Slate™ User Guide

28th June 2023
Version 0.5

Contents

1   Introduction

The Slate is a portable, refreshable, multiline braille display and stand-alone reader with the following features:

- 3 lines of 40 braille cells with 3x40 model and 5 lines of 20 braille cells with 5x20 model, with pins that arrange into the required pattern to accurately represent any six- or eight-dot braille code, in any language, and for any discipline.
- Cursor routing buttons
- Reads the contents of files on an SD™ (Secure Digital) card or USB drive in the Stand-Alone Mode
- Remote connectivity to PCs and mobile devices for use with a screen reader
- On-board translation from text to braille and from braille to text
- On-board support for contracted braille
- On-board support for over 40 languages, including UEB
- Simple editing functions
- Buzzer and Haptic indications
- Signage-quality braille

2   How the Slate Is Used?

2.1.1 Stand-Alone Mode

Content stored on an SD card (or USB thumb drive) is read in one of three ways:

- Sent by library.
- Prepared on a computer and copied to the device.
- Using onboard translation

In Stand-Alone mode, the Slate displays the contents of files stored on an SD card (or USB thumb drive). It supports text to braille and braille to text translation on-board for English and over 40 other languages. For English, it supports translation to and from contracted and uncontracted braille. In addition, it can be configured to translate contracted braille in other languages. Please refer to the localization section in this guide for more details.

2.1.2 Remote Mode

Connect the device to a computer or mobile device with a screen-reader and then do one of the following:
- Read commercially available titles on Kindle™, Adobe® Digital Editions, or Apple Books® application programs.

- Employ any accessible technology for browsing, utilities, and education.
- The screen reader translates text into Braille code of choice.

3   Transcribed Braille

There are multiple sources for files that are transcribed into high-quality braille. Below are some examples:

- National Library Service (NLS) provides professionally transcribed, formatted files through the Web Braille project.
- RNIB Reading Services offers professionally transcribed braille titles.
- National Braille Press (NBP) produces braille books, textbooks, tests, and information for adults and children.
- Louis Database lists titles produced by over 160 organizations American Printing House for the Blind (APH) transcribes textbooks for K-12 students.

4   Automatic Translation

In addition to professionally transcribed titles, you may also use dynamic translation to obtain braille.

Automatically translated braille may be appropriate for some forms of reading.

- Bookshare® dynamically generates braille formatted files from the titles in its library.
- Sugamya Pustakalaya is India's first and largest collection of accessible books. Users can access a collection of over 3,28,900 books, maintain their individual reading shelves online and download books in chosen formats.
- NFB-NEWSLINE® is a free audio information service, providing downloadable Braille files of up-to-the-minute content from over 400 national, international, and state newspapers.

5   Translate Braille

- The Slate features built-in forward and reverse braille translation. This is controlled by the profile selected from the menu.
- BrailleBlaster™ is a full-featured transcription software package for creating quality formatted braille.
- DAISY™ Pipeline provides a comprehensive solution for converting text documents into accessible formats,
- Send to Braille is a shortcut that adds braille to the Windows® Send To menu, which can convert files on your computer into unformatted BRF (Braille Ready Format) files.

6   Documentation Conventions

For consistency and clarity, we have used the following conventions in this document.

Braille keys are indicated by number. For example, if the documentation indicates Dot 1, it shows: Dot 1.

If multiple braille keys are required, the documentation indicates those keys by showing the numbers separated by a space like this: Dots 1 4.

When modifier keys are used, the documentation separates the modifiers from the rest of the keys with a plus (+) sign like this: Space + Dot 1. Modifiers like the Shift key on a regular QWERTY keyboard, are keys you hold down while pressing another key. This modifies the effect of the pressed key. On a braille keyboard, Space is often used as a modifier key to alter the effect of the input keys.

Key mnemonics are written in capital letters for emphasis but are typed in braille lowercase (unless otherwise stated). When one key follows another, the two keys are shown with a comma between them. For example, the command Select, M means to press and release the Select key, then press and release M (Dots 1 3 4) simultaneously.

The Up, Down, Right, and Left directional buttons on the navigation pad are interchangeably referred to as arrows, buttons, arrow buttons, and arrow keys.

The words Keys and Buttons are used interchangeably.

In the descriptions of each Menu option, this documentation indicates the default setting.

Any reference to navigation by "page" while in Stand-Alone mode only means navigation by 1000 characters (page = 1000 characters).

7   Features

The Slate has the following features:

- 3 lines of 40 refreshable eight-dot braille cells each with 3x40 model and 5 lines of 20 refreshable eight-dot braille cells each with 5x20 model that can display 6-dot as well as 8-dot braille symbols.
- A cursor routing button above each braille cell of the first braille display line.
- Onboard forward and backward braille translation
- Bluetooth® wireless technology

- Buzzer and Haptic indications
- Eight Braille input keys and space bar
- Navigation keypad with four directional buttons (Up, Down, Left, Right) and the Select button.
- USB Type-C charging and communication port
- Full-size SD card slot
- USB Host port to connect a USB drive.
- Rocker keys for panning
- User-replaceable rechargeable battery

8   Orientation Slate 340

The orientation of buttons, keys, cells, and slots is important for understanding how Slate operates and how you input and receive information on your braille display.

To begin with, place the device on a flat surface in front of you with the space bar closest to you. This is the proper operational orientation.

battery compartment is located on the bottom of the device.

8.1.1 **Side view**

On the right side of the device, from front to back, is the USB Type-C (front) and USB Type-A (back).

On the left side of the device, is the recessed on-off switch.

8.1.2 **Front view**

At the frontside of the device, is the SD card slot. The SD card slot is standard type. The SD card is inserted with the card connector fingers facing up and towards the device. To remove the card, press in and remove your finger to pop out

9   Orientation Slate 520

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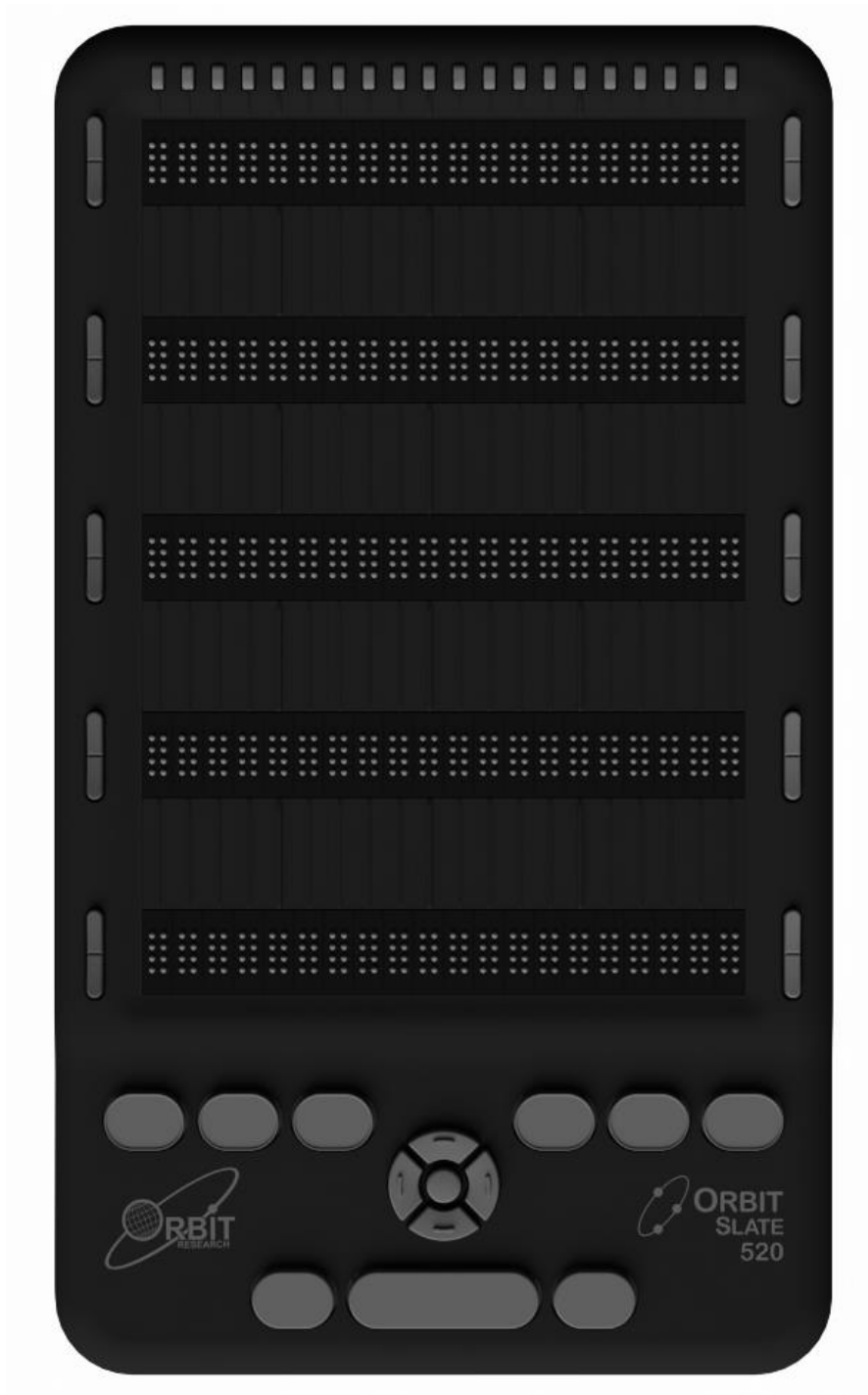
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9.2   Front view

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9.3   Key Locations and Use

When properly oriented, the space Bar (wider key) is closest to you. The Dot 7 input key is to the left of the Space Bar, and the Dot 8 input key is to the right of the Space Bar.

