P R O D U C T O V E R V I E W

ESI Cordless Handset II

Flexibility for mobile environments

Introduction

The **ESI Cordless Handset II** uses advanced DECT 6.0[1] third-generation 1.9 GHz technology to provide mobility to the user who's constantly on the move in the office. As with ESI's original Cordless Handsets, users can use most of the rich ESI feature set while enjoying the convenience of a portable device — with the added benefit of increased range of use, thanks to DECT's ability to support **repeaters**. This lets users continue calls while moving between different coverage cells throughout a location, using a process known as *handoff* that's similar to how cell phones work. When you return to your desk, a touch of ESI's Quick Switch™ Key lets you toggle from the lightweight, portable Cordless Handset II back to your full-function ESI desktop Feature Phone.

The ESI Cordless Handset II is offered in one compact handset size but in **three models** — Digital, Local IP, and Remote IP. Each can be used with any ESI Communications Server and is the perfect office companion phone.

The Local IP and Remote IP Cordless Handsets II work with IP-enabled[2] ESI Communications Servers, and support the same features as the ESI Digital Cordless Handset II over an Ethernet® connection. Each IP model is shipped with an Ethernet cable for connection of the base station to the customer's LAN (local) or broadband router (remote).

[1] Digital Enhanced Cordless Telecommunications. For details, see "DECT 6.0 technology" on page 3.

[2] The ESI-50L does not support IP communications (but can be upgraded to an ESI-50, which does).

There are three elements of an ESI Cordless Handset II: the **handset**, its **base station**, and an optional **repeater**.

The **base station** operates as the RF transmitter for the Cordless Handset II, relaying all system information and station call control over a 1.9 GHz signal. The base station of the **Digital** Cordless Handset II receives its power from the ESI system, eliminating the need for a separate power supply. This reduces cabling requirements, while enabling installation anywhere in the building that a station cable can be terminated. More importantly, it ensures that the ESI Digital Cordless Handset II will still be functional during a power outage, if the ESI system is on UPS backup as recommended.

The ESI IP Cordless Handset II's base station is powered by its Ethernet connection, using **Power over Ethernet (PoE)**.

The charging unit for all models is equipped with a charge indicator LED that lights when the handset is seated in the charging unit.

The **repeater** lets you extend the coverage area of your ESI Cordless Handset II in all directions, including up and down to other floors in your building. Each base station supports up to six repeaters.

The Cordless Handset II provides four fixed keys and eight user-programmable keys.

Features at a glance

LCD display

Each ESI Cordless Handset II includes a two-line, 32-character display. The display's icons advise the user of status for: talk mode; battery level; ringer mute; arrival of a new voice mail message; hands-free mode; and microphone mute. (The example below shows all icons visible, although this is not a typical scenario.)

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Rev. B

Familiar fixed-function keys

These keys access the same recognizable ESI prompts and features as the desktop Feature Phones.

- **HOLD** with exclusive hold — The **HOLD** key is outlined in red. Held calls can be accessed by pressing **HOLD** and the appropriate number for the CO line. Calls can be placed on exclusive hold by pressing and holding **HOLD** for more than two seconds.
- **FLASH/RDL** (flash/redial) — When on a call, the user may use this key to toggle between the current call and another call. When the phone is idle, pressing **FLASH/RDL** dials the most recently called number.
- **VOICE MAIL** — Outlined in blue, this key gives the user the same one-touch functionality as the desktop phone, providing easy voice message retrieval. The handy "envelope" icon in the display shows when the user has new voice mail waiting.
- **TRANS/CONF/PROG** (transfer/conference/ program) — This key has three specific functions, depending on the phone's state:
  - When the phone is idle, pressing this key places the phone into station **prog**ramming mode.
  - When the phone is in use on a call, using this key allows **trans**ferring or **conf**erencing, depending on the number and sequence of keypresses and whether the user stays on the call.

Programmable keys

CO lines, stations, mailboxes, departments, speed-dial numbers, Esi-Link locations, and feature keys can be assigned to the **eight programmable feature keys**, which make useful ESI features available with a single touch. Here are some examples:

- Press a *RECORD* key to record a call in progress or create a personal memo. Store and retrieve the information as you would any other voice message.
- A *DOOR UNLOCK* key lets you unlock an ESI Presence Management-secured door from anywhere in the building.
- Program a *VIRTUAL ANSWER* key to make personal call management easy. The Virtual Answer feature lets a busy user advise another caller of the user's status without interrupting a current call. The Virtual Answer greetings give the option to leave a message, continue to hold, or be re-routed to another extension.

