon the Linux operating system, the IP-224 provides an extremely reliable means of remote-controlling two audio devices. The IP-224 can be easily configured to work with both digital and analog consoles, and it performs a wide variety of other tasks related to using radios on a digital network, including state-of-the-art system diagnostics.



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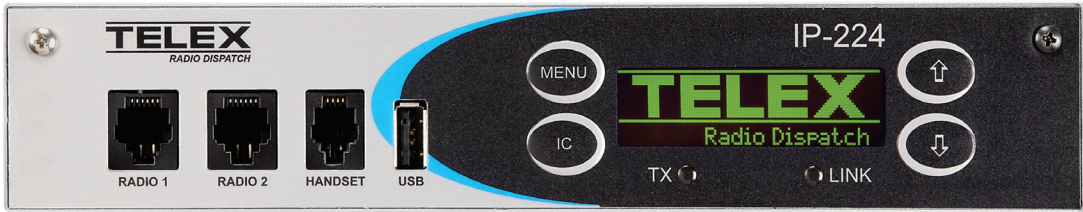
IP-224

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The IP-224’s sleek design combines form with function, allowing easy installation, operation, and servicing. The unit may be rack-mounted or placed directly on a desktop, and it is equipped with an LCD display to clearly provide user feedback when programming. VU meters are also provided via the display for alignment purposes. All other configurations are completed in the web browser configuration windows.

The IP-224 is backward compatible, allowing the use of IP-224 and IP-223 adapters in the same system. This will allow a migration to the new products when desired.



Features:

PTT (Push-To-Talk), monitor, and F1 and F2 relays (programmable to any function tone or revert to F1)	Secure remote web-browser-based programming and configuration
Eight digital outputs for channel selection, completely programmable per function tone	Nine selectable PTT frequencies
CTCSS (Continuous Tone Coded Squelch System) generation (64 frequencies)	Software gain control
Local handset port for monitoring activity and transmission back to base or to radio, uses optional AHS-1 alignment handset.	Menu-driven front panel controls for TX, RX, spare audio, IP addressing, and CTCSS
ANI (Automatic Number Identification) over-the-air-protocol decode and display	Supports USB, RS485, CAN-bus, RS232, and TTL
RX AGC (Automatic Gain Control)	Single- or dual-function tone generation
RX (Receive) audio squelch	Backwards compatible with Telex Radio Dispatch equipment
SoIP (Serial-over-Internet Protocol)	Number of channels or talk groups up to 1000
Crosspatch mode, console mode, redundant ethernet	Four PTT modes and three monitor modes
Guard tone user-selectable for 2100 Hz, 2175 Hz, 2300 Hz, 2325 Hz, 2400 Hz, 2600 Hz, 2800 Hz, 2850 Hz, or 2900 Hz	SNMP

Available Options:

- Fleetsync encode and decode
- MDC-1200 encode and decode
- P25 (Kenwood/Tait)
- Kenwood NEXEDGE®
- Icom IDAS™
- TETRA (Hytera/PowerTrunk/Sepura)
- Sprint Direct Connect
- MOTOTRBO™
- E.F. Johnson RS5300 P25 radio Interface
- DMR (Tait/Hytera)
- iDEN Interface

Available Accessories:

- Single or dual rack mounts
- AHS-1 handset
- Radio Interface cables, please see backside for list

Specifications

Power Requirements	+11 VDC to +16 VDC, 600 mA maximum
Ethernet Speed	10 BaseT or 100 BaseTX
Flash Memory	128 MB
SDRAM Memory	128 MB
Lease Line	2-Wire and 4-Wire supported
Radio Interface	345 VDC withstand rating
Hum and Noise	60 dB below rated output for each line
Non-Relay Outputs	Open collector, active low, 200 mA maximum, 40 V collector to emitter voltage
Radio Input Level	10 mVp-p to 10 Vp-p, adjustable
Line Output Level	10 mVp-p to 10Vp-p, adjustable (Single-Ended)/20 mVp-p to 40 Vp-p, adjustable (Balanced)
Tone Frequencies	Single or dual function tone generation
Function Tone Range	0—3200 Hz, adjustable in 1 Hz increments
Total Tone Duration	0—999 ms
Tone Magnitude	-60 dB to +12 dB
Vocoder	ADPCM 32/16 Kbits, 50 Kbits simplex (active channel) or 34 Kbits respectively, G.711 64Kbit at 82Kbit
Relay Contact Ratings	1A at 63V AC/DC
Digital I/O Ratings	Pull up/pull down/float 3.3 VDC/5 VDC/12 V 10K Ohm Pull up
Transmit Output Impedance	600 Ohms for balanced mode, 200 Ohms for single-ended mode
Receive Input Impedance	10/600/10 K Ohms (User-selectable)
Audio Distortion	2% THD maximum
Audio Frequency Response	300 Hz to 3000 Hz + 1, -3 dB less than 3% distortion
LAM Sensitivity	-50 dB to +10 dB
COR Sensitivity	User selectable rising or falling edge from radio
DTMF Detection Bandwidth	325 Hz around center of frequency
Monitor Timer	10 ms to 9999 ms, adjustable
Control Type	32-bit Digital Media Processor
Electro Static Discharge Immunity	8 kV on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage.
Line Protection	Fast-acting solid state surge protection
Memory Protection	Settings preserved in non-volatile memory
Level Controls	Menu driven front panel controls for TX, RX, spare audio and CTCSS
Operating Temperature Range	0° to 50° C (32° to 122° F) for full specifications
Storage Temperature Range	-30° to 65° C (-22° to 149° F) for full specifications
Dimensions (H x D x W)	1.625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm)
Actual Weight	4.125 lb (1.9 kg)
Shipping Weight and Dimensions (H x D x W)	7 lb (3.18 kg) 5" x 15" x 16" (127 x 381 x 406.4 mm)