Moving toward the top there is a navigation pad in the middle, between the Braille Input keys and Space bar.

The navigation pad contains the four directional arrow buttons (Up, Down, Left, Right) and the Select button.

The six traditional braille input keys are aligned horizontally above the navigation keypad, Dots 3 2 1 on the left and Dots 4 5 6 on the right. In Stand-Alone mode, the Braille Input keys are used for navigation.

As you continue toward the top you will find 5 braille displays. The Panning keys are at each end of the five braille displays.

For orientation purposes, there are slightly raised tick marks located above each braille cell. Every fifth tick mark is slightly raised than others. For example, the fifth tick mark from the left is somewhat higher than the following markers.

There are cursor routing buttons above each braille cell of the first braille display line.

9.4   Panning Keys

The Panning keys are two-function rocker keys found at either end of the braille display lines.

9.5   8-Dot Braille Cells

The Slate is a six-dot braille device with two additional dots below Dot 3 and Dot 6. These two additional dots are Dot 7 and Dot 8, which are used to indicate capitalization while reading and editing the file in 8 dot mode. These dots also indicate a selected item in the menu, text with attributes or accent marks or a cursor. Their exact use depends on the application you use with the display.

10 Getting Started

The Slate has two modes: Stand-Alone mode and Remote mode. In Stand-Alone mode, the device is a book reader that uses an SD card or a USB thumb drive as storage media. In Remote mode, the device works like a braille display and needs to be connected to a computer or other host with a screen reader.

This section explains how to charge, turn the device on and off, insert the SD card/USB drive, and enter and exit the menus.

10.1.1 Charging the Device

When you receive the Slate, it may be already charged; however, we recommend that it should be fully charged before or during first use. You can use the device and charge it at the same time, so it saves reading time. When the battery in Slate gets to 10% of its capacity, Dot 8 of the last cell of the last display line starts blinking on and off. This behavior is normal and indicates that the battery is low.

To charge the device, use the standard USB-A to Type-C USB cable and the charger power plug provided with the unit. Insert the small end of the cable into the Slate's USB C port. It should slide in without resistance; do not force it. Now insert the large end of the cable into a computer's USB A port or the charger plug provided. Plug the charger into an AC mains outlet.

If the device is on when you connect the charger, the display shows "-- Charger connected". When you unplug the charger, it shows "-- Charger unplugged". The charger plugged and unplugged indications are displayed briefly even when the unit is off. The language of the message depends on the language you select for system messages from the menu. By default, the language will be UEB Grade 1 (uncontracted). The system messages appear on the first display line.

If you have charged the device for 4 hours or longer, and it does not power on, contact Customer Service at techsupport@orbitresearch.com

10.1.2 **Power On and Off**
A square Power (on/off) button is located on the left face of the device. See the Orientation section for more information.

To power on the device, press and hold the power button for 2 seconds.

When you turn the device on, the Slate resumes from the place you left. If you are using the device or inserting the SD card/USB drive for the first time, the Slate shows the first file or folder name on the SD card.

The Slate displays, "SD card [no media]" when the SD card slot is empty.

To turn off the device, press and hold the Power button for two seconds.

The Slate has a low-power standby/sleep mode. Quickly tapping the Power button puts the unit in sleep mode. Tapping the Power button while the device is in sleep mode wakes the device. While editing or when connected to Bluetooth, if no keys are pressed for an hour, the unit automatically goes into sleep mode. Otherwise, the device goes to sleep after 10 minutes of inactivity. After five hours in sleep mode, the unit shuts off to conserve power.

10.1.3 **Inserting and Formatting the SD Card**
The device comes with an inserted SD card with translated braille files already on it, so that you can quickly learn to use the device by reading the material.

The Slate uses standard full-size SD cards from 4GB to 32 GB in capacity. The card must be formatted as FAT32. There is no way to format a card on the device. Most cards come already formatted. However, you can format one as FAT32 on a desktop computer for use with the Slate.

To insert the SD card, find the large slot at the front.

On one of the short sides of the SD card, there are some ridges called fingers or teeth. Position the SD card with the teeth facing up. Now insert the short side with teeth into the device. The SD card should go in smoothly until it gets about a quarter of an inch from being fully in the device. At this point, you feel a slight

resistance. The card slot works like a toaster, gently push the SD card in until you hear a click. The card is aligned with the rear edge when properly inserted.

To remove the card, press it in, a little until it pops out and then gently remove it.

10.1.4 Inserting a USB drive

The Slate comes with a standard USB A host port. You can insert a USB flash drive and read its contents. It shows the message "-- USB drive inserted" when the flash drive is plugged in. You can copy or move content from the flash drive to the SD card and vice-versa.

The Slate can support Flash drives up to 32 GB in capacity. The drive must be formatted in the FAT32 format. It is not possible to format a USB drive on the Slate. You use a Windows or Mac computer to format the drive.

10.1.5 About Menus and File Names

The Slate shows internal menus and file names according to the language selected from the menu.

10.1.6 Entering and Exiting Menus

- To Open the menu, press Up Arrow + Down Arrow
- To Exit the menu, press Dot 7
- To Move through the menu choices, press the Up or Down Arrows
- To See choices within a menu option, use the Right and Left Arrows
- To Select a menu item, press Select

10.1.7 Device Operational Modes

The Slate has two functional modes. Stand-Alone mode and Remote mode.

Stand-Alone mode is the default operational mode and allows you to read, edit, and browse files without being connected to another device. An SD card or USB drive must be inserted in the Slate while operating in Stand-Alone mode. See the Stand-Alone Mode section of this document for more information.

Remote mode allows you to connect the Slate to iPhone®, iPad®, and Android™ mobile devices, as well as desktop computers. In Remote mode, Slate acts as an input and output device for the remotely connected host via USB or Bluetooth. See the Remote Mode section of this document for more information.

To move back and forth between Stand-Alone and Remote modes, use the following commands:

- To switch to Remote mode: press Select + Space + Right Arrow
- To switch to Stand-Alone mode: press Select + Space + Left Arrow

The Stand-Alone mode provides the following features:
- Menu
- File Manager
- Reader
- Editor

Remote mode connects in the following ways:
- Bluetooth
- USB: HID (Orbit), Braille-HID, Serial, or Mass Storage

10.1.8 **Languages and Translation**

The Slate supports multiple languages. They following languages are pre-loaded on the unit:

- USA computer braille (8 dot)
- USA English Grade 1 (EBAE)
- USA English Grade 2 (EBAE)

More than 40 other languages can be loaded from the SD card. These include:

- Arabic Grade 1
- Arabic Grade 2
- French 6-dot Braille
- French 8-dot computer braille
- French Grade 2
- German Grade 1
- German 8-dot computer braille
- Hindi
- Spanish Grade 1
- Spanish Grade 2

You can configure the Slate to use the same or different languages for the system messages and to read/write files. For example, you can have the system menu and messages to be in your local language while you work with UEB Grade 1 (uncontracted) files with the reader/editor or vice versa.

For this, there are language profiles that can be selected and configured from the menu. Alternatively, you can switch between different profiles using the hotkeys. Please refer to the section 'Setting up the languages' for more details.

While typing you need to enter the key inputs as per the language selected. For example, if you have selected UEB Grade 1 (uncontracted), you must type in UEB Grade 1 (uncontracted) only. This applies to any key input you provide such as typing for the Find command, or for renaming the file.

11 The Menu

The Slate provides a menu for setting options, checking the battery, and changing modes of operation.

To open the menu, press the Up Arrow + Down Arrow keys. Battery Status is the first menu option displayed.

Some menu options let you select from among several choices. For example, the Sort option allows you to choose one of the various options for arranging files in the file manager. Other menu options provide information about the device, such as serial number and version. The selected option is underlined with Dots 7 8.

To scroll through the other possibilities, press the Right Arrow key. To select the option, press Select. The Slate responds by underlining the word with Dots 7 and 8 to indicate the choice.

To move to another menu item, press the Up or Down Arrow key. When you get to the end of the list of options and press the Down Arrow key, the Slate moves back to the top menu item. Similarly, when you press the Up Arrow from the first menu item, The Slate moves to the last item in the list. This feature allows quick access to the last few menu items and so some options that may be used frequently are located at the bottom of the menu list.

To close the menu and return to your work, press Dot 7.

11.1.1 Setting up Languages

The Slate comes configured to support USA English Grade 1 (EBAE), USA English Grade 2 (EBAE) and USA Computer Braille (8 dot). Additional language files can be loaded from the SD card. Please refer to the localization section in this guide for more details.

Note: BRF cannot be configured as the system language.

You can also configure the encoding type of the text file.

To allow easy configuration of languages and switching between languages, four language profiles (Profile 1, 2, 3, and 4) are provided. Each profile has options to choose the System Language, Read/Edit Language and Editor Encoding.

11.1.2 **System Language**

The System Language setting allows you to set the language of the system messages and menu options.

11.1.3 **Read/Write Language**

The Read/edit Language setting allows you to read or edit the content in the desired language.

Following is the list of languages that can be set as System language and/or Read/Edit language

- eng_uncontracted (USA English Grade 1)
- eng_contracted (USA English Grade 2)
- eng_8-dot-computer (USA Computer Braille (8 dot))
- brf (BRF format files)
- Additionally loaded Languages from SD card

11.1.4 **Editor Encoding**

The Editor Encoding setting applies to new files only and allows you to save the file in the desired encoding format. Encoding is how the data is stored internally in the text file. There are pros and cons to each of the encoding systems. If you are not sure which encoding to use, we recommend using UTF-8. More details on encoding can be found at https://en.wikipedia.org/wiki/Character_encoding

It has the following options:
- UTF-8
- Unicode-16LE
- Unicode-16BE
- ANSI

The hotkeys for switching between profiles are Select + Dot 1, Select + Dot 2, Select + Dot 3, and Select + Dot 4 for profiles 1, 2, 3, and 4, respectively.

