

Grayhill DuraMaxH

Quick Reference Guide v0.03

Bulletin #NNNN

DuraMax[™]
Mobile Computers



Grayhill
Mobile Computing

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Ordering Guide

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<u>Grayhill Product</u>	<u>Grayhill Part Number</u>
Rugged Mobile Handheld VGA Display 1.3Mpix Camera	M1YY1021-1
Rugged Mobile Handheld QVGA Display 1.3Mpix Camera	M1YY1021-2
Rugged Mobile Handheld VGA Display	M1YY1021-3
Rugged Mobile Handheld QVGA Display	M1YY1021-4
Handheld Lithium Polymer Battery 21Whr	M1YY1020-1
Handheld Lithium Ion Battery 10.5Whr	M1YY1020-2
Handheld Lithium Polymer Battery 15.25Whr	M1YY1020-3
Charging Cable with USB Host and USB Client Snap Version	M1HH4151-1
Charging Cable with USB Host and USB Client Screw Version	M1HH4151-2
Evaluation Kit – 1 Handheld QVGA Display (M1YY1021-4) 1 Handheld Lithium Ion Battery (M1YY1020-3), 1 Handheld Product CD, 1 Charging cable (M1HH4152-1)	DURAMAXEVT35

Audience

This manual provides a quick reference source for information about the Grayhill Handheld. The information it provides is intended for qualified electrical personnel familiar with installing, programming, and maintaining industrial networks and industrial automation.

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Introduction

The Grayhill Industrial Handheld Computer is a rugged handheld computer designed for use in heavy industrial or commercial applications. The Handheld provides wireless connectivity and mobile personal computing for personnel who work in extreme environments.

Summary of Features

Environmentally Sealed and Submersible

Daylight Viewing Ability

3.5" VGA (640x480) or QVGA (320x240) Transflective Display

Ruggedness: Solid frame; industrial-strength high impact touch screen

Dimensions: 7.6" x 3.3" x 1.7"

Weight: 20oz. with battery

Operating System: Windows CE 5.0

Processor: Intel XScale PXA260 416 MHz

Long Battery Life: 8 hours at maximum power consumption

64 MB RAM and 64 MB Non-Volatile Flash Memory: No loss of data upon hard reset

Auxiliary Storage Capabilities: Secure Digital / Compact Flash

Multiple On Board Wireless Options: WiFi (802.11x), Bluetooth

Wired Connections: Active Sync and USB via cable

Audio: Speakers and Microphone

Typical Uses

Wireless communications solve difficult industrial and commercial communications problems. Communications using radio waves can be made over long distances, through the heat of blast furnaces and the cold temperatures and precipitation that may be present at outdoor sites.

Whether working in construction, manufacturing, mining, or other physically demanding jobs, field personnel will find the Grayhill Handheld useful not only because of its comprehensive communications options, but also because the Handheld can withstand hard knocks, dusty job sites, extreme temperatures, rain, snow, and even submersion in water.

Handheld Product Components

The portable Handheld product is housed in a 7.6" x 3.3" x 1.7" hard plastic frame that features a rubber boot for added durability, and provides an 3.5" VGA or QVGA display with a rugged 5 wire touch screen. The Handheld 2 keypads one for navigation and one for numeric entry.

Product items that accompany the Handheld product are a Lithium Ion battery or Lithium Polymer Battery, an AC adapter that includes USB Active Sync and USB Host, and a companion CD with an electronic version of this guide.

Evaluation Kit Contents

The Handheld Evaluation Kit includes:

Table 1. Grayhill Handheld Evaluation Kit Components

Handheld Kit Components
1 Handheld Standard
1 Handheld Stylus
1 Handheld Lithium Ion Battery
1 Handheld AC Adapter with USB Active Sync connection and USB Host Connection
1 Handheld Product CD

For more on the Handheld Evaluation Kit, see the section starting on page **Error! Bookmark not defined.**

Setting Up the Handheld

The Grayhill Handheld is shipped with its handle already attached and a rechargeable Lithium Ion battery already installed. However, some initial setup is required.

Charge the Handheld

Before using your Handheld for the first time, charge its battery for about 3 hours, connecting the Handheld to an electrical outlet using the Grayhill Charging cable.

A completely charged battery will power the Handheld for eight (8) hours of maximum power consumption depending on the type of battery ordered with the system.

Charging the Battery Using the AC Adapter

Attach the AC adapter to the Handheld's external connector, then connect the power cord to an electrical outlet.



