

# User's Guide

BraillePen24

This User Manual applies to firmware version **1.3.33**

Copyright © 2024, 2025, 2026 Harpo Ltd, Poland. All Rights reserved.

No part of this publication may be reproduced or distributed in any form or by any means or stored in a database or retrieval system without prior written permission.

All efforts have been made to ensure that the information contained in this document is correct at the time of issue. Neither Harpo nor its representatives assume any responsibility for errors or omissions, nor is any liability assumed for damages resulting from the use of the information contained herein.

The BraillePen24 was developed and distributed by Harpo. BraillePen® is a registered trademark of Harpo.

## Table of contents:

Overview of the BraillePen24.....	5
Top surface.....	5
Braille Display.....	5
Braille Keyboard.....	6
Front Edge.....	6
Thumb Keys.....	6
Joystick.....	7
Rear Edge.....	7
Power Button.....	7
Application/Terminal Mode Switch.....	7
Silence switch.....	7
USB-C Port.....	7
micro-SD card slot.....	7
Charging the Battery.....	8
Powering On/Off.....	8
Battery status.....	8
Installation and Connectivity.....	9
Connecting to a PC or Notebook (Terminal Mode).....	9
Pairing the BraillePen24 as a Terminal with a Mobile Phone.....	10
Waking Up Your iOS Device Using BraillePen24.....	10
Switching the connection between the connected systems.....	10
Application Mode.....	11
Types of menu items.....	11
Read Only.....	11
Toggle.....	11
List.....	11
Context menu.....	11
Clock.....	17

Stopwatch.....	17
Timer.....	17
Auto off.....	18
Vibration and Sound.....	18
Computer Braille.....	18
Literary Braille.....	18
Default Braille.....	18
Language.....	18
Set Time and Date.....	18
Set Time Auto.....	19
Hour Format.....	19
Date Format.....	19
Service.....	19
Refresh display (Clean display).....	19
Key Test.....	19
Update firmware.....	19
Display sensor on/off.....	20
One Hand Mode.....	20
Reset to Default.....	20
Reset to Factory.....	20
About.....	20
Firmware.....	21
App Connected.....	21
Serial Number.....	21
Keyboard Shortcuts.....	21
User Manual.....	21
Contact to the service.....	21
Editing.....	22
End User License Agreement.....	25

Technical Specifications.....25

Manufacturer Warranty.....26

Customer Support.....26

Additional Resources.....26

Addendum 1 - List of key shortcuts.....27

Addendum 2 - BraillePen24 in Application Mode - Menu Structure.....31

Addendum 3 - List of supported file formats that will convert to text readable  
in Braille when found in a message attachment.....33

# Overview of the BraillePen24

The BraillePen24 is a braille terminal that can be used with virtually any screen reader on the market, including screen readers installed on, or already part of, mobile device operating systems (iOS, Android). The BraillePen24 can also work in application mode, where you can use one of the applications present in the device. The e-mail, calendar, contacts, and notes in the device may be synchronized with your other devices over the Internet, using servers such as Gmail or IMAP. This unique feature allows you to read and answer your e-mail messages, use your notes and other data instantly after turning on the device, and keep them synchronized with data on different devices.

The Internet connection for synchronization is performed over Bluetooth Low Energy and a smartphone with a data plan; thus, it does not take much power from the phone or BraillePen24.

It can also be used with a tablet without a data plan as long as it is connected to Wi-Fi.

## Unpacking the BraillePen24

The package contains the following items:

- BraillePen24
- Lanyard
- USB-C cable
- 3 cell-protecting frames with thin plastic film
- Card with QR code directing to the full User Manual

## BraillePen24 - Physical Description

Figure 1: BraillePen24

The BraillePen24 has a 24-cell braille display, an 8-dot Perkins-style braille keyboard, a joystick, and a number of additional keys for navigation. It includes the following elements:

### Top surface

#### Braille Display

The braille display with 24 cells is located on the top surface, near the middle of the device. The display is covered with a thin plastic film installed on a frame. The frame can be replaced easily whenever the film loses its smoothness.

Behind each braille cell is a small button known as the cursor routing key. It points to a particular character, word, or sometimes a menu item.

A membrane in a plastic frame covers the Braille Display. The user can replace this frame whenever it wears off (which may happen after several months of intensive use).

The type of Braille dots used in the BraillePen24 allows for remarkably slim housing and good Braille quality. The dots cannot be touched while their contents change. While some users habitually keep their fingers down on the Braille display when the contents change, that may cause the device to produce text with errors. BraillePen24 has two unique mechanisms to compensate for this problem:

1. One is a set of sensors underneath the Braille display. The sensors recognize the presence of your fingers on the display, and whenever the finger is raised, the text refreshes in that sector. This behavior can be blocked in the Settings menu.

2. On the Left side of the device, closer to the user, there is another sensor (marked with a round salience). Whenever you touch this sensor, the whole display will refresh.

The users who are aware of this cell behavior can effectively use BraillePen24.

## Braille Keyboard

The keyboard's eight keys are located above the braille display. The Leftmost key is called BackSpace, or sometimes dot 7; the Rightmost key is Enter, or dot 8. The Spacebar is located in the middle, just below the braille display. The Space key is divided into two halves—pressing either half causes the same effect. Pressing both space keys simultaneously along with other buttons may have different meanings in certain situations, as described in the following sections.

The braille keyboard can be used to type braille or perform commands (in combination with other keys, such as Space).

The commands depend on the screen reader used. Internal BraillePen24 applications can be controlled with keyboard shortcuts described in the Application Mode section of this documentation.

To maintain a uniform mode of key-press description throughout this manual, we use the following method to explain the BraillePen24 key combination when writing about key shortcuts and Entering text:

- To show that the shortcut should consist of the Space key with braille dots 1, 2 and 8 we write: Space key + dot128.
- To make the above explanation easier to remember we will use this kind of notation in parentheses: (Space-Enter-b) (because dots 1 and 2 make a 'b' letter, dot8 is the Enter key).
- If the user is to press some of the 8 Perkins keys, space key, and modifiers at the same time, we will explain that as Spece key + dot123456 and will explain in parentheses what Braille character combination will that make: (Space-modifier-letter); for example - to explain an action of pressing spece key and Perkins keys 1, 2, 3 and 4 simultaneously we will say: Space key + dot1234 (Space-p).
- If a double-space is required (pressing both halves of the space key on the keyboard) we will say Two Space keys + ... . For example: Two Space keys + dot1234 (Spaces-p).
- More examples:
  - Space key + dot12348 (Space-Enter-p)
  - Space key + touch cursor key 24 + dot1 (Space-touch24-a)

## Front Edge

### Thumb Keys

Your thumbs usually operate the four keys facing the user, so we call them “**thumb keys**” to differentiate them from the primary keyboard keys. These thumb keys are used with the braille display when reading and navigating and can be operated using your thumbs without moving your fingers from the braille display.

The thumb keys are named *Previous*, *Left*, *Right*, and *Next*.

In general, the *Left* and *Right* keys are used to show the contents of the text being read when the text is longer than 24 characters (the Braille cell number on the device). When you press the *Right* thumb key, you will see the remainder of the text to the Right of the

current fragment, and the opposite will happen when there is any text before the current fragment and you press **Left**.