If you accidentally select an unfamiliar language, pressing Select + Dots 1 2 3 restores the default profile.

11.1.5 **Menu Availability**

The menu is available for the Remote and Stand-Alone modes. Press Up Arrow + Down Arrow to open the menu in either mode.

To exit the menu and return to the previous mode, press Dot 7.

11.1.6 **Menu Options**

Some of the Menu options have a default setting (indicated in the list below). For most of these options, you can move among alternatives by pressing the Right or Left Arrows and then pressing Select. Selected items are underlined with Dots 7 8. Refer to the specific section for further information.

- Battery
- Cursor Blink (1)
- Sort (Name: Ascend)
- Split Words (Off)
- Filter Dot 7 (On)
- Wrapping (On)
- Compress Spaces (On)
- Indents (On)
- Profile 1
- Profile 2
- Profile 3
- Profile 4
- Add language
- Remove language
- Version.
- Serial Number.
- Reset Defaults
- Emulate (Orbit Reader 40)
- Window mode (off)
- Vib Intensity (60%)

11.1.7 **Battery**

The Battery status menu item displays the amount of energy remaining in the battery as a percentage of the total capacity of the battery. When the battery in the Slate gets to 10%, Dot 8 of the last cell of the last display line blinks on and off. This behavior is normal, indicating that the battery is low.

When the unit is plugged in for charging, the message "-- Charging XX%" is displayed, where XX is the percentage of remaining energy.

11.1.8 **Cursor Blink (1)**

The Cursor Blink option works only while editing in the Edit Box or Editor mode. This option allows selecting the number of seconds between blinks. The default setting for the Cursor Blink option is one second between blinks. The setting

choices are 1, 5, 15, 30, and 60 seconds, and 0 where the cursor does not blink. To make a selection, press Select.

11.1.9 Sort (Name: Ascend)

The Sort menu item lets you change the order in which files on the SD card or USB drive are displayed using the Slate's built-in File Manager. The sorting categories are: Name, Date, Size, and Last Read.

Additionally, you may sort files within the selected category in ascending or descending order. After selecting a category, press the Right Arrow until you reach either Ascend or Descend in the list and press the Select button. The Slate displays the files in the selected order. The default setting for this menu item is Ascending (A to Z). To return to the File Manager, press Dot 7 from Stand-Alone mode.

11.1.10   Split Words (Off)

The default setting for Split Words is Off. In the default setting, the Reader tries to put as much content on the display as possible without splitting a word. However, if you want full cells of braille, no matter the content, set Split Words to On. When Split Words is on, the Reader shows partial words. When you pan to the next cells of braille, the remainder of that word appears at the beginning of the line. To make a selection, press Select.

11.1.11   Filter Dot 7 (On)

The default setting for Filter Dot 7 is On. The Filter Dot 7 menu item lets you turn off the Dot 7 that frequently appears in some BRL and BRF files. The Dot 7 is filtered by default, but if you want to make a BRL or BRF file that uses eight-dot braille, turn this setting off. To make a selection, press Select.

11.1.12   Wrapping (On)

The default setting for Wrapping is On. The Wrapping option is the Slate's way of reflowing files that are already formatted for embossing. Normally, formatted files contain line-end indicators every 38-40 characters, which starts a new line. This option eliminates extra spaces, making it easier to read on a the display. To make a selection, press Select.

11.1.13   Compress Spaces (On)

Carriage returns, blank lines, and tabs represent extra spaces (or white space) in a document. These spaces take up a lot of room and therefore slow down reading on a braille display. The Compress Spaces option eliminates superfluous blank lines and spaces. If multiple blank lines or spaces appear in the file, they are compressed to a single space. This setting is especially useful when reading formatted text files that contain many blank lines.

The default setting for Compress Spaces is On. To make a selection, press Select.

11.1.14   **Indents (On)**

Paragraph Wrapping lets you choose if the Compress Spaces setting should be applied to the leading spaces of paragraphs or not. If Paragraph Wrapping is set to off, the paragraph is displayed with leading spaces if present, regardless of the Compress Spaces setting.

If Paragraph Wrapping is set to on, the Compress Spaces setting is applied to the leading spaces of the paragraph. The default setting for Paragraph Wrapping is On.

11.1.15   **Profile 1**

The Profile 1 settings are configured by default for using the device with UEB Grade 1. However, it can be configured to select any of the available languages and encoding schemes. The default configurations are as follows:

- System Language: UEB Grade 1 (uncontracted)
- Read/Edit Language: UEB Grade 1 (uncontracted)
- Editor Encoding: ANSI

11.1.16   **Profile 2**

The profile 2 default settings are configured for using the device with the UEB Grade 2. However, it can be configured to select any of the available languages and encoding schemes. The default profile 2 configurations are as follows.

- System Language: UEB Grade 2 (contracted)
- Read/Edit Language: UEB Grade 2 (contracted)
- Editor Encoding: ANSI

11.1.17   **Profile 3**

The profile 3 default settings are configured mainly for using the device with the Computer Braille. However, it can be configured to select any of the available languages and encoding schemes. The default profile 3 configurations are as follows.

- System Language: US Computer Braille (8 dot)
- Read/Edit Language: BRF
- Editor Encoding: ANSI

11.1.18   **Profile 4**

The profile 4 default settings are configured mainly for using the device with the language loaded from the SD card. However, it can be configured to select any of the available languages. The default profile 4 settings are as follows.

- System Language: <Languages from SD card>
- Read/Edit Language: <Languages from SD card>
- Editor Encoding: UTF-8

The default settings of Profile 1,2,3, and 4 can be changed with Right/Left Arrow keys, under the System Language, Read/Edit Language and Editor Encoding options.

For example, if you wish to have the system language as UEB Grade 1 (uncontracted) and work with BRF files, you can select Profile 3 that has the following default settings.

- System Language: UEB Grade 1 (uncontracted)
- Read/Edit Language: BRF
- Editor Encoding: ANSI

Likewise, all profiles can be configured as per the user's requirements.

Please refer to the localization section in this guide for additional information.

11.1.19   **Add Language**

The Add Language menu option lets you load language files from the SD card to the internal memory of your Slate. It lets you load as many languages as the available memory permits. If the memory is insufficient, the unit will display a "memory full" message. If you encounter this, you will need to remove some languages from the memory before you can load new languages.

You can scroll through the available language files on your SD card by pressing the Right or Left Arrow keys and press Select to add a language.

It may take some time for the file to be loaded. The unit shows a busy indication by displaying "busy" on the display.

11.1.20   **Remove Language**

The Remove Language menu option lets you remove language files from the internal memory of your unit so that you can make space for loading other languages.

You can scroll through the loaded languages using the Right or Left Arrow keys and press Select to remove a file.

You can also use the "remove all" option that appears as the first item to remove all the loaded languages at once. It does not remove the US English Grade 1 (EBAE), English Grade 2 (EBAE) and the US computer braille (8-dot).

If you remove a language that is currently assigned in a profile, English 8-dot computer Braille is assigned to the profile by default.

It may take some time for the file to be removed. The unit shows a busy indication by displaying "busy" on the display.

11.1.21   **Version**

The Version item in the menu displays the version number of the software on your device. You may need the version number when talking to Customer Service. For the latest version of software, refer to the website.

Note: The software version is shown in US computer braille (8 dot) only.

11.1.22   **Serial Number**

The Serial Number item in the menu shows the serial number of the device you are using. This number is useful for service and warranty purposes.

11.1.23   **Emulate (Orbit Reader 40)**

The Emulation option allows you to choose how the device appears to the Host screen reader applications while operating in Remote mode. If "Orbit Reader 40" Emulation mode is selected, the Slate appears as Orbit Reader 40. if Emulation mode is Off, it appears as Slate. To select the option, press Select.

11.1.24   **Reset Defaults**

The Reset Defaults item in the menu resets all your menu settings to the factory default settings. To reset to the default settings, press the Select button. This action resets defaults and takes you to the top of the Menu options list (Battery Status).

11.1.25   **Window Mode (Off)**

The Window mode item lets you choose how file content should be displayed when you are reading or editing a file. Please refer to The Display Modes for more details.

11.1.26   **Vib Intensity (60%)**

This lets you configure the intensity of the vibrator used to generate the haptic feedback. The default is 60%.

12 Stand-Alone Mode

Stand-Alone mode is the default operational mode and allows you to read, edit, and browse files without being connected to another device. A formatted SD card or USB drive must be inserted in the Slate while operating in Stand-Alone mode. This card must contain the files you wish to read.

Stand-Alone mode operates in the following ways:
- File Manager
- Menu
- Reader
- Editor

13 File Manager

The File Manager is where you select a file stored on the SD card or USB drive to read on the Slate. You can also create new files and folders, view the properties (such as the file size and current reading position) and copy, rename, and delete files.

When moving through the list of files, the Slate shows the first 100 characters of the file name. You may scroll to the rest of the information about the file, such as the rest of a long file name, its size, and date, by using the panning keys to move the display window. You can change the way files are sorted in the file list using related menu options.

Each item on the file list includes the following items:

- Filename and extension
- The current reading position in the file as a count of characters
- Size in KB (kilobytes)
- Last modified time
- Protected or Unprotected

Only one column is displayed per line (with panning as necessary). Pressing Left or Right Arrow moves to the previous or next column heading (file information). Upon exiting the Reader (Dot 7), you are returned to the same place and column in the File Manager.