WARNING: Use only a Grayhill-approved AC adapter with the Handheld. Use of another AC adapter may cause a fire or an explosion. Always connect the AC adapter first to the Handheld. Use the AC adapter with a properly grounded supply to avoid electrical shock. Before plugging the power cord into the wall socket, make sure its voltage and frequency match that of the AC adapter. If using an extension cord with the provided AC adapter, make sure the total current rating of the product does not exceed the current rating of the extension cord.

LEDs

When the Handheld is fully charged, the green Power LED glows steadily Green. When the unit is unplugged from AC or the Battery is not charging the LED is off. While the battery is charging the LED is Amber. If there is a low battery the LED will flash Red. If there is a fault or no battery present the LED will be solid Red.

Turn On the Handheld

If your Handheld has been turned off turn it on by pressing the Power button, located on the upper right-left side of the Handheld's frame. The first time you power on your Handheld, it will take about 45second.

Instant On/Off

After the initial power on, the Handheld instantly turns on when you press the Power button, and instantly turns off when you press the Power button again. The Grayhill Handheld provides these Instant On and Instant Off features to facilitate your work under harsh conditions.

Align the Handheld Touch Screen

The Handheld's touch screen may initially require calibration to align the cursor on the touch screen with the tip of your stylus. To calibrate your screen tap the center of each alignment target with the tip of the stylus.

Resetting

By default, the Handheld's Instant Off feature causes it to immediately power down to a "sleep" mode where closed programs are still running, but the screen's backlight is off. If no use is planned for the Handheld for the near future and batteries need to be removed, you can reconfigure the Instant Off feature to cause the Handheld to turn off completely instead of going to sleep. You'll use the *Power* control panel in *Settings* to reconfigure Instant Off (see page).

Pressing Power on a Handheld with Instant Off configured to completely turn off the Handheld causes a hard reset of the Handheld. When the Handheld is powered on again, all data saved to flash memory will still be present.

Soft resets of the Handheld are accomplished by selecting *Restart* on the Handheld's *Start* menu, or by responding affirmatively to a request for a restart from an installer or other program.

To conduct a hard reset hold the power button down for 6-10 seconds. This will clear the Handheld's ram and reload the OS from Flash.

Using the Handheld

The Handheld's external handheld features are designed for use in harsh conditions or on rugged terrain. Its QVGA OR VGA display, external buttons, and port covers are built to resist impact.

Handheld Buttons



Figure 1.

Handheld Front View

Power/Sleep Button

- Firmly press the Power button on the top right of the Handheld frame to turn the Handheld on.
- Press the Power button again to turn it off (either putting it into sleep mode or else powering it down completely).

Enter Buttons

The Handheld provides two external buttons for you to make a menu item or program selection:

- Press the stand-alone Enter button, located on the top left of the Handheld frame, to ...
- Press the Enter button, located in the center of the Navigation buttons on the Keypad, located below the touch screen, to ...

Either Enter button can be reprogrammed to perform another task, as necessary.

Numeric Keypad and Hot Keys

- Locate on the right of the Handheld is the numeric keypad with an escape (ESC) key and an Enter Key.
- Function keys 1-5 that are the hot keys located on the left of the screen. You can assign any functions you wish to each of these keys via *Settings* on the *Start* menu.

Connectivity



Figure 2. Handheld Cable

These ports, located on the top of the Handheld, provide for necessary connectivity:

- The USB A-Type Female connector facilitates connectivity with peripherals, such as with an external keyboard or a mass storage device.
- The USB A-Type Male connector is for connecting to another PC via Active Sync.
- The Compact flash and Secure Digital permits insertion of storage cards or other devices at the factory

Using the Stylus

You can use the Handheld stylus like a mouse to navigate menus and select items on the Handheld touch screen.

Tapping: Tap the touch screen with the stylus to select or open an item. Tapping with the stylus is equivalent to using your mouse to click an item on your PC screen.

Dragging: Place the stylus on the touch screen and drag the stylus across the screen to select text and images. Drag the stylus down a list to select multiple items.

Task Bar and Start Menu

When you power on the Handheld, the Task Bar will appear at the top of the Handheld touch screen.

Task Bar

The Task Bar at the top of the touch screen contains the *Start* menu and other items. You can perform the following tasks by tapping your stylus on the Task Bar item:

Figure 3. Task Bar

Start Menu

You can display the *Start* menu by tapping . The *Start* menu drops down, showing your favorite programs, *Programs*, *Settings*, the *Find* utility, and *Help* for the current screen.

