



WORKS FOR YOU

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.

PRODUCT INFORMATION

| | Base | Hard | ware |
|--|------|------|------|
|--|------|------|------|

| SAP# | Description |
|---------------|------------------------------|
| F.01U.306.547 | IP-224 Radio Gateway |
| | (includes MDC and Fleetsync) |
| F.01U.347.907 | IP-224 Radio Gateway |
| | Advanced Options NA |
| F.01U.347.906 | IP-224 Radio Gateway |
| | Advanced Options Export |

Software Options

| SAP# | Description | |
|---------------|--------------------------------|--|
| F.01U.343.869 | IP-224 Field Code | |
| | Advanced Options NA | |
| F.01U.343.868 | .01U.343.868 IP-224 Field Code | |
| | Advanced Options Export | |

Bosch Security Systems, Inc. Telex Dispatch Products 12000 Portland Avenue South Burnsville, MN 55337 Ph: 1-800-898-6723 dispatch@us.bosch.com

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Accessories

| SAP# | Description |
|---------------|--|
| 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 |

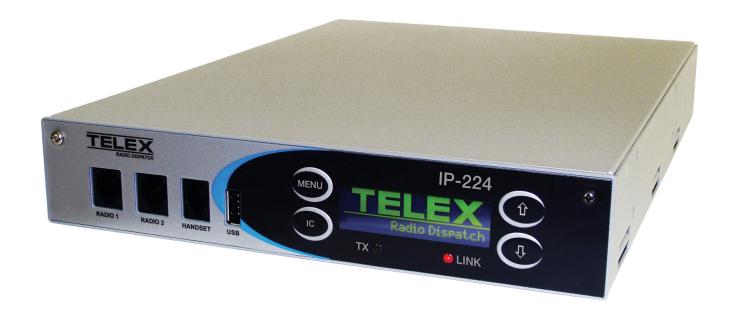








IP-224 IP RADIO GATEWAY









IIP-224 IP Radio Gateway

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 |
| MDC-1200 and Fleetsync encode and decode | Generic API Available |

Advanced interface Option:

- P25 (Kenwood/Tait)
- Kenwood NEXEDGE®
- Icom IDAS™
- TETRA (Hytera/PowerTrunk/Sepura)
- Sprint Direct Connect
- MOTOTRBO™
- (This feature is only available for North America)

 E.F. Johnson RS5300 P25
 radio Interface
- DMR (Tait/Hytera)
- iDEN Interface

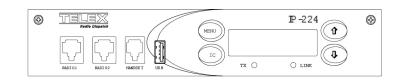
Available Accessories:

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

This specification information is subject to change without notification.