Special function keys

- **TALK** — Used to place an internal or external call. Incoming calls are answered by pressing **TALK** or removing the Cordless Handset II from the charger.
- **MUTE** — Press to disable the Cordless Handset II's microphone while on a call.
- **Speaker** (🔊) — Same as **TALK**, except that the incoming audio comes over the speaker of the Cordless Handset II.
- ✱ (**Call Pickup**) — A call ringing at another station can be answered from your Cordless Handset II when you press ✱ and then either press the appropriate blinking programmable feature key or enter the extension number. For example: to pick up a call ringing on extension 103, press ✱ **1 0 3**.
- **#** (**Page**) — To page through all available stations, press **# 0**. To page in only one programmed paging zone, press **#** followed by the one-digit paging zone designation (in a range of 1–9).
- **vol (Volume)** — 

While you're on a call, you can adjust the earpiece or speakerphone volume by pressing the **vol** key on the *side* panel of the Cordless Handset II. To change the ringer type and volume, press the same key when the Cordless Handset II is idle. To turn off the ringer, hold down the key's "minus" side when the Cordless Handset II is idle. The **vol** key also adjusts the Cordless Handset II's **vibrate mode**.

Quick Switch Key

The **Quick Switch Key** (assigned to a programmable feature key on an ESI 24-Key or 48-Key Feature Phone) is a dual-purpose key specifically created for those who have **both** an ESI desktop phone **and** an ESI Cordless Handset II. Providing seamless communications, this key[1] has two uses:

- **Ring option** — The user can select which phone rings, regardless of which extension a caller originally dialed.
- **Transfer control** — Calls can be transferred between the desktop phone and ESI Cordless Handset II with the press of the Quick Switch Key. A user who's on the desktop phone can easily become mobile and continue a call while walking away from the desk, if the call requires.

Headset operation

There's no need to program a headset key. Once the headset is attached to the ESI Cordless Handset II, audio is immediately transferred to the headset. A headset is required to use any hands-free operations.

> **Note:** While other headsets may function to some degree when used with the ESI Cordless Handset II, ESI can guarantee proper operation **only** when the ESI headset (see "Available additional items," page 5) is purchased and installed.

[1] Installer must program a relationship between the ESI Cordless Handset II and user's desktop Feature Phone. Consult ESI system documentation for details.

Competitive advantage

The ESI Cordless Handset II is tightly integrated with the ESI Communications Server. This enables the user to benefit from the features and functionality that are already offered with ESI's desktop phones.

The Digital Cordless Handset II's base station is line-powered by the ESI system, rendering a separate power supply unnecessary.

The IP versions of the ESI Cordless Handset II support Power over Ethernet. This ensures the IP handsets are compatible with all customers' networks, regardless of whether the LAN is PoE-enabled. If it isn't, an inexpensive PoE adapter can be installed between the customer's broadband connection and the ESI IP Cordless Handset II base station.

Once the Installer has programmed a relationship between a user's Cordless Handset II and desktop Feature Phone, the user can program a Quick Switch Key — at which time the user defines a personal ring and transfer control options. These enable a user with a desktop Feature Phone and Cordless Handset II to set up the two individual extensions to appear as one, giving the user flexible mobility choices when communicating with coworkers and customers.

The ESI Remote IP Cordless Handset II base station includes a jack into which the user can plug an analog telephone line. This gives the home-based teleworker the convenience of using both home and business lines with one phone: the ESI Remote IP Cordless Handset II.

The Local IP Cordless Handset II uses industry-standard G.711 voice compression, and the Remote IP model uses G.726 voice compression — each of which is supported by ESI Communications Servers. Each IP model uses QoS and is connected to one channel on any compatible Intelligent VoIP Card (IVC).

DECT 6.0 technology

The ESI Cordless Handset II is designed to achieve the maximum possible range by transmitting and receiving according to the highest specifications set forth by the FCC and IC.[1] This is particularly aided by the use of advanced **DECT 6.0** technology.

Benefits of DECT 6.0

Under DECT 6.0, each ESI Cordless Handset II operates on the **1.9 GHz** frequency band, which has been specially allocated to support cordless telephony. Benefits of DECT 6.0 technology include:

- **Longer battery life** (including longer standby time).
- **Support for repeaters** — Each base unit can be expanded to support up to six optional **repeaters**. This enables the user to significantly extend telephony coverage as compared to a traditional cordless telephone, by simply installing repeaters in appropriate locations. (For more details, see "Repeater," page 4.)
- **Encrypted radio traffic** for higher call security.
- **Wi-Fi friendliness** — DECT 6.0 technology enables use of ESI Cordless Handsets II within range of wireless home networking, or *WLAN*, systems without interference, a major advantage in the many businesses that also make use of WLAN.