The language of the file name is displayed according to the system language. For instance, if the file is in UEB Grade 1 (uncontracted) and the default language is also UEB Grade 1 (uncontracted), it will be displayed in UEB Grade 1 (uncontracted). But If the system language is set to a different language, and the file name is in UEB Grade 1 (uncontracted), the file name may appear unrecognizable. However, you can quickly change the profile using a hotkey to read the file name in the appropriate language.

The Slate supports two media storage devices – external SD card and external USB drive. You can use one or both simultaneously for reading and creating new files.

13.1.1 **File Manager Drives**

The file manager shows two drives at the top level:

- SD card
- USB drive

Pressing the Select key opens the root of the directory of the chosen drive. When you press the Select key on the SD card drive, it opens the root directory of the SD card and shows the list of files available on the SD card. Pressing Dot 7 will take you back to the top level in the file manager. Press the Down arrow key to go to the USB drive and press Select. This opens the root directory of the external flash drive connected to the USB host port.

When there is no flash drive connected to the USB host port, the display shows "USB drive [No media]". Similarly, it shows "SD card [No media]" when there is no SD card inserted.

Inserting a flash drive into the USB Host port shows the message "USB drive inserted" and it shows the message "USB drive removed" when you remove it.

If you are browsing the contents of the flash drive and remove it from the USB Host port, the File Manager takes you to the top directory of the file manager.

You can copy files between SD card and USB drive using available commands.

13.1.2 **File Manager Commands**

The following are the commands which you can use in the File Manager. Most of the commands for files also work for folders.

To open a file or folder, press select or Dot 8. Pressing Select or Dot 8 opens the file or folder.

To go to previous or next file or folder, press Up or Down Arrow. Pressing Up or Down Arrow moves to the previous or next file in the list.

To go back one folder level, press Dot 7. Dot 7 acts like a "back" key to exit the current activity. If you are already in File Manager, pressing Dot 7 moves back one level where you have multiple subfolders open. If you are at the root level, Dot 7 does nothing. If you are in one of the columns of information, for example, size or date, then pressing Dot 7 returns to filename.

To move through file information, press Left or Right Arrow. This command moves you through the file information by headings. See **Error! Reference source not found.** section for more information.

To open the Menu, press Up Arrow + Down Arrow. Pressing Up Arrow + Down Arrow opens the Menu.

To scroll text, press Left or Right Panning keys. If the file name is longer than the display, panning left or right displays more of the file name. When you get to the end of the file name, pressing the panning key moves you to the next item of file information, like position, size, date, and so on.

To make a New Folder, press Space + O (Dots 1 3 5). The New Folder command opens the Edit Box where you may type the name of the new folder. Pressing Dot 8 saves the new folder name and returns you to the file list with that folder selected. If you do not name the folder, pressing Dot 8 names the folder as New Folder. Press Select to exit without making a new folder.

To delete a file or folder, press Space + D (Dots 1 4 5). This action deletes the currently selected file(s) or folder(s). Only empty folders and unprotected files can be deleted. A confirmation is required before the file or folder is deleted. When the message "-- Confirm action" is displayed, press Dot 8 to confirm or press Dot 7 to cancel.

To rename a file or folder, press Space + R (Dots 1 2 3 5). The Rename File command allows you to change the name of a file or folder. To use it, press the Rename command. The Slate responds with an Edit Box containing the original file or folder name. Edit the name or type a new one and press Dot 8. Press Select to exit without renaming a file or folder. Note: The key input for the file name should be entered as per the selected system language.

To cut a file, press Space + X (Dots 1 3 4 6). This action cuts the currently selected file(s) or empty folders from their location and places it (them) on the clipboard to be used with the paste command.

To copy a file, press Space + C (Dots 1 4). The Copy File command makes a copy of the currently selected file(s) or empty folders and places it (them) on the clipboard to be used with the paste command.

To paste a file, press Space + V (Dots 1 2 3 6). This action pastes the file(s) or folder(s) that are currently on the clipboard into the current location in the File Manager. If no file or folder is on the clipboard, no action is taken.

To mark a file, press Space + M (Dots 1 3 4). When moving multiple files, use the Mark File command to mark each individual file before using Cut, Copy, or Delete. To Mark a file, place arrow on the file and press Space + M.
To clear a marked file, press Space + M again.
File Manager indicates marked files by raising Dots 7 and 8 of the first letter of the file name.

To Protect or unprotect a file, press Space + P (Dots 1 2 3 4). To protect a file from accidental changes, arrow to the file and press Space + P. To remove the protected status, select the file and press Space + P again. To determine if a file is Protected, arrow Right or Left to the Unprotected/Protected heading.

13.1.3 **More about Copying and Pasting Files**

When copying or pasting a file that results in another file with the same name, File Manager adds an extension to indicate that the new file is a copy. For example: if you copy book.brf to a folder that already contains book.brf, the new file becomes book_1.brf and the original book.brf remains unchanged.

If the SD card runs out of space before a file operation is completed, File Manager shows, "-- Error copying file xxx" where xxx is the file name.

When copying a large number of files, or large files that can take some time, the File Manager displays progress messages during the copy operation.

If copying a file takes more than five seconds, File Manager displays, "-- Copying xxx (yy%)" where xxx is the name of the file and yy is the percentage complete. This percentage is updated after every 10% of the progress.
For the command keys, go to the File Manager Commands table under the File Manager section.

13.1.4 **File Movement Commands**

To move to the first file, press Space + Dots 1 2 3. Pressing Space + Dots 1 2 3 moves File Manager selection to the first file in the current folder.

To move to the last file, press Space + Dots 4 5 6. Pressing Space + Dots 4 5 6 moves File Manager selection to the last file in the current folder.

To Incrementally search file list, Type the file name quickly. To find a file quickly, type the first few letters of the file's name. File Manager highlights the first file matching the letters you typed.

13.1.5 **Supported File Types**

- BRF: It is translated, formatted braille. Device displays exact representation

- BRL: It is Translated, unformatted braille. Device displays exact representation
- TXT: It is Text format. Device displays as per the language selected.

In addition to the supported file types, the Slate shows the contents of any file. This feature is useful, however, to examine files that do contain readable text even if it is not a supported file type. However, some files may not contain readable content.

There are several excellent braille translation systems available in the U.S. If you obtain textbooks from APH or get transcribed titles from NLS or NBP, the braille should be correct and formatted. You may also get braille translation software that produces automatically translated braille using programs like 'Liblouis'. Alternatively, you can have Bookshare automatically generate braille files of the titles available.

13.1.6 **Preparing Files**

To prepare BRF files for placement on the Slate, follow these guidelines:
- Determine the translation type.
- Translate the file.
- Place the file onto the SD card or use the Mass Storage protocol to copy from your desktop computer.

To copy files to the SD card, remove the card from the Slate and place it into a card reader on your computer. Alternatively, you can connect the USB cable from the Slate to your computer and activate the Mass Storage protocol on the Slate by either pressing Space + Dots 5 7 or selecting Mass Storage from the USB option in the menu. When using the Mass Storage protocol, the Slate shows up as a drive on the computer, and here, you cannot use other functions of the slate.

14 The Reader

In Stand-Alone mode, the Slate displays the content of files stored on an SD card and USB drive. It translates the text into the language that you select for the Read/Edit option in the menu section.

The Slate is designed to be a stand-alone reader. Placing BRF, BRL, or TXT content (see File Types section) on an inserted SD card/USB drive turns it into an on-the-go braille book reader. When first powered on, the Slate displays the contents of the first file on the SD card/USB drive. To get to the file list, press Dot 7. Go to the desired file using the Up or Down Arrow key. Press Dot 8 or Select to open the file. Use Left and Right Panning keys to read it. There are many other functions in reading mode such as Find, Power Move, Bookmarks, and even a menu to set preferences. The following sections describe the commands and settings that can be used while reading.

When you turn the device on, the slate resumes from the last place of the last file in use. For first-time use, it displays the first file or folder on the SD card. Press Dot 7 to close the file and display File Manager, which shows a list of files on the SD card. If there is no SD card inserted, the message "-- No SD card" is displayed.

You can switch the reading language with the help of hotkeys, even if you are in the middle of the file. Please note that if you change the language, the system will translate the file again as per the new language selected.

When you reach the end of the file, "-- End of file" is displayed by the Reader. Similarly, if you are at the beginning of the file, "-- Start of file" is displayed.

14.1.1 Reader Commands

While in Stand-Alone mode, the following commands are available.

To Go to Previous or Next display, Select + Down Arrow or Select + Up Arrow.

To Go to Previous or Next Character, press Left or Right Arrows. If you press Right Arrow key, the next letter appears on the right side of the last display line of the display. To conform to traditional braille display navigation commands, the Reader also supports Space + Dot 3 and Space + Dot 6.

To Go to Previous or Next Word, press Space + Left or Right Arrows. If you press Space + Right Arrow, the next word appears on the right side of the last display line of the display. The Reader also supports Space + Dot 2 and Space + Dot 5.

To Go to Previous or Next Line, press Up or Down Arrows. Pressing the Previous or Next Line command moves to the previous or next carriage return in the file. Also works with the bottom most Left/Right Backward Panning keys

To Go to Previous or Next Page, press Dot 3 or Dot 6. Pressing Dot 3 or Dot 6 moves the cursor back or forward in the file to the next page marker (form feed) or 1000 characters, whichever comes first.

To Go to Top or Bottom of a file, press Dot 1 or Dot 4. Pressing Dot 1 moves to the top of a file; pressing Dot 4 moves to the bottom of a file.

To go to Previous or Next Display, press Select + Up Arrow or Select + Down Arrow. Pressing Select + Up arrow moves to the previous display and pressing Select + Down arrow moves to the next display.

