CA22CD-SC and CA22CD-DC Release Notes

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1. Introduction

This document describes the new Model CA22CD and how it differs from the model that it replaces, Model CA12CD-S.

There are two primary versions of Model CA22CD: the single-receive-channel version, which is the direct replacement for Model CA12CD-S, and the new dual-receive-channel version that Poly has created for voice systems that require dual-channel headsets and adapters. The single-channel version is Model CA22CD-SC and the dual-channel version is Model CA22CD-DC. Both of these variants are available with either DECT radios for regions like the European Union or DECT 6.0 (a.k.a. UPCS) radios for use in the US, Canada, and Mexico.

2. Background

Model CA12CD-S has been an extremely popular cordless push-to-talk system for use with Poly headsets. The primary users are workers in public safety, other forms of radio dispatch, and air-traffic–control facilities. After a very successful run of more than five years, the DECT radio chipset and some peripheral components were declared obsolete by their manufacturers, whereupon Poly engaged in a redesign of Model CA12CD-S that incorporates an updated radio chipset and associated circuitry. As you'll see below, we also added new features and made other improvements.

3. CA22CD Compared to CA12CD-S

The basic functionality of Model CA22CD is the same as Model CA12CD-S, so users who are familiar with Model CA12CD-S will be able to quickly get up-and-running with Model CA22CD. As can be seen in the figures below, we have taken this opportunity to refresh Model CA22CD's industrial design. We have also added a couple of new features. They are:

1. A USB port to enable use with PC-based communications systems and training simulators.
2. Dual-receive-channel capability: an optional dual-receive-channel remote and a second receive channel in the base. The new base automatically configures itself for either single- or dual-channel operation depending upon which remote is subscribed to it.

Also, the PTT latency (time for a PTT button-press to be communicated to the host equipment) has been greatly reduced and is now under 36 milliseconds.

An additional improvement is that encryption has been increased from 64 to 256 bits.

Figure 1: Model CA22CD-SC: Single-channel Version

Figure 2: Model CA22CD-DC: Dual-channel Version

4. Reference Product Information

This section contains general reference information about Model CA22CD.

4.1 Functional Description

Model CA22CD is a cordless push-to-talk (PTT) headset adapter for providing wireless communications and PTT functionality to public-safety-dispatch, air-traffic-control, and other facilities that employ integrated telephone and radio communications. Consisting of a base and a remote, Model CA22CD has a Quick Disconnect™ connector (for single-channel systems) or a Switchcraft TA6FLX connector (for dual-channel systems), a console-interface cable, and an ac adapter. The single-channel remote is compatible with all Poly H- and HW-series headsets, and the dual-channel remote works with Poly's dual-channel headsets.

Model CA22CD's audio link is intended to be on whenever the base and subscribed remote are powered up, so that the mic is always "hot." The PTT button is used solely for "keying up" the host-equipment's communications radio, and it has no effect upon the status of the audio link. The audio link stays active even when the remote is docked in the base, so that the remote can be used in emergency situations where there is no time to recharge a depleted battery. (Note that Poly recommends avoiding this scenario by regularly swapping batteries about every four hours.)

The base has two charging wells, send- and receive-gain controls, status LEDs, and a ten-foot (extended length) coil cord with a choice of connectors for customers with analog headset interfaces. For voice systems with USB interfaces, Model CA22CD can be ordered with a USB cable. The charging wells accommodate the remote and a spare battery pack. The LEDs show the state of the battery charge and the status of the power, the link, and the PTT switch. The send (talk-volume) controls consist of a four-position slide switch on the underside of the base to emulate the outputs of different microphone types and talk-volume fine-adjust buttons on the top of the base. The receive-sensitivity controls consist of a four-position slide switch on the underside of the base that selects among four different gain ranges and a receive-sensitivity fine-adjust rocker switch on the remote. The typical PJ-7 cable-and-connector assembly is wired with send on the connector tips, receive on the sleeves, and push-to-talk on the rings. When the user presses the PTT switch on the remote, a relay is closed in the base that places a short circuit across the PJ-7 rings. This short circuit "keys up" the communications console to which the Model CA22CD is connected and allows the user to transmit over the host equipment's radio. Console-interface cables with connectors other than the PJ-7 work on the same principles, with send, receive, and PTT configured for compatibility with the host system.

For voice systems with USB interfaces, Model CA22CD enumerates as a composite audio device and game controller that uses standard operating-system drivers. The PTT button appears to the host system as Button 1 of a single-button game controller. (The host-system software must be capable of reading and using this button press.)

In addition to the PTT switch, the remote has an on-off switch with incorporated LED, a metal belt clip, a receive-sensitivity fine-adjust control, and a twelve-inch cable terminated in a either a Poly Quick Disconnect™ connector for single-channel systems or a Switchcraft TA6FLX connector for dual-channel systems.

The technology of Model CA22CD, including the new radio chipset and surrounding architecture, is based on field-proven DECT products that are in use by the thousands throughout the world.

Like Model CA12CD-S, the new Model CA22CD is a medium-range system that uses the DECT 6.0 (Digital Enhanced Cordless Telecommunications) standard to operate in the Unlicensed Personal Communications

Services (UPCS) 1920- to 1930-MHz band for use in North America. For use in regions such as the European Union and Australia, Model CA22CD is configurable through production-line EEPROM settings to operate in the DECT frequency band of 1880 to 1900 MHz.

The DECT protocol is used for its power efficiency, which allows extended operation from a relatively small battery pack. The Model CA22CD variants that are sold outside of North America use ten carrier frequencies, which accommodate a total of 120 duplex channels. To operate in the narrower US UPCS band, Model CA22CD uses five carrier frequencies, with a total of 60 duplex channels.

