Monarch™

User Guide

MONARCH

User Guide

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1.1 Product overview

Thank you for purchasing the Monarch, the first ever dynamic tactile device that brings both Tactile graphics and braille on the same tactile array in addition to showing true multiline braille.

The Monarch is revolutionary as it displays between 6 and 10 content lines of 32 cells each instead of only one at a time as do traditional braille displays on the market. That way, you can read text the same way that you would do while reading braille on paper. It also creates the required flexibility to display complex images and text at the same time on the braille surface. This ensures simplified access to these graphics without having to transcribe them on paper booklets, saving costs and time. The Monarch operates with a physical Perkins keyboard, making it easy to write in braille. You can also use your own standard Bluetooth or USB QWERTY keyboard if you wish to do so. It can also be plugged into a screen using the HDMI port, for sighted teachers or assistants who want to interact with the tablet.

We designed the Monarch with one thing in mind: to realign efficiency and accessibility. The Monarch is a revolutionary step forward for the empowerment of blind and partially sighted people everywhere.

Please note that this user guide can be read directly on the Monarch using the User Guide app.

1.2 Unpacking your Monarch

The package contains the following items:

- Monarch Tablet in its protective case
- Power Adaptor
- Type-C USB Cable
- Quick start guide (printed and Braille)
- Envelope containing 5 membranes
- M10 Screwdriver for Membrane
- Tactile QR Code sticker for additional resources, located on the top right corner of the lid inside the box and an additional one with this guide for you to place where you like.

Please Note: when you receive your Monarch, it will be encased in a protective bubble sleeve. To use the tablet, gently remove the Monarch from the sleeve. Remember to retain all packaging in case the need arises to return the Monarch.

1.3 Physical description

Protective case

When you receive your Monarch, it will be encased in a protective bubble sleeve. To use the tablet, gently remove the Monarch from the sleeve. Remember to retain all packaging in case the need arises to return the Monarch.

Top face of the Monarch

The top face houses the tactile display which shows 32 characters per line and up to 10 lines at a time. The tactile display is covered by a built-in protective membrane layer. This protective layer is part of the Monarch as it will protect the braille display from foreign objects and accidental spillage. Please note that using a Monarch without the membrane attached will result in a void warranty. Additionally, please note that the membrane should be replaced as soon as any tears are noticed, as this could potentially damage the cells and will void the warranty. For instructions on how to replace the membrane, please refer to the "Replacing the Membrane" documentation.

At the top of the tactile display, is the Touch Sensor which is used for finger positioning. Near the Power button is a LED that is green when the Monarch is powered on. When plugged into a power source, the LED light color will change depending on the charge level attained.

Note: Touch Sensor is based on Infrared technology. Usage in high sunlight environments may cause interference and may not work as intended.

Left edge of the Monarch

Starting at the left edge of the device and closest to you, there is a rectangular port. This is the USB-A port and can be used to connect a USB thumb drive to open and save files to an external drive.

Moving upward from the USB-A port is an oval shape button which is used for turning the Monarch on and off. To power on, press and hold this button for 3 seconds or until you feel a vibration. Immediately after the vibration, "starting keysoft..." will be shown in braille at the top line of the display. Shortly afterward, the Monarch will display a tactile graphic of a butterfly and will place you in the main menu list. Note that the first boot of the Monarch is slightly different, as described in section 2.1 "Setting up your system". If you want to turn off Monarch: press the power button for 3 seconds. Two options are available, "Power off" and "Restart". The focus is on the "Power off" option, on the first line of the display. This is preceded at the left of that line by the accessibility focus indicator, a symbol composed of 3 dots in width, and 3 dots in height (please read the section 4.4 "Accessibility focus indicator" to know more). Pressing the space bar will move you to the next option which will be "Restart". Pressing the Enter key on the "Power off" option will then shutdown the device. Pressing the Enter key on the "Restart" option will restart the device. Finally, if you just want to put Monarch to sleep, you will have to perform a short press of the Power button. Another short press will be required to turn Monarch back on.

The next port, going upward, is the USB-C port, which is used to charge your Monarch. We recommend that you fully charge the Monarch for 4 hours before you start using it. With a full charge, Monarch will last the full day.

USB Type C

Power Button

USB Type A

Right edge of the Monarch

On the right edge of the device and closest to you, is the Video out port which will predominately be used to plug in a monitor. If required, a sighted peer could connect a monitor to the Monarch to verify what is being displayed on the tactile device.

As you move upward from this port, there is a small hole which is the audio jack. Use it to plug in headphones if you don't want to disturb others while listening to the onboard Text to Speech (TTS).

Near the top of the right edge are two identical buttons. These are the volume buttons. The one furthest way will increase the volume and the one closest to you will decrease the volume.

Left and right sides of the Braille display

To the left and right sides of the tactile display, in the center, are the D-Pads (directional pads). These are identical to one another but will perform different actions depending on the circumstances. For example, when viewing a tactile graphic, these can be used to pan around the tactile image, moving left, right, up, or down. These keys can also be used to navigate while in a document or move down and up through a menu.

Above the left D-Pad is a Pan up key, which is used to pan your display to the previous set of lines displayed (between 6 or 10, depending on your configuration). Under the right D-Pad is the Pan down key, which pans your display to the next set of lines. As an example, once you have finished reading the content displayed in Braille, pressing the Pan down key will allow you to continue reading the next lines. If you want to go back because you missed some context, then you can press the Pan up key located above the left D-Pad.

On the lower-left and lower-right corners of the tactile display, you will find two horizontally situated oval buttons that manage the magnification of a tactile graphic, each is marked with a tactile plus (zoom in) or minus (zoom out) symbol. The zoom in key, situated on the bottom right of the tactile display, enlarges a tactile graphic, while the zoom out key reduces its size. These keys come in handy when using the tactile viewer but also serve to adjust the spacing between lines in real-time and change the number of lines displayed, from 6 to 10. With this feature, you will have the opportunity to adjust the line spacing depending on your reading comfort.

Front edge of the Braille display

Underneath the tactile display is an 8-dot braille (Perkins-style) keyboard with one space bar.

Between dots 1 and 4, in the middle of the Perkins keyboard, is an orange circle button. This is also known as the Refresh/Action button, which has multiple functions. For example, this button can be used to manually refresh the braille display if some cells remain raised after a dynamic refresh.

Under the Perkins keyboard and directly in front of you, are the three buttons mainly used to navigate your Monarch.

The triangle button: This is the back button and can also be used as an exit button.

The circle button: This is the home button. When pressed, it will take you back to the main menu.

The square button: This is the app switcher button, which allows to move through applications that are open. A press and hold of this button opens the Context menu.

Bluetooth

The Monarch features an internal Bluetooth interface.

Wi-Fi

The Monarch features an internal Wi-Fi B/G/N interface, 2.4 - 5 GHz

2   Setting up

2.1 Setting up your system

To power up your Monarch for the first time, press and hold the Power button for 2-3 seconds. You'll feel a brief vibration, and after 7-8 seconds, the Braille display will show "starting keysoft…" followed by tactile graphic of a butterfly. Soon after, you'll see a language selection screen. English will be the default language, appearing on the first line of your Braille display, with an accessibility focus indicator (a square made of three dots by three dots) to its left. This indicator helps you see which line your cursor is on as you navigate using the D-pad keys. It will always be to the left of the item currently in focus. If you move to another set of lines using the panning keys, the indicator will be at the top left of the new content line.

Use the D-pad and panning keys to browse through the list of languages. Select your preferred language by pressing the Enter key when you've highlighted it. After a short wait, the startup tutorial will begin. This tutorial will guide you through the basics of your Monarch, including the navigation keys, the tactile viewer, and text reading. For detailed information about the startup tutorial, see [section 2.5 "Startup Tutorial"](#) below. Once you complete or exit the tutorial, you'll be taken to the Main menu.

2.2 Recharging your system

To recharge your system, plug in the type-C USB connector of your recharge cable into the Type-C USB port located at the rear of the left edge of your Monarch. Since this is a type-C USB connector, you don't have to worry about plugging it upside down.

If this isn't already done, plug in the USB connector of your recharge cable into the power adaptor, then plug the power adaptor into a power outlet.

Alternatively, you can plug your USB connector into a computer, but note that this method of charging is slower than charging with a power adaptor.

Maximizing operating efficiency

In a working situation where you need your Monarch intermittently, you can enter in sleep mode when you are not using your tablet by pressing the Power button. The display will put itself in sleep mode.

You can exit Sleep mode by pressing the Power button again.

If you will not be using your device for the next few days, it is recommended that you power it off by pressing and holding the Power button and selecting Power off.

2.3 Basic Commands

Enter key: Dot 8 (Activates a selected item, also used in some commands)

Backspace key: Dot 7 (Delete the letter to the left of your cursor when editing, also used in some commands)

Navigate to previous item: D-pad Up, Backspace or Space with Dot 1

Navigate to next item: D-pad down, Space or Space with Dot 4

Main Menu: Home button or Space with Dots 1-2-3-4-5-6

Braille panning Up: pan up key

Braille panning Down: pan down key

Exit current item: Back button or Space with E (Exits the menu/application you are currently in)

Options: Space with O (Opens the KeySoft options menu)

Information: Space with I in main menu (Displays useful information related to your device)

Recent apps: Press the App switcher button (the square button on the front of the device) which will display a list of the most recently opened apps in the current session

Context menu: Space with M or press and hold of the app switcher button (A dynamic options menu that changes based on your location)

Context Help screen: Space with H (Provides useful tips about navigating in your current app or location)

Repeat: Space with R (Makes the Monarch repeat what was said last)

Turn speech on/off: Backspace with Enter with S

Display current date: Enter with D (Monarch will display and say the current date)

Display current time: Enter with T (Monarch will display and say the current time)

Stop Speech: Backspace with Enter (Stops the Monarch's speech while speaking.)

Focus cursor to top line: Enter with F (In lists, it brings the item with focus to the top of the braille display. In edit texts, it brings the line containing the cursor to the top of the braille display).

Increase Braille line spacing: Zoom In (+) Button

Decrease Braille line spacing: Zoom out (-) Button

Force dynamic refresh: Long press the Refresh/Action button

Note: All commands which involve Enter or BACKSPACE must have the SPACE BAR added to them when you are using computer Braille.

2.4 Sleep mode and powering your System On and Off

Powering On/Off

When you know you won't be using your Monarch for some time, it may be better to turn it off completely to preserve your battery. To do so, simply press and hold the power button for approximately 1 second. Your device will announce "Power Off" and give you the option to either power off or restart. Select power off, then press Enter to shut down your device.

Similarly, to start your device when it is powered off, press and hold the power button for approximately 3 seconds. You will feel a brief vibration and see "starting keysoft..." on your Braille display. After some time, the butterfly image will appear, then you will be directed to the Main menu.

Sleep mode

The Monarch gives you the possibility to put your device in sleep mode. Sleep mode is a quick and easy way to preserve the battery when you only want to stop using your Monarch for a short period. Sleep mode is the most common state the Monarch will be in when not being used.

To enter sleep mode, simply do a short press on the Power button. You will hear "Screen Off" to confirm that the Monarch has gone into sleep mode, and the Braille will disappear. To "wake" your device, simply do a short press on the Power button when your device is in sleep mode.

2.5 Startup tutorial

When you boot your Monarch for the first time, after the "starting keysoft..." message and the butterfly image, a language selection screen is displayed. Select one of the English language variants: English United States, English United Kingdom, or English Australia, navigate to it then press the Enter key to select the language of your choice. A few seconds later, the startup tutorial will begin.

Please note that if the tutorial exists in the language that you have selected, it will be launched. Otherwise, you will be directed to the Main menu.

- On the first screen of the tutorial, press Enter to begin it, and follow the instructions to complete the tutorial.

- When you have completed the tutorial, a message will indicate that the basic tutorial is done. You can press the Enter key to adjust the settings, or the Home or Back key to be directed to the Main menu.

Note: the text of the tutorial can be read in Appendix C.

2.6 Managing language profiles and voices

You can manage your language profiles from the Options menu. To access the Options menu, press Space with O (dots 1-3-5).

Configuring, adding, and deleting language profiles

To configure your language profiles, select the option "Configure Language Profiles" in the Options menu and press Enter. You will be presented with a list containing your language profiles. Select the one you wish to configure, and press Enter. You will be able to configure its name, TTS engine, voice, speech rate. You will also be able to select your preferred Braille Grade for entry and for display, and the mathematics code to use. Press Enter on one of these options to see various braille tables and languages supported, including braille learning tables. Press Back to return to the profile configuration screen. Press Back again to go to the profiles list.

To create a new language profile, select the option "Add additional language profile" and press Enter. You can create up to 10 language profiles. A dialog box will prompt you to enter a name. Enter a name for the language profile, then press Enter or the Ok button to proceed. Configure your new profile as you would for an existing profile.

At the end of the profile configuration list, you will find the option "Delete profile". Select this option to delete a language profile. You can also delete a language profile from the context menu by pressing Space with M, or by using the shortcut Backspace with Dots 2-3-5-6. Press Ok to confirm deletion. Note that you must have at least one language profile available; deleting the last language profile will not be possible. Note that deleting the active language profile is not possible; you must activate another language profile first and try again.

Selecting a language profile

To select a language profile, select the option "Select Language Profile" in the Options menu and press Enter, and select one of your language profiles. To toggle between your language profiles, press Enter with L.

Adding or replacing Acapela voices

You can add or replace Acapela voices by selecting Manage voices when configuring a language profile in the voice selection or by opening the KeyUpdater app in the All applications menu. In the KeyUpdater menu, select Manage voices and press Enter. You

will be prompted to either select a voice to replace or to add up to 3 additional Acapela voices. Select the voice you want to replace and press Enter.

A list of all available voice languages, sorted alphabetically, will be presented to you. Select a language and press Enter. Select the voice you want to add and press Enter. You will be prompted to replace the existing voice by the new voice. Press Yes to confirm, or No to cancel. If you select Yes, the voice will be installed on your Monarch.

Note: If you want to replace the default installed voice, you will be restricted to voices in your system language. If you selected English US in the language selection list when setting up your Monarch for the first time, the list of voices will be restricted to English.

To add an additional voice, select Add another voice in the Manage voices menu and press Enter. The Monarch supports a maximum of 4 voices. A list of all available voice languages will be presented to you; select your desired language and press Enter. Select the voice you want to add and press Enter to install it.

Learning Tables

The Monarch includes various language braille tables, but also, includes braille learning tables. Learning tables come in sets of various levels of contracted braille integration. As students advance in their class, they progressively select the higher-level tables until they reach the full contracted braille grade.

The braille-to-text table combined with these learning tables is the full grade 2 table, so no matter what is typed (grade 1 or 2) the system understands what is written.

Here's the list of learning tables sets:

- Braille in Easy Steps
- Fingerprint
- Mangold Method
- NLS I.M.B.T. (UEB)
- NLS I.M.B.T.
- RNZFB STAR
- S.A. Syllabus
- Take Off Series
- TSBVI
- UK UEB Brl Easy Steps
- UK UEB Fingerprint
- UK UEB Take Off Series

For more details on what is included on each learning table, please refer to Appendix E.

2.7 Standard keyboard

You can use your Monarch with a standard keyboard, that can be plugged into your tablet via either USB or Bluetooth. The layout of this keyboard is English QWERTY by default. To know how to perform the commands with a standard keyboard, please refer to [Appendix B of this user guide](#). Please note that it is not possible to type math expressions with an external keyboard.

3 Navigating on your Monarch

To navigate using your tablet, you will use the D-pad (directional) and panning keys when on a menu or in a document. The D-pad keys are directional and allow you to navigate to the left, right, up, and down on your display. The panning keys allow you to go to the next or previous set of lines displayed on your Braille display. When you have navigated to the desired element, you will be able to select it by using the Enter key. To perform the shortcuts, you will use the physical Perkins braille keyboard. These shortcuts usually use braille letters, so if you press the dots associated to the braille letter of a specific shortcut, combined with the Space bar, the Backspace or the Enter key, it will work. To know more about shortcuts, please read the command summary at the Appendix A or the section 2.3 for the most common used commands.

Because the Monarch is a multiline display, we provide the Point and click mode to navigate more efficiently on your screen and to interact quickly with elements on your braille display screen. This method will be explained in a more detailed way in Point and click mode.

3.1 Braille keyboard

Perkins Braille keyboard description

The Monarch comes with an 8-dot physical Perkins Braille keyboard, that you will use to navigate on your device, to perform shortcuts and to write in applications. Here is the layout of this keyboard, starting from the left:

Backspace key, also known as Dot 7

Dot 3

Dot 2

Dot 1

Dot 4

Dot 5

Dot 6

Enter Key, also known as Dot 8

Braille keyboard shortcuts

Shortcuts are composed with a braille letter and a Space Bar or Backspace or Enter key; these keys must be pressed in combination to perform the shortcut.

For example, to return to the Main menu while in an application, press the shortcut Space with Dots 1-2-3-4-5-6 or the Home button (circle button on the front of the device). Another example: to save a document in Keyword and KeyBRF, you must press Space with S (Space with dots 2-3-4). Typically, the dot 7 (backspace), the dot 8 (Enter) and the space bar are used to complete a shortcut. To know more about the shortcuts, please read the command summary at Appendix A of this user guide or read the section 2.3 about the most common used commands.

3.2 First letter navigation

When navigating in a menu, you can always press the first letter of any item to be directed to it. For example, in the Main menu, pressing the letter T will direct you to Tactile Viewer, and pressing the letter A will direct you to All applications. The first letter navigation can be used in all the menus and when a list is displayed, for example a files list in files Manager, or when trying to open a document in some applications.

3.3 Point and click mode

Point and click description

Point and Click is the method of positioning the cursor. To interact with elements, point to the location with one finger only. With the other hand, double-press the Refresh/Action button. This will move the accessibility focus to the element and activate it. Much like double-clicking a mouse on a computer selects and opens an item.