**Previous** and **Next** thumb keys work on lists, forms, and text as their names imply: on lists moving to the Next or previous item, on forms moving to the Next or Previous field, in a text moving to the following or preceding line or paragraph (in case a line concept does not exist).

## **Joystick**

The **joystick** is located in the middle on the front edge of the device. It has five functions: Left, Right, Up, Down, and Action. The action is performed by pressing the joystick cap into the unit.

The actions performed by the **joystick** functions depend on context and will be described separately in later sections for all types of data being read or entered.

## **Rear Edge**

### **Power Button**

The **power** button is located on the rear edge of the right side of the device. To turn the device on or off, hold this button for approximately 3 seconds. The BraillePen24 will confirm with a beeping sound that it is powering on or off. The word “starting...” will appear on the braille display during the boot process.

The power button is also used to reset the BraillePen24 (when pressed and held for approximately 10 seconds). This feature is helpful in case of a rare occurrence of a glitch in the device's software or if the user gets lost while navigating through the data.

### **Application/Terminal Mode Switch**

At the rear edge, left to the power button, is an App/Terminal Switch. Slide it to your left to use the device with any screen reader (mobile or PC). Slide it to your right (closer to the power button) to use the applications included in your BraillePen24.

### **Silence switch**

In the middle of the rear edge is the Silence Switch, which suppresses all beeping sounds coming from the device when turned left. Regular operation with sounds when the Silence Switch is turned right. When you turn Silence Mode on (the switch left), you will feel a vibration as a confirmation. In Silence Mode, all signals are given by vibration instead of sounds.

There is another setting for sounds and vibrations in the Settings menu (Settings - Vibration and sounds). The settings are meaningful only when the Silence Switch is off (turned right).

### **USB-C Port**

You will find an oval USB-C Port at the far left of the rear edge. Use the cable that came with your BraillePen24 to connect your device to a PC for charging.

### **micro-SD card slot**

There is a microSD card slot Next to the USB-C port. You can record textbooks for reading on the SD card. The accepted formats of the book files are .txt and .brf. The .brf format is the most robust for reading books. See the section about files on microSD card below.

## Charging the Battery

**IMPORTANT:** Please fully charge your BraillePen24 before first use. You must charge the device for at least 8 hours before first use. After first use, it will take up to five hours to charge the battery fully (depending on the charger unit you will use, it may take longer with low-output chargers).

The BraillePen24 has a built-in rechargeable lithium-ion polymer battery. Connect the BraillePen24 via USB-C to your PC or a power outlet using a USB-C adapter to charge the battery. The word “charging” will appear on the braille display when the BraillePen24 is connected to power and turned off. You can use the BraillePen24 while charging. You can view the battery status by using Two space keys + dot1234 (Spaces-p) in applications mode (mode switch to the right – closer to the on/off switch).

Once fully charged, the BraillePen24 will display “battery full” and is ready for up to 20 hours of continuous operation on Bluetooth.

You can use any universal USB adapter to charge the BraillePen24. Just insert the USB cable’s connector into the adaptor’s USB port, insert the other connector into the USB-C port on the rear side of your device, then plug the adapter into an AC outlet. The BraillePen24’s battery management system includes a battery protection circuitry that prevents it from being damaged by total discharge. If the battery is low, the BraillePen24 will warn you with a beeping sound before switching it off automatically.

Never try to replace the battery yourself. This will likely damage the device and void the warranty.

If your device needs repair, don't hesitate to contact your local dealer or the producer at [support@harpo.com.pl](mailto:support@harpo.com.pl) for help.

### Powering On/Off

Pressing and holding the power button for approximately three seconds will turn the device on or off. A beeping sound will be heard.

When pressing and holding the power button for approximately 10 seconds, the BraillePen24 will reset. This action does not delete any data from the device, but the currently edited and unsaved data.

If there is no action on the device (no communication with the PC and no user action on the buttons), the device will beep and turn off after the “auto-power-off” period expires. This counter/period will reset every time data is received from the PC or a user action occurs. The auto-power-off time can be set in Settings - auto-power-off 3, 5, 10, 15, 20, 30, 45, 60 or off.

### Battery status

In the menu, pressing Two Space keys - dot1234 (Spaces-p) will inform you about the battery status.

While the device is on, a short press will inform you about the battery status.

# Installation and Connectivity

## Interface Ports

You can connect your BraillePen24 to your PC or mobile devices via Bluetooth. The USB-C serves for recharging.

### Bluetooth Interface

Wireless technology, along with the BraillePen24's long battery life, provides total freedom and independence from wires within the range of a Bluetooth connection (range is approximately 30 feet). Bluetooth is now a standard interface for mobile phones, tablets, and Notebook PCs.

When two Bluetooth devices are interconnected for the first time, they have to be "paired". This is for security reasons. Later, the devices will recognize each other automatically if the user allows it.

In the Bluetooth environment of a PC, you will find BraillePen24 as:

**BraillePen24-XX: XX: XX: XX: XX** (where XX:XX:XX:XX:XX:XX is the unique Bluetooth address of your unit.)

## Connecting to a PC or Notebook (Terminal Mode)

Your BraillePen24 can be used as a braille display with popular PC screen readers such as JAWS, NVDA, and others. The PC or Notebook must provide a wireless Bluetooth interface (built-in or by using a Bluetooth dongle). We recommend that Windows 10 or above connect the mentioned screen readers via Bluetooth.

There are two digital interface modes available for the Braille terminal connection: HID (Human Interface Device) or serial. The serial connection is the legacy mode that is used on most of the existing screen readers. HID is the new standard and connects automatically, without any additional configuration but the regular pairing of your devices.

For the serial connection in some cases you will need to know the virtual serial port that you will use. To find out which virtual serial port is provided by a Bluetooth or USB interface in Windows:

1. Open the Control Panel (Start/Settings/Control Panel).
2. Select "System" from the list.
3. In the open window, select the tab "Hardware."
4. On this tab, click on "Device Manager."
5. Open the branch "Ports (COM and LPT)" in the Device Manager's tree view.
6. Search for something similar to "standard serial over Bluetooth port (COM 13)". There may be more of these. Take note of the number after the COM.
7. This is the number of the virtual COM port the device is connected to. The screen reader wants to know this port.

You will see two ports on Bluetooth—one outgoing and one incoming. We want to use the outgoing port to connect. When connected using Bluetooth, the serial port your device uses may also be found in the Properties of your connected device in the Bluetooth Manager.

Some screen readers do not support higher values of COM Ports. In that case, you should change the port number. Do this by selecting the "Port (COM and LPT)" branch in Device Manager as described above, and right-click on the Port you want to change (Shift-F10 will do the same). The context menu opens, and you can click on "Properties." Then click on the tab "Port settings" and the "Advanced" button. In the window now opening is a List Box, "COM Port Number," where you can choose a free port number. Numbers not available will be marked.

Please note that for some screen readers you may have two connections active simultaneously: HID and serial. You will have to choose which you want to use in the Devices menu of the BraillePen24.

## JAWS

A JAWS driver for BraillePen24 is included with the JAWS software.

## Other Screen Readers

The BraillePen24 is compatible with other screen readers, like NVDA. It works with various screen readers through an HID or serial interface, so in some cases, when connecting over Bluetooth, you may see your device on the list twice—once as a serial interface and another as an HID (Human Interface Device).

