

# Mountbatten Braille Tutor

User Manual

Ver. 1.0.0



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# Overview of Mountbatten Braille Tutor

## Introduction

Mountbatten Braille Tutor has lots of features that make it a Braille **typewriter**, Braille **printer**, Braille **notetaker**, Braille-print **interface**, student-teacher or child-parent **communication tool**, but the most important function of this unique device is that Mountbatten Braille Tutor helps **learning Braille** and may be the first valuable **IT experience** for kids. It does teach new **concepts** (Braille dot, blank space, character, line, paragraph, page, transfer, print, emboss, display etc.) that wouldn't be practically available for blind children.

This new version of Mountbatten Braille called Tutor, focuses on student-teacher interaction, giving many opportunities to share tasks, assignments, text files etc.

Using the unit will prove it has lots of other extras like **erase and correct**, **formatting** and more. To find out all these things, use the section Embossing.

The **speech output** gives feedback, helps you to remember each new character learned, and it will also let a new Braille user make discoveries about new characters. The synthetic speech reads words and sentences too, even if entered with Braille contractions.

**Embedded display** shows internal menu and, alternatively, what the user is typing (in Braille). The display helps to use the unit while accompanied by persons who don't know Braille. The Braille can be typed in any **Grade** (Grade 0, Grade 1 or Grade 2) – the spoken and displayed output will be correctly translated from Braille (translating from contracted Braille to print is known as **back-translation**).

The **Mountbatten Wireless Keyboard** makes the use of Braille machine convenient to every one including small children or persons with multiple disabilities (even while using it on a wheelchair). Another feature designed for people with disabilities is **one-hand keyboard**. You don't need any extra device to use your unit with one hand - the keyboard can be switched to one-hand mode easily - with a single command or a menu option.

Inside the device there is a Li-Ion rechargeable battery that lasts for up to 30 pages of embossing or few days of work when embossing only a smaller number of pages. The battery charges whenever you are connected to mains through Power Supply and you may work while the battery charges.

If you're working your way through Grade 2 Braille in English, you can use the APH Patterns Series; then the Mountbatten can print your worksheets and documents from the computer with the right combination of Grade 1 and Grade 2, and when other people type on the regular keyboard, the Braille will come out in the proper combination also. See the section **Using the APH Patterns Series** for information on how to turn the different Patterns levels on and off.

You can use the MB Tutor in **Graphic Mode** to make dot patterns and pictures.

One important feature is possibility of playing **Braille-learning games** that also help with

computer skills. Some games – like **Keyboard Master** are embedded in the device, other will be made available for download on the Internet. Contact us for more games by visiting the Mountbatten website, [www.mountbattenbrailleur.com](http://www.mountbattenbrailleur.com).

You can use the MB Tutor in lots of languages, in lots of ways. For language students, this can be very helpful!

Mountbatten Brailleur Tutor produces very **limited noise** while embossing, even on thick Braille paper. To limit even that you can write into the **Editor**, and not emboss until later; you can come back and make changes, and save them again, and still not emboss until you're ready. So you can use the MB Tutor in a classroom without the noise of Braille disturbing other people.

### **Unpacking the Mountbatten Brailleur Tutor**

Inside the outer carton, you will find the MB Tutor has been packed in a smaller carton, with foam cutouts to support it inside the outer carton. Around the foam cutouts we have packed all the other things you need to use the MB Tutor. It is wrapped in bubble-wrap inside its small inner carton.

Please keep ALL the packaging - both cartons, the bubble-wrap and the foam cutouts. If you have to return the MB to us for service, or if you have to ship it somewhere, it **MUST** be packed in this original packaging, so it doesn't suffer damage in transit.

When you receive your Mountbatten and unpack it, please check that you have received the following:

- The Mountbatten Brailleur Tutor main unit with Top Cover and Reading Table attached
- The Mountbatten Wireless Keyboard
- This User Guide
- An AC mains Power Supply
- A power lead to connect the power supply to the wall socket appropriate for your country

If anything is missing, please contact us or your distributor immediately, so we can supply you with the missing item.

## The Top Cover



Fig. 1 Removing the top cover of the Mountbatten Braille Tutor

The top cover has to be taken away before you start using your Mountbatten Braille Tutor.

*Remove the top cover by reaching over to the rear of the MB Tutor, and lifting the rear part of the cover towards you. Place the cover to one side. The cover comes off very easily.*

Under the Top Cover you will find the Reading Table that can be easily detached from the Cover (it is mounted with magnets).