Additional information about DECT

For more general information concerning DECT technology, visit *www.dect.org*.

[1] The major communications regulatory agencies for, respectively, the United States and Canada. The FCC is the Federal Communications Commission; IC is Industry Canada.

Base station

Installation

A **base station** comes with each Cordless Handset II and provides the communication link between the ESI Communications Server and the Cordless Handset II. The LED indicates the power status.

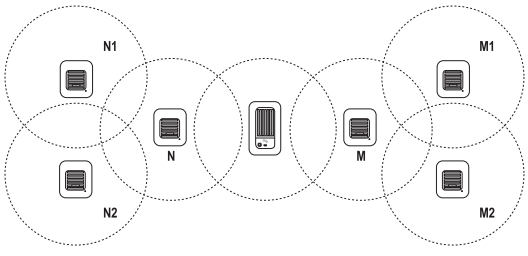
The back of the base station is slightly different for each model:

- **Digital** — Provides one jack into which a digital station port is connected; the other jack is unused.
- **Local IP** — A two-port data switch is built into the Local IP Cordless base station, and provides two RJ-45 Ethernet jacks. One jack is used for connecting the base station to the LAN. The other is used for connecting the PC or other LAN-based hardware into the base station.
- **Remote IP** — Provides one RJ-45 jack into which an Ethernet cable can be connected and an RJ-11 jack into which an analog phone line may be connected.

> **Note:** Power over Ethernet provides power for all IP versions of the ESI Cordless Handset II. In an environment where PoE is not available, a PoE adapter must be used.

Repeater

The optional **ESI Cordless Handset II Repeater** lets users extend the coverage area of a single ESI Cordless Handset II in all directions, including to other floors in a building. If the Repeaters are installed properly[1], so that one's coverage area overlaps that of the base station, calls can be handed off to the Repeaters as the user moves from one coverage area to the next. This is similar to how cell phones work, moving from "cell" (coverage area) to "cell." The following diagram shows one possible installation:



[1] For more details (and multiple diagrammed examples), see the *ESI Cordless Handset II Repeater Installation Guide*, ESI # 0450-1248.

Installing repeaters in a series

Each Repeater can be installed in a series, or "daisy-chain," wherein one repeater connects to a second Repeater instead of connecting directly to the base station. When such an installation occurs, it is necessary to keep in mind the following three rules:

1. Each base station can support a total of six Repeaters.
2. Each Repeater can support only two direct connections to other Repeaters.
3. No Repeater can be more than three connections ("hops") from the base station.

Automatic registration

If a Repeater is connected directly to a single base station, one may perform **automatic registration** to the base station. Once registered, the Repeater can be powered off and moved to a different location, but the registration will remain intact even when the Repeater is powered off (or if there is a power failure).

Clearing the registration so that the Repeater can be registered to a different base station requires a reset of the Repeater.

Registration for a daisy-chain layout

Registering Repeaters to operate in a daisy-chain or sequential layout requires use of the optional Repeater Configuration Kit.[2]

The registration process must be completed separately for each Repeater.

Finding the right location

To get the best operating conditions from each Repeater, it's important to place it in an optimal location. In general, each Repeater should be located:

- As **high** as possible, and **at least six feet off the floor**.
- **At least 35 feet** (horizontally **and** vertically) **away from any other Repeater**.
- **Away from** sources of **interference** (*e.g.*, audio or paging systems, microwave ovens, office equipment, metal doors, thick walls, equipment rooms, elevator shafts, and bathrooms or other mirrored surfaces).
- **Away from** sources of **heat** and **direct sunlight**.
- **Away from wet areas** (including sinks).
- Where it can get **good reception** from the base station to which it's to be registered.
- **Near** a 120 VAC power source.

[2] Installing the software included with the Kit requires *Windows*® administrative rights.

Power

Base station

As mentioned earlier in this document, the base station for an ESI **Digital** Cordless Handset II receives its power from the ESI Communications Server, while the base station for an ESI **Local IP** or **Remote IP** Cordless Handset II receives its power from Power Over Ethernet.

> **Note:** In an environment where PoE is not available, a PoE adapter must be used.

Handset

The ESI Cordless Handset II handset charger requires a power supply (included). If the Cordless Handset II loses battery power, it will power down. Even if power is reinstated immediately after it is lost while the phone is in talk mode, the Cordless Handset II won't automatically return to talk mode.

The charger includes an extra-battery compartment, which recharges an additional battery. This is convenient particularly in work environments which require prolonged use of the Cordless Handset II away from its charger.

