TN857 CI-IP-ADAPTER-1 Telex (Vega) IP-224 Ethernet Adapter

The Telex IP-224 Ethernet Adapter provides a reliable means of remotely controlling up to two Codan base stations remotely. The adapter can be used in conjunction with Telex model C-6200, C-Soft, IP-1616, IP-2002 consoles. The IP-223 is interconnected to the distant remote control console(s) by means of any available Wide Area Network (WAN) or Local Area Network (LAN) connection.

The IP-224 can be configured to operate in modes that allow it to connect to both digital and analog radios, and perform a variety of other tasks related to using radios on a digital network. The IP-224 can be rack mounted providing easy installation and service. A sleek LCD display provides user feedback when programming. VU meters are provided on the front of the display for alignment purposes. All other configurations are completed in the web browser configuration windows.

The Telex IP-224 Ethernet Adapter provides the following features:

Ethernet TX and LINK LEDs
PTT (Push To Talk) Monitor, F1 and F2 relays
Four (4) PTT Modes and Three (3) Monitor Modes
Nine (9) Selectable PTT Frequencies
Seven (7) Digital Outputs for Channel Selection
CTCSS (Continuous Tone Coded Squelch System) Generation(64 frequencies)
Software Gain Control
Direct Radio Control
Handset Port for Monitoring Activity and Transmission
Single Function Tone Recognition (16 Function Tones)
AGC (Automatic Gain Control)
RX (Receive) Audio Squelch
ANI (Automatic Number Identification) Over-the-Air Protocol
Up to 1000 function tones supported
MDC1 and FleetSync1 Encode/Decode
SOIP (Serial Over Internet Protocol)
Dual Ethernet Interface for Backup Solution
Supports RS485, CAN Bus, RS232 and TTL
Backwards Compatible with Telex Radio Dispatch Products
Secure Remote Web Browser Programming and Configuration
Single or Dual Function Tone Generation
Guard Tone User-Selectable for 2100Hz, 2175Hz, 2300Hz, 2325Hz,2400Hz, 2600Hz, 2800Hz, 2850Hz or 2900 Hz
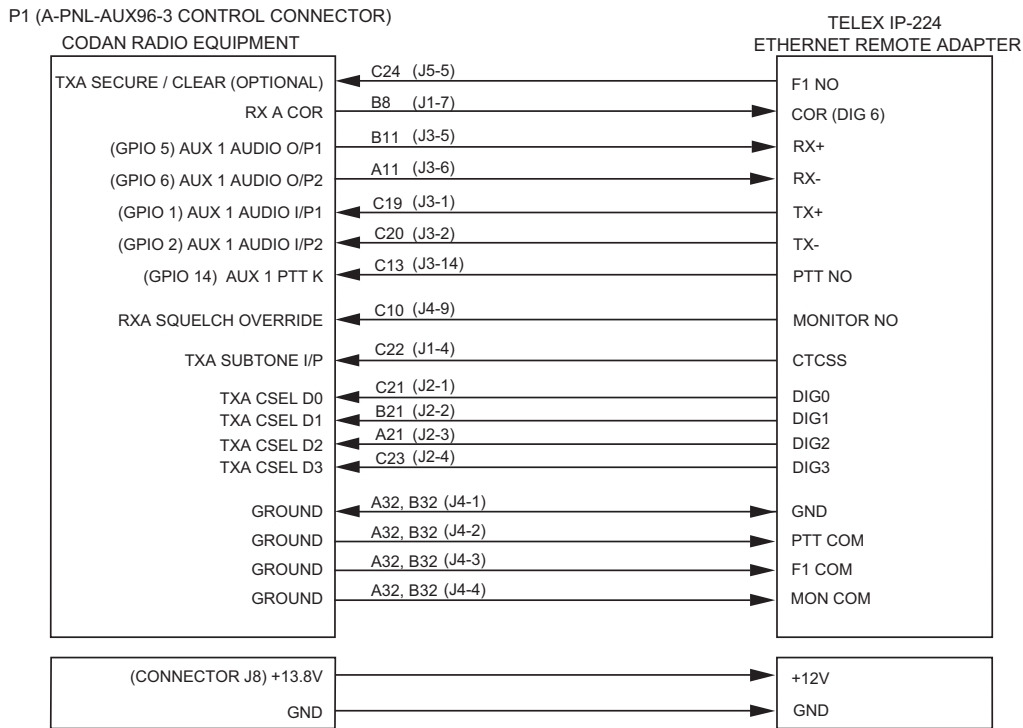Menu Driven Front Panel Control for TX, RX, Spare Audio, and CTCSS