IP-224 Specifications I

| Ethernet Speed 10 BaseT or 100 BaseTX Flash 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 10 Vp-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 327/6 Kbits, 50 Kbits simplex (active channel) or 34 Kbits respectively, G711 64/Kbit at 82/Kbit Relay Contact 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 3-bit Digital Media Processor B kV on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage. Line Protection Settings preserved in non-volatile memory Level Controls Memory Protection Memory Protection Memory Protection Memory Protection Memory Protection Settings or 160°C (22° to 142° F) for full specifications Storage Temperature Range -30° to 65° C (22° to 142° F) for full specifications Dimensions (H x D x W) 1625° x 15° x 65° (4.13 x 292.1 x 215.9 mm) | Power Requirements | +11 VDC to +16 VDC, 600 mA maximum |
|--|-----------------------------------|--|
| SDRAM Memory 128 MB | Ethernet Speed | 10 BaseT or 100 BaseTX |
| 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 10 Vp-p, adjustable Line Output Level 10 mVp-p to 10 Vp-p, adjustable (Single-Ended)/20 mVp-p to 40 Vp-p, adjustable (Balanced) Tone Frequencles 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 G771 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% THO maximum Audio Frequency Response 300 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 Blectro Static Discharge Immunity Premaent and Self-self-self-self-self-self-self-self-s | Flash Memory | 128 MB |
| 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 (Single-Ended)/20 mVp-p to 40 Vp-p, adjustable (Balanced) Tone Frequencies Single or dual function tone generation Function Tone Range O—3200 Hz, adjustable in 1 Hz increments Total Tone Duration O—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 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 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 Memory Protection Settings preserved in non-volatile memory Level Controls Memory Protection Memory Protection Memory Protection Memory Protection O" to 50° C (-22° to 149° F) for full specifications Storage Temperature Range -30° to 65° C (-22° to 149° F) for full specifications Dimensions (H x D x W) 1625° x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | SDRAM Memory | 128 MB |
| 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 10 Vp-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 -60 dB to +12 dB Vocoder ADPCM 32/16 Kbits, 50 Kbits simplex (active channel) or 34 Kbits respectively, 67/16 4Kbit 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 B kV on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage. Line Protection Memory Prot | Lease Line | 2-Wire and 4-Wire supported |
| 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 10 Vp-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 K/bits, 50 Kbits simplex (active channel) or 34 Kbits respectively, G/716 4/kbit 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 + 1, -3 dB less than 3% distortion LAM 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 RN on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage. Line Protection Settings preserved in non-volatile memory Level Controls Memory Protection Memory Protection Settings preserved in non-volatile memory Level Controls 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) 1625° x 11.5° x 8.5° (41.3 x 292.1 x 215.9 mm) | Radio Interface | 345 VDC withstand rating |
| Radio Input Level Line Output Level Line Protection Level Controls Menu of Utput Line Ange Line Protection Level Controls Menu of Utput Line Ange Line Straig Protested Line Voc Code Line Vision Line Line Line Line Line Line Line Lin | Hum and Noise | 60 dB below rated output for each line |
| 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 0—3200 Hz, adjustable in 1 Hz increments Total Tone Duration 0—999 ms Tone Magnitude -60 db to +12 db -60 db to +12 db Vocoder ADPCM \$27/16 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 8 kV on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage. Line 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) | Non-Relay Outputs | Open collector, active low, 200 mA maximum, 40 V collector to emitter voltage |
| Tone Frequencies Single or dual function tone generation O-3200 Hz, adjustable in 1 Hz increments Total Tone Duration O-999 ms Tone Magnitude -60 dB to +12 dB Vocoder ADPCM 32/16 Kbits, 50 Kbits simplex (active channel) or 34 Kbits respectively, 6,711 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 B kV on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage. Line Protection Settings preserved in non-volatile memory Level Controls Memory Protection Memory Protection Memory Protection Verall Security S | Radio Input Level | 10 mVp-p to 10 Vp-p, adjustable |
| Function Tone Range O=3200 Hz, adjustable in 1 Hz increments Total Tone Duration O=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 82/kbit 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 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 -30° to 50° C (-22° to 149° F) for full specifications Dimensions (H x D x W) 1625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Line Output Level | 10 mVp-p to 10Vp-p, adjustable (Single-Ended)/20 mVp-p to 40 Vp-p, adjustable (Balanced) |
| Total Tone Duration O—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 64 Kbit at 82 Kbit 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 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 -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) | Tone Frequencies | Single or dual function tone generation |
| Tone Magnitude -60 dB to +12 dB ADPCM 32/16 Kbits, 50 Kbits simplex (active channel) or 34 Kbits respectively, G711 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 30° 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) 1625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Function Tone Range | 0—3200 Hz, adjustable in 1 Hz increments |
| 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) 1625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Total Tone Duration | 0—999 ms |