## Pairing the BraillePen24 as a Terminal with a Mobile Phone

The BraillePen24 can be paired with mobile phones as a Bluetooth braille display. The pairing must be initialized from the phone, tablet, or PC, just as you would pair with any other keyboard or Bluetooth device. It may be connected through an HID (Human Interface Device). Please note that another connection with your phone will be made over Bluetooth Low Energy for application data synchronization using a particular BraillePenSync application.

Please don't confuse the two – look for the terminal connection in the screen reader's menus and the data synchronization Bluetooth Low Energy connection in the BraillePenSync app.

For more information, refer to your mobile device screen reader user guide.

## Waking Up Your iOS Device Using BraillePen24

When using your BraillePen24, you may wake up your iOS device and initiate a connection between the BraillePen24 without touching the iPhone or iPad. Starting with iOS17, this feature is available when the paired Braille device is a HID type. Since BraillePen24 is such, you can benefit from the feature at once - whenever you turn your BraillePen24 on, the paired iOS17 or newer device will turn on, too.

An iOS or Android phone may be used as an internet connectivity bridge for mobile data exchange. To use internal BraillePen24 applications, you need the BraillePen24 to be connected to the BraillePenSync app (see "Synchronizing the BraillePen24 data" section below). The devices maintain this connection even if turned off, so you only need to establish it once.

## Switching the connection between the connected systems

Since you can connect to many devices at any time you will need a way to switch between them. To do that press short the on/off switch. It will switch the device to the next active device.

Switching can be done in the Devices menu in the Application mode as well.

# Application Mode

BraillePen24 can work autonomously when switched to Application Mode (with the switch at the rear of the unit, close to the on/off switch, slid to the right). Although in Application Mode, the device uses an Internet connection provided by the BraillePenSync app on the smartphone; the connection is seamless and does not distract the user. All data (e-mail, notes, contact details, etc.) can be read directly from BraillePen24.

This mode's menu allows access to data (notes, e-mail, tasks, etc.) and settings.

## Application Mode Menu

The BraillePen24 Menu is activated when you Enter application mode (the Terminal/Application switch must be set to Right).

While in the menu, navigate with the joystick or **Previous / Next** (the outer) thumb keys.

The Up and Down joystick movements or Previous and Next thumb keys (plus some alternative key shortcuts) move on the menu items available. To Enter the selected menu item, you need to use the joystick Down, or Space key + dot4 shortcut, or Enter (dot8); yet another way to choose an item is to touch any cursor routing key above the menu item. To exit a menu level, use the joystick Up, or Space key + dot1 shortcut (Space-a). First-letter navigation is available in the main menu: pressing the first letter of the item you are looking for in long menus is a quick way to jump to that item. This makes for a highly efficient experience. In large menus or long lists, first-letter navigation is handy. We will introduce this feature in the future versions of BraillePen24 that will be available to you by an easy firmware update.

## Types of menu items

### Read Only

The system provides information that cannot be modified.

### Toggle

Allows you to toggle settings like on/off, etc. In BraillePen24, this works as a list of two settings. Please see the description of the list menu type below.

In forms, if you encounter a toggle (like "All day event: Yes/No"), you will have to use Space to toggle.

### List

Good for choosing one item from a list of many. First, if you want to change a setting, press Enter or use the touch cursor above the setting name. When in the list, you will see one item of the list at a time, preceded by an eight-dot sign that will be either full (all 8 dots up) or "empty" - dots 1, 2, 7 and 8 up and the rest down. Move between the list items with the Previous / Next (the outer) thumb keys. Then use Enter, Space, or Routing keys to choose the currently displayed item from the list.

### Context menu

Apart from the regular menu, you can access the Context menu. The fast context menu provides the most relevant and frequently used commands. To reach the Context Menu, use the Space key + dot134 (Space-m) keyboard shortcut. One interesting feature of this

menu is that it provides information on key shortcuts leading to all the functions present in the Context menu. It helps to memorize the shortcuts, which is the fastest way of operating.

If, for any reason, you want to resign from taking any action in the context menu, to exit the menu, press Space key + dot15 (Space-e).

## Notes

This application keeps your notes. Notes may be downloaded and synchronized with an IMAP or Google GMail server and via the server with all your other devices (a PC, tablet, phone, etc.).

You will see an “empty” announcement when you first Enter this menu item. To see your notes, you must log in to your account on a server in your BraillePenSync app on the smartphone connected with your BraillePen24. Then - while in the Notes menu - sync the email by pressing Space-dot234 (Space-s).

If synced, you will see a list of accounts from which to choose. Enter one and read your notes.

After Entering the Notes menu item, you will see a list of folders – one per account. All folders are created when you first connect the device to the BraillePenSync application. See “Synchronizing BraillePen24 Data” section below.

In any folder, you will find a list of notes belonging to the account corresponding to the folder. Typically, you will find all the notes stored in a given account.

The BraillePen24 uses computer braille for menus, so when viewing your notes, names will be shown in computer Braille. Once you open the note, the BraillePen24 will show the text in computer or literary Braille, according to how you set it in Settings (see below).

When entering the account, you will see “empty” on the Braille display. To see the list of your notes on the server, press Space-s (Synchronize).

To create a new note, use the Space-n command.

Browse the notes with the usual scrolling methods (joystick Left/Right or thumb **Previous/Next** keys) and Enter a note using the joystick down or Enter (dot8).

Delete note - while on the notes list, press Space key + dot145 (Space-d)

Escaping a note without saving - Space + dot14 (Space-c).

Escaping a note and save it - Space + dot15 (Space-e).

Look for ways to edit a note in the Editing section of this manual.

Notes that are modified or created on the device will be updated on the server during the next synchronization. Then, you will also see them in the application on your computer or mobile devices. In this way, all data from the device can be synchronized with your computer and smartphone.

## Email

This application lets you read and write (create a new or answer the received) e-mail. Messages may be downloaded from and sent to a server. The menu item enables you to Enter BraillePen24's email messaging system. You will see an “empty” announcement when you first Enter it.

To read your email, you must log in to your account on an IMAP or GMail server in the BraillePenSync app on the smartphone connected with your BraillePen24. Then, while in the Email menu on your BraillePen24, sync the email accounts by pressing Space-dot234 (Space-S). A list of accounts will be created or updated when the device is synchronized with the server. When the synchronization of the accounts is done, you can Enter one of them (joystick DOWN or Enter key - dot8) and press Space-S to get or update the list of folders and yet again in a folder (joystick DOWN or Enter key = dot8) on the list of messages (provided the BraillePenSync application is connected to BraillePen24 and configured to connect to a server). More details are available in the “Synchronizing BraillePen24 Data” section below.

The above-described series of sync operations must only be performed when a new account is synchronized for the first time or when you want to update the account or folder lists. If you have an account with its folders synchronized already, you can go directly to the folder you wish and sync the list in search for new messages.

To summarize: when the accounts are already synchronized, enter one of the accounts (joystick DOWN or Enter key - dot8) to see a list of folders. Choose a folder with the joystick DOWN or Enter key (dot8) and sync (Space-s) to refresh your email messages list. The system will download about 50 messages. To see more, use "Download more" shortcut: Space key + dot1348 (Space-Enter-m).

Browse the e-mail list with the usual scrolling methods (joystick or thumb keys) and Enter into one using the Enter key (dot8) or joystick DOWN.