To Exit File, press Dot 7. If reading a file, pressing Dot 7 returns you to your previous location.

To Open the Menu, press Up Arrow + Down Arrow together.

To Set or Clear a Bookmark, press Space + M. In addition to the automatic bookmark placed when you close a file, the Slate lets you set additional bookmarks. Reader displays the message "-- Bookmark added" or "-- Bookmark cleared" if there was already a bookmark at that position.

To Go to Previous or Next Bookmark, press Dot 2 or Dot 5. The Reader responds by moving the cursor to the bookmarked position. The bookmarked location appears as the first character on the display. If there are no marks in the indicated direction, "-- No more bookmarks" is displayed.

To Power Move/Search Forward and/or Back, press Space + Dots 8 + Down Arrow or Space + Dots 8 + Up Arrow. See Power Move Forward and Back section for more information.

To Find Braille, press Space + F (Dots 1 2 4). Pressing Space + F opens an input field (Edit Box) with a cursor. By default, it shows the last search string on the display. This allows you to perform a search in a specific braille format by typing the text in the same braille format. Press Dot 8 to begin the search. To exit the Edit Box without performing a search, press Select. See Edit Box and Find Braille sections for more information.

To Find Next Braille, press Dot 8 + UP Arrow. Pressing Dots 8 + Up Arrow repeats a previous search forward from the point in the file where you are. If there is no text in the Find Edit buffer, the Reader uses the text at the cursor. See the Find Braille section for more information.

To Find Previous Braille, press Dots 8 + Down Arrow. Pressing Dots 8 + Down Arrow repeats a previous search backward from the point in the file where you are. If there is no text in the Find Edit buffer, the Reader uses the text at the cursor. See the Find Braille section for more information.

14.1.2 Power Move Forward and Back

The Slate's power move commands provide a quick means of moving/searching through large sections of a file to find a known location in the document. A power move operates by using boundaries and moving 50% between them with each press of the key command. In essence, by using a power move to search within a file, you are drilling down to the information using a binary command. When you press Space+ Dot 8 + Down Arrow or Space + Dot 8 + Up Arrow, the Reader moves in the following ways:

On the first press, the cursor moves halfway between the current position and the start (Dot 1) or end (Dot 4) of the file, which acts as the boundaries for the power search.

Subsequent presses treat the moved-from position as the new boundary in that direction. So, if you are at the beginning of the file (or 0%) when you press the Space + Dot 8 + Down Arrow, the Reader moves the cursor to halfway between 0% and 100%. You are now at 50%, and this becomes the new boundary. The initial boundary is at the original position of 0%. Therefore, if you press Space + Dot 8 + Up Arrow, you move halfway between 50% and 0% to end at 25%. Or, if you press the Space + Dot 8 + Down Arrow, you move halfway between 50% and 100% to end at 75%.

Each time you press Space + Dot 8 + Up Arrow or Space + Dot 8 + Down Arrow keys, the Reader shows the percentage in the first few cells of the display line and fills the rest of the cells with text at that position. This continues until you press some other key.

14.1.3 **Find Braille**

To find specific braille text, use the Find command (Space + F). The Slate responds by opening an input field (see Edit Box section) with a cursor, which is indicated by Dots 7 and 8. By default, it shows the text at the current cursor location in the edit box. Unlike the Power Move, which searches by known location of text, the Find command searches the entire file for instances of the braille text you enter in the input field. If you have searched for something previously, that text appears in the Edit Box with your cursor at the end.

To find a word, first press Space + F to enter the Edit Box. Type the word you wish to find, in the language selected for the reader/editor and then press Dot 8 to start the search moving forward in the file. To search moving backward in the file, press Dot 8 + Up arrow. The word is shown as the first word on the display. If the word is not found, the message "-- Not found" is displayed. Press Dot 7 to clear the message. To exit the Edit Box without finding the word, press Select.

After the word is found, to continue searching, press Dot 8 + Down arrow to find the next occurrence (forward in the file) or Dot 8 + Up arrow to find a previous occurrence (towards the beginning of the file).

If you are searching for text in a contracted braille file, you must type the text you want to search in contracted braille.

If you are searching in a plain text file, you must type the text you want to search in Computer Braille. See Appendix A - Computer Braille Chart for details.

You can search for terms up to 255 characters long. Searches are generally not case sensitive. A search for the word "animal" results in finding both lowercase and uppercase versions of that word (animal/Animal). However, if you want to find words with upper case letters only, type the text you wish to find with the braille indicator for capitalization included (in contracted braille, one Dot 6 precedes a capital letter, while two Dot 6s precede an entirely capitalized word.

In Computer Braille, capital letters include Dot 7). For example, a search for the capitalized word "Animal" gives the results for "Animal" (capitalized), but not "animal" (lowercase).

Additionally, searches match both whole and partial words. Searching for "an" finds "an" (whole) and "man" (partial). To restrict searches to whole words, add a space at the beginning or end of the word. The Reader matches the space with any non-printing character such as spaces, tabs, and line feeds.

Read the section on Edit Box for editing commands and navigation functionality.

In "search files", the Reader moves from reading files to searched text and displays it at the beginning of the display line. If the text is not found, then the Reader displays "Not found" and gets back to its previous position. While searching through large documents, the Slate displays "Busy" while conducting the search.

To repeat a search moving forward towards the end of the file, press Dot 8 + Down Arrow.

To repeat a search moving back towards the beginning of the file, press Dot 8 + Up Arrow.

15 Edit Box

The Slate presents a text dialog or input field called an Edit Box when you want to find text or rename a file. The Edit Box permits only one line of text. Press Space + F to begin a search or press Space + R to rename a file.

Once in the Edit Box, insert the text by typing the desired text as per the language selected for the reader/editor and then use the Edit Box commands to navigate. The Edit Box displays a blinking cursor (Dots 7 8) to indicate the beginning of the text that you are searching or editing.
When the Slate shows an edit box, it often provides default text, such as a file name or a previously entered search term. To delete or replace the selected text, type a letter, or press the backspace key (Dot 7). To edit the existing text in insert mode, press one of the arrow keys to move the cursor letter by letter to the position where you wish to edit.

15.1.1 **Edit Box Commands**

To Move Left or Right One Letter, press Left or Right Arrow. Pressing the left or right arrow moves the cursor in the desired direction. When the cursor reaches the end of the edit box, it stops--it can move no further.

To move Up or Down by one display line, press Up or Down Arrow. Pressing Up or Down Arrow moves cursor to the Previous or Next display row, retaining the column position.

To Move to Start or End of Text, press Space + Dot 7 + Left Arrow or Space + Dot 7 + Right Arrow.

To Backspace, press Dot 7. The Backspace key Dot 7 deletes the letter immediately left of the cursor. Use Backspace key in case of a typing mistake or to remove small amounts of text.

To Accept typed text, press Dot 8. Here, pressing Dot 8 acts as an Enter/OK key.

To Close the Edit Box, press Select. In single line controls, Close removes what you have typed. In multiple line controls, all text is automatically saved in the editor.

16 The Display Modes

While reading or editing a file, it is shown differently on the display depending on weather window mode is set to on or off in the Menu.
 When it is set to ON, the characters are shown for each line of text without wrapping the lines at the display boundaries.

For example, if the file content is

Hello World. This is slate test file.
It demonstrates how lines shall be displayed on slate.
This is test sentence 1.

Then the display shows following

Hello World. This is
It demonstrates how
This is test sentence

You can scroll the display left or right to view the remaining portions of the line by pressing Select + Left or Select + Right keys. The display also scrolls automatically when you navigate your cursor beyond the display boundaries.

But if the window mode is set to off, the lines are wrapped at the display boundaries. For the same example we used earlier, the display shows the following.

Hello World. This is
 slate test file.

It demonstrates how
lines shall be
displayed on slate

17 Remote Mode

In addition to using the Slate as a portable reading tool and editor, it connects with host devices (i.e., computers, phones, tablets) to provide braille input/output to that device. The host device must be running software that supports braille.

- Windows PCs - JAWS®, NVDA, Windows Narrator, System Access
- Mac® computers and iOS® devices - VoiceOver
- Android devices - BrailleBack, Braille TTY, Amazon VoiceView

When you use the Slate as a display for other hosts, the screen reader on that host device provides translation and other braille settings. Refer to documentation for the specific screen reader you are using.

The only hotkeys used with Remote mode that are not sent to the remote device are as follows:
- Pressing Up Arrow + Down Arrow opens the Slate Menus.
- Pressing Select + Space + Left Arrow returns the Slate to Stand-Alone mode.
- Pressing Select + Space + Right Arrow returns the Slate to Remote mode.

17.1.1 Before you Connect

Before you connect the Slate to a host, it is important to set the device so that the screen reader(s) you use, recognize it. The Slate is in the process of being registered with screen readers. Currently, to use the Slate, unless the screen reader support HID-Braille protocol, you must change the Emulation mode to Orbit Reader 40 in the Menu. Once the Slate is supported by screen readers, it will no longer be necessary to use the Emulation mode.

If you plan to connect multiple host devices and if any of your preferred screen readers does not support the Slate, you must use the same emulation setting for each device. Note that if you already have emulation set and you want to change the setting, you must disconnect the device from the host first. Temporarily turn off your screen reader's braille support before altering the setting.

If you have paired the Slate with Emulation off, unpair it from Bluetooth connections before using it again.

17.1.2 Using the Bluetooth Connection

Bluetooth is a technology that wirelessly connects devices, such as the Slate, to host devices, such as phones, tablets and computers or to peripherals such as

Bluetooth keyboards. For example, when using an iPhone with VoiceOver, you can control the iPhone with keys and buttons on the Slate, and you can read the entire interface in braille as you interact with it.

