TACTICAL COMMUNICATIONS BRIDGE

www.tcb1.net

TCB-1

Solutions Package

- Powerful DSP based digital audio interface
- Adjustable VOX detector. Non-VOX based COR inputs
- Supports Analog and Digital radios with either conventional or trunked operation. Includes the necessary digital audio delay to preserve the audio during trunked access
- Includes a 7Amp/Hour sealed battery ensuring many hours of uninterrupted operation
- Two user specified radio cables are included with each package
- Each package includes a hand microphone enabling front panel dispatch operation
- Switchable operation utilizing a front panel switch or remotely with a six digit DTMF code
- Windows(tm) based software for remote control operation

TCB-1 Interface Unit

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Custom TCB-1 Pelican Case

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User Selected Radio Cables

→ **TCB-1**

Solutions Package

Integrated in the case Battery/Charger System

The Tactical Communications Bridge 1 (TCB-1) Solutions Package provides a complete package, including the TCB-1 interface, battery and charger power system, two user selected radio cables all housed in a custom Pelican case enclosure. This package is designed for a grab and go minimal time to operate deployment system.

The TCB-1 incorporates many features including simplex and duplex repeater operation, different protocol radio interoperability, radio link extender and cross-band repeater operation. The TCB-1 is an ideal interface between Analog and Digital trunked radio systems. Operators utilizing PTT Cellular phones can easily connect the phone with other conventional or trunking radio systems utilizing the available radio interface cables.

Radio interfacing is simplified by using the built-in radio settings database along with one of the custom radio interface cables.

When connecting different radios to the TCB-1, the radio database contains all the settings needed for the selected radio to operate correctly with pre-defined audio level settings. This ensures that the connected radios audio is correct and interfaced at the correct level.

Interfacing to a trunked radio system is accomplished by selecting the appropriate radio from the radio database. Within the radios profile is the mode of operation for the radio. When a trunked radio is selected, the TCB-1 enables the adaptive digital audio delay feature. The delay minimizes the receiver clipping that can occur when connecting to a trunked system. The TCB-1 has a total of 3 seconds of digital audio delay capacity available during trunked radio operation. If the connected radio generates “Channel Available tones”, the TCB-1 will recognize the tone, and will automatically adjust the length of the digital audio delay. This operation minimizes the length of the audio delay which in turn maximizes the ease of operation.

When ordering the user will need to provide the radio model and its operational mode (either trunking or conventional). All settings based on that information will be incorporated in the TCB-1. If changes are necessary, the user can simply make the changes in the field from the front panel LCD display system.

For more information on the TCB-1, currently supported radios, options, documentation and pricing; contact us by phone at +406-245-5002 or visit our web site at www.tcb1.net

Link Communications Inc.
+406-245-5002 1-800-610-4085 http://www.link-comm.com

TCB-1 Solutions Package Specifications

Power and Size	
Voltage / Current / Temperature	11V .. 18V DC / 350mA DC @ +12V/DC. Integrated 7Amp/Hour Sealed Gell-Cell Battery. -4 °F to 158 °F (-20 °C to 70 °C). 85VAC to 264VAC Power charger module for charging and operating the TCB-1 when AC is present
Size/Weight	18" length x 13" wide x 6.75" deep, Total weight 10 lbs.
Radio Ports	2 radio ports, RJ-45 connector (Balanced Input / Output, VOX only).
Audio Characteristics	
Input Level / Range / Response	150mV p-p .. 8V p-p , 96dB (16 bit digital conversion ADC). > 50K ohms, AC Coupled, 2Hz - 3.5 KHz (-3dB point).
Output Level / Range / Response	0V p-p .. 4.30V p-p, 96dB (16 bit ADC). 600 ohms, AC Coupled. 15Hz - 3.5 KHz (-3dB Point), (600 Ohm Load).
Digital Voice Storage	4 minutes total per radio port, 2 minutes for Simplex Repeater function.
Local Speaker / Microphone	4", 6 watts nominal, 10 watts max, 1/8" mono external speaker jack. RJ-45 microphone (HMN-3596a or equivalent).
I /O Characteristics	
COR and CTCSS Inputs	0V - 30V, (12 bit digital converted ADC), Programmable Pull-up/Pull-down load, 55K Ohm input load.
Access Modes	VOX (Activates on audio), COR, CTCSS, COR and CTCSS, COR or CTCSS.
PTT Output	0V - 40V, 100mA maximum current (DB-9), 0V - 200V, 2 Amp, Relay Isolated w/mechanical contact (RJ-45).
User Output Lines	7 (user programmable function), 750mA sink capacity, 50V maximum voltage.
Digital Characteristics	
DSP Processor / Firmware	40 MIPS Motorola DSP with field software upgrades. Program and Data storage Flash memory based.
Audio CODEC	16 Bit @ 8 KHz sample rate, 4 KHz input/output bandwidth.
LCD	16 character by 2 line. LCD Backlight control either ON, OFF or User Adjustable Timer.
RS-232 Port	300 baud - 115 K baud selectable. GUI remote control interface software from the RS-232 port or Telnet.
Operating Modes	
Conventional	Half duplex transceiver. Receiver audio ignored when transmitter is active. Fixed audio delay available.
Trunked	Same as conventional except adaptive digital audio delay and channel available tone on PTT enabled.
Duplex Radio	Same as conventional except receiver audio and transmit audio paths both enabled.
Duplex Repeater	Receiver activity causes a PTT condition on the same port as the receiver. Ideal for analog repeater ops.
Simplex Repeater	Receiver audio is recorded, up to 2 minutes. When receiver unkeys recorded audio is played back.
Audio Delay Description	
Fixed Audio Delay	The receiver audio is digitally delayed up to 1.50 seconds. Used when trunked system radio does not generate a "Channel Available" tone.
Adaptive Digital Audio Delay	When a port is configured as a trunked port, the TCB-1 configures its digital audio delay into an adaptive audio delay. This allows the delayed audio to be varied based on the information received back from the trunked radio during transmit. For best operation, configure the trunked radio to generate the “Channel Available” tone while in transmit. The TCB-1 will then delay the audio as long as the tone is present. When the tone goes away, the TCB-1 will begin playing back the delayed audio. This ensures that no audio information is lost during the trunking channel acquisition time.
Database Description	
Radio Database	The TCB-1 contains a radio database that has the set-up information for up to 50 radio types. The user can simply select the type of radio connected to each radio port. Once selected, the receiver and transmitter setting will be automatically recalled for the selected radio. No adjustments should be needed when setting up a radio. The radio technician can also edit the radio’s settings to exactly match the connected radio. If a radio is not found in the radio database, the radio technician can develop their own profiles using the radio set-up utility.
Options Available	
Radio Cables	Most handheld / mobile radios are supported and more are added weekly. Custom cables are available for most radios that are listed in radio database. Contact Link Communications for pricing and availability cables and radios not listed.
E&M Type 3 Interface	The TCB-1 supports several E&M interfaces which enable the TCB to connect to external VOIP router equipment (Cisco routers). Custom interface cables are required and can be obtained from the factory.