Here is a list of shortcuts available in the list of messages:

- Synchronize or email download - Space key + dot234 (Space-s)
- Download more messages - Space key + dot1348 (Space-Enter-m)
- Reply the sender - Space key + dot1235 (Space-r)
- Forward - Space key + dot124 (Space-f)
- Reply all - Space key + dot12358 (Space-Enter-r)
- Delete message - Space key + dot145 (Space-d)
- Delete permanently - Space key + dot1458 (Space-Enter-d)
- Jump to the first message on the list - Space key + dot123 (Space-l)
- Jump to the last message on the list - Space key + dot456
- Move a message to another folder - Space key + dot1347 (Space-M)
- Open a message - dot8 (Enter)
- Attachment menu - Space key + dot1356 (Space-z)

The BraillePen24 uses computer Braille for menus, so when viewing your message titles, they will be shown in computer Braille too. You will see "empty" on the braille display if no messages are in the list.

Reading a message is performed with the regular navigation keys (see below). Additionally, while reading, you can access an Attachment menu - Space key + dot1 (Space-a). This menu is available only when the message has at least one attachment.

The attachment menu is a list of names of files attached. To open an attachment, press dot8 (Enter). When an attachment is displayed, BraillePen24 will try to show any text that will be found in the attachment. This is useful for reviewing the contents of PDF or HTML documents and some other (see Addendum 3 - List of supported file formats that will convert to text readable in Braille when found in a message attachment).

Exiting the attachment - Space key + dot15 (Space-e) or Space key + dot14 (Space-c).

To create a new message, use the Space key + dot1345 (Space-n) command. The message form can be navigated and filled in using the following shortcuts:

- The Previous field - Space key + dot23, Left thumb key (**Previous**)
- The Next field - Space key + dot56, Right thumb key (**Next**)
- Theme field - Space key + dot2348 (Space-Enter-s)
- Jump to Copy to: field - Space key + dot148 (Space-Enter-c)
- Jump to Receiver: field - Space key + dot12358 (Space-Enter-r)
- Jump to Blind copy to: field - Space key + dot1258 (Space-Enter-h)
- Jump to the message contents - Space key + dot158 (Space-Enter-E)
- Open contact list - Space key + dot124 (Space-f)
- Navigating text - Joystick Left/Right Thumb keys (**Left/Right, Previous/Next**) and cursor routing keys
- Jump to beginning of text - Space key + dot123 (Space key + l)
- Jump to end of text - Space key + dot456
- Send the message - Space key + dot234 (Space + s)
- Exit the message - Space key + dot14 (Space + c)

While moving around a new message or a reply (or forwarded message), you will see two buttons: Send and Exit. You may choose an action linked to the button (sending or exiting

the message without sending) by pressing the Enter key or any routing keys above the button.

Please go to the Editing section below to learn how to edit the e-mail body text.

## Tasks

This menu item allows you to Enter the tasks' descriptions and dates. Similarly to notes or emails, you must first sync your accounts with a server by pressing Space-dot234 (Space-s). Once the sync is done, you will get tasks from all your active accounts organized in lists, in alphabetical order.

The tasks are displayed in an alphabetical order and grouped by the account they belong to (the accounts are set in the BraillePenSync app on your phone).

Task list navigating:

The Previous list - Joystick Left, Left thumb key (**Previous**)

The Next list - Joystick right, Right thumb key (**Next**)

Synchronize list of lists - Space key + dot234 (Space-s)

Delete list - Space key + dot145 (Space-d)

New task list - Space key + dot1345 (Space-n)

Task navigating inside any list can be done in a similar mode:

- The Previous task - Joystick Left, Left thumb key (Previous)
- The Next task - Joystick right, Right thumb key (Next)
- The first task - Space key + dot123 (Space key + l)
- The last task - Space key + dot456
- Synchronize tasks on the list - Space key + dot234 (Space-s)
- Delete task - Space key + dot145 (Space-d)
- New task - Space key + dot1345 (Space-n)
- Show more task details (start, updated time, completed time and name of the task) - Space key + dot23 (Back-tab) and Space key + dot56 (Tab)
- Task description - dot8 (Enter)
- Editing the task where the cursor is located - Space + Enter + period (Space-Enter-dot)

While in the task editing form you will see description of the task and dates. The dates and times are differentiated by their labels:

- due time – “d” letter
- updated time – “u” letter
- completed time – “c” letter

New task/edit task command shortcuts:

- The Previous field - Space key + dot23 (Space-Tab), Left thumb key (Previous)
- The Next field - Space key + dot56 (Space-Tab), Right thumb key (Next)
- The fields you will be able to edit: Name, Completed state, Due date, Description, Save button, Exit button
- Changing a toggle on the form requires a Space
- Choosing a button requires pressing Enter key
- Save - Space+234 (Space-s)
- Exit - Space key + dot14 (Space-c)

## Events (Calendar)

This application allows you to review your calendar, read details about events, edit them, and Enter new ones. Events may be downloaded and saved from and to a server.

After entering the Events menu item, you will see a list of events in all synchronized accounts. The list will be created or updated when the device is synchronized to servers using the BraillePenSync application. See the “Synchronization of the BraillePen24 Data”

section below. When BraillePenSync is configured for connection with the server(s) and your BraillePen24, to sync your calendars press Space key + dot234 (Space-s). You will see a list of events that belong to the calendar.

To find out which account the calendar belongs to, press Tab (Space key + dot56, Next thumb key) while on the calendar name.

You may use the regular navigation keys or joystick to navigate through the events. Additionally, please use:

- The Previous event - Joystick Left, Left thumb key (Previous)
- The Next event - Joystick right, Right thumb key (Next)
- The first event - Space key + dot123 (Space key + l)
- The last event - Space key + dot456
- Synchronize events on the list - Space key + dot234 (Space-s)
- Delete event - Space key + dot145 (Space-d)
- New event - Space key + dot1345 (Space-n)
- Show more event details (Name, All day event (yes/no), Begin date + time, Finish date + time, Description, Save button, Exit button) - Space key + dot23 (Back-tab) and Space key + dot56 (Tab)
- Reading the event description where the cursor is located - Enter key
- Editing the event where the cursor is located - Space + Enter + dot15 (Space-Enter-e)

New event/edit event:

While in the event editing form you will see description of the event and time fields. The dates and times are differentiated by their labels:

- begin time – “b” letter
- finish time – “f” letter

New even/edit event command shortcuts:

- The Previous field - Space key + dot23 (Space-Tab), Left thumb key (Previous)
- The Next field - Space key + dot56 (Space-Tab), Right thumb key (Next)
- The fields you will be able to edit: Name, All day event (yes/no), Begin date + time, Finish date + time, Description, Save button, Exit button
- Changing a toggle on the form requires a Space
- Choosing a button requires pressing Enter key
- Save - Space+234 (Space-s)
- Exit - Space key + dot14 (Space-c)

To switch a toggle – use space.

## Contacts

Contacts display one of the names present on all your address lists on all your accounts that are synchronized with the BraillePen24. When you enter Contacts you will first see an "s:" prompt to type in the first letters of the name, surname or e-mail address of the person you want. After you have typed the text to find press Space key + dot124 (Space-f). You will see the first found element on display.

Show more contact details (Name and other data that is available for the contact) with Space key + dot23 (Back-tab) and Space key + dot56 (Tab).