If the Slate is on, when you turn on the host device, it connects automatically provided the Bluetooth option in the menu is set to Automatic. When the host device enters sleep mode or is turned off, the Slate reverts to showing stand-alone content. When connected to another device through the USB port, the Slate reconnects to screen reader on the other host device.

There are only two ways to wake up a host device:

- Pressing the Power button
- Receiving a notification

17.1.3 **USB**

Universal Serial Bus (USB) is a technology that makes connecting devices with hosts easy. It provides some advantages over Bluetooth because it is both faster and charges the Slate simultaneously.

The Slate supports four kinds of USB connections (all with the same cable available in the box.)

- Human Interface Device - Orbit (recommended)
- Braille - HID
- Serial
- Mass Storage (for turning the Slate's SD card into a drive on your computer)

17.1.4 **Human Interface Device (HID) – Orbit**

When using the Slate with a screen reader that supports HID Orbit, follow these steps:
1. Turn on the Slate. Slate displays the last braille you were reading.
2. Connect the USB cable to the host and to the Slate. "-- Charger connected" is displayed.
3. On the Slate, press Space + Dots 2 7. "-- HID Orbit" is displayed.
4. Start the screen reader. Orbit responds by displaying what the screen reader is showing. If your screen reader does not support HID Orbit, see Serial below.

To switch back to Stand-Alone mode, press Select + Space + Left Arrow.

17.1.5 **Human Interface Device (HID) – Braille**

When using the Slate with a screen reader that supports HID Braille, follow these steps:

1. Turn on the Slate. Slate displays the last braille you were reading.
2. Connect the USB cable to the host and to the Slate. "-- Charger connected" is displayed.
3. On the Slate, press Space + Dots 6 7. "-- HID Braille" is displayed.

Start the screen reader. Orbit responds by displaying what the screen reader is showing. If your screen reader does not support HID, see Serial below. Switch back to Stand-Alone mode, press Select + Space + Left Arrow.

17.1.6 **Serial**

When using a screen reader that only supports Serial protocol, follow these steps:

1. Turn on the Slate. It displays the last read material.
2. Connect the USB cable. "-- Charger connected" is displayed.
3. On Slate, press Space + Dots 3 7. "-- Serial USB" is displayed.
4. Configure the screen reader. Refer to the screen reader section in this document or refer to your screen reader documents.

17.1.7 **Mass Storage**

To use an SD card inserted in the Slate as a drive on your computer, follow these steps:

1. Turn on the Slate. It responds with braille from your last activity.
2. Connect the Slate with your computer using USB cable. "-- Charger connected" is displayed.
3. On the Slate, press Space + Dots 5 7. "—Media-device " is displayed. Depending on your settings, the computer also responds with a notification of a new drive that is now available.
4. Use your PC to read and write files on the new drive.

To switch back to Stand-Alone mode, press Select + Space + Left Arrow. Do not switch back to Stand-Alone mode while file transfers are in progress.

Note: If you have hidden files enabled on your device, you may encounter the following files:

- .BKP-FILEHISTORY - This file contains information of the last read position of the last 100 files that were opened on the device.
- .BKP-RECENTHISTORY - This file contains information required for software to generate the recent file list.
- .Logfile - Log file containing software debug information.

Do not delete these files. You will only see them if you have hidden files enabled.

17.1.8 **Windows PCs**

Before connecting the Slate with a PC, you must first decide how you wish to connect: via Bluetooth or USB. This is a personal choice. USB charges the device as you use it, so it is a good choice when your battery is low. Bluetooth does not use wires, so it is a good choice when you are on the go.

17.1.9 **Connecting to Windows over Bluetooth**

When connecting the Slate with Bluetooth, you must first choose a pairing configuration.

The default configuration is 'Just Works'. If the Slate is in default connection, follow these steps to pair the device:
1. On the PC, perform a Bluetooth search.
2. Select the Orbit Reader 40 from the list of Bluetooth devices.

Confirm code configuration shows a random number on both the Slate's braille display and on the host device. Follow steps 1 and 2; then, to confirm the request, compare the numbers in the Bluetooth dialog on the Windows PC with the code shown on your display. If they are the same, select 'Yes'. If the numbers do not match, select 'No', and try the next Orbit Reader on the list. Pairing requests can be accepted by pressing Dot 8 or rejected by pressing Dot 7 from the Slate device. The purpose of this procedure is to allow more than one Slate device to be paired in the same room at the same time without pairing the wrong device.

The device pairs with the Slate and an incoming Bluetooth virtual serial port is set up on the PC.

Next, check the Ports list in the Windows Device Manager to find the COM port number assigned to the outgoing Bluetooth serial port. Make a note of this number.

In your screen reader on the PC, set the active Braille display COM port to use as the relevant Bluetooth serial port COM number.

17.1.10   **Non-Visual Desktop Access (NVDA)**

You can choose any of the emulations or the emulation off settings with NVDA. Go to the NVDA Preferences menu and select Braille Settings from the list. From the braille display drop-down menu, select "Baum/Humanware/APH/Orbit Displays" and click OK.

NVDA turns 'On' braille output when it is configured for the display. To turn 'Off' braille support, select "No Braille" from Braille Display options in the Braille Settings menu.

17.1.10.1.1   NVDA Commands

- To Move up one line, press Up Arrow
- To Move down one line, press Down Arrow
- To Move left one character, press Left Arrow
- To Move right one character, press Right Arrow
- To Enter, press Select

18 Reboot the Device

If the Slate suddenly does not respond to button presses, and you know that the battery is not fully discharged, then you may try rebooting the device by pressing the Right bottom most lower Panning key + Dot 8. There is no indication of the reset event. The unit is in power-off condition after reset and needs to be powered on before it can be used.

19 Device Upgrade Procedure

19.1.1 Device Firmware Upgrade

New versions of the firmware for the Slate are released from time to time, containing improvements, bug fixes, and new features. This section describes the procedure for updating the Slate firmware.

There are two ways to upgrade the firmware of the Slate: either using a Windows PC and a USB cable or using an SD card containing the update file.

The USB upgrade method requires a Windows PC, but the upgrade process is simple and quicker, but the SD card upgrade method only requires a computer to download the update file and put it on the SD card; then no computer is required to perform the actual upgrade.

19.1.2 Using the Windows PC Upgrade Utility

The following is required to perform the upgrade to the Slate with a PC:

1. The Slate unit
2. Standard USB-A to Type-C USB cable
3. A PC running Windows XP or later.
4. The Slate Upgrade Utility file found in the Slate folder (see **Error! Reference source not found.**).
5. Slate Release Bin files found in the Slate folder (see **Error! Reference source not found.**).

To upgrade the firmware, follow these steps:

1. Make sure the Slate is turned off.
2. Connect the Slate to the PC using the USB cable.
3. In the Release folder on your PC, run the Slate Firmware Upgrade Utility. If you receive an error message, see the Troubleshooting section. Assuming no errors, the program displays the message, "Note: Connect the device to the PC and put it into upgrade mode. To enter, Firmware Upgrade Mode, press and hold the Right bottom most panning key forward button + 'Dot 5' key. Then press and release the 'Dot 8' key. The other keys can be released after this" in the message field.
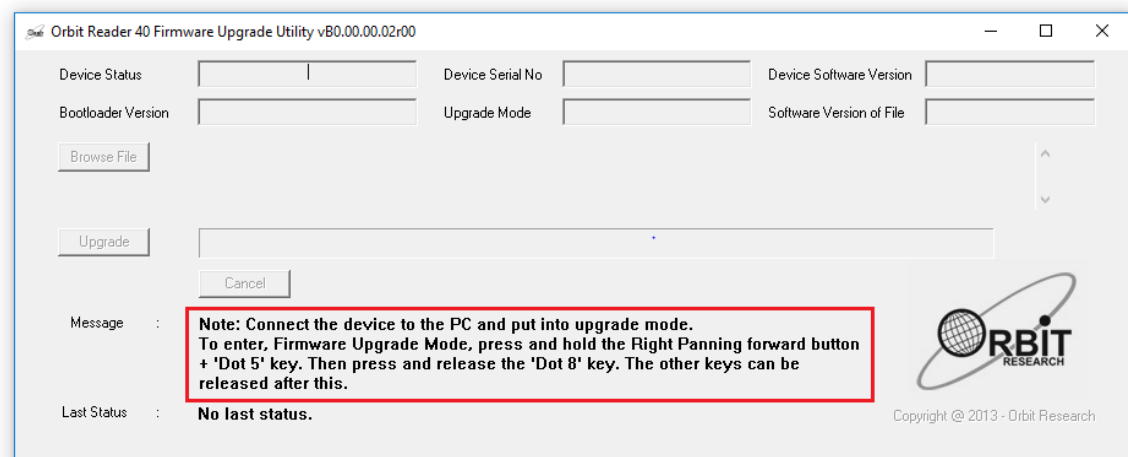