Navigating through a list of items

To navigate through a list of items, touch your Braille display screen with a finger until attaining the desired location. Perform a short press on the Refresh/Action button to move the focus to the desired element. If you need to change the set of Braille content lines displayed (next or previous page), use the panning keys.

Activating a selected item

When you are positioned on the item you want to select, make a double press on the Refresh/Action key.

Dynamic and manual Braille display refresh

Each time the screen is refreshed, a dynamic braille display refresh is done, meaning that all the cells will be refreshed to display the actual content. This refresh can take one second to be completed and is done automatically, it's for this reason that it is called a dynamic refresh. Please note that to be performed correctly, your fingers must be raised because the cells on which your fingers are placed cannot be refreshed until this happens.

It can happen that the braille display is not able to refresh itself completely. If this happens, perform a long press on the Refresh/Action button, this will trigger a manual braille display refresh. Any cell that wasn't refreshed properly before, should now be corrected.

Note: External magnets may interfere with the performance of the braille pins, leading to incorrect content being displayed.

3.4 Edit Mode

If you want to type information into an edit box or form, you will first need to activate edit mode. Similar to Forms mode used by many screen readers, simply press ENTER to activate it. You will hear a rising tone to signify that edit mode is active, you will also see the Braille cursor appear between the edit box brackets on your Braille display. Type your information into the edit box and, when finished, you can easily leave edit mode by pressing the exit command (Space with E, or the Back button, which is the triangular-shaped button on the front of the Monarch). Edit mode will be disabled automatically and you can use first letter navigation or the D-pads and panning keys again.

If you have multiple edit boxes to fill, often time apps will allow you to press Enter to jump directly to the next edit box in the form, keeping you efficiently editing. You can quickly check what the enter key will do in an edit box by using your contextual help command. When the Edit mode is deactivated, you can navigate to the next field with the Space bar and to the Previous field with the Backspace key.

3.5 Text-to-speech

As you learn to use your Monarch, you will notice that most of what you do is followed with the audio feedback of a Text-to-Speech engine (TTS) called HumanWare Acapela.

It will also inform you whenever a prompt appears on your Monarch.

As you get used to using your Monarch, you may want to stop the TTS while it is speaking. To do so, simply press the Enter and Backspace keys simultaneously when the TTS is speaking. Note that this is temporary and only applies to a single occurrence of speech.

You may also want the TTS to repeat what it just said. You can do so by pressing SPACE with R.

You can increase or decrease the volume of your TTS with the two volume buttons located on the right edge of your Monarch.

Note that Monarch has two different volume controls, the music volume and the accessibility volume which includes the TTS and navigation sounds. You can raise or

lower the accessibility volume individually by pressing ENTER with DOT 4 or 1, and to raise or lower the music volume individually, you can press ENTER with DOT 5 or 2.

You can also turn off the TTS entirely by using the shortcut Backspace with Enter with S.

To turn the TTS back on, use again the shortcut Backspace with Enter with S.

Note: You will only receive audio confirmation when turning the TTS on.

3.6 Copying Spoken Content

It is possible to copy any content spoken by your Monarch and paste it into an editable field or in any application you can write in, like KeyWord.

Important: The TTS must be turned on in order to copy spoken content. You can toggle the TTS on and off by using the shortcut Backspace with Enter with S.

To copy spoken content:

- Make sure the TTS is turned on.
- Start your text selection by pressing Enter with S.
- Scroll down to the end of the text you wish to copy, then press Enter with S a second time to complete your selection.
- Press Backspace with Y to copy the selected text to the clipboard.
- Activate an editable field, or open KeyWord or any other application with an editable field, then press Backspace with V to paste the copied text.

3.7 Connecting to Wi-Fi

The quickest way to connect to a Wi-Fi network is by accessing Android Settings by pressing Enter with Q. Then, navigate to and activate the Network & Internet item. You should be on the Wi-Fi item. Press Enter to activate it. This will take you to the Wi-Fi configuration screen where you can select and connect to one of the Wi-Fi networks detected by your Monarch.

In the Wi-Fi configuration menu, start by making sure that the Wi-Fi switch, the second item, is set to on. Otherwise, no network will be detected by your Monarch. Navigate in the list until you find the network you want to connect to, then activate the network by pressing Enter.

You will be directed to the network connection screen that gives you information about the network to which you are about to connect. Enter the network password in the password edit box. Navigate to and activate the Connect button.

Give your Monarch some time to connect to the network.

Connectivity information

To view your connectivity information such as Wi-Fi and Bluetooth status or your signal strength, use the shortcut Enter with N to enter in the notification shade, and the Wi-Fi connectivity status will be announced.

3.8 Disabling and Enabling Accessibility

Although it is not recommended, it is possible to disable accessibility on your device by pressing and holding the Volume Up and Volume Down buttons simultaneously for a few seconds. This could be useful when a sighted user intends on using your device.

To re-enable accessibility, simply press and hold the Volume Up and Down buttons once more for a few seconds.

4   Main Menu

4.1 KeySoft Main Menu Description

KeySoft is the heart of your Monarch, supporting all applications that are built in your tablet. KeySoft's main menu gives you access to the most often used applications, such as the word processor, the Braille editor, the math app, etc.

The Main menu contains the following items:

- Braille Editor – KeyBRF
- Tactile Viewer
- Word Processor – KeyWord
- Math – KeyMath
- File Manager – Files
- Victor Reader
- All applications

4.2 Launching the Main Menu

The KeySoft Main menu is your Monarch's default screen. From the main menu, you can access all KeySoft applications. When you start your Monarch or close an application, you automatically return to this menu.

You can at any time return to the main menu by simply pressing the Home button on your Monarch (the button shaped like a circle located on the front edge of your Monarch, in the middle). Alternatively, you can use the Go to Main Menu command on the keyboard by pressing SPACE with DOTS 1-2-3-4-5-6. Upon reaching the Main Menu, Monarch will read "Main Menu". When on the Main menu, the selected application is preceded, on the left of the same line, by the accessibility focus indicator. To know more about the accessibility focus indicator, please refer to the [section 4.4 "Accessibility focus indicator").](#)

4.3 Navigating in the Main Menu

You can press Space or D-Pad Down to navigate to the next item and Backspace or D-Pad up to navigate to the previous item.

4.4 Accessibility Focus Indicator

To indicate the location of the focused item, an accessibility focus indicator is present. This square-shaped symbol, formed by three dots in width and three dots in height, is

present at the left of the focused item. If you use the D-pad keys to change your focused item, your accessibility focus indicator will move to the same line. This indicator is the equivalent of your cursor when you navigate in the Main menu and in all the menus.

4.5 Opening Menu Items

To launch a selected item, press Enter. While using the Point and click method, you can also position your finger on the item that you want to select, then make a double-press on the Refresh/Action key.

4.6 Access to Running Applications

At some point, you may wish to return to an application you recently used and did not close. These applications are still running so you can quickly return to them without having to reopen them through the main menu.

To access a running application, press the Recent apps button, the square button in the middle of your Monarch's front edge. Navigate to the app you wish to open with the D-pad keys, then press Enter.

To close this specific app, use the shortcut Backspace with dots 2-3-5-6 or go to the contextual menu with Space with M then select this option and press on the Enter key.

To close all apps in the recent apps screen, use the shortcut Backspace with C or go to the contextual menu with Space with M then select this option by pressing on the Enter key. Note that this will completely close any open apps and return you to the main menu.

You can quickly switch to your last used application by pressing the Recent apps button twice in rapid succession.

4.7 Accessing All Applications

The "All Applications" item takes you to a new menu called "Main Menu All Apps". This menu lists every application that has been installed on your Monarch.

To access all applications, type the letter A or navigate to the "All applications" item by pressing SPACE or the D-pad up key as it is the last item of the menu, then activate the item with Enter.

To leave All Applications and return to the Main Menu, press the Back button or SPACE with E.

4.8 Customizing your Main Menu

With the Monarch, you have the possibility to customize the main menu by either adding or removing items of your choice.

Turning On the Custom Menu

To customize your Main Menu, make sure you are already in the Main Menu, then press Backspace with Enter and X.

The Main menu is now called My Menu and can be customized according to your preferences.

Alternatively, you can open the Contextual menu by pressing Space with M or by pressing and holding the Recent application button (the square button on the front of the device). Scroll down to Customize main menu and activate it by pressing Enter.

Adding an Application to your Custom Menu

To add an application to your Custom Menu, scroll to All applications from the Main Menu and activate it by pressing Enter.

Scroll through the All applications menu until you find the application you wish to add to your Custom Menu.

Once you have found it, press Enter with M to immediately add it to your Custom Menu.

Alternatively, you can add it by going through the context menu by pressing Space with M, or by holding down the Recent Apps button.

Removing an Application from your Custom Menu

To remove an application from your Custom Menu, simply reach the application you wish to remove from the Main Menu and press Enter with M.

Alternatively, you can remove it by going through the context menu by pressing Space with M or holding down the Recent Apps button.

Note that removing an application from your custom menu does not remove it from the device; the application will still be available in the All Applications sub-menu of the Main Menu.

Restoring the Default Main Menu

To revert to the Default Main Menu, press Backspace with Enter and X when you are in your Custom Main Menu. Alternatively, you can open the Contextual menu by pressing Space with M or by pressing and holding the Recent application button.

Scroll down to "Restore default menu" and activate it by pressing Enter.

5   Other Menus and Help

5.1 Contextual Menu

The Contextual Menu lists all available actions for the KeySoft application you are currently working in as well as their associated commands. It can be very useful when you forget how to do a specific command.

To access the Contextual Menu from most KeySoft apps, press SPACE with M, or press and hold the Recent apps button (the square button on the front edge of your Monarch).

From the context menu, press the Space bar or the D-pad keys to scroll through the available options.

To exit the context menu, simply press the Back button (the triangular-shaped button on the front of the device) or SPACE with E.

Note: Accessing the Context menu from the KeySoft Main Menu will provide easier access to the app info of the selected application. This is useful when you want to know the version number of a specific application.

5.2 Contextual Help

Contextual Help is a feature designed to help you find useful information about how to use your Monarch according to the current context. Contextual Help will provide you with a description of the context, list the commands you can do on a particular item, and explain how to execute them. If you ever find yourself stuck and aren't quite sure what to do, access contextual help and you may just find the answer you're looking for.

To access contextual help, press SPACE with H. "Contextual help" will be read by your Monarch.

From the contextual help menu, press the Space bar or the D-pad keys to scroll through the help topics.

To exit the contextual help menu, simply press the Back button (triangular-shaped button on the front of the device) or SPACE with E.

5.3 Notification Shade

The Monarch features a notification Shade that provides you with general information such as date and time, Wi-Fi signal and battery level. It also logs events that occur on your Monarch, such as when you complete a download or when a system update is available. You can access the notification Shade by typing ENTER with N. You can

navigate through the notification pane and activate items just like you would with any menu.

The Notification Shade provides access to the Android Settings and contains some Quick Settings items, for example: Airplane mode, Wi-Fi, and Bluetooth that you can set directly in this window. Activating the Settings item will take you to the Android settings menu, where you have access to all the settings of your Monarch.

5.4 Reading the User Guide

If you would like to read the user guide for your Monarch on the device, this can be accessed in the options menu under User Guide. Type SPACE with O to access the Options menu then you can quickly type "U" to jump to the User Guide option and press Enter. Alternatively, you can manually navigate to and activate the User Guide item.

You can also read the User guide via the dedicated app. To do so, go to the All applications submenu, then, using the first letter navigation or the D-pad keys, select the User guide app.

6 Managing files with Files

To launch Files, access the Main menu, then press F until you reach the item File Manager: Files, then press Enter. Alternatively, use the D-pad keys to navigate until you reach the item File Manager: Files, and press Enter.

6.1 Creating folders

To create a new folder, press Space with N. Input the name of the new folder and press OK or Enter to confirm.

The new folder will now be listed in the Files app and will be available as a saving location when you wish to save a file.

6.2 Differences among drives, folders, and files

At the root of your Monarch are the different storage devices of your tablet. These are storage (the internal storage of your device) and USB drive (USB drive will only appear if a USB key is inserted in your device). Select and activate one of these drives to view its content.

6.3 Navigating in the file browser

Navigate through your files using the D-pad and panning keys, with first letter navigation with the Perkins Braille Keyboard or by pressing Space or Backspace.

To open a file or go inside a folder, navigate to it then press Enter. If you wish to go back to the previous folder, press the Back button or navigate to the first item of your list. Alternatively, you can press Space with E to go up as well.

You can do this until you reach the list of drives on your Monarch.

6.4 Renaming a file or a folder

To rename a file or folder, navigate to it and press Backspace with R. Type the new name in the text field that appears, and press Ok to confirm.

6.5 File and folder commands

Files offers a wide array of commands that can all be accessed in the context menu by pressing Space with M or by pressing and holding the recent apps button. These commands include:

New Folder: Space with N

Mark/Unmark: Backspace with L

Mark/Unmark all: Enter with Dots 1-2-3-4-5-6

Copy to: Backspace with Y

Move to: Backspace with X

Perform current action: Backspace with A

Search: Space with F

Rename: Backspace with R

Delete: Backspace with Dots 2-3-5-6

Select drive: Space with D

Info: Space with I

Marking files

It is possible to "mark" files and folders for when you want to perform an action to more than one file or folder.

To mark a file or folder, simply navigate to it and press Backspace with L. These marked items will be identified by the dots 7 and 8 added to them. You can also mark all files in your current folder by pressing Enter with Dots 1-2-3-4-5-6.

Once your files are marked, type the command for the action you wish to perform. For example: delete, copy to, or move to.

All your marked files or folders should have been affected by your action.

To unmark a file or folder, select it and press Backspace with L.

6.6 Moving, copying and pasting files and folders

To move a file, navigate to it and press Backspace with X. You will be placed in the documents menu and "Move to" will be displayed. Select the folder in which you wish to move the file or folder using the D-pad keys, and press Enter to open it. Once in the folder of your choice, press Backspace with A. Your file or folder will be moved to the selected location.

To copy a file, navigate to it and press Backspace with Y. You will be placed in the documents menu and "Copy to" will be displayed. Select the folder in which you wish to copy the file or folder to, using the D-pad keys, and press Enter to open it. Once in the folder of your choice, press Backspace with A. Your file or folder will be copied to the selected location.

6.7 Add an External Storage

The Monarch allows for the use of external storage devices, such as a USB stick.

IMPORTANT: You must safely eject your USB stick before physically removing it from your Monarch. To safely eject your USB stick, type Space with D to be directed to the Drives selection. Then, navigate to the external storage added and select the Eject button. A prompt indicating that your external storage had been ejected safely will be displayed. It is now safe to remove your external storage device.

Note: If you eject an external storage device, but decide to not physically remove it, it will no longer be detected by your Monarch. To make your Monarch detect an unmounted external storage device, simply remove it and then re-insert it into your Monarch.

6.8 Transferring Files with a Computer

You can transfer files between your Monarch and computer, just like most tablets or phones. However, additional security measures with Android require you to activate USB file transfer beforehand. Otherwise, plugging your Monarch into your computer will only recharge it, and your PC will not recognize your device.

To enable USB file transfer, start by plugging your USB-C connecter from your Monarch to the USB port of your PC. Then, open Android settings by pressing Enter with Q. Scroll down to Connected devices, and press Enter. Now, scroll down to USB, and press Enter. This will open a pop-up window with many options. Select File transfer, then press Enter to activate it.

Your Monarch can now transfer files with your PC.

7 Editing a document with KeyWord

7.1 Launching KeyWord

To launch KeyWord, access the main menu, Press W or Navigate to Word Processor: KeyWord, then press Enter.

7.2 Creating a document

From the KeyWord menu, navigate to and activate the Create menu item. You should see your cursor in a blank document.

7.3 Opening documents

KeyWord can open the following file types: DOCX, DOC, RTF, TXT and PDF files.

From the KeyWord menu, select Open. The file manager will appear allowing you to navigate to your desired folder and file. Press Space with D to display the list of drives available on your device, from which you can open files. Using the D-pad keys, move to the desired storage and press Enter.

To activate the desired file or folder, press Enter. To go back a folder level, press the Back button or Space with E. After you select a file to open, you will receive a message indicating the name of the document you are opening, and the document content will be displayed on the Braille display.

If you are unsure which document you are reading, press Space with I to display document information.

7.4 Saving and closing a document

Save your document by typing Space with S. If this is the first time you are saving a newly created file, a new window will open showing the different drives available on your device in which you can save your document. You will be automatically prompted with a file name; you can either choose to keep the prompted name or overwrite it with a name of your choice.

Once the drive in which you want to save your file is opened, you will be prompted to select in which folder you wish to save your document. If this folder contains sub-folders, these will be listed. If the folder does not contain any sub-folder, you will be asked to name the file.

You will be prompted with a text field in which you can type the name of the document you wish to save. Once you entered the name of your choice, choose the format you wish to save the document into. When you are done, use the D-pad keys to navigate

until you reach the SAVE button and press Enter. You can also press Backspace with A (perform current action) to complete the saving of the file. Please note that anywhere in the saving process, pressing Space with S will bring you directly to the filename edit field.

If you open an existing file, Space with S will simply overwrite that existing document with your changes.

At any point in the save as window, you can save your document by pressing the Save button.

If you are working on a document that is already named, and wish to save the changes you made in a new document with a different name, use the "save as" command by typing Backspace with S. This command can also be used to save a copy of your file in a different location, such as another folder or drive.

To close and return to your document to continue editing, use the Exit command Space with E.

7.5 Editing a document

Writing text

After creating or opening a document, you will be in edit mode by default. You can simply start writing on your Perkins Braille keyboard in the Braille grade of your choice, computer Braille or literary Braille.