Next search - press Space key + dot124 (Space-f).

Navigating contact list:

- New contact - Space key + dot1345 (Space key + n)
- The Previous field - Space key + dot23, Left thumb key (thumb-up)
- The Next field - Space key + dot56, Right thumb key (thumb-down)
- Phone call - Space key + dot12348 (Space-Enter-p) - this function displays a notification with the phone number on the smartphone's screen; you can use it to call the number

New contact form:

- The Previous field - Space key + dot23, Left thumb key (thumb-up)

- The Next field - Space key + dot56, Right thumb key (thumb-down)
- First name - Space key + dot13458 (space-Enter-n)
- Name - Space key + dot2348 (space-Enter-s)
- E-mail address - Space key + dot158 (Space-Enter-e) this is a combined, two-element field, consisting of the label and the actual e-mail address
- Phone number - Space key + dot12348 (Space-Enter-p) this is a combined, two-element field, consisting of the label and the actual phone number
- Save - Space key + dot234 (Space-s)
- Find name - Space key + dot124 (Space-f)
- Add a phone number: Space key + dot12348 (Space-Enter-p)
- Add an email address: Space key + dot158 (Space-Enter-e)
- Add an organization: Space key + dot1358 (Space-Enter-o)

## Books

This function displays a list of files placed on the micro-SD card inserted into the rear-edge slot of your BraillePen24. The files can be read on the device if they are present on the SD card in .brf or .txt format. Refer to the "Files on the SD card of BraillePen24" section below. Books are files for reading-only. They can not be edited. Please bear that in mind and use the navigation shortcuts the same as for the notes editor, but remember that the editing shortcuts will not work.

When browsing the SD card contents for books you will see the files in books folder on the card. The information on the files consists of:

- level of the folder in the SD card catalog - values 0 (the file or folder is placed in books folder)
- f or d letter - designating files of directories (folders)
- b or t - designating the file type (b = .brf; t = .txt; empty for folders)
- A colon - to separate the above information from the name of the file or folder

• examples:

- 0d :Novels - a directory (folder) with name "Novels" placed in the "books" folder on the SD card,
- 1fb:Grapes of Wrath.brf - a file with name "Grapes of Wrath" placed in a folder one level below books folder.

Folders on level 3 cannot be browsed - thus, only four levels are helpful for book files level 0, 1, 2 and 3.

To leave a book – press Space key + dot14 (Space + c).

## Devices

List of devices connected in terminal mode (HID and serial). Each item on the list has a preceding mark showing if the connection is active at the moment: 8-dot sign (dot12345678). When the connection is not active you will see dot1478. The next Braille cell shows type of connection: "h" for HID or "s" for serial.

There may be up to four connections available at the same time. In this menu, you will be able to switch between them by pressing Space key while the requested device's name is displayed.

# Time and date

## Clock

This item shows the current time. After pressing **Next** thumb key you will see the current day of the week and date.

The time and date may synchronize when you connect the BraillePen24 with a mobile device (smartphone or tablet) via the BraillePenSync application – see the “Synchronizing BraillePen24 Data” section below.

Set the auto-synchronization in Settings - Time and Date - Set Time Auto.

The date and time display format is determined in Settings - Time and Date - Hour Format for time, and Settings - Time and Date - Date Format for date.

Two Space keys + dot2345 (Spaces-t) - is a global shortcut to show the current time and date on display. **Previous/Next** keys move from time to date display or vice versa. Any Perkins key finishes displaying the time and date.

## Stopwatch

The stopwatch is a simple stop-and-go counter showing the elapsed time. Pressing Space starts and stops the time counting. To reset the time to 00:00:00, press the Space key + dot14 (Space-c).

## Timer

This is a counter good for boiling eggs or similar tasks that require a set time period to be performed. Time is counted down from the set value to zero. Set the time by pressing dot8 (Enter) while on the timer display and entering the time in lowered notation (dot2 = 1, dot23 = 2, dot25 = 3, etc.). When you are done with one value, move with the thumb keys to the next (the **Next** thumb key) or the previous (the **Previous** thumb key). Dot78 under the edited value on display will help to orientate while setting the time.

Finish by pressing Space key + dot15 (Space-e).

To start the countdown press Space. When the time set elapses, you will hear a timer signal or feel the vibration, depending on the setting in Settings - Vibration and Sound. You will be informed by a message on the Braille display. This message and signal will show even if you are in some other function of the device (in Terminal mode as well). Any key cancels the message.

If while the timer works (a countdown is performed) you may cancel the process by entering the Time and Date - Timer menu and pressing Space key + dot14 (Space-c).

## Settings

In Settings, you choose the BraillePen24 operating parameters:

Auto off, Vibration and Sound, Computer Braille, Literary Braille, Default Braille, Language, Time and Data, Service, Display sensor, One Hand Mode, Reset to Default, Reset to Factory

## **Auto off**

Allows users to set the time of inactivity before the unit turns off automatically, between 3 minutes, 5, 10, 15, 20, 30, 45, 60 minutes, and off.

## **Vibration and Sound**

Allows users to set sounds and vibrations ON or OFF. When sounds are on, the unit will provide sound cues for its actions (like switching on and off, etc.) - similarly vibration. Choose one of the options: Vibration and sound, Vibration and Sound.

Silence switch is useful in an urgent situation, like in a concert, when you need to suppress the sound signals. When the switch is deactivated again, the device returns to its previous state.

## **Liblouis Braille Rules**

BraillePen24 may use Liblouis Braille rules in the application mode for many languages. This menu item serves to choose the Liblouis rules set from a list of available sets. The Braille rules work both ways – for forward translation (text to Braille – for example, from a note text to Braille for display on your BraillePen24 Braille display) and back translation – from Braille to text (for sending a text in a plain form, for example in an email message).

## **Computer Braille**

Allows users to choose one of the available 8-dot computer braille tables. An 8-dot sign marks the selected item.

Computer Braille is used for the menus and messages in the current version of the device. In menus and system messages, BraillePen24 always uses Computer Braille; it cannot be switched to literary Braille.

## **Language**

Allows users to select a language from a list of available languages. An 8-dot sign indicates the selected language.

## **Time and Date**

This menu has submenus:

### **Set Time and Date**

When Set Time Auto (the next option -see below) is set to On, you will see the current time here and cannot change it.

When Set Time Auto is Off, set the time by pressing dot8 (Enter) and entering the date and the time using a lowered notation (dot2 = 1, dot23 = 2, dot25 = 3, etc.). When done with one value, move with the joystick right to the next or left to the previous. Dot78, under the edited display value, shows the value currently being edited.

The sequence and format of the time and date entered are consistent with the format set in Hour Format and Date Format. In the imperial format, you need to change the am/pm.

### **Set Time Auto**

Determines if the time will be synchronized automatically with the connected mobile device. When set to On, the synchronization is performed each time the connection to the BraillePenSync application is established.

### **Hour Format**

The display format of the time is determined between 12h and 24h.

### **Date Format**

The display format of the date is determined between a number of predefined settings.

## **Service**

This item's submenus consists of troubleshooting options useful in case of technical problems with BraillePen24:

### **Refresh display (Clean display)**

A series of activating and deactivating all Braille cells that helps remove any debris from the cells.

### **Key Test**

When in doubt if your keyboard responds well, you may use this test..

