

GENERAL REQUIREMENTS

PURPOSE

Digital Beltpack shall address the need for a reliable and simple IP solution for interconnecting multiple users in a chain or star topology and allow them to communicate over a partyline or a matrix intercom. The beltpack receives its DC power from a Power over Ethernet switch operating on 802.3af and 802.3at standards. Power over Ethernet output is available to power beltpacks individually and/or in a daisy chain up to six beltpacks. The beltpack shall operate with cable lengths up to 100m from the power source to the last beltpack in the chain. Electrical signals on the beltpack system shall be transmitted over CAT5E cable or better with a 13-ohm resistance or less.

CAPACITY

The Digital Beltpack shall support four channels of audio. It shall access 16 conferences when operating with an IP main station in a digital partyline mode and can access all available IP ports when operating with a matrix to operate like a digital intercom keypanel. Ethernet connectivity shall be available through copper connections with etherCON connectors.

FORM FACTOR

The Digital Beltpack shall be in a rugged, over-molded enclosure, which is IP-53 compliant. The physical dimensions shall not exceed the follow: 140mm (5.51 in) Length x 100mm (3.94 in) Width x 67mm (2.64 in) Depth. The weight of the beltpack shall not exceed 340 g (.75 lbs.)

AMBIENT OPERATING TEMPERATURE

The Digital Beltpack shall operate at an ambient temperature up to -4° F to 113° F (-20° C to 45° C) 5% to 90% relative humidity.

MECHANICAL STRUCTURE

The Digital Beltpack shall have a top panel user interface featuring a color display capable of displaying information about the unit, two rotary encoders with push-function, channel controls, menu controls, and call signal. The bottom of the unit shall have the set of connectors specified below.

FRONT AND TOP PANEL FEATURES

TOP PANEL DISPLAY PROPERTIES

The display shall have the active area of at least 27.72 mm x 27.72 mm. The dot resolution must be 240 x 240 pixels, with a color resolution 16-bit (64K) RGB color. The luminance of the display shall be user-adjustable. The display technology shall be TFT. Display viewing angle shall be 80 degrees, vertically and horizontally.

TOP PANEL DISPLAY GUI

The features of the Digital Beltpack shall be available through an icon-driven Graphical User Interface (GUI) where individual user-configurable functions are selectable from hierarchically organized menus. It is possible for the user to navigate through the menus and select individual items using the front panel rotary knobs and/or menu buttons.

REAR AND BACK PANEL REQUIREMENTS

REAR PANEL FEATURES

The Digital Beltpack shall have a rear panel that uses etherCON connectors for PoE in, PoE out, XLR headset connector, and a 3.5mm TRRS headset connector. The XLR headset connector shall be a male or female four-pin or a female five-pin connector (all three versions shall be available). The microphone input on the XLR headset connector must be able to support both dynamic and electret microphones automatically. The beltpack shall be equipped with volume control knobs to adjust the headphone listen level.

BACK PANEL FEATURES

The Digital Beltpack shall have a removable belt clip and two metal rings for a lanyard attachment. The beltpack shall have a recessed USB port with cover that supports third-party Bluetooth dongles.

OPERATIONAL REQUIREMENTS

CHANNEL CONTROLS

The Digital Beltpack shall have buttons for Call, Menu Select/Back, and Channel Talk with backlight and shall be similar in material and “touch-and-feel”, including amount of tactile feedback. It shall have button combination to toggle Listen on and off when operating with a matrix. The Digital Beltpack shall have rotary encoders for volume/program.

When the Call button is actuated, an alert signal shall be generated in the beltpacks of other users connected to the same partyline. The alert shall be signaled with an optional audible tone and optional vibration of the beltpack itself. When the Talk button is actuated, the headset microphone audio is transmitted to the beltpack of other users. An LED on the Channel Talk button shall indicate to the user which partyline is active as well as in indication on the TFT display.

The beltpack must support the following options: Incoming Call Beep, Call Vibration, Mic Kill, and Key Mode.

Incoming Call Beep shall have two available settings; On, or Off. When On, the beltpack shall generate an audible alert in the headset, upon incoming call. When Off, the audible alert shall be disabled. The beltpack must be able to receive calls on all channels. Call Vibration shall have three available settings; Off, Low, and High. When On, an incoming call shall generate a beltpack vibration, also known as 'buzzer'. When Off, this feature shall be disabled.

Mic Kill shall have three available settings; On, Off, or Send. When On, the beltpack shall disable the microphone when it receives a reserved pilot tone from another beltpack. When Off, the beltpack shall ignore any incoming pilot tone to disable the microphone. When Send is selected, the beltpack shall generate the reserved pilot tone on the party line. The pilot tone shall consist of a pre-defined frequency selected to be outside of the audible spectrum, above 20 kHz.

Key Mode shall have four available settings; On, Off, Latching, or Momentary. When On, the beltpack microphone shall always be on. When Off, the beltpack microphone shall always be off. When Latching is selected, a Talk button depress shall result in the beltpack switching the microphone input from on to off, or from off to on. The microphone then remains in that mode until the next button depress occurs. When Momentary is selected, the microphone shall be on only while the button is depressed. When the button is released, the beltpack shall switch the microphone to off.

MENU CONTROLS

The Digital Beltpack shall have an icon-based menu that supports and visually shows parameters for Setup, Display, Bluetooth, Audio, Call Alerts, and Info.

The Setup menu shall include parameters for Network Configuration, Key Modes, PIN Authentication, Service Tests, Key Assignments, and Offers to the beltpack. Service Tests shall include a Factory Reset. Factory Reset shall have two available settings; Reset or No Reset. When Reset is selected, the beltpack shall revert all settings to the values their default (factory) settings, and the effect of any user programming shall be void. When No Reset is selected, Reset shall not be performed.

Display menu shall include parameters for Display Mode, Brightness, Screen Saver, and Screen Flip. Display Mode shall have three available settings; Normal, Dim, and Dark. Normal shall operate at 76% brightness, Dim at 26% brightness, Dark at 0% Brightness.

Bluetooth menu shall allow for pairing Bluetooth headset and mobile devices.

Info menu shall display client, bootcode, DSP, and software versions as well as serial number and MAC Address.

Call Alerts menu shall include parameters for enabling Call Beep and Call Vibration.

Audio menu shall include parameters for Headset, Sidetone, Echo Canceller, Mixing Signals, Input Output level control, Noise Gate, Mic Select, Mic Type, Hot Mic, and Mic Kill.