Low-battery indicators

The ESI Cordless Handset II has visual and audible indicators to warn of low-battery conditions:

- **In standby mode** — The display's battery status icon will change to show "battery low" and a blinking *Charge Battery* message.
- **In talk mode** — The display's battery status icon will change to show "battery low" and, every 30 seconds, the Cordless Handset II will emit an alert tone.

Battery-save mode

If there is no activity within 30 seconds after the ESI Cordless Handset II is returned from talk mode to standby mode, the device will enter battery-save mode, turning off the illumination on its display and its keys' LEDs. Pressing its keys or receiving an incoming call discontinues battery-save mode.

Talk and standby times

Approximate times for a fully charged ESI Cordless Handset II are:

- **Talk time** — 16 hours.
- **Standby time** — Seven days.

As with all cordless devices, these times will vary among users, depending on the specifics of the installation, environment, and other associated factors.

Included items

Each ESI Cordless Handset II comes with:

- **Base station** — This communicates between the Cordless Handset II and the ESI Communications Server.
- **Charger** — When the Cordless Handset II is not in use, it should be placed in the charger's cradle to keep the Handset's battery fully charged.
- **Battery pack**.
- **Power supply** — Used with the charger.
- **Belt clip** — Helpful for when the Cordless Handset II is in standby or hands-free mode.
- **Wall plate** — For use if the base station is wall-mounted.
- ***Quick-start User's Guide***.
- **Ethernet cable** (with IP models only).

Repeaters are sold separately. Each includes a power supply. The optional **Repeater Configuration Kit** includes a cable, splitter, and CD-ROM (containing *Windows*-based configuration software).

Available additional items

> **Note:** To purchase keypad overlays for these and other ESI phones, visit *www.desi.com*.

Repeater — ESI # 5000-0530.

Repeater Configuration Kit (required to register Repeaters to other Repeaters)

Description	Part number
RS-232C cable	5060-7717
Splitter	
CD-ROM with configuration software	

Batteries (five-pack) — ESI # 5060-7707.

Headset — ESI # 5060-7709.

Accessory kit for ESI Cordless Handset II

Description	Part number
Charger	5060-7708
Power supply for charger	
Belt clip	
Base station wall mount	
Repeater power supply	

Specifications and requirements

	ESI Cordless Handset II specification
Fully charged battery time	Approx. 16 hrs.
Recharge time	5–8 hrs.[1]
Standby time	Approx. 7 days
Approximate range[2]	Without Repeater: 175 ft. With Repeater: 320 ft.
Weight (including battery)	5.4 ozs.
Size, W × D × H (in.)	2.25 × 1.25 × 6.5

Hardware requirements

An ESI **Digital** Cordless Handset II may be installed on all ESI Communications Servers.

An ESI **IP** Cordless Handset II (either Local IP or Remote IP) may be installed on **only** IP-enabled ESI Communications Servers.[3]

The optional Repeater Configuration Kit's RS-232C cable must be plugged into a standard DB-9 (nine-pin)[4] serial port on a PC.

Software requirements

Minimum operating software for ESI Communications Servers to support the ESI Cordless Handset II is system software version xx.04.16. The latest system software is downloadable from *www.esiresellers.com/software*.

The optional Repeater Configuration Kit's software requires the use of *Windows 2000, Windows XP*®, or *Windows Vista*®, and *Windows* administrative rights.

[1] If charged while in the handset. A battery pack placed in the charger's extra-battery compartment requires 15–19 hours to recharge.

[2] Interference may result if cordless base stations are installed within 10 feet of each other. Ranges are approximate, and are dependent on each site's unique characteristics. Feedback may result if the Cordless Handset II is within three inches of the ESI desktop phone.

[3] The ESI-50L lacks support for IP models (but it may be upgraded to an ESI-50, which supports IP models).

[4] For use with some PCs, particularly many laptops, this cable requires an adapter to convert its DB9 connector to a USB connector. Although neither included with the Repeater Configuration Kit nor sold by ESI, such adapters are readily available from retail outlets for computer hardware.

Note: Due to the unique and sometimes complex nature of VoIP technology, ESI requires that Resellers complete certain levels of training to purchase and install IP equipment. Passing the Remote IP Web test is necessary to install either a Local IP or Remote IP Cordless Handset II on an ESI system. Consult your ESI Sales Representative for more information.

About ESI

ESI (Estech Systems, Inc.) is a privately held corporation based in Plano, Texas. Founded in 1987, ESI specializes in business communications systems. ESI pioneered the all-in-one telephone and voice mail system. The original IVX, introduced in 1996, represented a radical breakthrough in system design: the inclusion of a full suite of features within a single integrated system.

Since its days as a small start-up, ESI has enjoyed exceptional stability and growth while maintaining its dedication to small-company values — including the need to take care of the most important part of the equation: your business.