Figure 4. Start Menu

Pre-Installed Programs

Certain programs are pre-installed for you on the Handheld. When you first power on the Handheld, the following programs will appear on the *Start* menu:

- *ActiveSync*
- *Calculator*
- *Calendar**
- *Contacts**
- *Inbox**
- *MSN Messenger*
- *Notes**
- *Pocket Excel*
- *Pocket Internet Explorer*
- *Pocket Word*
- *Tasks**
- *Today*
- *Windows Explorer*

When your Handheld is connected via the Grayhill cable to your regular computer, you can install other programs on the Handheld.

Using the Keyboard

The Handheld provides a soft keyboard that lets you type letters, numbers, and symbols by tapping them with the stylus. When you tap a text entry field in a program, the keyboard activates to permit data input, as shown in Figure 6 below. Tap each letter, number, or symbol in the order you wish to enter them into the text field.

* A Microsoft *Pocket Outlook* program.

Figure 5. The Handheld Keyboard

Special Keyboard Keys

Note that the soft keyboard also provides these special keys:

- Navigation keys to move within the text field
- An Enter key
- A Tab key
- An All Caps key
- A Shift key
- A Control key
- Accent keys

To use the Navigation, Enter, and Tab keys, tap them.

Tap the All Caps, Shift, or Control key, or one of the Accent keys, then tap the letter, number, or symbol. Just as on a normal keyboard, tap the All Caps key again to enter lower-case letters.

Changing Handheld Settings

Handheld settings, such as the brightness of the Handheld backlight, are changed using Windows Control Panels. Settings are stored in permanent flash memory.

To change a Handheld setting, tap  and then tap *Settings*.

Figure 6. The Handheld Control Panel

Field Swapping the Battery

The handheld is designed for quick field swapping of the battery. Include is ride through technology that allows the user to swap the battery with in a full 2 minuets and maintain a state that does not require a hard boot.

Storing Data

There are multiple ways to store content when using the Handheld. You can save content to:

- Handheld built-in flash memory
- Compact Flash cards or Secure digital installed at the factory.
- Your desktop or laptop, via a wired or wireless connection

Built-In Flash Memory

In addition to 64 MB of RAM, the Handheld provides 64 MB of non-volatile flash storage. Once content is saved to flash memory, it is permanently stored (until you delete it). No loss of data stored in flash memory occurs even if a hard reset is performed.

Storing your data via wired or wireless connectivity is addressed in subsequent sections.

Wired Communications

Wired data communications allow transfer of files for storage on your desktop or laptop computer and installation of software components on the handheld.

Installing ActiveSync on Your Computer

ActiveSync is pre-installed on your Handheld, but may not be installed on your desktop or laptop computer. Run a search for ActiveSync on your regular computer if unsure whether or not it is installed on the computer.

Note: ActiveSync must be installed on your regular computer before you can run it.

If the ActiveSync application is not present on your regular computer, install ActiveSync from the Handheld Product CD. You can also download the most current version of ActiveSync from: <http://www.microsoft.com/mobile/pocketpc/downloads/>. Note that the ActiveSync installation steps may vary from the steps given here.

After starting Microsoft ActiveSync Setup on your regular computer, you will be asked for the folder in which ActiveSync should be installed. We recommend the default folder. Click *Next*.

Figure 9. ActiveSync's Get Connected Dialog

Choosing the ActiveSync Partnership Type

ActiveSync offers two ways to connect from the Handheld to your computer. These different types of connections are called *partnerships*. When installing, the next ActiveSync dialog asks you to choose one of the two types of partnerships: the *Standard Partnership* or the *Guest Partnership*. There are advantages and disadvantages to each type of partnership, as you can tell from the table below which presents the pros and cons of each partnership.

Figure 10. ActiveSync Partnerships Dialog

Table 2. Partnership Pro's and Con's

Connection Type	Advantages	Disadvantages
<i>Standard Partnership</i>	Easier: Files on each computer are automatically synchronized. More Convenient: After the first time, you can connect from Handheld to PC via wired or wireless LAN. Faster: Subsequent connections are speedier, totally automatic. More Flexible: This partnership offers more file sharing options. In Sync: Your Handheld's clock is automatically set to the time on your regular computer's clock.	Less Control: File updating is automatic; correct file updating is dependent on correct setup. Less Safe: Unintended file updates are possible. More Lengthy Setup: There are more questions to answer when first choosing this partnership. Doubly Wrong: If your regular computer's clock is wrong, your Handheld's clock will be wrong.
<i>Guest Partnership</i>	More Control: Files are manually moved/copied between computers. Safer: Since you're in control of file synchronization, data cannot be inadvertently written over. Faster Setup: There are fewer questions asked when setting up this partnership type. Allows for Multiple Partners: This partnership is for use on shared or borrowed computers.	Synchronization Less Certain: Since file updating is manual, there may be inconsistencies. Takes Longer: Manual updating requires attention to detail. Slower Connections: Each time you connect, ActiveSync will ask if you want a Guest or a Standard Partnership connection. Less Convenient: You cannot connect via wireless LAN.