Type Backspace with G to change between Braille grades. You must add the spacebar should you wish to switch from Computer braille to literary braille. Type backspace with space G to return to Literary Braille.

Navigating in your document

KeyWord features many commands that will help you efficiently navigate through your documents.

Move to top of document: Space with Dots 1-2-3

Move to bottom of document: Space with Dots 4-5-6

Move to previous character: Space with Dot 3 or D-Pad left

Move to next character: Space with Dot 6 or D-Pad right

Move to previous word: Space with Dot 2

Move to next word: Space with Dot 5

Move to previous line: Space with Dot 1

Move to next line: Space with Dot 4

D-Pad up: move cursor at current position to previous line.

D-Pad down: move cursor at current position to next line.

Move to previous paragraph: Space with Dots 2-3

Move to next paragraph: Space with Dots 5-6

Beginning of line (Home): Enter with Dots 1-3

End of line (End): Enter with Dots 4-6

Braille panning up: Pan up key

Braille panning down: Pan down key

Editing a text selection

When editing text, you can identify the location of your editing cursor by locating Dots 7 and 8 that are raised on your Braille display. Note: a 2-dot cursor will be displayed in an empty space. If the cursor is under a letter, 3 dots will be displayed. Any letter you type will appear to the left of your editing cursor, and typing Backspace will delete the letter located to the left of your editing cursor. When using Computer Braille, the cursor is represented by Dot 8.

To select text, place your cursor where you wish to begin your selection, then press Enter with S. This will activate selection mode. In selection mode, the Braille display's editing cursor will "flash" repeatedly.

Move your cursor to the location you wish to end your selection, then press Enter with S once again to finish your selection. Your next action will affect the text you have selected. Your selected text will be "underlined" on your Braille display with Dots 7 and 8.

You can select all the text by pressing Enter with Dots 1-2-3-4-5-6.

There are many ways you can change text you have selected. For a thorough list of commands that can affect your text, such as alignment and font, press Space with M or press and hold the square Recent apps button down for the KeyWord Context menu or refer to the command summary located at the Appendix A of this guide.

Deleting text

To delete the letter left of your cursor, type Backspace.

Backspace will also delete any text that is highlighted.

To delete the current character, type Backspace with Dots 3-6.

To delete the word just before your editing cursor, type Backspace with Dot 2.

To delete the word on which your editing cursor is located, type Backspace with Dots 2-5.

To delete everything from your editing cursor to the end of the line, type Backspace with C.

To delete everything from your editing cursor to the end of the document, type Backspace with Dots 4-5-6.

7.6 Reading a document continuously using speech

When you are in a document, you can ask KeyWord to read everything that follows your editing cursor with the Read all command: Space with G, for "Go".

You can stop your Monarch from reading by pressing Backspace with Enter.

Reading mode

Keyword features a "Reading mode" useful when you just want to read text and avoid modifying it by accident. When reading a document in Reading mode, editing of the text is locked, but commands can still be performed.

To toggle between Reading mode and editing mode, press Space with X in an open document, or access the Context menu with Space with M in an open document, select and activate File functions, then select and activate Enable reading mode.

7.7 Spell checking a document

To spell check a document, type Space with Dots 1-6 while you are editing your document.

If you only wish to spell check a certain part of the document, select the part of the document you wish to spell check then type Space with Dots 1-6.

A window will pop up displaying one by one each error found by KeySoft as well as its surrounding context.

You will be brought to an edit box containing the word KeyWord identified as an error. You can manually change this word in this edit box if you wish to correct it.

Following the edit box are 6 buttons with the possible actions for this error:

- The Suggestions button will provide you with a list of words proposed by the KeySoft dictionary.
- The Correct button will change the original word with what you have written in the edit box.

- The Ignore button will ignore this error and move to the next one.
- The Ignore All button will ignore every occurrence of this mistake in your document.
- The Add Word to Dictionary button will add the word to your dictionary so that it will not be seen as a misspelled word in the future.
- The Language button allows you to change the current spell check language. Press Enter and select a language from the list to use as the current spell checking language for all documents.

7.8 Math functions

Keyword contains features that allow you to use math expressions in your documents. This can be particularly useful in educational environments.

Launch KeyMath

If you are working on a Word document that already contains math equations, or, if you want to add math expressions from Keymath to a Word document, you can use the "Launch Keymath" functionality. To do so, anywhere in your document, press the shortcut Backspace with M. You can also select this option in the Context menu, under the Editing functions, then by pressing on the Enter key on the "Launch KeyMath" option. The KeyMath app will open.

Note: if the cursor is placed on a math expression when using the shortcut to launch KeyMath, this expression will be entered automatically in KeyMath and it will be displayed on your braille display when opening the app. If no math expression is under the cursor, KeyMath will open in the main screen of the app, where the expressions list is displayed, and you will have the opportunity to enter a new expression.

Equation editor

To access the Equation editor, use the shortcut Enter with M or select this option in the context menu, under "Editing functions". Then, press the Enter key on the "Equation Editor" option. The TTS will say "math start" and the symbol will be displayed in braille, at the beginning of a new line. You will be able to enter a new expression when opening the Equation editor, using your current math code selected in your language profile.

If a math expression was previously entered, you can use the Equation editor to modify this expression. You will be able to navigate in it with the D-pad keys but please note that the expression is not spoken by the TTS.

When you have finished entering or modifying your math expression, press the shortcut Enter with M to close the Equation Editor. This action will also add this new math expression to your document. The message "Processing Math" is heard, then you are returned to your document. The new or modified expression will be displayed, preceded

by a math start symbol and followed by a math end symbol. You will be able to read the expression in braille, but the expression will not be spoken by the TTS.

You can also enter multiple math expressions at the same time. When you have finished writing or modifying an expression, press Enter and you will be able to enter a new expression on a new line. You can enter as many Math expressions as you want, then press the shortcut Enter with M when done. It will add all these Math expressions to your document at the same time.

Notice of license agreement

The KeyWord equation editor utilizes a modified version of the library "mathml2braille", originally developed by Ludovic Bal (contact: ludo.bal62@gmail.com).

This library is distributed under the GNU Lesser General Public License v2.1 (LGPL v2.1).

HumanWare agrees to provide a copy of the modified library to any requesting party at no charge. To obtain a copy, please contact HumanWare Customer Support as detailed in Appendix J.

7.9 Working in multiple documents

Creating a new document while editing

The Monarch allows you to create a new document while editing another one. Access the context menu by pressing Space with M, select File functions, and select the option Create new additional document. You can also use the command Backspace with N. If your current document has not previously been saved, you will be prompted to do so before creating a new document. If it has already been saved, your current document will be saved automatically when you create a new one, and a blank document will be opened.

To open a document while editing another one, access the context menu by pressing Space with M, select File functions, and select the option Open additional document. You can also use the command Backspace with O to open an additional document. If your current document has not previously been saved, you will be prompted to do so before opening a new document. If it has already been saved, your current document will be saved automatically when you open a new one. Select the document you wish to open from the list presented to you, and the new document will open.

Switching between documents

To switch between two or more previously opened documents, access the context menu by pressing Space with M, select File functions, and select the option Switch documents. You can also use the command Space with Dots 1-2-5-6 to switch documents. If your current document has not previously been saved, you will be prompted to do so before

switching documents. If it has already been saved, your current document will be saved automatically when you switch to another one. Use the D-pad keys to select which drive, among those available on your device, you wish to open, then select the document you wish to switch to from the list presented to you, and the new document will open.

A message will inform you of the name of the document you have switched to. When switching from one document to another, the cursor will be at the last location in your document.

For improved performance, turning on read-only mode on documents which you are not editing, will avoid needing to save the document every time it is switched from. There is no limit to the number of documents that can be open at a time, keeping in mind that the larger the documents and more documents that are open will reduce performance.

7.10 Generating a Visual Preview

You may hear at times that the visual output of the KeyWord screen has black boxes or shapes on it that do not always make sense to a sighted viewer. This is because KeyWord is a Word Processor designed specifically for the Braille user. These black boxes and shapes are renderings of Braille format markers which cannot be translated into a visual representation.

This Preview feature can be useful for reading large documents, as it allows for various navigational elements. There may also be times when you need to show a sighted teacher or colleague a document you have worked on with the final formatting.

When these situations occur, you can use the Generate Preview option, which generates a web preview of your document and displays it on the Braille display and appear as it should visually on the screen if one has been plugged into the HDMI port. When a document is in preview mode, you can use the D-pad keys to navigate.

To generate the preview of a document, type Enter with V in an open document, or type Space with M, choose File Functions, then select and activate Preview. To close the preview, press Space with E.

7.11 Converting a Word document to another format

Word documents can be saved to a .brf or .brl Braille file formats. From a Word document, use the Save As option by pressing Backspace with S and select .brf or .brl format to convert your Word document into that format.

7.12 Embossing a document

KeyWord enables you to emboss documents with a compatible embosser such as Romeo 60, Juliet 120, and Basic-D 5, which all offer direct Wi-Fi embossing. To emboss a

document, you first need to configure the IP address of your embosser from the Settings menu of KeyWord.

Once the IP address is configured, select Emboss from the KeyWord menu and press Enter. Select a word document to emboss and press Enter.

Please note that embossing formatting and page size must be controlled on the embosser's menu and is not controllable at this point from KeyWord. Blank lines are currently not rendered by the embosser. To get the maximum functionality from your embosser, make sure the Monarch software is up to date.

8 Creating graphs with KeyMath

KeyMath is the designated application for math expressions. You can enter all your math expressions in any of the supported math codes, edit them, import/export them from/to other apps, and you can also generate many types of graphs from these expressions, that can be used in different contexts, for example for schoolwork.

8.1 Creating a new expression

When you open KeyMath, you are directed to the Expressions list. If expressions have been written previously in the same session, these expressions will be displayed. If not, a message will be displayed indicating that you are in the expressions list and inviting you to enter a new expression by using the shortcut Space with N. Use this shortcut and you will be directed to a window where you will be able to enter a new expression, using the math code defined in your language profile. When you are finished, press Enter to create the expression and generate a visual preview of the graph.

8.2 Import and export math expressions

Insert math expressions from BRF or BRL file

You can insert math expressions from a braille file (.brl or .brf). To do so, use the shortcut Backspace with O or select the option "Insert from BRL file" in the Context menu. A files window will open, and you will need to browse through your folders and files to find the desired document. Press Space with D to be directed to the drives list. The files displayed are those in BRF and BRL formats. Press Enter on the desired file. All the math expressions present in this file will be inserted in Keymath's expressions list.

Export math expressions to BRL file

After you have written your math expressions, you can export them to re-use them on another device, or simply save the current session. To do so, use the shortcut Backspace with S or select the option "Export expressions to BRL file" in the Context menu. A new window will open showing the different drives available on your device in which you can save your document. You will be automatically prompted with a file name; you can either choose to keep the prompted name or overwrite it with a name of your choice.

Once the drive in which you want to save your file is opened, you will be prompted to select in which folder you wish to save your document. If this folder contains sub-folders, these will be listed. If the folder does not contain any sub-folder, you will be asked to name the file.

You will be prompted with a text field in which you can type the name of the document you wish to save. Once you entered the name of your choice, choose the format you wish to save the document into. When you are done, use the D-pad keys to navigate

until you reach the Save button and press Enter. You can also press Backspace with A (perform current action) to complete the saving of the file. Please note that anywhere in the saving process, pressing Space with S will bring you directly to the filename edit field.

If you open an existing file, Space with S will simply overwrite that existing document with your changes.

At any point in the save as window, you can save your document by pressing the Save button.

Please note that you can insert math expressions from BRL and BRF files, but you can only export your math expressions to a BRL file.

Export expressions to KeyWord

You can also export math expressions from KeyMath to KeyWord. To do so, in KeyMath, use the shortcut Backspace with E or select the option "Export content" in the context menu. The KeyMath's expressions list will be copied to the clipboard and, returning to KeyWord, you will be able to paste them using the shortcut Backspace with V. The expressions will be pasted at the position of your cursor.

8.3 Inserting a math symbol in a KeyMath expression

To insert a symbol, you must be in the process of creating or modifying an expression. When inside the window to write or modify an expression, place your cursor at the location where you want to insert a symbol, then press the shortcut Backspace with Dots 3-5 or select the option "Insert symbol" in the context menu. A wide range of symbols is displayed, by categories, then the list of symbols in each category is displayed if you continue to navigate through the window. Their representation depends on the Math code that you have selected in your profile. You can select, in the list, the desired symbol, by selecting the appropriate category then the desired symbol in this category, or by selecting the desired symbol directly by navigating to it with the D-pad keys. Press the Enter key to insert this symbol into your expression, at the location of your cursor.

8.4 Modify or delete a KeyMath expression

To modify a KeyMath expression, simply press Enter on the expression that you want to modify. With the D-pad keys, place the cursor at the location in your expression that you want to modify, then modify the expression as desired (type or delete any content, insert a symbol, etc.). Press Enter when done.

To delete an expression, place your cursor at the location where you want to delete the expression, then press the shortcut Backspace with Dots 2-3-5-6.

To delete all expressions, press the shortcut Backspace with Dots 3-5-6.

You can also select these options in the Context menu.

8.5 Generating, reading, and modifying graphic objects in KeyMath

With KeyMath, you can convert any math expression to a graph that can be directly read in Braille. It can be very useful to visually represent different operations in some math contexts, as anyone can do by creating a math formula on paper.

Generating a graph

To generate a graph, simply write your math expression as described above, then press Enter. The graph will be generated visually. On the braille display, you will see the letters "ge" to the left of your math expression, indicating that a graph was generated for this expression.

Please note that only specific types of expressions can generate a graph. These contain two variables that interact with each other. In algebric terms, we would say X and Y or any other letter you want to attribute to them. The value of one variable is influenced by the math operation completed on the other. For example, in the operation y = 2x+5, the value of y is two times the value of x, plus 5. On a graph, X and Y will be the two axis and depending on the math operation being performed, the curves will represent the variation of each of the two variables from each coordinate point.

Note: if your expression is not written correctly to be graphable, an error symbol "er" will be displayed at the left of your expression on the braille display. Please also note that if you enter a simple operation without any variable, for example 2+5, the expression will be displayed without the graph symbol on the left, and an answer will be provided, as KeyMath is also a calculator.

View the graph generated

To view the graph generated, when on the math expression, press the shortcut Enter with G. You can also select the option "Graph viewer" in the Context menu. The graph will open and you will be able to touch the graph generated visually.

You can also point anywhere in the graph and get the coordinates both verbally and in braille. Please note that the coordinates displayed are rounded to two significant figures.

Graph settings

On the Keymath's expressions list, access the Context menu with the shortcut Space with M, then select the option "Graph settings". You will have the option to change the left, right, top or bottom boundary of your graph (the coordinates), to show or not the grid on the graph and/or on the tactile preview that you can touch when going to the graph viewer, to show the axis on tactile preview, to change the label of the X and Y axis,

to change the axis step and to display your graph on polar or degree mode. To check or uncheck an option, press the Enter key on the desired option. To change the labels, press Enter on the desired label and you will be in an edit box to rename this specific label. Press Enter when done typing.

9 Tactile viewer

One of the most powerful possibilities of the Monarch is to display tactile graphics. For instance, you can use the entire surface of the Braille display to show an image, as you would do on a piece of paper.

This way, you can have a complete overview of the picture in two dimensions. Moreover, with features to zoom in and zoom out, and with navigation shortcuts, you will have detailed access to various parts of the picture.

As such, pictures displayed are not static as on paper, giving the Monarch an undeniable advantage compared to a single-line Braille display.

9.1 Open a graphic document

To open the Tactile Viewer app, use the first letter navigation method or the D-pad keys to navigate to Tactile Viewer in the Keysoft's Main menu. Then, press the Enter key to activate it. The app will open and will display three options: "Open", "APH TGIL" and "Settings". Press the Enter key on the "Open" option. A Files window will appear, in which you will be able to select the file of your choice. Press the shortcut Space with D to be directed to the drives available on your device. Then, select the desired folder and file. Tactile Viewer can read image files in .JPG, .PNG and .PDF formats. When on the desired file, press the Enter key to open it. The graphic will be displayed.

APH TGIL

The American Printing House for the Blind (APH) provides a wide range of pictures that you can access using the APH TGIL (Tactile Graphic Image Library). To access the APH TGIL, press the Enter key on this option in the Tactile Viewer's menu. You will now be directed to the APH TGIL menu, in which you can search a specific image by typing its name and you can browse images by categories. To search a specific image, press the Enter key on the "Search" item, then type the desired image name, then press Enter when done. The search results will be displayed. To search images in a specific category, press the Enter key on the desired category. The results for the specific category (and sub-category if any) will be displayed. Press Enter on the desired image, then the image will open. When on an image, you can save the file locally by pressing the shortcut Space with S or by selecting the option "Save file locally" in the Context menu which you can access with the shortcut Space with M.

Note: The APH TGIL menu can only be used when the Monarch is connected to the Internet.

9.2 Navigate in your graphic

Tactile Viewer contains a lot of navigation shortcuts that will enhance your experience when touching tactile images and that will allow you to see each section of the image as you wish. You can also zoom at any specific point in a graphic. When in Point and click mode, point with one finger on the area that you want to zoom, then press two times on the Refresh/Action button.

Index, previous page, next page, go to page

When you open a tactile image, two cases can happen. If the tactile image has only one page, the image will be displayed directly. If the image has more than one page, when opening it, an index, listing all the pages of this image (numbered from 1 to the total number of pages) is displayed. Press the Enter key on the desired page to open it. At any time, you can return to the index by pressing the Back key or the shortcut Space with E.

When there is more than one page on your image, you can always navigate to the other pages directly, without having to return to the index.