4.2 Features

Options

1. Choice of single-channel remote or the new dual-channel remote for use with dual-channel voice systems
2. Wide variety of console-interface cables and connectors for compatibility with almost any voice-communications system
3. Secure-voice operation (programmed at the factory), in which the microphone is muted by default until the PTT button is pressed
4. Serialized USB “friendly name” (programmed at the factory) for easy identification of multiple CA22CDs connected to the same host PC

Controls

1. Push-to-talk (PTT) button on the remote
2. Receive-volume fine-adjust rocker switch on the remote
3. On-Off (link-enable) button with integrated green link-status LED, located on the remote
4. Talk-volume fine-adjust buttons on the base (also used for subscription)[1]
5. Receive-volume coarse-adjust switch on the underside of the base[1]
6. Talk-volume coarse-adjust switch on the underside of the base[1]
7. Subscription button on the back of the base

Visual Indicators

1. Link-status LED, remote
2. Subscription-mode indication, remote
3. Subscription-mode indication, base
4. Battery-charging indications, base, two each
5. System-power indication, base
6. Talk LED, base, to indicate closure of the remote’s PTT switch

Audible Indicators

1. Low-battery earcon
2. Receive-volume fine-adjustment earcons

[1] The talk-volume fine-adjust buttons, the talk-volume coarse-adjust switch, and the receive-volume coarse-adjust switch are only active when the base is plugged into an analog host. These controls are not active in the USB interface. When connected to a USB host, talk and receive volume can be controlled in the host PC, and receive volume can be fine-tuned with the receive-volume fine-adjust rocker on the remote.

3. Talk-volume fine-adjustment earcons[1]
4. Loss-of-link (traffic bearer) earcon
5. Returning-in-range earcon

Electrical and RF Features

1. Modular eight-position jack for connection to analog host equipment (Model CA12CD-S's jack is six-position; we've added two contacts to accommodate the optional second receive channel.)
2. New USB port for use with PC-based voice systems and training simulators
3. Carbon-, electret-, and dynamic-mic emulation (analog-host connections only)
4. Over-the-air (OTA) subscription of remote to base. (The remote does not need to be docked in the base.)
5. Battery talk time greater than eight hours with ten hours typical for single-channel operation
6. AES-256 encryption

4.3 Accessories

Model CA22CD is shipped with a spare battery, an ac adapter, and a console-interface cable or a USB cable. The console-interface cable typically comes terminated with a PJ-7 connector, but it can be ordered with other connectors as mentioned above.

4.4 System Versions and Variants

There are four major variants of Model CA22CD:

1. DECT 6.0 (UPCS) with single-receive-channel remote
2. DECT 6.0 (UPCS) with dual-receive-channel remote
3. European DECT with single-receive-channel remote
4. European DECT with dual-receive-channel remote

4.5 Controls and Indicators

Unless otherwise noted, all Model CA22CD controls and indicators are the same as on Model CA12CD-S.

4.5.1 Controls

Table 1 shows Model CA22CD's controls.

No.	Name	Location	Type	Function
1.	Push to Talk (PTT) Switch	Remote	Leaf switch	Keys-up the host-equipment radio
2.	Locking-Momentary Selector	Remote	Mechanical	Enables or disables locking operation of the PTT switch
3.	On-Off	Remote	Pushbutton with integrated green LED	Turns the audio link on and off (default is on)
4.	Receive-Sensitivity Fine Adjust	Remote	Rocker switch	Adjusts the receive sensitivity in 2-dB steps
5.	Receive-Sensitivity Coarse Adjust	Base (bottom)	Four-position slide switch	Adjusts the receive sensitivity in 6-dB steps
6.	Send-Sensitivity Fine Adjust	Base (top)	Momentary pushbuttons (one Up and one Down)	Adjusts the send sensitivity in 2-dB steps
7.	Send-Sensitivity Coarse Adjust	Base (bottom)	Four-position slide switch	Adjusts the send sensitivity to emulate carbon-, electret-, or dynamic-mic outputs
8.	Subscription	Base (back)	Momentary pushbutton	Subscribes a base to its remote

Table 1: CA22CD Controls

4.5.2 Visual Indicators (LEDs)

As shown in Table 2, Model CA22CD has one LED in the Remote and four LEDs in the Base.

No.	Name	Location	Qty	Color	Aspect
1.	On-Off	Remote, integrated into the On-Off switch	1	Green	1) 1-Hz blink to indicate that the audio link between the Remote and the Base is enabled 2) On steadily when the remote is in subscription mode
2.	Power	Base	1	Green	1) On steadily when the Base is connected to power via the ac adapter 2) 1-Hz blink to indicate subscription mode
3.	Talk	Base	1	Green	On continuously when PTT button is depressed, otherwise off
4.	Charge	Base	2	Orange/Green (CA12CD-S is orange only)	1) 1-Hz blink *orange* while battery is charging 2) On continuously *green* when battery is fully charged 3) 6-Hz blink if charger contacts are shorted

Table 2: LEDs

4.5.3 Audible Indicators (Earcons)

Table 3 lists the audible indicators used in Model CA22CD.

No.	Event	Description
1.	Receive-volume fine adjustment	One musical note per step, from E6 (1318.50 Hz) to E7 (2637.00 Hz)
2.	Send-volume fine adjustment	One musical note per step, from E6 (1318.50 Hz) to E7 (2637.00 Hz)
3.	Out of range	Triple beep
4.	Return in range (link was active prior to moving out of range)	Single beep
5.	Low battery	Single beep every ten seconds for five minutes, followed by shutdown
6.	On-off button press	Single beep

Table 3: Earcons