4. Press and hold down the right bottom most Panning key forward button + Dot 5, then press Dot 8. The utility shows the message "Slate is connected" in the Device status field. It shows the message "Do you want to upgrade the device?" in the message field at the bottom of the dialog.
5. Release Dot 8 first, then release the Panning key and Dot 5. This switches the Slate to Upgrade mode. You should hear a tone on your PC.
6. The utility shows the device serial number and the software version of the device at the top right corner of the window. If the serial number is blank, repeat steps 4 and 5.
7. Activate the Browse button found in the dialog.
8. Browse and select the firmware bin file from your PC. The file is in the folder you unzipped previously.
9. Once the file is selected, the dialog shows the software version of the selected file. A dialog box will also display the information that the current

file selected is firmware binary.
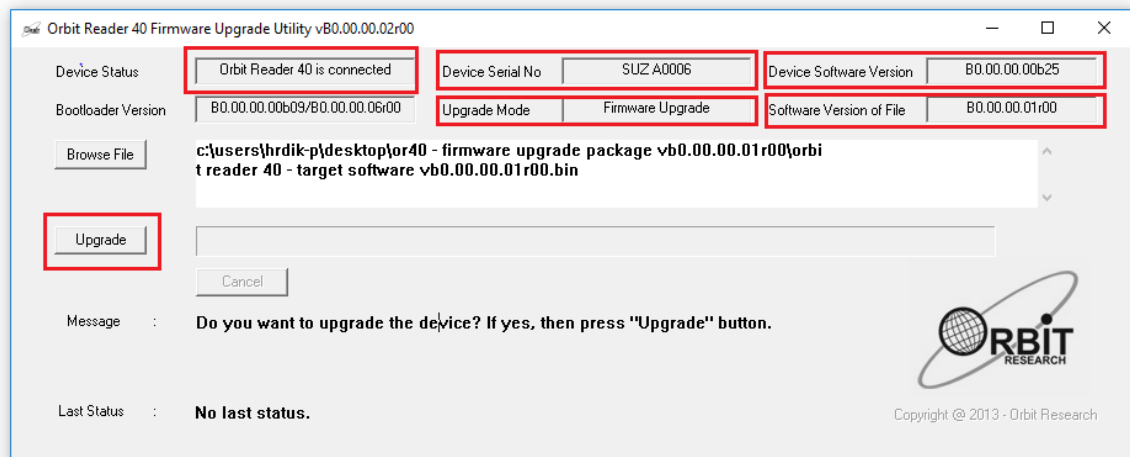
10. Activate the Upgrade button. The utility starts upgrading the device. The device will emit a single vibration pulse at 2 second intervals.
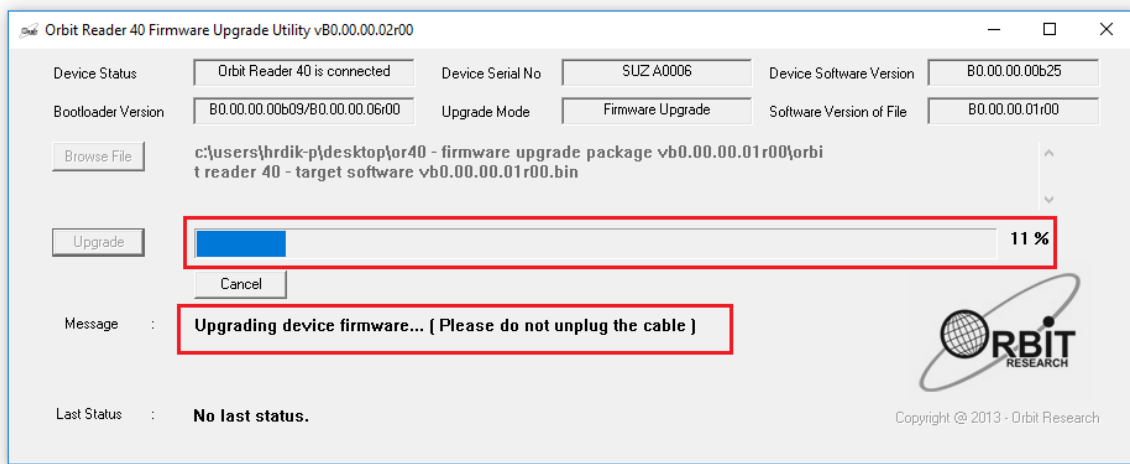
11. Do not unplug the cable. Wait for the message "Device upgrade has been completed" on the upgrade utility or until the Slate reboots and shuts down.
12. The Slate is upgraded. Turn on the Slate to start using the device.

To check for a successful upgrade of the Slate, press Up Arrow + Down Arrow to open the Slate Menu and arrow to "Ver" in the list. The version number of the firmware release should match the number shown in the upgrade utility.

19.1.3 Using an SD card to Perform the Upgrade
The following is required to perform the upgrade to the Slate from an SD card:
1. Slate unit
2. Slate Release Bin files found in the Slate folder of the download package (see **Error! Reference source not found.**).

3. Your SD card should have a FAT32 file system.

To upgrade the firmware, follow these steps:
1. Copy the binary file "Slate - Target Software vB0.00.00.XXrYY.bin" from the download package to the root folder of the SD card. Use either the Slate Mass Storage Mode or remove the SD card and put it in a card reader. When completed, insert the SD card into the Slate. Make sure that your SD card contains only one binary file. Remove the other binary files from the SD card.
2. Turn off the Slate. The unit should be turned off before the upgrade is started.
3. Press and hold down the "Bottommost Right Panning forward key" and "Dot 4" key simultaneously, while pressing these two keys, turn on the device using the power key. it will show the message "Preparing…". Now you can release all the keys. Typically, it will take about 40 to 50 seconds to prepare.
4. The device will emit a single vibration pulse at 2 seconds interval.
5. Once preparation is complete, it should show the message "Upgrading firmware..". Progress is shown by blinking 2 cells of dot 6 at the end of the message.
6. Typically, it will take 2.5 to 3 minutes to upgrade the firmware. Do not remove the SD card during the upgrade.
7. When the upgrade has been completed, it will show the message "Upgrade complete" for a few seconds and then the device will automatically reset itself and turn off.
8. Turn it on to start using the device.

To check for the successful upgrade of the device, press Up Arrow + Down Arrow to open the Slate Menu and arrow to "Ver" in the list. The version number of the firmware release should match the number in the name of the bin file.

19.1.4 **Troubleshooting**
1. In case the unit freezes up or does not accept any commands at all, you can perform a recovery operation by following the steps suggested below.
    a. Try a different key combination to upgrade (see below).
    b. Make sure that you have the binary file "Slate - Target Software vB0.00.00.XXrYY.bin" into the root directory of the SD card.
    c. Press and hold the Bottom most right pan lower + Dot 4 keys + the Power button and wait for the message "Preparing…". If you do not

get any message within 4 or 5 seconds, press and release the Dot 8 key and then release the other keys.

    d. Wait for about a minute. The Slate should start upgrading and show the message "Upgrading firmware".

    e. Typically, it will take 2.5 to 3 minutes to upgrade the firmware.

    f. The slate shows the "Upgrade complete" message after completion of a successful firmware upgrade for 5 to 8 seconds and then the device will automatically reset/shut down itself.

2. If the Slate does not show the message "Preparing", make sure you had pressed the keys in the correct sequence. Press and hold the Bottom most Right pan lower + Dot 4 keys and without releasing them, press the power key to turn on the device.

3. If you are not sure at what stage of the upgrade process you are, you can always start from the first step. Just reset the Slate by pressing Dot 8 and the Right pan down key.

20 Localization

The following are the steps to be followed for configuring a language other than English.

1. Copy the file on the SD card that you are using with the device. The file can be copied externally through a card reader or putting the device into Mass Storage mode.

2. Go to the Preference menu item "Add language" to check the file you copied. If you have multiple language files in the SD card, you can scroll through them using Left/Right Arrow key.

3. Go to the file of your choice and press Select to load file to internal memory.

4. It may take some time for the file to be loaded. The unit shows busy indication by displaying "busy" on the display.

5. You can load multiple languages following the same process (If you encounter "Memory full" error while adding languages, you need to remove some languages before you can load new languages. Please refer to the "Remove language" section for more details on how to remove languages.)

6. Go to the Profile settings for the profile of your choice among profile 1, 2, 3 or 4 in preference menu.

7. Go to the sub-menu called "system language" and press Select. If you have multiple language files in the internal memory you can scroll through them using Left/Right Arrow key.

8. Go to the file of your choice and press Select. Press dot 7 to exit the system language setting.

9. Now Go to the Read-write menu item which is next to the sys lan
10. Go to the file of your choice and press Select. Press dot 7 to exit the read-write language setting.
11. Press dot 7 to exit the menu.
12. Press Select + Dot 1, Select + Dot 2, Select + Dot 3 or Select + Dot 4 to activate the profile 1, profile 2, profile 3 or profile 4, respectively.

21 Troubleshooting

21.1.1 **Slate does not power on or seems to freeze**
If the Slate does not power on or seems to freeze, try these options in the following order:

Option 1: Plug in the device
1. Plugin the unit with the supplied AC wall connector and cable to ensure that the battery is charged. This is the most reliable power source.
2. Let the unit 'charge' for at least an hour or more.
3. Hold the Power button for at least two seconds. If the unit is on, it should turn off. If it is off, it should come on.

Option 2: Check SD card
1. Remove the SD card.
2. Hold the Power button for two seconds.

Option 3: Unplug the device
1. If the unit is plugged in, unplug the power cord.
2. Hold the Power button for at least two seconds.

Option 4: Reset device
1. Press the Reset command (Dot 8 + right-bottom Panning key). Note: On reset, the unit is unresponsive, and there is no change to the display.
2. Hold the Power button for at least two seconds.

Option 5: Remove the battery

Note: Use this option as the last resort.
1. Call customer service for guidance on safely removing the battery.
2. Leave it out for a few minutes.
3. Reconnect it, then try the options again.

If none of the options works and the device does not come on, contact Customer Service at techsupport@orbitresearch.com.

22 Battery Use and Replacement

The Slate includes a rechargeable Lithium-Ion capacity battery. It charges fully in about three hours under optimal conditions. A full battery charge lasts about three days of typical use. You can check the battery status in the Menu.

When the battery in Slate gets to 10% capacity, Dot 8 of the last cell of the last line on the display starts blinking and vibration indications are also provided.

The battery in Slate should last several years. Gradually, the battery begins discharging faster than usual as its capacity declines. When the duration of time that the battery holds charge becomes inconveniently short, it is time for a replacement.