You can navigate to the previous page with the shortcut Enter with Dots 2-4-6.

You can navigate to the next page with the shortcut Enter with O.

You can also return to the index with the shortcut Enter with I.

Finally, you can go to a specific page with the shortcut Enter with G.

Note: all these options can also be accessed via the Context menu.

Zoom in and zoom out

To adjust the amount of information, present in your image, that you want to touch at the same time, the two zoom keys can be very useful. To increase the zoom, that will allow you to see a specific section of the image more clearly, press the zoom in (+) key. To decrease the zoom, that will allow you to explore a wider section of your image, press the zoom out (-) key. These two options are also available in the Context menu. Please note that you can zoom in and zoom out multiple times in your image.

Bookmarks menu

To help you find the most important information in your image quickly, you can add bookmarks with the shortcut Backspace with M when your cursor is located at the position you wish to bookmark. To jump to a specific bookmark, use the shortcut Backspace with J. These two options can be found in the Context menu.

Note: these bookmarks are created for the current session and cannot be saved afterwards. Also, it is not possible to delete a bookmark.

Rotate

Use the Rotate function to change the position/viewing angle of your image. To rotate your image, press the shortcut Space with R, that you will also find in the Context menu. Each time you use this command, the image will rotate 90 degrees on the plane.

Go to a specific position in your graphic

Multiple navigation shortcuts can be used to go to a specific location in your image.

To go to the top left of the image, use the shortcut Space with Dot 1.

To go to the center left, use the shortcut Space with Dot 2.

To go to the bottom left, use the shortcut Space with Dot 3.

To go to the top right, use the shortcut Space with Dot 4.

To go to the center right, use the shortcut Space with Dot 5.

To go to the bottom right, use the shortcut Space with Dot 6.

To go to the top center, use the shortcut Space with C.

To go to the center, use the shortcut Space with Dots 2-5.

To go to the bottom center, use the shortcut Space with Dots 3-6.

Note: all these options can also be found in the Context menu, under the Navigation submenu.

Filters

You can change the appearance of your image by using one of the filters present in the Context menu or by using one of the following shortcuts.

To invert braille, use the shortcut Space with Dots 3-5.

To show less details, use the shortcut Space with Dots 1-3.

To show more details, use the shortcut Space with Dots 4-6.

To apply default detail level, use the shortcut Space with D.

Finally, to undo the last filter applied, use the shortcut Space with Z.

The default detail level filter applies the default recommended threshold. By default, this filter is applied when opening an image and will serve as a basis point for increase and decrease threshold commands.

The filter to increase and decrease details allows, as stated, will increase or decrease the details displayed on your picture.

10 Reading and editing Braille documents with KeyBRF

10.1 Opening BRF and BRL files

The Monarch includes KeyBRF, a software designed to open .brf or .brl files. These common Braille file types are directly written in Braille. There are two ways to open a Braille file with KeyBRF. One way is to open Files, find your .brf or .brl file, and activate the file – the file should automatically open with KeyBRF. Alternatively, select and activate KeyBRF from the Keysoft's Main menu. From the KeyBRF menu window, activate the Open option and find the file you wish to open.

KeyBRF will display the content of the .brf or .brl file in the same grade it was written in, which means that if the file was written in grade 2 Braille, it will also be displayed in grade 2 Braille regardless of your chosen Braille type. In KeyBRF, the Braille text will not be converted to visual text, and if you plug an external screen into the HDMI port, sighted users will only be able to see Braille dots on the screen. Speech feedback is limited in KeyBRF as you are working with direct Braille dots exclusively. It is also possible to toggle between Reading mode and editing mode by pressing Space with X as in KeyWord.

Note that when opening a .brf or .brl file in KeyBRF, it is always in read only mode first. If you want to edit an existing Braille file in KeyBRF, you need to activate edit mode via the context menu or using the command Space with X.

10.2 Creating a BRF or BRL file

To create a .brf or .brl file, from the KeyBRF menu, select the option Create and press Enter. When creating a document, edit mode is turned on. As in KeyWord, you can use the same Save and Save As options (space with S, and backspace with S, respectively), and your document will be saved as a .brf or .brl file.

10.3 Finding Braille Text

It's possible to search for text in a .brf or .brl file using the Find shortcut. Type Space with F, then enter your search parameters in the search field. Select and activate the Next button to find the text of your search parameter located after your cursor, or select the previous button to find your search parameter text located before your cursor. Alternatively, you can access the Find function through the Context menu by pressing Space with M.

11 Reading a book with Victor Reader

Victor Reader is the Monarch's application designed to read textbooks. It can read books in EPUB or DAISY 3 textbook formats. It can also access the text content provided by various book and magazine services.

11.1 Navigating the menu

To open the Victor Reader application, in Keysoft's Main menu, navigate until you reach the Victor Reader app, or, using first letter navigation, press the letter V to be directed to Victor Reader, then press Enter. After opening the application, you will be placed in the menu, containing the following items:

- My Books: in this submenu, you will find all the books added to your bookcase. Please note that books can only appear in the My Books submenu if they are downloaded from a book provider to which you are subscribed, or if you import them.
- My Subscriptions: in this submenu, you will find the magazines to which you are subscribed. When you connect this device to an account with a magazine provider, all the magazines provided by this service or those that you have chosen in your account will be displayed in the "My Subscriptions" submenu. To read a specific issue of a magazine, please select this magazine in the "My Subscriptions" submenu, then press Enter on the desired issue. This issue will be downloaded and when it is finished, you will be returned to the list of issues available for this magazine. Press the Enter key and the issue will open.
- Manage libraries: in this submenu, you can manage the books providers and the magazines providers from which you receive content. In the list of books providers and magazines providers, those that are checked are already subscribed, and those that are not checked are not subscribed.
- Import book: in this submenu, you will have the opportunity to import books that are not yet in the My Books list, whether they are on the internal storage of your device or on a USB stick plugged into the device.
- Settings: in this submenu, you can choose the book format that should be used by default to download books, when more than one format is available. You can choose between DAISY 3 and EPUB.

11.2 My books

In this submenu, you will find books that were added to your bookcase. These books can come from the internal memory, have been imported from a USB stick or can come from a book provider. They will be listed and numbered. Navigate to the desired book, then press Enter to open it. If you want to delete a book, navigate to the desired book, then

use the shortcut Backspace with Dots 2-3-5-6, then confirm the deletion by pressing Enter on the OK button.

Download a book in Victor Reader

To download a book in Victor Reader, in the main menu of the app, select a book provider to which you are subscribed. Then, you can search a book by typing its name, or you can search by categories by choosing one of the options displayed in the list. In the book results list, press Enter on the desired book. In the submenu that opens, press the "Download book" option, which will download the book and add it to your "My books" list. If the book is available in more than one format, you have the option to change this before downloading the book. In the settings there are two formats to choose from, and one is set by default. These are: EPUB and DAISY 3. Should you wish to change the format, the option to select the book format can be found under the "Download book" button. When the download of the book is completed, the first button that is displayed at the top of your braille display is "Open in Reader". Press Enter on this button to open the book or press the Back key to return to the results list.

Reading a book in Victor Reader

When your book is opened, its content is displayed, with your focus located on your last position if any, or at the beginning of the book. To pan up or down in your book, use the panning keys. To know more information about the current book, use the shortcut Space with I. To know your position in the current book, use the Where am I shortcut, Space with Dots 1-5-6.

Here is the list of the navigation functions in Victor Reader:

Table of contents: Space with T

Go to page: Enter with G

Next page: Enter with O

Previous page: Enter with Dots 2-4-6

Where am I: Space with Dots 1-5-6

Book Info: Space with I

Next Heading: H

Previous Heading: Backspace with Enter with H

Next heading level 1 to 6: Dots 1 to 6

Previous heading level 1 to 6: Add backspace with Enter to the level choice

Note: all the heading navigation shortcuts can be found in the Contextual menu, under the "Navigation" submenu, then the "Heading navigation" submenu.

11.3 My subscriptions

In this submenu, your magazines to which you are subscribed are displayed. Press Enter on the desired one to select it and access the list of available issues. Then, select an issue in the list to download it. When the issue is downloaded, you will be able to read it in Victor Reader. You can delete any downloaded issue and any subscription by doing the shortcut Backspace with Dots 2-3-5-6 when on the desired issue or subscription.

11.4 Manage libraries

Book providers

In the list that is displayed, you will find the books providers to which you can subscribe. Those that are checked are already subscribed, and those that are not checked are not subscribed. By checking an item, you will be prompted with a dialog box where you will have to enter the username and password for the selected service. A prompt will indicate to you if the connection was successful or not.

Note: when a new book provider or magazine provider is added to the list, a new item, called the name of the newly added service is added to the Victor's menu.

Magazine providers

In this submenu, you will find a list of magazine providers to which you can subscribe. Those that are checked are already subscribed, and those that are not checked are not subscribed. When checking an item, you will have to enter the username and password of the magazine provider. When you are finished, a prompt will indicate if the login was successful or not.

Note: when a new book provider or magazine provider is added to the list, a new item, called the name of the newly added service is added to the Victor's menu.

11.5 Import book

After selecting this item, you will be directed to a file manager window, that will search, by default, in your Documents folder. If you want to search in other drives or folders, press Space with D to be directed to the drives list, then select the desired one. Next, select the book that you want to import, and press Enter on it. You may now read this book in Victor and you will find this book in the My books submenu.

Note: if you wish to import a DAISY book, the contents of the folder containing the DAISY book must be in .zip format. Other file types (such as epub), do not need to be zipped.

12 Browsing the web with Ecosia (Beta)

Ecosia is still in Beta while we work on enhancing performance and resolving Braille refresh issues. We apologize for any inconvenience caused.

Ecosia is a Chromium-based web browser that focuses on environmental impact. Ecosia is the web browser implemented on the Monarch and works, in large part, as Chrome would. We adapted this program to fit our needs for an accessible web browsing experience for blind and partially sighted people. To launch Ecosia, access the main menu, Press I or Navigate to Internet Browser: Ecosia, then press Enter. This user guide only covers the basic functions of Ecosia; for additional details on Ecosia or for troubleshooting, at any time, you can access the Ecosia help page by navigating to the Ecosia menu using the shortcut Space with W, then by selecting the Help option.

12.1 General web page navigation

Like anywhere on your Monarch, you can navigate in your web browser by either using the point and click method or the Braille keyboard.

Ecosia features many functions and options that can be accessed in the context menu by pressing and holding the Recent apps button, or by pressing SPACE with M. The available commands are listed below:

Open web page: Enter with O

Forward: Backspace with F

Back: Space with E or the Back button

Reload page: Enter with R

Add or manage bookmark: Enter with M

Bookmarks: Enter with dots 2-3-5

History: Enter with dots 2-3-6

New tab: Backspace with N

Previous tab: Backspace with K

Next tab: Backspace with dots 4-6

Close tab: Enter with C

Find: Space with F

Find next: Space with N

Find previous: Space with P

Downloads: Backspace with D

Ecosia menu: Space with W

Alternatively, most of these functions can be accessed in the main page by scrolling with the panning keys. The first element on your web browser's screen are the tabs that are currently open. Each tab is followed by a close tab button that will close that particular tab when activated.

The tabs are followed by a "New Tab" button, which you can activate to create a new Ecosia tab.

Next is the "Go Back" button, which will bring you to the previous page.

It is followed by the "Go Forward" button, which is the opposite of back; meaning it will bring you to the page you were at before you pressed the back button. The forward button is only available if you have pressed back.

"Reload this Page" button: Pressing this button will force the page to reload, which is useful when pages have not properly loaded.

"Search and plant trees": allows you to perform a Google search with specific keywords. If you know a URL address, you can type it in this field then press enter to reach the website for that address. Please note that for each search performed by Ecosia, a new tree is planted.

"Bookmark this page" button: Click this button to bookmark the current page.

"Download this page" button: Click this to download the current page and make it available for offline use.

"Ad blocking" button: blocks ads from websites.

"Customize and control Google Chrome" button: by selecting this button, you have access to multiple options: new tab, new incognito tab, history, clear browsing data, downloads, bookmarks, recent tabs, help, and settings.

Note: Your browsing history won't be saved when using Ecosia in Incognito mode.

The next section is the main web page window that will display the content of your current website.

Navigating on a website

Navigating by element is an alternate way of navigating through your web page, allowing you to select the specific HTML elements you are looking for instead of going through the entire page to find them. When the focus is on the Web page, you can search by the

following HTML elements: headings, form elements, landmarks, list items, tabs, and links. When focus is located outside the webpage, standard navigation levels will apply.

Press SPACE with DOTS 1-3 to move to the previous navigation element and SPACE with DOTS 4-6 to move to the next navigation element.

Here are the web view navigation shortcuts:

To navigate backwards, add backspace and enter (dots 7 and 8)

Button: B

Control: C

ARIA landmark: D

Editable field: E

Focusable item: F

Graphic: G

Next graphic: G

Heading: H

Heading level 1: DOT 1

Heading level 2: DOT 2

Heading level 3: DOT 3

Heading level 4: DOT 4

Heading level 5: DOT 5

Heading level 6: DOT 6

List: O

List item: I

Link: L

Table: T

Checkbox: X

Combo box: Z

List of available webview commands: Space with H

12.2 Accessing a new website

To access a new website, press ENTER with O, or press Enter on the "Search and plant trees" field. You could also point and click on this field to open it.

This field requires you to use computer Braille to input the address. Remember that computer Braille uses all 8 dots, so when using computer Braille, if you want to perform traditional commands that use the ENTER or BACKSPACE keys, you must add the SPACE BAR to these commands to perform them. Commands which involve ENTER or BACKSPACE that would normally write a character must have the SPACE BAR added to them when you are using computer Braille. Anytime you are typing content in Ecosia, you must use Computer Braille.

Note: if you are using any UEB English Braille tables, computer Braille is not required when typing in Ecosia.

Once the address bar is focused, simply type in the address you wish to visit. If you do not have an address and wish to search a specific topic, simply write a word in the address bar then press enter. You will be directed to the results of that word in the Google search engine.

Press SPACE with E or the Back button to return to your previous page.

12.3 Bookmarks menu

You can add a bookmark to pages you will be visiting often. To quickly add a bookmark for your current page, type ENTER with M.

Typing this shortcut again will delete the bookmark.

To enter the bookmark menu, type ENTER with DOTS 2-3-5.

Alternatively, you can open the context menu or use the Next command until you reach the Bookmarks menu, then press enter. The bookmarks menu lists all your current bookmarks. To activate a bookmark, use the Next command until you reach the Website you wish to visit then activate it by pressing enter.

12.4 Viewing or erasing browsing history

You can access your browsing history by typing ENTER with DOTS 2-3-6, via the Context menu or by selecting the "Customize and control Google Chrome" option, and then the History button in your browser. Then, select Clear Browsing Data. You will see a page where you can choose what you wish to erase. Once you have made your selection, scroll down to the Clear Data button, and press Enter to erase your history.

12.5 Downloading files

If you press enter on a link from a web page which activates a download, you will see a notification that the download has started. All downloads are saved in the Monarch's internal storage under the Downloads folder. In Ecosia, you can retrieve the list of downloads by accessing the downloads from the Ecosia context menu. Space with W is the shortcut for this menu. Remember that the Ecosia context menu contains all functions and their associated shortcuts in Ecosia.

13 Monarch Chess

The Monarch contains a chess game application. To open it, go to the All applications submenu of the Keysoft's Main menu, then press the Enter key on the Monarch Chess application. A chess board will be displayed in braille, with the following message: "Press Enter to continue". Press the Enter key and you will be directed to the main menu of the app, that contains three items: "New game", "Tutorial" and "Settings".

13.1 Tutorial

Before playing your first game, we highly recommend completing the provided tutorial. It will guide you through the basics of chess, including how the chessboard is represented in Braille, a description of each piece, how to move them according to the rules, and the shortcuts you can use. You'll also learn how to save a game in progress. Even if you're experienced with chess and/or other adapted versions for blind players, going through this tutorial is essential to familiarize yourself with the specific features and environment of this virtual game.

13.2 Playing a new game

To begin a new game, select the option "New game" and press Enter. You will have two choices: "Play Chess against CPU", that will allow you to play against your device, and "Play Chess against a human opponent", that will allow you to play against another person.

Note: if you decide to play against the CPU, you will have to choose one of the following levels of difficulty: very easy, easy, medium, hard, and very hard.

Note: if you decide to play against a human opponent, your adversary must be physically with you. You will play using the same device and the same Chess board.

When you have chosen the desired option, a Chess board will be displayed in braille, containing all the pieces, yours and those of your adversary, at their default location and you will be ready for your first move. If you want to quit a game that is not yet completed, press the shortcut Space with E to exit, or the Back key. A message will ask you if you want to save your game before quitting, or just quit. Press on the desired option, then confirm that you really want to quit.

Please note: to know more about the two types of games and how to play Chess in general, and with this app in particular, please refer to the tutorial.

13.3 Settings

The last item in the menu of the Chess' app is called "Settings". If you press Enter on this item, you will be able to modify some game settings.

To know more about the settings and what effect changing them has, please refer to the tutorial.

14 Settings

14.1 Settings overview

Two types of settings can be changed on your Monarch: KeySoft settings, and Android settings.

Android settings apply to your Monarch in general, such as Wi-Fi connection, sound, storage, battery and software version.

You can access Android settings by pressing Enter with Q, or by going to the All Applications menu from the main menu, and then selecting and activating the Settings item. You will then be redirected to the Android settings menu where you can modify your Monarch's settings. KeySoft settings, or more commonly known as the Options menu, allows you to personalize the way KeySoft applications behave. You can also access the Android system settings at the bottom of the options menu.

14.2 KeySoft Options Menu

You can access the KeySoft options menu from anywhere by pressing SPACE with O.