Standard Partnership

If ease of connecting and storing data is what you want, choose the Standard Partnership to have your data automatically synchronized each time you connect using ActiveSync.

You can establish one Standard Partnership with your regular computer, or you can establish two Standard Partnerships – perhaps one with your desktop computer, and one with your laptop.

Guest Partnership

Choose a Guest Partnership if you share a computer with someone else, or if you are borrowing someone else's computer. You can set up multiple Guest Partnerships (what is limit?).

If you can't decide on a partnership type, establish a Guest Partnership until such time that you are more comfortable with a Standard Partnership. Remember that, with a Guest Partnership, you can opt for a Standard Partnership connection each time you connect.

Indicating Your Partnership Choice

Once you have decided on the partnership type, click the checkbox by that type, and click *Next*.

Choosing a Name for Your Handheld

Enter a unique name for your Handheld in the next dialog box, and click *Next*.

Selecting Information for Synchronization

If you have selected a Standard Partnership, the next dialog will ask you to indicate data type targets, such as the Calendar, Inbox, etc., that you want to be automatically synchronized.

1. Select the checkboxes by data types you want ActiveSync to automatically synchronize.
2. Deselect the checkboxes by data types that are not to be automatically synchronized.
3. To customize settings for each program, select the data type, then click the *Settings...* button.
4. When finished, click *Next*.

Figure 11. Selecting Data Types for Synchronization

Running ActiveSync

ActiveSync compares the data on your Handheld with the data on your PC, and then updates all locations with the most recent information. To run ActiveSync using the Grayhill Cable connection, follow these steps:

1. First start ActiveSync on your regular computer.
2. Connect the Grayhill Cable, with the Handheld installed inside it, to your PC using the USB cable.
3. ActiveSync automatically establishes a connection. This may take several seconds.
4. With a Guest Partnership, ActiveSync will ask if you want to connect using your Guest Partnership or with a Standard Partnership. If you stay with a Guest Partnership:
 - On your regular computer, open Windows Explorer and double-click the *Explore* icon to view the file structure on your Handheld.
In the *Explore* window, the Handheld file structure looks and acts like the file structure as shown in the Windows Explorer window on your PC.
Manually copy and paste files in between the two file structure windows.
5. With a Standard Partnership, ActiveSync automatically synchronizes the data types you selected for synchronization, using any customized settings you chose.
 - To change ActiveSync's data types or settings, click *Tools, Options* in the ActiveSync program running on your regular computer.
 - Once synchronization has completed, open Windows Explorer and double-click the *Explore* icon to view the file structure on your Handheld in order to review the files that ActiveSync has automatically updated for you.

Figure 12. Using the Explore Window

Disconnecting ActiveSync

To avoid connection problems, disconnect ActiveSync on your Handheld before closing ActiveSync on your regular computer:

1. Tap the ActiveSync connection icon in the lower right corner of the Today screen.
2. Tap *Disconnect* in the dialog that appears.
3. Remove the USB cable from the Handheld and from your regular computer.

Wireless Communications

WiFi (802.11x)

802.11b/g is an available option that is include on board internal to the Handheld.

BlueTooth

Bluetooth is an available option that is include on board internal to the Handheld.

Antennas

The DuraMax handheld is designed with high gain custom internal antennas.

Regulatory Information

An Grayhill Industrial Handheld Computer complies with Title 47, Part 15, Section 247 of the FCC Rules for radio communication devices.



FCC Approved (USA)

FCC IDs: Industrial Handheld Computer – NMAM1YY1021

Devices that embed EZCom Thunderbird modules can inherit Grayhill's FCC certification.



**Industry
Canada**

**Industrie
Canada**

Industry Canada Certified #: 2972A-M1YY1021

FCC Notices

This device has been certified by the FCC for use with other products without any further certification (as per FCC section 2.1091). Changes or modifications not expressly approved by Grayhill could void the user's authority to operate the equipment as well as the warranty.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the transmitter and the receiver.
- Connect the transmitter into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or ask an experienced radio/TV technician for help.

This wireless probable device has been tested in accordance with the measurement procedures specified in FCC OET 65 SUPPLEMENT C and IEEE Std. 1528-(July 2001), and has been shown to be capable of compliance for localized specific absorption rate *SAR) for uncontrolled environment/general population exposure limits specified ins OET 65.

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Service Information

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