CODAN
RADIO COMMUNICATIONS

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Installation:

A female DB25 connector on the back of the subrack (J10) can be used for basic base connections to a Telex IP-224, using a standard straight-through male-to-male DB25 cable and a female DB25 to male DB37 adapter as follows:

|	
CBLC40-04225092	straight-through male-to-male DB25 cable
CBLC46-TELEX-ADPTR	female DB25 to male DB37 adapter

WARNING: JU108 must be configured correctly or damage can occur. JU108 B for Rx A COR / IP-224. The IP-224 also requires that 2 pins on the DB25 (PTT COM - pin2 and MON COM - pin 16) are wired to ground for proper operation. The A-PNL-AUX96-3 auxiliary connector can also be used to connect to the Telex board to a Codan Base Station with an AC-3E or CI-BC-4E, as shown in Figure 1. Ensure jumpers JU67A (or JU67X for CI-BC-4E) and JU68 are installed on the AC-3E and CI-BC-4E. On Codan MT-4R and MT-4D P25 radio systems, the CTCSS to Subtone connection is not connected.

P1 (A-PNL-AUX96-3 CONTROL CONNECTOR)
CODAN RADIO EQUIPMENT

TELEX IP-224
ETHERNET REMOTE ADAPTER

CODAN RADIO EQUIPMENT	Wire (Pin)	TELEX IP-224
TXA SECURE / CLEAR (OPTIONAL)	C24 (J5-5)	F1 NO
RX A COR	B8 (J1-7)	COR (DIG 6)
(GPIO 5) AUX 1 AUDIO O/P1	B11 (J3-5)	RX+
(GPIO 6) AUX 1 AUDIO O/P2	A11 (J3-6)	RX-
(GPIO 1) AUX 1 AUDIO I/P1	C19 (J3-1)	TX+
(GPIO 2) AUX 1 AUDIO I/P2	C20 (J3-2)	TX-
(GPIO 14) AUX 1 PTT K	C13 (J3-14)	PTT NO
RXA SQUELCH OVERRIDE	C10 (J4-9)	MONITOR NO
TXA SUBTONE I/P	C22 (J1-4)	CTCSS
TXA CSEL D0	C21 (J2-1)	DIG0
TXA CSEL D1	B21 (J2-2)	DIG1
TXA CSEL D2	A21 (J2-3)	DIG2
TXA CSEL D3	C23 (J2-4)	DIG3
GROUND	A32, B32 (J4-1)	GND
GROUND	A32, B32 (J4-2)	PTT COM
GROUND	A32, B32 (J4-3)	F1 COM
GROUND	A32, B32 (J4-4)	MON COM
(CONNECTOR J8) +13.8V		+12V
GND		GND

Jumpers Required For TXA Channel Select:
SR-39-1: JU50A, JU51A, JU52A, JU53A, Remove JU48
On older motherboards (Serial # 123125 and earlier)
the jumpers were as follows:
SR-39-1: JU24B, JU25B, JU26B, JU27B, Remove JU41

Figure 1: Codan Radio System to Telex IP-224 connection

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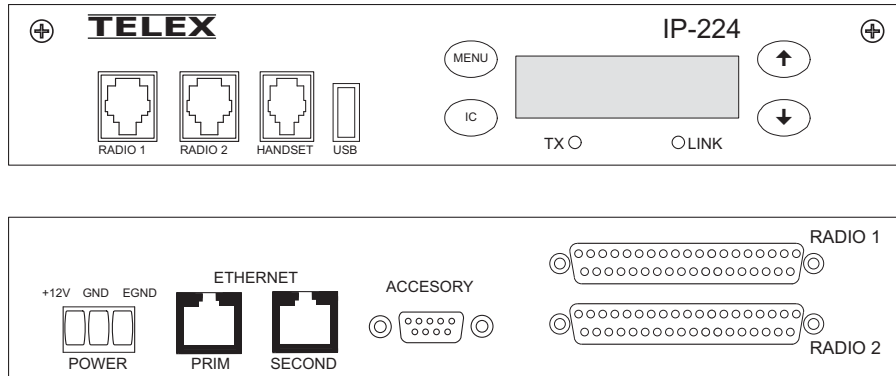
Telex IP Alignment / Tuning Procedures:

Initial Setup

Step 1 - Program the Telex IP-224 for your system. Codan makes the following changes from default:

 - Ethernet Setup: IP Address, Subnet Mask and Default Gateway
 - Multicast Setup: Set RX Mcast, TX Mcast and Mcast address at 224.0.0.13
 - Per Line Setup: CTCSS Setup Always On, Digital Outputs set from 0 up, COR Enable, Hi-Pass RX, and PTT
          Notch Filter selected, Monitor Relay set to Timed 1000 ms.