The following options can be changed in the KeySoft options menu:

- Configure Language Profiles (submenu): Customize your language profiles or add additional profiles. Select which profile you would like to modify or add an additional profile.
    - o Text To Speech Engine: Choose your preferred TTS engine.
    - o Voice: Select an existing voice or use the Manage voices option to replace or add additional voices. You can have up to 4 different Acapela voices installed.
    - o Speech rate: Choose the speed at which the TTS engine speaks.
    - o Preferred Braille Grade for entry: Choose from either literary Braille or computer Braille as your preferred entry method.
    - o Preferred Braille Grade for display: Choose from either literary Braille or computer Braille as your preferred display method.
    - o Computer Braille Table: Select the computer Braille table of your choice.
    - o Literary Braille Table: Select the literary Braille table of your choice.
    - o Preferred Braille type for Math: select the Braille math type of your choice.
    - o Delete language profile.

- Select Language Profile (submenu): Choose from one of 10 language profiles on your Monarch. You can also use ENTER with L to switch profiles.
- Braille navigation settings (submenu): modify the Braille navigation settings.
  - Display mode: choose between multiline and single line.
  - Reduce spacing: when checked, the spacing will be reduced as much as possible to increase the quantity of information displayed.
  - Show text editor indicators: when checked, a text editor indicator (an empty space between two brackets) will be displayed when in an editable field. When unchecked, the text editor indicator will not be displayed in documents but will remain for other editable fields.
  - Format markers rendering: select the format markers to display.
  - Braille message display time (in seconds): Change the Braille message display time by entering a number between 1 and 30 seconds.
- Keyboard settings (submenu):
  - Keyboard echo: Choose whether the TTS should repeat your typed words, characters, none, or both.
  - Keyboard vibrations: When checked, your Monarch will vibrate after each keystroke.
  - Keyboard clicks: When checked, your Monarch will make an audible click after each keystroke.
- Configure additional TTS settings (submenu)
  - Preferred engine, HumanWare Acapela.
  - Language: choose if you want to use the system language or another language for which TTS had been installed.
  - Speech rate: to change the speech rate of your TTS.
  - Pitch: to change the pitch of your TTS.
  - Reset: to reset the TTS parameters to their default value.
- Miscellaneous settings (submenu):
  - Vibration feedback: When checked, your Monarch will produce a short vibration when navigating to a new item.
  - Use Navigation sounds: When checked, your Monarch will produce various sounds when navigating.
  - Sound Volume: Choose the volume of your Monarch's sounds in relation to media volume.

- Visual Braille output: When checked, the Braille dots will appear on the external screen plugged in the HDMI port, on the top of the display.
- User Guide: Opens the Monarch user guide.
- Android System Settings: Access the Android Settings.

14.3 Viewing Monarch Software Version

The fastest way to see the version number of your Monarch is to type SPACE with I from the main menu. This will open the Tablet Status window which gives you useful information about your device – status, Model Number, Android version, and so on.

An alternate way to view your version number is to press Enter with Q to open Android Settings, then scroll and activate About Tablet, that is located at the bottom of the list.

This screen lists the version number of your tablet as well as other software information.

15 Updating your Monarch

HumanWare is constantly improving its products and software to provide you with the best user experience possible. For this reason, Monarch features an auto-updater that automatically notifies you each time new system or application updates become available online. A Wi-Fi connection is necessary to perform a system or application update. Note: To initiate a system update, your Monarch should at least have 20% of battery charge if it is plugged into a power source, and 50% battery charge if it is unplugged.

15.1 System Update

When it is time to perform a system update, a prompt is displayed on your device informing you that a system update is available. You can install this update now or be reminded later. If you want to install the update now, press Enter on the Yes button, then the installation update will begin. If you want to be reminded later, press the Enter key on the "Remind me later" button. In this case, the update can be done by accessing the notification shade. You can activate it by pressing Enter with N, then scrolling down to the System update notification. Activate the item, then the installation will begin. The update alert will be displayed again when you restart the Monarch. Please make sure you save all your work before performing a system update, as you will have to restart your device at the end of the update process.

Alternatively, you can access system updates through the KeyUpdater application. To open it, go to the Main menu, then select the All applications submenu. In this submenu, navigate to KeyUpdater, then press Enter to open this application. If any system or application update is pending, you will be notified of that and you will be able to press Enter on the Yes button to perform the update.

The update will begin downloading, and you will receive updates as it progresses. When the download has completed, installation begins, and you will be notified as it progresses. When it is finished, a prompt will be displayed asking you if you want to restart your device. Press Enter on the Yes button to restart your device. The "starting keysoft..." message will be displayed a few seconds later, followed by the butterfly image, then you will be focused on the Main menu.

15.2 Updating your Monarch applications from a Wi-Fi network Application Update

When application updates become available, a prompt is displayed. You have the choice to install them now or to install them later. If you decide to install them now, press Enter on the "Yes" button. If you want to install them later, press Enter on the "Remind me later" button. You can also update your applications by using the KeyUpdater

application. When opening the application, a prompt will be displayed indicating that apps must be updated and asking you if you want to update them. If you select the "Yes" button, the updates will begin. Application updates will be downloaded and installed on your Monarch. The Monarch will then tell you how many applications were installed. Note that if accessibility components need to be updated, Acapela and/or KeySoft may be temporarily suspended during the update process. Please note that in KeyUpdater, you can always access the latest release notes by pressing Enter on the button called "Latest release notes". You will see the list of the most recent updated applications and the release notes of the last system update. Press Enter on the desired application update to read the corresponding release notes.

Please note that when a system update is installed, the related apps update are installed at the same time.

If you wish to update your apps manually, you can uncheck the option "auto-update apps" in the KeyUpdater Settings.

Note that after updating your device with KeyUpdater, you may have to restart the device to install other updates.

15.3 Updating your Monarch via USB

It is possible to update your device via a USB stick that is loaded with the latest software update. To do so, download the package from HumanWare's website and the appcast file associated with this package. Then, copy and paste these two files (the appcast file and the ZIP file) downloaded to the USB stick that will be used to perform the update. plug the USB stick into your Monarch and the update will be detected automatically. A prompt asking you if you want to update your device will be displayed. You will have the choice to install the update now or to be reminded later. If you select to be reminded later, you will have the prompt again five minutes later or when rebooting your Monarch. You can also access the update by the notification shade (press Enter with N), or via the KeyUpdater app. Note: if updating online, you will access the KeyUpdater app.

To begin the update, press Enter on the "Install" button. KeyUpdater will copy the update package from the USB stick to the internal memory of the device, will unzip the files then will process to install the update. You will have to restart your device when the installation is finished.

Please note that the update package will not be deleted from the USB stick when you restart your device, allowing you to update multiple devices with the same package.

Please also note that even though your Monarch is connected to a Wi-Fi network and even though a more recent system version is available online, the version stored on the

USB stick will always prompt you to install it when the USB stick is plugged into the Monarch.

15.4 Update apps via USB

To update apps via a USB stick, copy and paste the app files of these applications on your USB stick. Then, plug the USB stick into the device. If the version of the apps stored on the USB stick is more recent than the version installed on your device, an update prompt will appear, offering you the opportunity to update these apps. As with an online update, you can choose to install the updates now or be reminded later. To install the updates, simply click on the Install button and the installation will proceed.

16 Troubleshooting

16.1 Monarch does not power on

Press and hold the Power button. If your Monarch still does not turn on, your battery may need recharging.

Connect the provided USB cable with the power supply into a power outlet or just the USB cable into a running computer. If the battery was completely discharged, it may take a few minutes before the device shows any signs of activity.

16.2 There is no text-to-speech

If you can hear all sounds from your Monarch except the text-to-speech voice, speech may have been turned off. You can easily turn it back on by typing Backspace with Enter with S. If you hear nothing at all, ensure your accessibility volume level is not at 0. Turn volume up by pressing Enter with Dot 4 repeatedly.

16.3 Device is no longer Accessible

If for any reason you lose accessibility on your device, it is possible that KeySoft was deactivated. To reactivate KeySoft, simply press and hold the Volume Up and Volume Down buttons simultaneously for a few seconds, and accessibility should return.

16.4 Other problems

If you find yourself with a problem you can't seem to resolve, try restarting your Monarch normally.

If you are unable to power off normally, or if your Monarch is frozen, press and hold the power button for 12 seconds to perform a hard reset. Once your Monarch is shut down, power it on again to see if the problem is resolved.

If the problem is not resolved, please contact:

For USA users, you can contact the American Printing House for the Blind (APH)'s customer service.

Toll-Free: (833) 447-8444

Email: monarchsupport@aph.org

You can also contact HumanWare's technical support at the following numbers or email addresses:

Global: support@humanware.com

North America: 1-800-722-3393 or 1-888-723-7273 (Canada)
us.support@humanware.com

Europe: (0044) 1933 415 800
eu.support@humanware.com

Australia / Asia: (02) 9686 2600
au.sales@humanware.com

Appendix A – Braille Keyboard command summary

Note: If using Computer braille, you need to add Space with commands using Enter or Backspace.

General

Home (Main Menu): Space with Dots 1-2-3-4-5-6 or Home button (circle-shaped button on the front of the device)

Activate Selected item: Enter (Dot 8) or point with one finger and double press Action button

Escape or Back: Space with E or Back button (triangle-shaped button on the front of the device)

Accessibility Volume up: Enter with Dot 4

Accessibility Volume down: Enter with Dot 1

Music volume up: Enter with Dot 5

Music volume down: Enter with Dot 2

Increase speech rate: Enter with Dot 6

Decrease speech rate: Enter with Dot 3

Increase Braille line spacing: Zoom In (+) Button

Decrease Braille line spacing: Zoom out (-) Button

Force dynamic refresh: Long press the Action button

Open KeySoft Options: Space with O

Jump to any item in a list: Type the first letter of the item or app

Activate notification shade: Enter with N

Open Android settings: Enter with Q

Stop speech: BackSpace with Enter

Repeat: Space with R

Running apps: Recent apps button (square button on the front of the device)

Context menu: Space with M or press and hold Recent apps button (square button on the front of the device)

Contextual help: Space with H

System information: Space with I

Toggle language profile: Enter with L

Turn screen reader and accessibility on / off: Press and hold Volume up and Volume down buttons for 3 seconds

Toggle speech on/off: Backspace with Enter with S

Toggle Braille grade: Backspace with G

Toggle from Computer Braille to Literary Braille: backspace with space with G

Battery status: Enter with P

Time: Enter with T

Date: Enter with D

Manually create bug report: Backspace with Enter with R

Focus cursor to top line: Enter with F (In lists, it brings the item with focus to the top of the braille display. In edit texts, it brings the line containing the cursor to the top of the braille display).

General navigation

Previous item: D-pad Up, Backspace or Space with Dot 1

Next item: D-pad down, Space or Space with Dot 4

Pan up and down: Up or Down Panning key

Go to top: Space with Dots 1-2-3

Go to bottom: Space with Dots 4-5-6

Reading

Previous character: D-pad left or Space with Dot 3

Current character: Space with Dots 3-6

Next character: D-pad right or Space with Dot 6

Previous word: Space with Dot 2

Current word: Space with Dots 2-5

Next word: Space with Dot 5

Previous line: Space with Dot 1

Current line: Space with Dots 1-4

Next line: Space with Dot 4

Move cursor at current position to previous line: D-pad up

Move cursor at current position to next line: D-pad down

Previous paragraph: Space with Dots 2-3

Current paragraph: Space with Dots 2-3-5-6

Next paragraph: Space with Dots 5-6

Jump to the beginning of a line or sentence (Home): Enter with Dots 1-3

Jump to the end of a line or sentence (End): Enter with Dots 4-6

Jump to the top of an area: Space with Dots 1-2-3

Jump to the bottom of an area: Space with Dots 4-5-6

Read all: Space with G

Stop reading: Backspace with Enter

Editing

Delete previous word: Backspace with Dot 2

Delete current word: Backspace with Dots 2-5

Delete previous character: Backspace (Dot 7)

Move insertion point to start of text field document: Space with Dots 1-2-3

Move insertion point to end of text field document: Space with Dots 4-5-6

Delete from cursor to the end of the line: Backspace with C

Delete from cursor to the end of the document: Backspace with Dots 4-5-6

Start/Stop selection: Enter with S

Select all : Enter with Dots 1-2-3-4-5-6

Copy: Backspace with Y

Cut: Backspace with X

Paste: Backspace with V

KeyWord Commands

Save: Space with S

Save as: Backspace with S

Create file: Backspace with N

Open file: Backspace with O

Switch documents: Space with Dots 1-2-5-6

File info: Space with I

Find : Space with F

Find next: Space with N

Find previous: Space with P

Replace: Backspace with F

Toggle Reading mode : Space with X

Launch KeyMath: Backspace with M

Equation Editor: Enter with M

Preview print document: Enter with V

Spell check: Space with Dots 1-6

Tab: Backspace with T

Insert page break: Backspace with P

Align left: Backspace with L

Align center: Enter with C

Align right: Enter with R

Align justify: Enter with J

Bold: Enter with B

Italic: Enter with I

Underline: Enter with U

Formatting details: Space with Dots 3-5

Braille Editor: KeyBrf Commands

Save: Space *with S*

Save as: Backspace *with S*

Find : Space *with F*

Find next: Space *with N*

Find previous: Space *with P*

Toggle Reading mode : Space with X

Victor Reader

Table of contents: Space with T

Go to page: Enter with G

Next page: Enter with O

Previous page: Enter with Dots 2-4-6

Where am I: Space with Dots 1-5-6

Book Info: Space with I

Next Heading: H

Previous Heading: Backspace with Enter with H

Next heading level 1 to 6: Dots 1 to 6

Previous heading level 1 to 6: Add backspace with Enter to the level choice

Tactile Viewer Commands

Pan left: Left or right D-pad left

Pan right: Left or right D-pad right

Pan Up: Left or right D-pad up

Pan Down: Left or right D-pad down

Zoom In: Zoom In (+) Button or Point and double press Action button

Zoom out: Zoom out (-) Button

Top left: Space *with Dot 1*

Center left: Space *with Dot 2*

Bottom left: Space *with Dot 3*

Top right: Space *with Dot 4*

Center right: Space *with Dot 5*

Bottom right: Space *with Dot 6*

Top center: Space with C

Center: Space with Dots 2-5

Bottom center: Space with Dots 3-6

Rotate the display: Space *with R*

Switch to overview mode: Zoom out (-)

Switch to standard mode: Zoom In (+)

File info: Space *with I*

Invert Braille: Space *with Dots 3-5*

Show less details: Space *with Dot 1-3*

Show more details: Space *with Dots 4-6*

Default detail level: *Space with D*

Undo Last Filter: Space *with Z*

Add Bookmark: Backspace *with M*

Jump To Bookmark: Backspace *with J*

Go to page: Enter *with G*

Next Page: Enter *with O*

Previous Page: Enter *with Dots 2-4-6*

Index page: Enter with I

TGIL Library

Search: Space with F

Save file locally: Space with S

File Manager

New Folder: Space with N

Rename file or folder: Backspace with R

Mark/Unmark file or folder: Backspace with L

Mark all files or folders: Enter with Dots 1-2-3-4-5-6

Delete file or folder: Backspace with Dots 2-3-5-6

Copy to: Backspace with Y

Cut file/Move to: Backspace with X

Search: Space with F

Drive Selection: Space with D

Perform current action: Backspace with A

File info: Space with I

Math: KeyMath

New Expression: Space with N

Insert symbols in an expression: Backspace with Dots 3-5

Modify expression: Enter (On expression)

Graph viewer: Enter with G

Graph settings: Space with Dots 3-5

Export content: Backspace with E

Disable expression: Backspace with L

Delete expression: Backspace with Dots 2-3-5-6

Delete All expressions: Backspace with Dots 3-5-6

Information about a disputed expression: Space with I

Zoom in on a graph: Plus (+) button

Zoom out on a graph: Minus (-) button

Pan around a graph: D-pads

Internet Browser: Ecosia

Open web page: Enter with O

Forward: Backspace with F

Back: Space with E or the Back button

Reload page: Enter with R

Add or manage bookmark: Enter with M

Bookmarks: Enter with dots 2-3-5

History: Enter with dots 2-3-6

New tab: Backspace with N

Previous tab: Backspace with K

Next tab: Backspace with dots 4-6

Close tab: Enter with C

Find: Space with F

Find next: Space with N

Find previous: Space with P

Downloads: Backspace with D

Ecosia menu: Space with W

Html Content Navigation (webviews)

To navigate backwards, add backspace+enter (dots 7 and 8)

Button: B

Control: C

ARIA landmark: D

Editable field: E

Focusable item: F

Graphic: G

Next graphic: G

Heading: H

Heading level 1: DOT 1

Heading level 2: DOT 2

Heading level 3: DOT 3

Heading level 4: DOT 4

Heading level 5: DOT 5

Heading level 6: DOT 6

List: O

List item: I

Link: L

Table: T

Checkbox: X

Combo box: Z

List of available webview commands: Space with H

Appendix B – Standard Keyboard command summary

General

Home (Main Menu): Home button (circle-shaped button on the front of the device) or Ctrl + Alt + H

Activate Selected item: Enter or point with one finger and double press Action button

Escape or Back: Escape or Back button (triangle-shaped button on the front of the device)

Accessibility Volume up: Alt + =

Accessibility Volume down: Alt + -

Music volume up: Ctrl + =

Music volume down: Ctrl + -

Increase speech rate: Ctrl + Alt + =

Decrease speech rate: Ctrl + Alt + -

Increase Braille line spacing: Zoom In (+) Button

Decrease Braille line spacing: Zoom out (-) Button

Force dynamic refresh: Long press the Action button

Open KeySoft Options: Ctrl + Alt + O

Jump to any item in a list: Type the first letter of the item or app

Activate notification shade: Ctrl + Alt + N

Open Android settings: Ctrl + Alt + Q

Stop speech: Ctrl

Repeat: Alt + Shift + R

Running apps: Recent apps button (square button on the front of the device)

Context menu: Ctrl + Alt + M or press and hold Recent apps button (square button on the front of the device)

Contextual help: F1 or Alt + Shift + H

System information: Ctrl + I

Toggle language profile: Ctrl +Alt + L

Turn screen reader and accessibility on / off: Press and hold Volume up and Volume down buttons for 3 seconds

Toggle speech on/off: Alt + Shift + S

Toggle Braille grade: Ctrl + Shift + G

Battery status: Ctrl + Alt + P

Time: Ctrl + Alt + T

Date: Ctrl + Alt + D

Manually create bug report: Ctrl + Alt + R

Focus cursor to top line: Ctrl + Alt + F (In lists, it brings the item with focus to the top of the braille display. In edit texts, it brings the line containing the cursor to the top of the braille display).