| 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 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 -30° to 50° C (-32° to 142° F) for full specifications Dimensions (H x D x W) 1625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Tone Magnitude | -60 dB to +12 dB |
| 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 (-22° to 149° 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) | Vocoder | |
| Transmit Output Impedance 600 Ohms for balanced mode, 200 Ohms for single-ended mode Receive Input Impedance 10/600/10 K Ohms (User-selectable) 2% THD maximum 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 -30° 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) | Relay Contact Ratings | 1A at 63V AC/DC |
| Receive Input Impedance10/600/10 K Ohms (User-selectable)Audio Distortion2% THD maximumAudio Frequency Response300 Hz to 3000 Hz + 1, -3 dB less than 3% distortionLAM Sensitivity-50 dB to +10 dBCOR SensitivityUser selectable rising or falling edge from radioDTMF Detection Bandwidth325 Hz around center of frequencyMonitor Timer10 ms to 9999 ms, adjustableControl Type32-bit Digital Media ProcessorElectro Static Discharge Immunity8 kV on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage.Line ProtectionFast-acting solid state surge protectionMemory ProtectionSettings preserved in non-volatile memoryLevel ControlsMenu driven front panel controls for TX, RX, spare audio and CTCSSOperating Temperature Range0° to 50° C (32° to 122° F) for full specificationsStorage Temperature Range-30° to 65° C (-22° to 149° F) for full specificationsDimensions (H x D x W)1.625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Digital I/O Ratings | Pull up/pull down/float 3.3 VDC/5 VDC/12 V 10K Ohm Pull up |
| Audio Distortion 2% THD maximum 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) | Transmit Output Impedance | 600 Ohms for balanced mode, 200 Ohms for single-ended mode |
| 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 (-22° to 149° 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) | Receive Input Impedance | 10/600/10 K Ohms (User-selectable) |
| LAM Sensitivity -50 dB to +10 dB 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) 1625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Audio Distortion | 2% THD maximum |
| COR Sensitivity User selectable rising or falling edge from radio 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) | Audio Frequency Response | 300 Hz to 3000 Hz + 1, -3 dB less than 3% distortion |
| DTMF Detection Bandwidth325 Hz around center of frequencyMonitor Timer10 ms to 9999 ms, adjustableControl Type32-bit Digital Media ProcessorElectro Static Discharge Immunity8 kV on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage.Line ProtectionFast-acting solid state surge protectionMemory ProtectionSettings preserved in non-volatile memoryLevel ControlsMenu driven front panel controls for TX, RX, spare audio and CTCSSOperating Temperature Range0° to 50° C (32° to 122° F) for full specificationsStorage Temperature Range-30° to 65° C (-22° to 149° F) for full specificationsDimensions (H x D x W)1.625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | LAM Sensitivity | -50 dB to +10 dB |
| Monitor Timer10 ms to 9999 ms, adjustableControl Type32-bit Digital Media ProcessorElectro Static Discharge Immunity8 kV on all exposed operator control areas. At 8 kV no operation is disturbed. At 8 kV no permanent damage.Line ProtectionFast-acting solid state surge protectionMemory ProtectionSettings preserved in non-volatile memoryLevel ControlsMenu driven front panel controls for TX, RX, spare audio and CTCSSOperating Temperature Range0° to 50° C (32° to 122° F) for full specificationsStorage Temperature Range-30° to 65° C (-22° to 149° F) for full specificationsDimensions (H x D x W)1.625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | COR Sensitivity | User selectable rising or falling edge from radio |
| Control Type 32-bit Digital Media Processor 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 O° 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) | DTMF Detection Bandwidth | 325 Hz around center of frequency |
| 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 O° 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) | Monitor Timer | 10 ms to 9999 ms, adjustable |
| 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 O° 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) | Control Type | 32-bit Digital Media Processor |
| Memory ProtectionSettings preserved in non-volatile memoryLevel ControlsMenu driven front panel controls for TX, RX, spare audio and CTCSSOperating Temperature Range0° to 50° C (32° to 122° F) for full specificationsStorage Temperature Range-30° to 65° C (-22° to 149° F) for full specificationsDimensions (H x D x W)1.625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Electro Static Discharge Immunity | · · · · · · · · · · · · · · · · · · · |
| Level ControlsMenu driven front panel controls for TX, RX, spare audio and CTCSSOperating Temperature Range0° to 50° C (32° to 122° F) for full specificationsStorage Temperature Range-30° to 65° C (-22° to 149° F) for full specificationsDimensions (H x D x W)1.625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Line Protection | Fast-acting solid state surge protection |
| Operating Temperature Range0° to 50° C (32° to 122° F) for full specificationsStorage Temperature Range-30° to 65° C (-22° to 149° F) for full specificationsDimensions (H x D x W)1.625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | Memory Protection | Settings preserved in non-volatile memory |
| 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) | Level Controls | Menu driven front panel controls for TX, RX, spare audio and CTCSS |
| Dimensions (H x D x W) 1.625" x 11.5" x 8.5" (41.3 x 292.1 x 215.9 mm) | 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 |
| A struct Malinta | 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) | 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) | | 7 lb (3.18 kg), 5" x 15" x 16" (127 x 381 x 406.4 mm) |





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