AC-3E Audio Control Card and CI-BC-4E Base Control Card Tuning

Step 2 - Disconnect the Telex from the Codan radio system.

Step 3 - Apply a 1.0 KHz tone @ 0 dBm (775 mV) to the GPIO 1 (Aux1 I/P 1) and GPIO 2 (Aux1 I/P 2) balanced auxiliary audio input on the Codan radio system.

Step 4 - Adjust R120 (Aux In 1 to TXA) for a transmitter deviation of ± 3 KHz (WB), ± 1.5 KHz (NB).

Step 5 - Inject a 1.0 KHz tone @ a deviation of ± 3 KHz (WB), ± 1.5 KHz (NB) into Receiver A.

Step 6 - Adjust R13 (RXA to Aux Out 1) for an audio level of 0 dBm (775 mV @ 600 ohms) across GPIO 5 (Aux 1 O/P 1) and GPIO 6 (Aux 1 O/P 2) on the Codan radio system. **Note:** MT-4R and MT-4D P25 Receiver modules have a higher audio level output when receiving a digital signal (as opposed to analog). When using these receiver modules in digital mode, adjust R13 for an audio level of -8.0 dBm (308 mV @ 600 ohms).

Step 7 - Connect the Telex to the Codan radio system.

Telex Line and Radio Level Tuning

Step 8 - Inject a 1.0 KHz tone @ a deviation of ± 3 KHz (WB), ± 1.5 KHz (NB) into Receiver A.

Step 9 - On the front of the Telex, go to Gain Adjustments - RX Inputs and adjust Line #1 (dB) until VU reads +0dB.

Step 10 - On the front of the Telex, go to Gain Adjustments - TX Outputs and select Tone as well as PTT. This will key the Transmitter

Step 11 - Adjust Line #1 (dB) for a transmitter deviation of ± 3 KHz (WB), ± 1.5 KHz (NB).

Step 12 - Ensure the transmitter is de-keyed by unselecting the Tone and PTT.

Step 13 - On the front of the Telex, go to System Utilities - Reboot IP-224 and reboot the IP-224.

Step 14 - Connect a console and test the connection.

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Bypassing the AC-3E Audio Control Card and CI-BC-4E Base Control Card:

The AC-3E Audio Control Card and CI-BC-4E Base Control Card can be bypassed and the MT-4E Receiver and Transmitter can be connected directly to the Telex adapter. The control card needs to be removed from the subrack, or unwanted loading could occur.

<u>**The following receiver and transmitter tuning changes would be required:**</u>

Transmitter Setup - Apply a 1.0 KHz tone @ 0 dBm (775 mV) to the Tx A Bal I/P1 (J1-1) and Tx A Bal I/P 2 (J1-2) balanced audio input and adjust the RSS software Balanced Audio Deviation Level for a transmitter deviation of ± 3 KHz (WB), ± 1.5 KHz (NB).

Receiver Setup - Inject a 1.0 KHz tone @ a deviation of ± 3 KHz (WB), ± 1.5 KHz (NB) into the receiver and adjust the RSS software Balanced Output Audio Level for an audio level of 0 dBm (775 mV @ 600 ohms) across Rx A Bal O/P 1 (J1-5) and Rx A Bal O/P 2 (J1-6).

<u>**The DB25 (J10) can be jumpered for Balanced Audio direct to / from the receiver and transmitter as follows:**</u>

WARNING: JU108 must be configured correctly for IP-224 or damage can occur.

JU104	A = RX A Bal O/P2	JU107	A = RX A Bal O/P1
JU105	A = TX A Bal I/P2	JU108	B = IP-223 & IP-224 / RX A COR
JU106	A = TX A Bal I/P1		

On the Wiring diagram for the A-PNLAUX96-3, the following connections change:

(GPIO 5) AUX 1 AUDIO O/P1(J3-5)	Rx A Bal O/P 1 (J1-5)
(GPIO 6) AUX 1 AUDIO O/P2 (J3-6)	Rx A Bal O/P 2 (J1-6)
(GPIO 1) AUX 1 AUDIO I/P1 (J3-1)	Tx A Bal I/P1 (J1-1)
(GPIO 2) AUX 1 AUDIO I/P2 (J3-2)	Tx A Bal I/P 2 (J1-2)
(GPIO 14) AUX 1 PTT K (J3-14)	Tx A PTT (J1-3)