General navigation

Previous item: D-pad Up, Backspace, Shift + Tab or Alt + Left Arrow

Next item: D-pad down, Space, Tab or Alt + Right Arrow

Pan up and down: Up or Down Panning key

Go to top: Ctrl + Home

Go to bottom: Ctrl + End

Reading

Previous character: D-pad left or Left arrow

Current character: Ctrl + Alt + 1

Next character: D-pad right or Right arrow

Previous word: Ctrl + Left arrow

Current word: Ctrl + Alt + 2

Next word: Ctrl + Right arrow

Previous line: Up arrow

Current line: Ctrl + Alt + 3

Next line: Down arrow

Move cursor at current position to previous line: D-pad up

Move cursor at current position to next line: D-pad down

Previous paragraph: Ctrl + Up arrow

Current paragraph: Ctrl + Alt + 4

Next paragraph: Ctrl + Down arrow

Jump to the beginning of a line or sentence: Home

Jump to the end of a line or sentence: End

Jump to the top of an area: Ctrl + Home

Jump to the bottom of an area: Ctrl + End

Read all: Alt + G

Stop reading: Ctrl

Editing

Delete previous word: Ctrl + Backspace

Delete current word: Ctrl + Delete

Delete previous character: Backspace

Move insertion point to start of text field document: Ctrl + Home

Move insertion point to end of text field document: Ctrl + End

Delete from cursor to the end of the line: Ctrl + Alt + C

Delete from cursor to the end of the document: Ctrl + Alt + End

Start/Stop selection: Ctrl + 8

Select all: Ctrl + A

Copy: Ctrl + Y

Cut: Ctrl + X

Paste: Ctrl + V

KeyWord Commands

Save: Ctrl + S

Save as: Ctrl + Shift + S

Create file: Ctrl + N

Open file: Ctrl + O

Switch documents: Ctrl + Tab

File info: Ctrl + I

Find : Ctrl + F

Find next: Ctrl + 3

Find previous: Ctrl + Shift + 3

Replace: Ctrl + H

Toggle Reading mode: Ctrl + R

Preview print document: Ctrl + Q

Spell check: Ctrl + 7

Tab: Tab key

Insert page break: Ctrl + Enter

Align left: Ctrl + Shift + L

Align center: Ctrl + Shift + C

Align right: Ctrl + Shift + R

Align justify: Ctrl + Shift + J

Bold: Ctrl + Shift + B

Italic: Ctrl + Shift + I

Underline: Ctrl + Shift + U

Formatting details: Ctrl + Shift + F

Select previous character: Shift + Left Arrow

Select next character: Shift + Right Arrow

Select previous word: Shift + Ctrl + Left Arrow

Select next word: Shift + Ctrl + Right Arrow

Select previous line: Shift + Up Arrow

Select next line: Shift + Down Arrow

Select previous paragraph: Shift + Ctrl + Up Arrow

Select next paragraph: Shift + Ctrl + Down Arrow

Select previous page: Shift + Page up

Select next page: Shift + Page down

Select from the beginning of the line: Shift + Home

Select to the end of the line: Shift + End

Select from top of content: Shift + Ctrl + Home

Select to end of content: Shift + Ctrl + End

Braille Editor: KeyBrf Commands

Save: ***Ctrl + S***

Save as: ***Ctrl + Shift + S***

Find : ***Ctrl + F***

Find next: ***Ctrl + 3***

Find previous: ***Ctrl + Shift + 3***

Toggle Reading mode : Ctrl + R

Victor Reader

Table of contents: Ctrl + T

Go to page: Ctrl + Alt + G

Next page: Ctrl + N

Previous page: Ctrl + P

Where am I: Ctrl + W

Book Info: Ctrl + I

Next Heading: H

Previous Heading: Shift + H

Next heading level 1 to 6: 1 to 6

Previous heading level 1 to 6: Add Shift to the level choice

Tactile Viewer Commands

Pan left: Left or right D-pad left

Pan right: Left or right D-pad right

Pan Up: Left or *right D-pad up*

Pan Down: Left or right D-pad down

Zoom In: Zoom In (+) Button or Point and double press Action button

Zoom out: Zoom out (-) Button

Rotate the display: *Ctrl + R*

Switch to overview mode: Zoom out (-)

Switch to standard mode: Zoom In (+)

File info: Ctrl + Shift + I

Invert Braille: *Ctrl + I*

Show less details: *Ctrl + K*

Show more details: *Ctrl + J*

Apply OTSU Threshold: *Ctrl + O*

Apply Gaussian Filter: *Ctrl + G*

Apply Dilation Filter: *Ctrl + D*

Undo Last Filter: *Ctrl + Z*

Add Bookmark: *Ctrl + Shift + M*

Jump To Bookmark: *Ctrl + Alt + J*

Go to page: *Ctrl + Alt + G*

Next Page: *Ctrl + Right arrow*

Previous Page: *Ctrl + Left arrow*

Index page: Ctrl + Alt + I

TGIL Library

Search: Ctrl + F

Save file locally: Ctrl + S

File Manager

New Folder: Ctrl + N

Rename file or folder: Ctrl + 2

Mark/Unmark file or folder: Alt + Shift + Enter

Mark all files or folders: Ctrl + A

Delete file or folder: Delete

Copy to: Ctrl + Y

Cut file/Move to: Ctrl + X

Search : Ctrl + F

Drive Selection: Ctrl + D

Perform current action: Ctrl + Alt + A

File info: Ctrl + I

Math: KeyMath

Note: at the moment, it is not possible to write math equations with an external QWERTY keyboard.

Internet Browser: Ecosia

Open web page: Ctrl + O

Forward: Ctrl + Shift + F

Back: Escape or the Back button

Reload page: Ctrl + R

Add or manage bookmark: Ctrl + D

Bookmarks: Ctrl + Shift + B

History: Ctrl + H

New tab: Ctrl + T

Previous tab: Ctrl + Shift + Tab

Next tab: Ctrl + Tab

Close tab: Ctrl + F4

Find: Ctrl + F

Find next: Ctrl + 3

Find previous: Ctrl + Shift + 3

Downloads: Alt + D

Ecosia menu: Space with W

Html Content Navigation (webviews)

To navigate backwards, add the Shift key

Button: B

Control: C

ARIA landmark: D

Editable field: E

Focusable item: F

Graphic: G

Next graphic: G

Heading: H

Heading level 1: DOT 1

Heading level 2: DOT 2

Heading level 3: DOT 3

Heading level 4: DOT 4

Heading level 5: DOT 5

Heading level 6: DOT 6

List: O

List item: I

Link: L

Table: T

Checkbox: X

Combo box: Z

List of available webview commands: F1

Appendix C – Startup tutorial

Screen 1, at the opening of the app:

Monarch Startup

Press Enter

Screen 2, welcome:

Welcome to the Monarch startup. This tutorial will teach you the basics of using your Monarch. Press Enter to continue or Space with E to exit.

Screen 3, panning keys:

Find and press each Pan key above/below the left/right D-Pad. The Pan keys move the page up and down.

Screen 4, symbol:

Since some screens have more content than can fit on the display, we use the symbol at the bottom right to let you know there is more braille. Check out the symbol then press Enter to continue.

Screen 5, Panning keys:

When a screen has more braille to read, you scroll down using the Pan Down key. If you press Pan Down on the right side of the display, the text will continue to move down until you reach the bottom. If you press the Pan Up key, the text will move in reverse until you reach the top. Try it out then press Enter to continue.

Screen 6, D-Pad keys:

Find and press each D-Pad key on the left or right side of the display. Press Enter to continue.

Screen 7, braille keys:

Find and press each braille key individually. Once each key has been pressed, use Enter to continue.

Screen 8, Caterpillar:

Check out this caterpillar! Press Enter to continue.

Screen 9, tactile graphic of a caterpillar, with the word "caterpillar" written in braille at the bottom.

Screen 10, first letter navigation:

Use first letter navigation to go to butterfly. Press B to move to Butterfly then press Enter.

Pupa

Cocoon

Monarch Book

Caterpillar

Butterfly

Screen 11, Butterfly:

Check out this butterfly! Press Enter to continue.

Screen 12, a tactile graphic of a butterfly, with the word "butterfly" written in braille at the bottom.

Screen 13, zoom in and zoom out keys:

Find and press the Zoom Out and Zoom In keys on each side of the keyboard. These are used to increase line spacing and to zoom into tactile graphics.

Screen 14, Monarch Book:

Using the D-Pad or first letter navigation, open the Monarch Book.

Pupa

Cocoon

Monarch Book

Caterpillar

Butterfly

Screen 15, reading the braille on the display:

When you are finished reading the braille on the display, use the Pan Down key to move to the next page. Try using Zoom In slash Out to change spacing between lines. When finished, Press the enter key to continue.

Monarch Lifecycle

The Monarch Butterfly (Danaus plexippus) undergoes a fascinating lifecycle, comprising four distinct stages: egg, larva (caterpillar), pupa (chrysalis), and adult. This intricate process begins with the female Monarch laying eggs on milkweed plants, the sole food source for Monarch caterpillars. The eggs, typically laid on the undersides of leaves, hatch into tiny larvae within a few days.

The second stage involves the larval phase, during which the caterpillar feeds voraciously on milkweed leaves, storing energy for its transformation. As it grows, the caterpillar undergoes a series of molts, shedding its exoskeleton to accommodate its increasing size. This phase lasts about two weeks, culminating in the formation of a chrysalis. The pupa, or chrysalis, is a protective casing where the caterpillar undergoes metamorphosis. Inside the chrysalis, the caterpillar's body undergoes a remarkable transformation into a butterfly.

After approximately 10 to 14 days, the adult Monarch Butterfly emerges from the chrysalis. This newly formed butterfly unfolds its wings, allowing them to dry and strengthen. The adult Monarch then engages in activities like feeding on nectar from flowers, mating, and, for some generations, embarking on the incredible migration journey. The Monarch's lifespan as an adult typically ranges from a few weeks to several months, depending on factors such as weather conditions and the timing of its

emergence. The cyclical nature of the Monarch Butterfly's lifecycle is not only a testament to the marvels of nature but also highlights the importance of preserving habitats and food sources critical for their survival.

This content was generated by AI, and is provided as an example of sample text.

Screen 16, Point and click gesture mode:

Use only one finger to point to the butterfly, then double tap the Action key between dots 1 and 4 with your other hand.

Screen 17, point and click:

After using point and click, be sure to raise your fingers completely off of the display, or some pins will not refresh. Point and click the butterfly on the next screen, then look at the broken example. Press Enter to continue.

Screen 18, a tactile graphic of a normal butterfly, with the words "normal butterfly" written in braille at the bottom.

Screen 19, a tactile graphic of a broken butterfly, with the words "broken butterfly" written in braille at the bottom.

Screen 20, Point and click, butterflies:

Great. Just like before, find the butterflies, point, and use the Action key to click on them. Press Enter to continue.

Screen 21-26, five graphic representations of butterflies, placed at different locations on the screen.

Screen 27, front keys:

Point and click on each shape to learn what each front key does. **Note:** if you press the actual key, you will exit the app. Press Enter to continue.

(The three shapes are above the braille text.)

When clicking on the triangular shape:

Back key. Press to move to the previous screen, or to back out of an app.

When clicking on the circular shape:

Home key. Press to return to the main menu from anywhere.

When clicking on the square shape:

Recent apps key. Press to see a list of recently used apps, and switch to one of them.

Screen 28, tutorial complete:

You have completed the basic tutorial! Press Enter to continue.

Screen 29, options menu:

Please choose an option

Restart Tutorial

Adjust settings

Exit

Appendix D – Braille tables

United States 8 dot Computer Braille

exclamation mark: '!' 2,3,4,6

quote: '"' 5

pound: '#' 3,4,5,6

dollar sign: '$' 1,2,4,6

percent: '%' 1,4,6

ampersand: '&' 1,2,3,4,6

apostrophe: ''' 3

left paren: '(' 1,2,3,5,6

right paren: ')' 2,3,4,5,6

asterisk: '*' 1,6

plus sign: '+' 3,4,6

comma: ',' 6

dash: ' ' 3,6

period: '.' 4,6

forward slash: '/' 3,4

colon: ':' 1,5,6

semi colon: ';' 5,6

less than: '<' 1,2,6

equals: '=' 1,2,3,4,5,6

greater than: '>' 3,4,5

question mark: '?' 1,4,5,6

at symbol: '@' 4,7

left square bracket: '[' 2,4,6,7

back slash: '\' 1,2,5,6,7

right square bracket: ']' 1,2,4,5,6,7

carat sign: '^' 4,5,7

underscore: '_' 4,5,6

grave accent: '`' 4

left curly bracket: '{' 2,4,6

vertical bar: '|' 1,2,5,6

right curly bracket: '}' 1,2,4,5,6

tilde: '~' 4,5

'0': 3,5,6

'1': 2

'2': 2,3

'3': 2,5

'4': 2,5,6

'5': 2,6

'6': 2,3,5

'7': 2,3,5,6

'8': 2,3,6

'9': 3,5

Uppercase letters:

'A': 1,7

'B': 1,2,7

'C': 1,4,7

'D': 1,4,5,7

'E': 1,5,7

'F': 1,2,4,7

'G': 1,2,4,5,7

'H': 1,2,5,7

'I': 2,4,7

'J': 2,4,5,7

'K': 1,3,7

'L': 1,2,3,7

'M': 1,3,4,7

'N': 1,3,4,5,7

'O': 1,3,5,7

'P': 1,2,3,4,7

'Q': 1,2,3,4,5,7

'R': 1,2,3,5,7

'S': 2,3,4,7

'T': 2,3,4,5,7

'U': 1,3,6,7

'V': 1,2,3,6,7

'W': 2,4,5,6,7

'X': 1,3,4,6,7

'Y': 1,3,4,5,6,7

'Z': 1,3,5,6,7

Lowercase letters:

'a': 1

'b': 1,2

'c': 1,4

'd': 1,4,5

'e': 1,5

'f': 1,2,4

'g': 1,2,4,5

'h': 1,2,5

'i': 2,4

'j': 2,4,5

'k': 1,3

'l': 1,2,3

'm': 1,3,4

'n': 1,3,4,5

'o': 1,3,5

'p': 1,2,3,4

'q': 1,2,3,4,5

'r': 1,2,3,5

's': 2,3,4

't': 2,3,4,5

'u': 1,3,6

'v': 1,2,3,6

'w': 2,4,5,6

'x': 1,3,4,6

'y': 1,3,4,5,6

'z': 1,3,5,6

United Kingdom 8 dot Computer Braille

exclamation mark: '!': 2,3,4,6

quote: '"' 4

pound: '#' 5,6

dollar sign: '$' 4,5,6

percent: '%' 4,6

ampersand: '&' 1,2,3,4,6

apostrophe: ''' 3

left paren: '(' 4,5

right paren: ')' 3,4,5

asterisk: '*' 3,5

plus sign: '+' 2,3,5

comma: ',' 2

dash: ' ' 3,6

period: '.' 2,5,6

forward slash: '/' 3,4

colon: ':' 2,5

semi colon: ';' 2,3

less than: '<' 2,3,6

equals: '=' 2,3,5,6

greater than: '>' 3,5,6

question mark: '?' 2,6

at symbol: '@' 2,3,4,6,7

left square bracket: '[' 1,2,3,5,6,7

back slash: '\' 5,7

right square bracket: ']' 2,3,4,5,6,7

carat sign: '^' 6,7

underscore: '_' 3,4,6

grave accent: '`' 2,3,4,6

left curly bracket: '{' 1,2,3,5,6

vertical bar: '|' 5

right curly bracket: '}' 2,3,4,5,6

tilde: '~' 6

Pounds sterling: '£' 2,3,6,7,8

degree sign: '°' 1,3,4,6,8

'0': 1,2,3,4,5,6

'1': 1,6

'2': 1,2,6

'3': 1,4,6

'4': 1,4,5,6

'5': 1,5,6

'6': 1,2,4,6

'7': 1,2,4,5,6

'8': 1,2,5,6

'9': 2,4,6

Uppercase letters:

'A': 1,7

'B': 1,2,7

'C': 1,4,7

'D': 1,4,5,7

'E': 1,5,7

'F': 1,2,4,7

'G': 1,2,4,5,7

'H': 1,2,5,7

'I': 2,4,7

'J': 2,4,5,7

'K': 1,3,7

'L': 1,2,3,7

'M': 1,3,4,7

'N': 1,3,4,5,7

'O': 1,3,5,7

'P': 1,2,3,4,7

'Q': 1,2,3,4,5,7

'R': 1,2,3,5,7

'S': 2,3,4,7

'T': 2,3,4,5,7

'U': 1,3,6,7

'V': 1,2,3,6,7

'W': 2,4,5,6,7

'X': 1,3,4,6,7

'Y': 1,3,4,5,6,7

'Z': 1,3,5,6,7

Lowercase letters:

'a': 1

'b': 1,2

'c': 1,4

'd': 1,4,5

'e': 1,5

'f': 1,2,4

'g': 1,2,4,5

'h': 1,2,5

'i': 2,4

'j': 2,4,5

'k': 1,3

'l': 1,2,3

'm': 1,3,4

'n': 1,3,4,5

'o': 1,3,5

'p': 1,2,3,4

'q': 1,2,3,4,5

'r': 1,2,3,5

's': 2,3,4

't': 2,3,4,5

'u': 1,3,6

'v': 1,2,3,6

'w': 2,4,5,6

'x': 1,3,4,6

'y': 1,3,4,5,6

'z': 1,3,5,6

Braille table for password entry

exclamation mark: '!' 2,3,4,6

quote: '"' 5

pound: '#' 3,4,5,6

dollar sign: '$' 1,2,4,6

percent: '%' 1,4,6

ampersand: '&' 1,2,3,4,6

apostrophe: ''' 3

left paren: '(' 1,2,3,5,6

right paren: ')' 2,3,4,5,6

asterisk: '*' 1,6

plus sign: '+' 3,4,6

comma: ',' 6

dash: '-' 3,6

period: '.' 4,6

forward slash: '/' 3,4

colon: ':' 1,5,6

semi colon: ';' 5,6

less than: '<' 1,2,6

equals: '=' 1,2,3,4,5,6

greater than: '>' 3,4,5

question mark: '?' 1,4,5,6

at symbol: '@' 4,7

left square bracket: '[' 2,4,6,7

back slash: '\' 1,2,5,6,7

right square bracket: ']' 1,2,4,5,6,7

carat sign: '^' 4,5,7

underscore: '_' 4,5,6

grave accent: '`' 4

left curly bracket: '{' 2,4,6

vertical bar: '|' 1,2,5,6

right curly bracket: '}' 1,2,4,5,6

tilde: '~' 4,5

Numbers:

'0': 3,5,6

'1': 2

'2': 2,3

'3': 2,5

'4': 2,5,6

'5': 2,6

'6': 2,3,5

'7': 2,3,5,6

'8': 2,3,6

'9': 3,5

Uppercase letters:

'A': 1,7

'B': 1,2,7

'C': 1,4,7

'D': 1,4,5,7

'E': 1,5,7

'F': 1,2,4,7

'G': 1,2,4,5,7

'H': 1,2,5,7

'I': 2,4,7

'J': 2,4,5,7

'K': 1,3,7

'L': 1,2,3,7

'M': 1,3,4,7

'N': 1,3,4,5,7

'O': 1,3,5,7

'P': 1,2,3,4,7

'Q': 1,2,3,4,5,7

'R': 1,2,3,5,7

'S': 2,3,4,7

'T': 2,3,4,5,7

'U': 1,3,6,7

'V': 1,2,3,6,7

'W': 2,4,5,6,7

'X': 1,3,4,6,7

'Y': 1,3,4,5,6,7

'Z': 1,3,5,6,7

Lowercase letters:

'a': 1

'b': 1,2

'c': 1,4

'd': 1,4,5

'e': 1,5

'f': 1,2,4

'g' :1,2,4,5

'h': 1,2,5

'i': 2,4

'j': 2,4,5

'k': 1,3

'l': 1,2,3

'm': 1,3,4

'n': 1,3,4,5

'o': 1,3,5

'p': 1,2,3,4

'q':1,2,3,4,5

'r': 1,2,3,5

's': 2,3,4

't': 2,3,4,5

'u': 1,3,6

'v': 1,2,3,6

'w': 2,4,5,6

'x': 1,3,4,6

'y': 1,3,4,5,6

'z': 1,3,5,6

Appendix E – Braille learning tables

The Monarch introduces new braille tables to which are designed to teach braille is easy steps. The learning tables are also found within Duxbury system and is great introduction to becoming proficient at contracted braille. Each learning table has a specific learning structure with several stages or series to select from. Each series or stage will introduce new word signs, contractions, punctuation, etc. and will only show the necessary braille contraction that is being learned or know.

The Learning tables can be found amongst all English braille tables. When configuring your language profile and selecting the preferred literacy braille table you can select the relevant learning table followed by the current series you are undertaken,

Details of each course can be viewed below, which is shared from Duxbury systems.

NLS I.M.BT. (UEB 2015)

This series of "select contractions" steps is based upon the "Instruction Manual for Braille Transcribers," (UEB, 2015) published by the National Library Service for the Blind and Physically Handicapped of the Library of Congress. The lesson numbers associated with the steps correspond to that document; the contractions are introduced as follows:

Lesson 4.2:
as, you, it, will, very, us, that, so, rather, quite, people, not, more, like, knowledge, just, have, go, from, every, do, can, but

Lesson 4.3:
with, the, of, for, and

Lesson 5.1:
still, out, which, this, shall, child

Lesson 5.3:
st, ou, wh, sh, ch, th

Lesson 6.1:
ing, ow, gh, er, ed, ar

Lesson 7.2:
be (wordsign), were, was, his

Lesson 7.3:
enough

Lesson 7.4:

in (wordsign)

Lesson 7.5:

en, in (groupsign)

Lesson 7.7:

dis, con, be (groupsign)

Lesson 7.10:

said, quick, paid, little, letter, good

Lesson 8.1:

ea, gg, ff, cc, bb

Lesson 8.2:

great, first, below, because, above, about

Lesson 9.1:

their, world, spirit, many, had, cannot, these, whose, those, word, upon, there, ought, where, through, character, young, work, under, time, some, right, question, part, one, name, mother, lord, know, here, father, ever, day

Lesson 9.3:

perhaps, braille, always, according, children

Lesson 10.1:

ity, ment, ness, tion, ful, ong, ence, ount, less, sion, ance, ound

Lesson 10.3:

necessary, must, immediate, also, almost, across

(Full grade 2):

receiving, receive, perceiving, perceive, deceiving, deceive, conceiving, conceive, rejoicing, rejoice, declaring, declare, thyself, themselves, ourselves, oneself, myself, herself, yourselves, yourself, your, itself, its, himself, him, tomorrow, tonight, today, such, much, neither, either, would, should, could, together, friend, blind, beyond, between, beside, beneath, behind, before, altogether, although, already, against, again, afterward, afternoon, after

TSBVI Clusters (BANA)

The second graduated contractions series is based upon the "Clusters" defined and used by the Texas School for the Blind and Visually Impaired.

The complete TSBVI "Clusters" sequence is listed below. Note that Cluster 1 is equivalent to grade 1, and Clusters 54 and above are equivalent to grade 2.

Those clusters that are omitted in the menu are marked with an asterisk (*). Apart from Cluster 54, the reason that the others are omitted is that they introduce no new contractions nor the letter sign:

1: a, t, m
*2: b, g, i
3: a, that, more, but, go
*4: capital, period, I
*5: r, f, n
*6: x, l, s
7: rather, from, not

8: it, like, so
9: d, do, p, people, k, knowledge
10: y, you, c, can
11: h, have, o, question mark
12: q, quite, u, us, comma
13: w, will, e, every
14: v, very, z, as
15: j, just, and
*16: (Reading exercises)
17: mother, father, right, time, exclamation point
18: lord, some, day, part, name
19: know, young, here, one
20: question, under, work, ever, apostrophe
*21: number sign, numerals
22: hyphen, numeric dates, letter sign
*23: comma in large numbers
24: the, there, braille, ing, him
25: about, according, after, also, afternoon, afterward
26: th, this, although, through, across, already
*27: (Reading exercises)
28: almost, always, blind, either, neither, ed
29: of, by, myself, himself, itself, oneself, yourself
30: had, quick, its, these, cannot, open quote, closed quote

31: sh, shall, should, would, could, good, paid

32: tion, er, herself, perhaps

33: o'clock, was, con, cc, colon

34: ou, out, ought, today, tonight, tomorrow

35: for, ch, child, children, character, such, much

36: ar, ound, above, en, enough

*37: (Reading exercises)

38: great, together, little, ow, ance

39: be, bb, semicolon, spirit

40: because, before, behind, below, beneath, beside, between, beyond

41: sion, ble, his, your, friend, letter

42: less, their, ourselves, yourselves, themselves

43: with, st, still, first, must, again, against

44: ount, dollar sign, decimal, cent, many

45: percent, fraction bar, ity

46: ence, altogether, immediate, com

*47: (Reading exercises)

48: wh, which, where, world, ea

49: to, ff, in, into, those, said, ong

50: word, were, gg, parentheses

51: ness, ment, necessary, ally

52: dis, dd, gh, ation, ful

53: upon, whose, thyself

*54: conceive, conceiving, deceive, deceiving, declare, declaring, perceive, perceiving, receive, receiving, rejoice, rejoicing

*55: dash, ellipsis, asterisk, italics or underline

*56: double dash, brackets, inner quotes, accent sign, termination sign, degrees

Braille in Easy Steps (BAUK/UKAAF)

by John Lorimer (revised by Claire Wilson, 2017).

Duxbury Levels

Because three letters are not introduced until Book 7 (j, q, z), but all other letters have been learned by the end of Book 4, this would have to be the first Duxbury level, with the three missing letters taught specially if they occur. So, the Duxbury levels would look like this:

Book 4

(**Note:** letters j, q and z may occur which are not formally taught until Book 7)

Pre-braille and tracking skills

The alphabet (j, q and z not formally introduced, but may crop up)

Wordsigns: but, can, do, every, from, go, have, knowledge, like, more, not, people, rather, so, that, us, very, will, it, you, and, of, the, in, into, was, in

Contractions: and, of, the, ed, in

Punctuation: full stop, question mark, exclamation mark, comma

Other signs: capital letter sign (dot 6)

Book 5

Contractions: er, ing

Shortforms: could, good, would

Punctuation: apostrophe

Book 6

Contractions: st, ar, en, ea

Wordsigns: still, enough

Composite signs: one, time, there, had

Shortforms: about, after, again

Punctuation: Ellipsis

Book 7

Letters: j, q, z

Wordsigns: which, his, just, quite, as, were

Contractions: wh, ow

5. after Book 8

Wordsign: shall

Contractions: gh, sh

Shortforms: him, said

Punctuation: quotation (speech) marks, hyphen

Book 9

Wordsigns: out, this

Contractions: ou, th

Composite signs: mother, father, some

Shortforms: across, perhaps

Book 10

Wordsigns: child, for, with, be

Contractions: ch, com, for, with, be, ble

Composite signs: day, where, -ound, -less

Shortforms: against, quick

Other signs: numeral sign, decimal point (dot 2), mathematical comma (dot 3), pound sign (dots 1-2-3)

Book 11

Contractions: bb, cc, dd, ff, gg, dis
Composite signs: their, word, these, -ong, -ally, -ful, -ment
Shortforms: although
Punctuation: dash

Book 12

Wordsigns: by
Contraction: con,
Composite signs: here, know, ought, right, ever, through, work
Shortforms: friend, must, your, today, tomorrow, tonight, afternoon, much, such, herself, himself, myself, yourself, above, before, below, beneath, should

Other signs: italic sign, double italic sign, italic closure sign

Book 13

Composite signs: -ance, part, name, young, -tion, -ness, -ount
Shortforms: because, behind, beside, between, beyond, children, great, its, little, afterwards, almost, always, first, together
Punctuation: brackets

By the end of Book 14, the cmplete contracted braille code should be familiar (see exceptions below - which would have to be explained if context did not make the meanings apparent)

Book 14

Composite signs: many, world, those, -ation, question, under, upon, -ence, -ity, -sion

Shortforms: also, already, blind, braille, letter, paid, receive, receiving, themselves, either, neither, immediate, necessary

Other signs: braille letter sign (dots 5-6)

Not included in this course

The following rarely used signs have not been taught in Braille in Easy Steps. The pupil is warned at the end of Book 14 that they may encounter some of these unfamiliar signs in their braille reading, and a list is given.
Composite signs: lord, character, cannot, spirit, whose
Shortforms: according, altogether, conceive, conceiving, deceive, deceiving, declare, declaring, itself, o'clock, oneself, ourselves, perceive, perceiving, rejoice, rejoicing,

thyself, yourselves

Punctuation: slash, square brackets, inner quotes

Mathematical signs: plus, minus, multiplication sign, division sign, equals, per centage sign, fractions in braille, separation sign

Other signs: bullet point sign (dots 4-5-6, dots 2-5-6), asterisk (dots 3-5 twice), ampersand (dot 4, 1-2-3-4-6), accented letter sign (dot 4), Euro sign (dot 4, e)

Take Off Reading Scheme (UEB)

Takeoff - A second stage scheme for young learners to develop phonic skills, knowledge of braille contractions and word signs, in 12 stages TC21413.

Takeoff teachers handbook – This is currently available from RNIB. ATeachers handbook to accompany Takeoff TC21415P.

Take Off is divided into 12 levels, and a group of grade 2 braille signs is taught at each level.

From the start of the Take Off series all of the alphabet and alphabetic wordsigns with the exception of K for knowledge are used. In addition, the shortforms good and little are also used. Punctuation used from the outset are full stop, capital symbol indicator and question mark. The numeric indicator is also used as this has been previously introduced in Hands On. The following lists the signs and shortforms as they are introduced by series.

The Take off Series is available from RNIB product Code TC21413 on RNIB's website

Series 1

And
For
In
Ing
Of
Ou
Out
The
Comma

Series 2

Ar
Ed
Him
St

Still
With

Series 3

Day
En
Er
Ow
Sh
Th
This
Apostrophe

Series 4

ch
child
children
one
some
there
time
was

Series 5

Ea
His
Under
Were
Wh
Where
Which

Series 6

About
Again
Tion
Friend
Letter
Name
Work
Your

Series 7

Also
Bb
Cc
Enough
Father
Ff
Gh
Great
Had
Herself
Himself
Its
Know
Mother
Myself
Perhaps
Said
Sion
Together
Yourself
Nonspecific quotation marks
Semi colon

Series 8

Afternoon
Be
Cannot
Could
Dis
Ence
Much
Ong
Ound
Shall
Such
Today
Tomorrow
Tonight

Would

Exclamation mark

Series 9

After

Always

Ance

Because

Behind

Here

Right

Should

Hyphen

Grade 1 indicator (formerly the letter sign)

Series 10

Above

Across

Almost

Already

Before

Beneath

Beside

Con

Ever

First

Many

Ment

Ount

Paid

Part

Quick

Their

Through

Series 11

Against

Below

Between

Beyond

Character

Declare

Declaring

Ful

Immediate

Ity

Knowledge

Less

Ness

Ought

Question

Receive

Receiving

Spirit

World

Series 12

According

Afterwards

Although

Altogether

Blind

Either

Itself

Must

Necessary

Neither

Ourselves

Themselves

These

Those

Upon

Whose

Word

Young

Yourselves

Fingerprint - Order of Sign Introduction

The "select contractions" step series is based upon the "Fingerprint" course originally developed in 1993 by the late Nigel Berry, Lecturer in Braille at the Royal National College for the Blind, Hereford, UK, and now published by the RNIB.

Please note that the tables in DBT only enable you to produce additional braille as the student progresses. They are not intended as a substitute for the actual course4 material itself. The following is RNIB's Product reference.

Fingerprint braille course (UEB) - Product code: TC21439,

Revised edition 2015, on RNIB's website.

The following list shows the order in which signs are introduced in Fingerprint. There are 24 units in the course, but no new signs are introduced in Units 1 (pre-braille skills) or 22 (practical uses of braille). The 26 letters of the alphabet are taught in Units 2 and 3, in the order shown. For all other units, the signs taught are grouped by type.