### **Update firmware**

The firmware upgrade can only be performed with a new firmware version in a file received from the authorized service. Please use the firmware upgrade with caution: any interruption during the upgrade may render the device unusable until sent for service to an authorized workshop.

To update BraillePen24 with an update file:

1. Make sure that the SD card is properly formatted and contains the correct firmware file before starting the update process.
2. Go to the "settings" menu.
3. Navigate to "service".
4. Then to "firmware update".
5. You will see a list of BraillePen24 firmware files present in the root folder of the SD card in the SD card socket of your device. An example firmware file name is: "firm\_1\_3\_32\_b23.bin"
6. Choose the file you wish to use for the update. The final question, "update firmware?" will appear. Press Enter.
7. You should see "updating in progress". A progress indicator will show up.
8. In case of an error, you will see "update error" and the error number. Please note the number to report to the service department.
9. When the update is successfully finished, you will see "update ok". The device will be switched off.
10. Start the BraillePen24 up again to use the updated device.

After updates, sometimes it may require two charging cycles for the battery charge information to be correctly calibrated.

## Display sensors on/off

When using the BraillePen24, users accustomed to the regular piezoelectric Braille cells may notice that while they keep their fingers on top of them, the text displayed (in Braille) has some errors. The dots cannot be touched while their contents change because this effect may occur. The type of Braille dots used in the BraillePen24 allows for remarkably slim housing and good Braille quality, but the above-described effect is a drawback.

BraillePen24 has a unique mechanism to compensate for this problem: a set of sensors underneath the Braille display. The sensors recognize the presence of your fingers on the display, and whenever the finger is raised or moved left/right, the text refreshes in that sector.

This way - when in doubt, it is enough to raise your finger above a cell to get a correction. There may be two reasons to switch this feature off: for users that don't keep their fingers on the display all the time, this feature can be set off. Besides refreshing always while the user moves his fingers above the Braille cells consumes some power.

To change the state of the Display sensor feature - please enter the submenu and choose on or off. An 8-dot sign marks the selected item.

## One Hand Mode

This option enables or disables one-hand mode for users restricted to using a single hand. When you turn on your BraillePen24, you will be notified if one-hand mode is enabled.

When using One-hand mode, the Spacebar must be pressed after most kinds of input are made. For example, to type a braille letter, press the corresponding braille keys either all at once or one at a time, and then press Space. To use a hotkey combination like Space + E to save and exit in the editor, you need to press Space, dot1, dot5, and then press Space again. To make a space while in the editor, you press Space, Space.

Only the thumb keys and the joystick are not affected by the need to press Space after information input.

## Reset to Default

When this option is run, you will reset all the settings of the device to default (auto-off time, language, Braille tables etc.). This action does not delete any data or disable any connections with BraillePenSync app or any screen reading program.

## Reset to Factory

This option clears the contents of the device; all data and files will be deleted, and default settings will be reset. Useful when you would like to give it to a new user.

After a factory reset, you must delete the accounts from the BraillePenSync app before the next synchronization.

## Help

## About

Displays the BraillePen24's key information. Includes options for starting the firmware and memory upgrade process.

## **Firmware**

This is where you can check your device's current firmware version.

## **App Connected**

Informs if you are connected to BraillePenSync app on your smartphone.

## **Serial Number**

Displays serial number of the BraillePen24 unit you use.

## **BT MAC**

Displays the Bluetooth MAC address. Useful for connecting with other devices over Bluetooth.

## **Key Shortcuts**

This is where you can check all keyboard shortcuts for the device. You can browse the section titles to enter and read one of the shortcut lists with the Enter (dot 8) key.

## **User Manual**

Includes all chapters of the User Manual. It is divided into sections. You can browse the section titles to enter and read any of them with the Enter (dot 8) key.

## **Contact**

This menu item shows the Internet address of the producer of your BraillePen24. Useful when you need to contact the technical service.

# Editing

When in the note or any other large text field, you may edit it using the following shortcuts:

## Editing functions Shortcut keys

New line - dot8 (Enter) or Joystick action  
BackSpace - dot7 (Backspace) or Space key + dot12 (Space-b)  
Previous line (paragraph) - Space key + dot1 (Space-a) or joystick up  
Next line (paragraph) - Space key + dot4, joystick down  
Previous word - Space key + dot2  
Next word - Space key + dot5  
Previous character - Space key + dot3 or joystick Left  
Next character - Space key + dot6 or joystick Right  
Beginning of note - Space key + dots 1-2-3  
End of note Space key + dots 4-5-6  
Save - Space key + dot234 (Space-s)  
Exit - Space key + dot15 (Space-e)

While editing a note, its text may be displayed on the Braille display in Computer Braille or Literary Braille. Switching between the two may be done by pressing Space-g. Specific Braille conversion rules table may be set in Settings.

While in a note, the cursor is represented by dots 7 and 8 in Literary Braille mode and by dot8 while in Computer Braille mode.

## Reading books

Books may be stored as files in .txt format on the microSD card placed in the slot at the rear edge of BraillePen24. Files can be read from the BraillePen24 SD card put in the slot at the rear of the device.

The BraillePen24 uses computer braille for menus, so viewing your file names will be shown in computer braille.

The BraillePen24 will remember the point where you stopped reading and return to that same point when you re-open the file again.

All navigation commands and shortcuts are the same as with the notes editor (see the Previous section). You cannot create a new file or edit files in the files folder.

For more information, please refer to the “Files on the SD card of BraillePen24” section below.

To leave a book press Space key + dot14 (Space-c).

## Synchronizing BraillePen24 Data

BraillePen24 e-mail, contacts, calendar, tasks and notes can be synchronized with your Google Mail account, etc. This makes it easy to access your e-mail and notes at any moment without all the hassle of accessing them through your smartphone application (for that, you would need to switch both devices on, wait until they connect, and finally reach the Mail or Notes app in your phone – in BraillePen24, you switch the device to Application mode, and you’re ready to view your existing notes or write new ones).

For synchronization, you need to use the BraillePenSync app from the Apple AppStore or Google Play Store.

Before the app can be used, it must be set up:

1. Define your accounts in BraillePenSync app on your smartphone (for example, Google account) by giving an email address, server name, user name, password
2. Connect to your BraillePen24 by choosing "Select device" and selecting your device's serial number from the displayed list. The BraillePen24 must be on when doing this. Choose one (the only one usually, unless your neighbor also uses a BraillePen24).

Once the connections are defined, you no longer need to worry about the BraillePenSync application on your phone. It can keep running in the background. Whenever you turn your phone off and on again, it is good to check if the app is active by running it.

The synchronization is activated from the BraillePen24.

1. When in the menu, enter "E-Mail", "Calendar," or "Notes." - Space-S will sync the accounts (it will create accounts on the device). You only need to perform this once. Typically, you would do that only if you have added a new account or changed your existing accounts in the BraillePenSync app. The synchronization may be stopped by pressing Space + C.

2. From this time on, the synced accounts will exchange data (between the device and the server) every time you use the Space-s shortcut. If you only want one or a few accounts synchronized you may disable synchronization for all other accounts in the BraillePenSync app.

Each time the BraillePen24 is connecting to the BraillePenSync app, the device's system time is synchronized with the phone time (unless this feature is turned off on the Settings menu).