To replace the battery, follow these steps:
1. Obtain a replacement battery. Use only the battery designed for the Slate. Batteries are available from our website or by calling us.
2. Remove the battery door screws.
3. Remove the battery door.
4. Carefully unplug the connector. Do not pull the wire. Use the connector instead.
5. Insert a new battery.
6. Replace the cover and screws.

To dispose of batteries properly, call the recycling center at 1-800-822-8837.

23 Slate Cleaning Tips

Due to exposure to natural elements such as dust and oils, the Slate should be cleaned periodically.

The following are some tips to keep your Slate clean:

- Cleaning should be performed with the unit switched off and with all pins in the down position.
- Use a vacuum cleaner with a soft tip attachment to remove dust from the pin area.
- Use a lint-free cloth to wipe the cells.
- The cloth may be moistened with water.
- Avoid using the following:
  - Paper towels, cotton swabs or materials that can release fibers.
  - Alcohol or ammonia-based cleaners
  - Canned or compressed air

24 General Specifications

- Dimensions (WxHxD): 11.5 x 6.5 x 1.3 inch; 29.2 x 16.5 x 3.3 cm
- Weight: 1400 grams
- Braille Cells: 3 rows of 40 eight-dot braille cells for 3x40 model and 5 rows of 20 eight-dot braille cells for 5x20 model; Refresh rate < .75 sec
- Braille Input Keys: 8-key Perkins style keypad, with space bar
- Additional Keys: Power on/off button, 4-way cursor keys and select key, 2 panning keys per display line, rocker type
- Supported File Formats: .txt, .brl, .brf, .bra
- OS Support: Windows - NVDA, JAWS, Dolphin Supernova, System Access, Microsoft Narrator, Mac OS X - Voiceover, iOS - Voiceover, Android - Brailleback, Fire OS - VoiceView, Chrome OS - ChromeVox, Linux/Unix - BRLTTY
- Interfaces and Ports: 1x USB Type C port, for host interface, firmware upgrade, and battery charging, 1x USB Standard-A port for connecting USB flash drives.
- Bluetooth 5.0, Class 2, Flash Media Slot, 1x SD card (4GB to 32GB capacity)
- Battery: User-replaceable, rechargeable Lithium-Ion battery
- Battery Life on a full charge: 3 days of typical use
- Charging Method: PC charger - Charge over USB Port – 5V, 500 mA Max, Wall charger - Charge over USB Port – 5V, 1000 mA Max; USB BC1.2 compliant charger required
- Environmental Conditions: Operating Temperature: 5 °C to 45 °C
- Operating Humidity: 10% - 70% relative humidity,
- Storage Temperature: -15 °C to 70 °C
- Storage Humidity: 5% - 90% relative humidity

25 Appendices

25.1.1 Appendix A - Computer Braille Chart
- ASCII Code 33: Exclamation mark, Dots 2-3-4-6
- ASCII Code 34: Quotation marks, Dots 5
- ASCII Code 35: Number sign (Hash), Dots 3-4-5-6
- ASCII Code 36: Dollar sign, Dots 1-2-4-6
- ASCII Code 37: Percentage sign, Dots 1-4-6
- ASCII Code 38: Ampersand, Dots 1-2-3-4-6
- ASCII Code 39: Apostrophe, Dots 3

- ASCII Code 40: Opening round bracket, Dots 1-2-3-5-6
- ASCII Code 41: Closing round bracket, Dots 2-3-4-5-6
- ASCII Code 42: asterisk, Dots 1-6
- ASCII Code 43: Plus sign, Dots 3-4-6
- ASCII Code 44: Comma, Dots 6
- ASCII Code 45: Minus sign, Dots 3-6
- ASCII Code 46: Full stop, Dots 4-6
- ASCII Code 47: Forward Slash, Dots 3-4
- ASCII Code 48: 0, Dots 3-5-6
- ASCII Code 49: 1, Dots 2
- ASCII Code 50: 2, Dots 2-3
- ASCII Code 51: 3, Dots 2-5
- ASCII Code 52: 4, Dots 2-5-6
- ASCII Code 53: 5, Dots 2-6
- ASCII Code 54: 6, Dots 2-3-5
- ASCII Code 55: 7, Dots 2-3-5-6
- ASCII Code 56: 8, Dots 2-3-6
- ASCII Code 57: 9, Dots 3-5
- ASCII Code 58: Colon, Dots 1-5-6
- ASCII Code 59: Semicolon, Dots 5-6
- ASCII Code 60: Opening triangular bracket, Dots 1-2-6
- ASCII Code 61: Equal to sign, Dots 1-2-3-4-5-6
- ASCII Code 62: Closing triangle bracket, Dots 3-4-5
- ASCII Code 63: Question mark, Dots 1-4-5-6
- ASCII Code 64: At sign, Dots 4-7
- ASCII Code 65: A, Dots 1-7
- ASCII Code 66: B, Dots 1-2-7
- ASCII Code 67: C, Dots 1-4-7
- ASCII Code 68: D, Dots 1-4-5-7
- ASCII Code 69: E, Dots 1-5-7
- ASCII Code 70: F, Dots 1-2-4-7
- ASCII Code 71: G, Dots 1-2-4-5-7
- ASCII Code 72: H, Dots 1-2-5-7
- ASCII Code 73: I, Dots 2-4-7
- ASCII Code 74: J, Dots 2-4-5-7
- ASCII Code 75: K, Dots 1-3-7
- ASCII Code 76: L, Dots 1-2-3-7
- ASCII Code 77: M, Dots 1-3-4-7

- ASCII Code 78: N, Dots 1-3-4-5-7
- ASCII Code 79: O, Dots 1-3-5-7
- ASCII Code 80: P, Dots 1-2-3-4-7
- ASCII Code 81: Q, Dots 1-2-3-4-5-7
- ASCII Code 82: R, Dots 1-2-3-5-7
- ASCII Code 83: S, Dots 2-3-4-7
- ASCII Code 84: T, Dots 2-3-4-5-7
- ASCII Code 85: U, Dots 1-3-6-7
- ASCII Code 86: V, Dots 1-2-3-6-7
- ASCII Code 87: W, Dots 2-4-5-6-7
- ASCII Code 88: X, Dots 1-3-4-6-7
- ASCII Code 89: Y, Dots 1-3-4-5-6-7
- ASCII Code 90: Z, Dots 1-3-5-6-7
- ASCII Code 91: Opening square bracket, Dots 2-4-6-7
- ASCII Code 92: Backward slash, Dots 1-2-5-6-7
- ASCII Code 93: Closing square bracket, Dots 1-2-4-5-6-7
- ASCII Code 94: Caret, Dots 4-5-7
- ASCII Code 95: dash, Dots 4-5-6
- ASCII Code 96: backtick sign, Dots 4
- ASCII Code 97: a, Dots 1
- ASCII Code 98: b, Dots 1-2
- ASCII Code 99: c, Dots 1-4
- ASCII Code 100: d, Dots 1-4-5
- ASCII Code 101: e, Dots 1-5
- ASCII Code 102: f, Dots 1-2-4
- ASCII Code 103: g, Dots 1-2-4-5
- ASCII Code 104: h, Dots 1-2-5
- ASCII Code 105: I, Dots 2-4
- ASCII Code 106: j, Dots 2-4-5
- ASCII Code 107: k, Dots 1-3
- ASCII Code 108: l, Dots 1-2-3
- ASCII Code 109: m, Dots 1-3-4
- ASCII Code 110: n, Dots 1-3-4-5
- ASCII Code 111: o, Dots 1-3-5
- ASCII Code 112: p, Dots 1-2-3-4
- ASCII Code 113: q, Dots 1-2-3-4-5
- ASCII Code 114: r, Dots 1-2-3-5
- ASCII Code 115: s, Dots 2-3-4

- ASCII Code 116: t, Dots 2-3-4-5
- ASCII Code 117: u, Dots 1-3-6
- ASCII Code 118: v, Dots 1-2-3-6
- ASCII Code 119: w, Dots 2-4-5-6
- ASCII Code 120: x, Dots 1-3-4-6
- ASCII Code 121: y, Dots 1-3-4-5-6
- ASCII Code 122: z, Dots 1-3-5-6
- ASCII Code 123: Opening curly bracket, Dots 2-4-6
- ASCII Code 124: Vertical bar, Dots 1-2-5-6
- ASCII Code 125: Closing curly bracket, Dots 1-2-4-5-6
- ASCII Code 126: Tilde, Dots 4-5
- ASCII Code 127: NULL, Dots 4-5-6

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Warranty obligations for the Slate are limited to the terms set forth below:

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A replacement product or part assumes the remaining warranty of the original product or thirty (30) days from the date of replacement or repair, whichever provides longer coverage. Parts provided in fulfillment of its warranty obligation must be used in products for which warranty service is claimed.

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2. Damage caused by operating the product outside the permitted or intended uses described by Orbit Research LLC
3. Damage caused by service (including upgrades and expansions) performed by anyone who is not a representative of Orbit Research
4. A product or part that has been modified to alter functionality or capability without the written permission of Orbit Research
5. The serial number has been removed or defaced.

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Your product will be returned to you configured as originally purchased, subject to applicable updates. You will be responsible for reinstalling all other software programs, data, and passwords. Recovery and reinstallation of software programs and user data are not covered under this Limited Warranty.

25.1.5 Appendix C - FCC Information

FCC Notice
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 equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Caution
To ensure continued compliance follow the installation instructions and this device must be installed with a computer or peripheral device certified to comply with Part 15 of the FCC rules for the Class B limits. Use shielded interface cables only. Use the power adapter that is supplied with the device to charge its internal battery pack.
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.