Unit 1
Pre- braille skills:
tracking and back-tracking;
early shape discrimination;
two-handed reading technique;
the braille cell, and dot numbering

Unit 2
13 letters:

a, l, d, t;
e, m, y;
b, h, o;
c, k, s

Unit 3
remaining 13 letters, full stop, capital indicator, numeric indicator and basic numbers:

g, i, u;
j, n, v;
r, x;
f, p;
w, z;
q

Punctuation: full stop
Special signs: capital sign, numeric sign and basic numbers

Unit 4
Alphabetic Wordsigns :but, can, do, every, from, go, have, just, knowledge, like, more, not people, quite, rather, so, that, us, very, will, it, you, as

Unit 5

Contractions: AND, ST

Wordsigns: and, still
Shortforms: about, above, according, across, after, afternoon, afterwards, again, against

Unit 6

Contractions: TH

Wordsigns: this;

Lower Wordsigns: was

Shortforms: also, almost, already, although, altogether, always

Unit 7

Lower Contractions: BE

Lower Wordsigns: be, were

Shortforms: because, before, behind, below, beneath, beside, between, beyond

Unit 8

Contractions: CH, SH

Wordsigns: child, shall

Shortforms: children, could, should, would, either, neither, first, friend, good, great, him

Unit 9

Contractions: AR, ER

Shortforms: immediate, its, letter, little, much, such, must, necessary, paid, said, perhaps

Punctuation: apostrophe

Unit 10

Contractions: THE, ING

Wordsigns: the

Shortforms: quick, today, tomorrow, tonight, together, your, blind, braille

Unit 11

Contractions: OF, WITH, GH, WH

Wordsigns: of, with, which

Punctuation: comma, question mark

Unit 12
Contractions: FOR, ED, OU, OW

Wordsigns: for, out

Unit 13
Lower Wordsigns: enough, his, in

Unit 14
Composite groupsigns:

dot 4-5-6: cannot, had, many, spirit, world, their;

dot 4-5: upon, word, whose, those, these

Unit 15
Lower Contractions: EA, BB, CC, FF, GG, EN, IN, CON, DIS

Unit 16
Composite groupsigns (dot 5 signs):

day, ever, father, here, know, lord, mother, name, one;

part, question, right, some, time, under, work, young;

character, through, where, ought, there

Unit 17
Composite (final) groupsigns:

dot 4-6: -ound, -ance, -sion, -less, -ount;

dot 5-6: -ence, -ong, -ful, -tion, -ness, -ment, -ity

Unit 18
Shortforms:

deceive, deceiving, receive, receiving, conceive, conceiving, perceive, perceiving, declare, declaring, rejoice, rejoicing;

myself, yourself, herself, himself, itself, oneself, thyself, ourselves, yourselves, themselves

Unit 19
Punctuation:

exclamation mark, colon, semi colon, speech marks;

brackets, hyphen, dash, ellipsis, oblique stroke

Unit 20

Special signs:

accented letter signs: acute, circumflex (more in Volume 10)

grade 1 indicator (dots 5-6);

capital word indicator, capital passage indicator, capital terminator;

typeform indicators: symbol, word, passage and terminator for bold, italics and underline

Unit 21

Mathematical signs:

mathematical comma (dot 2);

numeric space (dot 5);

operation signs (plus, minus, division, multiplication, equals);

fractions;

decimal point (dot 2-5-6);

money: pound sign, pence sign, Euro sign, Dollar sign;

unit abbreviations: metres, centimetres, millimetres, kilometres, grams, kilos, litres, millilitres, pounds (weight), ounces;

other signs: per cent; degrees (including degrees Fahrenheit and Centigrade)

Unit 22

(No new signs)

Using signs learned for practical applications: address and phone lists, letters, appointment calendar, etc

Unit 23

Other print signs:

Roman numerals;

long dash and ampersand;

asterisk and dagger;

bullet point sign;

copyright, trademark and registered trademark signs;

Braille Conventions:
options for poetry layout
Print abbreviations and indicators:
new print page indicator in transcribed books

Unit 24

Signs for email and website addresses:
dot, at, hyphen, underscore;
slash, colon;
numbers and capital letters in email and web addresses;
grade 1 terminator;
line continuation sign (dot 5)

RNZFB STAR (UEB)

The "RNZFB STAR" series is based upon the document entitled "STAR -- Order of introduction of braille signs," prepared by the Royal New Zealand Foundation of the Blind. The contractions are introduced in the following order:

Level 1.1 Alphabet letter wordsigns: like, can, but, knowledge, it, people, every
Level 1.3 Alphabet letter wordsigns: very, go, more, us, you
Level 1.5 Alphabet letter wordsigns: have, rather, do, that, so
Level 1.7 Alphabet letter wordsigns: from, just, quite, will, not, as
Level 1.8 Shortforms: about, above, according, also, again, almost, blind, little, either, immediate
Level 1.9 Shortforms: across, already, altogether, braille, could, deceive, deceiving, declare, declaring, good, great, him, its, letter, paid, said, receive, receiving, today, together, tomorrow, tonight, your, yourselves
Level 1.10 Shortforms: after, afternoon, afterward, always, friend, himself, myself, necessary, neither, quick, rejoice, rejoicing, would, yourself, itself

Level 2.1 Contractions: and, for, of
Level 2.2 Contractions: the, with
Level 2.3 Contractions: st, ar, ing, still
Level 2.4 Contractions: ed, er
Level 2.5 Contractions: ou, ow, out
Level 2.6 Contractions: ch, gh, sh, child, shall
Level 2.7 Contractions:: th, wh, this, which
Level 2.9 Shortforms: themselves, herself, against, first, must, perceive, perceiving, perhaps
Level 2.10 Shortforms: children, much, such, should, although, ourselves, thyself

Level 3.1 Contractions: en, in (groupsign)
Level 3.2 Contractions: be (wordsign) were, his, was
Level 3.3 Contractions: enough, in (wordsign)
Level 3.4 Contractions: be (groupsign) con, dis
Level 3.7 Shortforms: before, behind, below, beneath, beside, between, beyond, because, conceive, conceiving
Level 3.8 Contraction: ea
Level 3.9 Contractions: bb, cc, ff, gg

Level 4.1 Contractions (dot 5): day, ever, father, here, know, lord, mother

Level 4.2 Contractions (dot 5): name, one, part, question, right
Level 4.3 Contractions (dot 5): some, time, under, work, young
Level 4.4 Shortform: oneself
Level 4.5 Contractions (dot 5): there, where, ought
Level 4.6 Contractions (dot 5): character, through
Level 4.7 Contractions (dots 4-5): upon, word, these
Level 4.8 Contractions (dots 4-5): those, whose
Level 4.9 Contractions (dots 4-5-6): cannot, had, many
Level 4.10 Contractions (dots 4-5-6): spirit, world, their

Level 5.1 Contractions (dots 4-6): ound, ance, ount
Level 5.2 Contractions (dots 4-6): sion, less
Level 5.3 Contractions (dots 5-6): ence, ong, ful, ness
Level 5.4 Contractions (dots 5-6) (Fully contracted UEB): tion, ment, ity

S.A. Syllabus (UEB)

The "S.A. Syllabus" series is based upon the document entitled "Syllabus -- Order in Which Braille Contractions Are Learnt", prepared by Reinette Popplestone for the University of Cape Town Disability Unit, for teaching English Braille to students in South Africa. The contractions are introduced in the following order:

Level 1.1 Alphabetic word signs: but, people, can, quite, do, rather, every, so, from, that, go, us, have, very, just, will, knowledge, it, like, you, more, as, not

Level 1.2 Five contractions: and, for, of, the, with

Level 1.3 Initial-letter contractions with dot 5: day, part, ever, question, father, right, here, some, know, time, lord, under, mother, work, name, young, one, there

Level 1.4 Two related contractions: these, their

Level 2.1 Short forms: about, good, above, great, according, him, across, immediate, after, little, afternoon, letter, afterward, necessary, again, neither, also, paid, almost,

quick, already, said, altogether, today, always, together, blind, tomorrow, braille, tonight, could, would, either, its, friend, your

Level 2.2 Group signs: gh, ed, er, ow, ar, ing

Level 2.3 Group signs which also have a word meaning: ch, child, sh, shall, th, this, wh, which, ou, out, st, still

Level 2.4 Initial-letter contractions with dots 4-5 and 4-5-6: upon, cannot, word, had, those, many, whose, spirit, world

Level 2.5 Two lower contractions: en, in (as part-word only)

Level 3.1 Lower group signs: ea, be (as part-word only), bb, con, cc, dis, ff, gg

Level 3.2 Lower word signs: be, enough, were, his, in, was

Level 3.3 The remaining initial-letter contractions: character, through, where, ought

Level 3.4 The remaining short forms: against, itself, although, yourself, declare, yourselves, declaring, themselves, deceive, children, deceiving, should, first, thyself, himself, ourselves, herself, because, myself, before, must, behind, much, below, perhaps, beneath, perceive, beside, perceiving, between, receive, beyond, receiving, conceive, rejoice, conceiving, rejoicing, oneself, such

Level 3.5 Terminal group signs: ound, ence, ance, ong, sion, ful, ness, tion, ount, ment, ity, less

Level 4.1 Contractions from pre-unified code: o'clock, ble, com, dd, to, into, by, ation, ally

Note: Level 4.1 is, naturally, not relevant when Unified English Braille is the basis of the series as level 3.5 constitutes fully contracted UEB.

Mangold Method

There are 62 Units in the Mangold Series, each listed here.

Part A

A.a (can, go, like,)
A.b (but, do, you)
A.c (so, will, people)
A.d (us, that, more)
A.e (every, have, not)
A.f (it, as, from)
A.g (very, just)
A.h (and, for of, the, with)

A.i (said, little, good)

Part B

B.a (in sign)
B.b (your, him, could, would)
B.c (w-h sign, t-h sign, which, this)
B.d (about, after, again)
B.e (s-t sign)
B.f (one, right, here)
B.g (under, day)
B.h (e-d sign, i-n-g sign)
B.i (mother, father, time)
B.j (name, know, there)

Part C

C.a (letter, friend, great, also)
C.b (a-r sign, e-r sign)
C.c (work, where)
C.d (part, ever)
C.e (s-h sign)C.f (first, must, should)
C.g (question, some, young)
C.h (paid, quick)
C.i (his, was, were)
C.j (today, tomorrow, tonight)
C.k (had, their)
C.l (cannot, many)
C.m (blind, braille, above, himself)
C.n (c-h sign, child, still, shall)
C.o (e-a sign)
C.p (together, altogether, afternoon, afterward

Part D

D.a (knowledge, quite, rather)
D.b (o-w sign, g-h sign)
D.c (yourself, yourselves, themselves, myself, herself)
D.d (enough, e-n sign)
D.e (out, o-u sign)
D.f (b-b sign, c-c sign, f-f sign, g-g sign)
D.g (tion, ment)
D.h (ity, ong)
D.i (be, because, before behind, below, beneath, beside, between, beyond)

D.j (children much, such)
D.k (con, dis)
D.l (conceive, conceiving)

Part E

E.a (ought)
E.b (thyself, its, itself)
E.c (ourselves, oneself)
E.d (immediate, neither, either, necessary)
E.e (ence, ful, ness)
E.f (against, almost, already)
E.g (according, across, although, always)
E.h (these, word)
E.i (ance, ound, ount)
E.j (receive, receiving, rejoice, rejoicing)
E.k (deceive, deceiving, declare declaring)
E.l (sion, less)
E.m (character, lord, through)
E.n (spirit, world)
E.o (whose, upon, those)

(full grade 2) (perceive, perceiving, perhaps)

Appendix F – Safety and maintenance

General Care

Keep beverages away from your Monarch. Periodically wipe the device with a warm damp cloth. Don't use any cleaning compounds.

Braille display care

Each cell of the Braille display has eight pins. For each pin there is a magnet that lifts the pin to make a dot, and allows the pin to drop when there is no dot. The pins must be allowed to move freely. To prevent dirt and other foreign objects obscuring the pins, a protection screen "Membrane" is applied. In the event of any damage to the membrane, it is recommended that it is replaced. Refer to the "Replacing the Membrane" documentation for more information.

Important: Do not attempt to remove the protective membrane to clean the Braille display yourself. Instead, it is recommended to send the Monarch device to an authorized Monarch service center every 12 months for a professional cleaning.

To help maintain your Braille display, always ensure your hands are clean before use. Additionally, once a week, gently wipe the surface of the membrane with a soft, damp cloth. Make sure the cloth is wrung out thoroughly to remove any excess moisture and use only warm water.

By following these guidelines, you can help ensure the optimal performance and longevity of your Braille display.

FCC / Industry Canada Two Part Statement:

This device complies with FCC Part 15 and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Industry Canada French Warning / Avertissement d'Industrie Canada

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Per Industry Canada RSS rules:

This device complies with Health Canada's Safety Code. The installer of this device should ensure that RF radiation is not emitted in excess of the Health Canada's requirement. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the Federal Communications Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates 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 causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

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

Battery safety precautions

CAUTION:

- Risk of explosion if battery is replaced by an incorrect type.
- Dispose of used batteries according to the instructions below.
- Do not disassemble or modify the battery.
- Use only the specified HumanWare charger.
- There is a risk of overheating, fire or explosion if the battery is put in a fire, heated,subjected to impact, put in contact with water, or if its terminals are shorted.
- Do not attempt to charge or use the battery outside of the unit.

Disposal instructions

When the Monarch device reaches the end of its operational life, its internal components must be disposed of in accordance with local regulations. The Monarch

does not contain any hazardous materials. For disposal, you can return the device to HumanWare or follow the disposal guidelines provided by local authority.

Appendix G – Technical specifications

Mechanical

Width: 403.5mm (15.89in)

Depth: 266.5mm (10.49in)

Thickness: 35.5mm (1.40in)

Weight: 2.1 kg (4.65lbs)

System

Android OS

Internal Storage: 128GB

Quad core 64-bit Cortex A55 @ 2.0GHz processor - 4GB LPDDR4

User Interface

480 braille cells

- Dot Spacing 2.6mm equidistant
- Displays 32 characters per line
- Up to 10 braille lines
- Configurable braille line spacing to represent double line spacing
- User replaceable protected membrane protects from dust and accidental liquid spillage
- Display refresh time: 2.64 seconds
- Single cell refresh time 13ms

IR sensor for Touch recognition

Perkins type keyboard

Haptic LMA (Linear Motor actuator) Feedback

Connectivity

WIFI 802.11ac – 2.4GHz and 5GHz

Bluetooth 5.1

USB Type C 3.0 For charging with OTG support

USB Type A 3.0 Host

HDMI 2.0

3.5mm Headset Jack (CTIA)

Internal Microphone

Stereo 1W Speakers

Battery and Power

Autonomy: 20 Hours in typical continuous usage.

71.25Wh Lithium Polymer Battery

Charger

USB Type-C charging profiles support:

- BC 2.1
- USB PD: Up to 15V, 3A

Battery temperature for charging: 0-40°C

The battery will fail to charge outside of these temperatures

Environmental conditions

Long-time Storage temperature: 15-25°C

Operating temperature range: 0-40°C

Humidity: 10-95%, non-condensing

Appendix H – Cybersecurity

Code Obfuscation

All applications developed by HumanWare and preinstalled on the device are protected using code obfuscation techniques. Code obfuscation renders the application code more resistant to decompilation, thereby complicating efforts by attackers to reverse-engineer or tamper with the application. This measure is part of a comprehensive strategy designed to secure sensitive data within our applications.

Update Protection

Signature Verification

Official updates downloaded from the HumanWare server include a unique, cryptographic signature that must be validated by KeyUpdater prior to installation. This signature serves to verify the authenticity and integrity of the update source. Should signature verification fail, all associated update files are automatically purged from the device.

Additionally, system and application updates are safeguarded through code signing. Build files must be signed with HumanWare's cryptographic key; any unsigned files will be deleted.

Server Access

All update files are stored on a secure, private server with access restricted to a limited number of authorized HumanWare employees. Access to the server is safeguarded through Multi-Factor authentication and the disabling of Federated Identity among other security measures.

Android 13 Security Features

This section is based on work created and shared by the Android Open Source Project and used according to terms described in the Creative Commons 4.0 Attribution License. For the original source page please refer to Android Security Features.

App Sandbox

The Android platform takes advantage of the Linux user-based protection to identify and isolate app resources. To do this, Android assigns a unique user ID (UID) to each Android app and runs it in its own process. Android uses this UID to set up a kernel-level App Sandbox.

App Signing

App signing allows developers to identify the author of the app and to update their app without creating complicated interfaces and permissions. Every app that runs on the Android platform must be signed by the developer of that app.

Authentication

Android uses the concept of user-authentication-gated cryptographic keys that require cryptographic key storage and service provider and user authenticators.

The Gatekeeper subsystem performs device pattern/password authentication in a Trusted Execution Environment (TEE).

Encryption

Once a device is encrypted, all user-created data is automatically encrypted before committing it to disk and all reads automatically decrypt data before returning it to the calling process. Encryption ensures that even if an unauthorized party tries to access the data, they won't be able to read it.

Keystore

Android offers a hardware-backed Keystore that provides key generation, import and export of asymmetric keys, import of raw symmetric keys, asymmetric encryption, decryption with appropriate padding modes, and more.

Security-Enhanced Linux

As part of the Android security model, Android uses Security-Enhanced Linux (SELinux) to enforce mandatory access control (MAC) over all processes, even processes running with root/superuser privileges (Linux capabilities).

Trusty Trusted Execution Environment (TEE)

Trusty is a secure Operating System (OS) that provides a Trusted Execution Environment (TEE) for Android. The Trusty OS runs on the same processor as the Android OS, but Trusty is isolated from the rest of the system by both hardware and software.

Verified Boot

Verified Boot strives to ensure all executed code comes from a trusted source (usually device OEMs), rather than from an attacker or corruption. It establishes a full chain of trust, starting from a hardware-protected root of trust to the bootloader, to the boot partition and other verified partitions.

Appendix I – End User License Agreement

By using this Product (Monarch), you agree to the following minimum terms:

1. <u>License Grant</u>. HumanWare grants to End User a non-exclusive, non-transferable right and licence to use the Software on this product.

2. <u>Ownership of Software</u>. End User acknowledges that HumanWare retains all rights, titles, and interests in and to the original, and any copies, of software which is incorporated into this product. End User agrees not to modify, port, translate, decompile, disassemble, reverse engineer, or make the software of this Product public in any way.

Appendix J – Customer Support

Our dedicated support team is well-equipped to help with troubleshooting, technical issues, and any questions related to your purchase. Contacting APH support ensures you receive the most accurate and timely information specific to your device and service needs.

Toll-Free: (833) 447-8444

Email: monarchsupport@aph.org

Appendix K – Warranty

Manufacturer Warranty

This device is a high-quality product, built and packaged with care. All units and components are guaranteed against any operational defects for 2 years for all countries.

Warranty covers all parts (except battery) and labor. If any defect should occur, please contact your local distributor or the manufacturer's technical assistance line.

Note: Warranty terms may periodically change, please consult our website for the latest information.

Conditions and Limitations:

Please keep your original bill of purchase in a safe place as it may be required for a warranty repair or replacement. If the unit must be returned, please use the original packaging. This warranty applies to all cases where the damage is not a result of improper use, mistreatment, negligence, or acts of God.

North America: In addition to the warranty, you can purchase a Service Contract to prolong coverage for up to two years and benefit from the cleaning service. Please refer to our website: http://www.humanware.com/

Or contact us by E-mail at us.info@humanware.com or call 1(800) 722-3393

Important Notice:

Using the Monarch without the membrane attached will void the warranty. Additionally, if the membrane shows any signs of tears, it must be replaced immediately to prevent potential damage to the cells and avoid voiding the warranty.

For detailed instructions on how to replace the membrane, please refer to the "Replacing the Membrane" guide. You can access this guide by scanning the QR code on the product's box or by visiting the support page on HumanWare's or APH's websites.