Please note that if you have a large number of messages or notes and/or if your notes are long, you may have to wait up to an hour for a full synchronization (this happens if the notes are synchronized for the first time). Please don't interrupt the process too early. Also, please remember to set the sleep time long enough for the first synchronization. Whenever you want to delete a message or note from your device, you can use the Space-d command when on the note's title in the note list. This message or note will be deleted from your device and, after a subsequent synchronization, from the respective server.

Remember that if a synchronization is interrupted (by Space-C shortcut or by interrupted connection to the Internet) the data may be incomplete. If you suspect this case you should repeat full synchronization.

If you have an account that is obsolete or not used in the current context you can go to the BraillePenSync24 app and deactivate the account. It will not be synchronized then, but ready to be switched on again later.

## **Files on the SD card of BraillePen24**

To read books Enter the books on the "books" folder on the SD card that is accessible at the socket on the rear part of BraillePen24.

File types that can be placed on the memory card and read with the device are .txt and .brf.

The information on the files consists of:

- level of the folder in the SD card catalog - values 0 (the file or folder is placed in books folder)
- f or d letter - designating files of directories (folders)
- b or t - designating the file type (b = .brf; t = .txt; empty for folders)
- A colon - to separate the above information from the name of the file or folder
- examples:
  - 0D :Novels - a directory (folder) with name "Novels" placed in the "books" folder on the SD card,
  - 1Fb:Grapes of Wrath.brf - a file with name "Grapes of Wrath" placed in a folder one level below books folder.

# End User License Agreement

By using this Product (BraillePen24), you agree to the following minimum terms:

1. License Grant. Harpo grants to End User a non-exclusive, non-transferable Right and licence to use the Software on this product.
2. Ownership of Software. The end user acknowledges that Harpo retains all Rights, title, and interest in and to the original and any copies of software incorporated into this product. The end user agrees not to modify, port, translate, decompile, disassemble, reverse engineer, or make the software of this product public in any way.

## Technical Specifications

### Navigation Components

- 4 thumb keys
- 1 joystick (up, Right, down, Left, action)
- 8-key braille keyboard
- 2 Spacebars
- 24 touch cursor routing keys
- 24 braille cells

### Long-life Battery

- Lasts 10 hours or more
- Recharges from PC through USB-C port
- Auto shut-off
- Lithium-ion polymer battery
- Compatible with any standard USB-C A/C adapter
- Voltage rating: 3.7V

### Connectivity

- USB-C 2.0
- Bluetooth V2.1 + EDR Class 2
- Bluetooth 4.0

### Portability

- 154 x 97 x 14 mm (6" x 3.8" x 0.5") / 230 g (0.5 lbs).

### Compatibility

- Windows computers (32 and 64 bits)
- JAWS and other screen readers
- Apple products with iOS 10 or macOS 10.12 (or newer) and VoiceOver (MAC, iPhone, iPad).

# Manufacturer Warranty

## **Manufacturer Warranty**

The BraillePen24 is a high-quality product, built and packaged with care. All units and components are guaranteed against any operational defects for one (1) year. Warranty covers all parts (except battery) and labor. If any defect should occur, please contact Harpo at +48 61 8531425 or [iss-info@harpo.com.pl](mailto:iss-info@harpo.com.pl).

## **Conditions and Limitations**

Please keep your purchase bill safe as it may be required for a warranty repair or replacement. Please retain your original. If the unit has to 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.

Please refer to <http://braillepen.com/> or contact Harpo at [iss.info@harpo.com.pl](mailto:iss.info@harpo.com.pl), or +48 61 8531425

## **Customer Support**

For customer support, please contact Harpo at [iss.info@harpo.com.pl](mailto:iss.info@harpo.com.pl), or +48 61 8531425

## **Additional Resources**

For additional resources, including more information about braille literacy, fun and engaging student activities, and to order a complimentary Classroom Kit, please visit [www.braillepen.com](http://www.braillepen.com)

# Addendum 1 - List of key shortcuts

## **Main menu - Space key + dot125 (Space-h)**

- To the Previous (upper) level - Space key + dot1, Joystick up
- To the Next level (lower, deeper) - Space key + dot4, Joystick down
- Activate a menu item - Space key + dot8, (routing key above the menu item)
- The first menu item - Space key + dot123 (Space-l)
- The last menu item - Space key + dot456
- The Previous menu item - Space key + dot2, Joystick Left
- The Next item - Space key + dot5, Joystick Right
- Synchronize - Space key + dot234 (Space-s)
- The Next field - Space key + dot23
- The Previous field - Space key + dot56
- Delete an item - Space key + dot145 (Space-d)
- Edit an item - dot8
- New item - Space key + dot1345 (Space-n)
- Context menu - Space key + dot134 (Space-m)
- Exit editing - Space key + dot15 (Space-e)
- Accept Edited form - dot8

## **Stop watch**

- Te reset the stop watch - Space key + dot14 (Space-c)

## **Notes**

- New note - Space key + dot1345 (Space-n)
- Delete note - while on the notes list, press Space key + dot145 (Space-d)
- Escaping a note without saving - Space + dot14 (Space-c)
- Escaping a note and save it - Space + dot15 (Space-e)
- Editing a note - see Editing section below

## **Email**

- Synchronize - Space key + dot234 (Space-s)
- Download more - Space key + dot1348
- Reply the sender - Space key + dot1235 (Space-r)
- Forward - Space key + dot124 (Space-f)
- Reply all - Space key + dot12358
- Delete message - Space key + dot125 (Space-d)
- Delete permanently - Space key + dot1258
- Move a message to another folder – Space key + dot1347 (Space-M)
- Open a message – dot8 (Enter)

New e-mail message:

- The Previous field - Space key + dot23, Left thumb key (thumb-up)

- The Next field - Space key + dot56, Right thumb key (thumb-down)
- Theme field - Space key + dot2348 (Space-Enter-s)
- Copy to: field - Space key + dot148 (Space-Enter-c)
- Receiver field - Space key + dot12358
- Blind copy to: - Space key + dot1258
- To the message contents - Space key + dot158
- Contact list - Space key + dot124

Message reading:

- Open a message - dot8, any routing key
- Navigating text - Thumb keys
- Attachment menu – Space key + dot1 (Space-a)
- Exit the message – Space key + dot14 (Space-c)

## Contacts

Navigating contact list:

- New search - Space key + dot124 (Space-f)
- Phone call - Space key + dot1234 (Space-p)
- New contact - Space key + dot1345 (Space-n)

New contact form:

- The Previous field - Space key + dot23, Left thumb key (thumb-up)
  - The Next field - Space key + dot56, Right thumb key (thumb-down)
  - First name - Space key + dot13458 (Space-Enter-n)
  - Name - Space key + dot2348 (Space-Enter-s)
  - E-mail address - Space key + dot158 (Space-Enter-e)
  - Phone number - Space key + dot12348 (Space-Enter-p)
  - Send - Space key + dot234 (Space-s)
- Call the phone number: Space key + dot148 (Space-Enter-c)

Creating contact:

- Add a phone number: Space key + dot12348 (Space-Enter-p)
- Add e-mail address: Space key + dot158 (Space-Enter-e)
- Add organization name: Space key + dot12348 (Space-Enter-o)

## Tasks

Task list navigating:

- The Previous list - Joystick Left, Left thumb key (Previous)
- The Next list - Joystick right, Right thumb key (Next)
- Synchronize list of lists - Space key + dot234 (Space-s)
- Delete list - Space key + dot145 (Space-d)
- New task list - Space key + dot1345 (Space-n)
- Entering a list to see tasks - Enter key or Space key + dot4, or joystick down key, any routing key

Task navigating inside any list can be done in a similar mode:

- The Previous task - Joystick Left, Left thumb key (Previous)
- The Next task - Joystick right, Right thumb key (Next)
- Synchronize tasks on the list - Space key + dot234 (Space-s)
- Delete task - Space key + dot145 (Space-d)
- New task - Space key + dot1345 (Space-n)
- Show more task details (start, updated time, completed time and name of the task) - Space key + dot23 (Back-tab) and Space key + dot56 (Tab)
- Task description - dot8 (Enter)
- Edit task - use the Context menu item "Edit"

New task/edit task:

- The Previous field - Space key + dot23 (Space-Tab), Left thumb key (Previous)
- The Next field - Space key + dot56 (Space-Tab), Right thumb key (Next)
- The fields you will be able to edit: Name, Completed state, Due date, Description, Save button, Exit button
- Changing a toggle on the form requires a Space
- Choosing a button requires pressing Enter key
- Save - Space+234 (Space-s)
- Exit - Space key + dot14 (Space-c)

## Calendar

- The first event - Space key + dot123(Space-l)
- The last event - Space key + dot456
- New event - Space key + dot1345 (Space-n)
- Delete event - Space key + dot145 (Space-d)

Navigation keys:

- The Previous event - Joystick Left, Left thumb key (Previous)
- The Next event - Joystick right, Right thumb key (Next)
- Synchronize events on the list - Space key + dot234 (Space-s)
- Delete event - Space key + dot145 (Space-d)
- New event - Space key + dot1345 (Space-n)
- Show more event details (start and name of the task) - Space key + dot23 (Back-tab) and Space key + dot56 (Tab)
- Event description - dot8 (Enter)
- Edit event - use the Context menu item "Edit"

Event editing shortcuts:

- The Previous field - Space key + dot23 (Space-Tab), Left thumb key (Previous)
- The Next field - Space key + dot56 (Space-Tab), Right thumb key (Next)
- Save - Space+234 (Space-s)
- Exit - Space key + dot14 (Space-c)

## Contacts

Navigating contact list:

- New contact - Space key + dot1345 (Space key + n)
- The Previous field - Space key + dot23, Left thumb key (thumb-up)
- The Next field - Space key + dot56, Right thumb key (thumb-down)

- Phone call - Space key + dot12348 (Space-Enter-p)

Editing contact:

- The Previous field - Space key + dot23, Left thumb key (thumb-up)
- The Next field - Space key + dot56, Right thumb key (thumb-down)
- First name - Space key + dot13458 (space-Enter-n)
- Name - Space key + dot2348 (space-Enter-s)
- E-mail address - Space key + dot158 (Space-Enter-e)
- Phone number - Space key + dot12348 (Space-Enter-p)
- Save - Space key + dot234 (Space-s)
- Find name - Space key + dot124 (Space-f)
- Add a phone number: Space key + dot12348 (Space-Enter-p)
- Add an email address: Space key + dot158 (Space-Enter-e)
- Add an organization: Space key + dot1358 (Space-Enter-o)

## **Editing text:**

- New line - dot8 (Enter) or Joystick action
- BackSpace – dot7 or Space key + dot12 (Space-b)
- Previous line (paragraph) - Space key + dot1 (Space-a) or joystick up
- Next line (paragraph) - Space key + dot4, joystick down
- Previous word - Space key + dot2
- Next word - Space key + dot5
- Previous character - Space key + dot3 or joystick Left
- Next character - Space key + dot6 or joystick Right
- Beginning of note - Space key + dot123 (Space-l)
- End of note - Space key + dot456
- Save - Space key + dot234 (Space-s)
- Exit - Space key + dot14 (Space-c)

# Addendum 2 - BraillePen24 in Application Mode -

## Menu Structure

Below you will see the complete Application Mode menu structure:

### 1. Notes

{List of accounts} [sync]

{List of Notes} [sync, open, new, delete]

{Edit note} [save, exit with save, exit without save]

### 2. Email

{List of accounts} [sync, open]

{List of Folders} [sync, open]

{List of Mails} [sync, open, new, delete, reply to sender, reply to all, forward]

{Mail content} [open attachment list, exit]

### 3. Tasks

{List of task list} [sync, open, new, delete]

{List of tasks} [sync, open, new, edit, delete]

{Task content}

### 4. Event

{List of calendars} [sync, open]

{list of events} [sync, open, new, edit, delete]

{events content}

### 5. Contacts

{List of contacts} [search, clear, open, new, edit, delete, call]

{contact details}

### 6. Books

{List of book files} [search, open]

{book reading}

### 7. Devices

{List of devices connected in terminal mode (hid, serial)} [select]

### 8 Time and Date

{Time and Date}

#### 8.1 Clock

{Display time}

#### 8.2 Stop watch

{Start, Stop, Laps}

#### 8.3 Timer

{Set time, Start, Stop}

### 9. Settings

{System settings}

#### 9.1 Auto off

{Auto off time}

#### 9.2 Vibration and Sound

{The silence switch action: sound off, vibration, vibration and sound}

#### 9.3 Liblouis

{list of Liblouis Braille conversion tables} [select]

#### 9.4 Computer Braille

{list of computer Braille tables} [select]

#### 9.6 Language

- {List of languages}
- 9.7 Time and Date
  - {Time settings}
  - 9.7.1 Set Time and Date
    - {Time set dialog}
  - 9.7.2 Set Time Auto
    - {auto-on/off}
  - 9.7.3 Hour Format
    - {24/12 h}
  - 9.7.4 Date Format
    - {y,m,d etc.}
- 9.8 Service
  - {Service settings}
  - 9.8.1 Refresh Display
    - {refresh procedure}
  - 9.8.2 Key Test
    - {key test procedure}
  - 9.8.3 Firmware Update
    - {firmware update procedure}
- 9.9 Display sensor
  - { Display sensors on/off}
- 9.10 One Hand Mode
  - {One Hand Mode on/off}
- 9.11 Reset to Default
  - {All settings to original state}
- 9.11 Reset to Factory
  - {All settings to factory + data wipe off}
- 10 Help
  - {Help functions}
  - 10.1 About
    - {Firmware version etc.}
    - 10.1.1 Firmware version
      - {Version display}
    - 10.1.2 App Connection
      - {Show connection}
    - 10.1.3 Serial Number
      - {Show Serial}
  - 10.2 Key shortcut
    - {Key test run}
  - 10.3 User manual
    - {Context-sensitive user manual}
  - 10.4 Contact
    - {Contact info}

# Addendum 3 - List of supported file formats that will convert to text readable in Braille when found in a message attachment

## **Plain text files displayed as found**

text/plain (txt, cpp, swift, cs, java, m, h, c, hpp, c++, cfg, conf, cnf, log, asc, tex, svg)  
text/css (css)  
text/javascript (js)  
text/csv (csv)  
text/sgml (sgml)  
text/xml (xml)  
application/json (json)

## **Parsed file formats**

text/html (html, htm)  
text/rtf (rtf)  
xml.document (docx)  
application/vnd.oasis.opendocument.text (odt)  
application/pdf (pdf)