### Removing the Shipping Lock

*Don't switch the MB Tutor on yet! First you MUST remove the shipping lock, or you could damage your new MB Tutor.*

When you have the MB Tutor out of its box, sit it on the table in front of you, with the display towards you. The keyboard may stay away for a moment.

If you did remove the top cover, you will now be able to examine the sheet which says: REMOVE THIS INSERT. This insert is the top sheet, plus the cardboard shipping restraint attached behind the sheet. The two legs of the shipping restraint sit on either side of the Braille embossing head, and prevent it from moving while the MB Tutor is in transit. The insert sheet and restraint are held in place by the paper bail.

## The Reading Table



Fig. 2 Installing the Reading Table

The Reading Table can be optionally mounted in its nest as on the picture above. If you want to read more than three last embossed lines of Braille you will need the Reading Table that will make the reading array reach last embossed 7 Braille lines.

Remember that if you will want to place your Reading Table under the Top Cover and put the Cover on top of your Mountbatten - you will need to push the right margin to its far right position - do so only when the Paper Lever is up, then release the Lever. Now you are ready to install the Top Cover in its place. If you don't want to carry the Reading Table with you you will not have to move the margin to the right though.

### Removing the Paper Bail

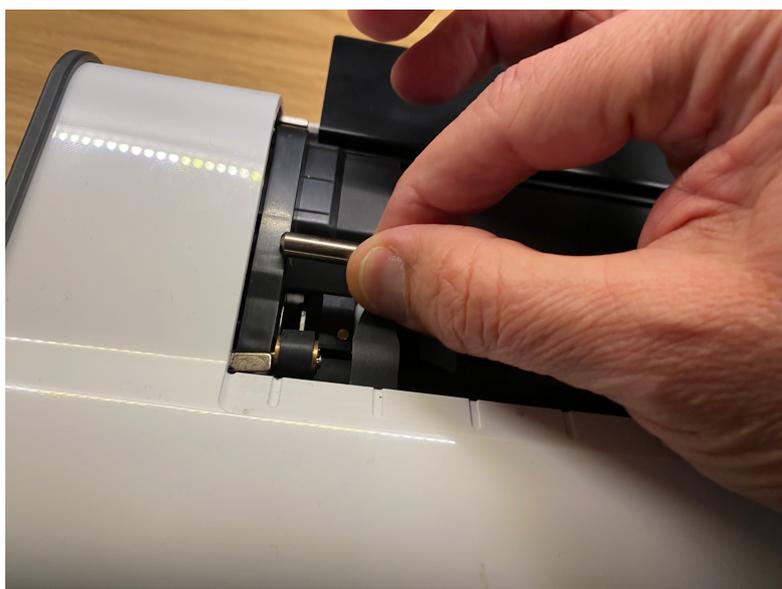


Fig. 3 Removing the Paper Bail

*The Paper Bail is only needed when the MB Tutor is operating as a Braille embosser. When using the MB Tutor as a Braille writer, we recommend that you remove it, because*

*with the Paper Bail in place, it is difficult to read the Braille just written.*

To remove the Paper Bail, first lift the Paper Grip Lever, which is on the right. Then slide the right hand margin adjuster as far right as it will go (if the Top Cover with Reading Table was just taken away the right margin is already in its far right position). The adjuster will not move unless the Paper Lever has been lifted.

On the left hand end of the Paper Bail is a small spring-loaded sleeve. Take this sleeve between your fingers and push it to the right, releasing the left side of the Paper Bail from its slot. You can then pull the Paper Bail towards the left to release it from the slot on the right. Lift the paper bail out and put it to one side.

We suggest that you store the Paper Bail and the shipping lock in the carton, so you can find them easily when you need them.

### The Wireless Keyboard

The Mountbatten Wireless Keyboard is packed along the main unit in the inner box. It should be pre-charged when shipped, but for best performance we advise to put it in front of the main unit in the cradle, attach the main unit to mains via the attached Power Supply and keep so for 12 hours. The device may be used during that time, but the keyboard should stay in the cradle, because it is charged then.

## **Description of your new Mountbatten Braille Tutor**

Mountbatten Braille Tutor consists of two parts: the main unit and detachable wireless keyboard. The main unit is a compact device with a leather carrying handle. It has an On/Off Switch in front (front left side) and connectors on the right and left panels. On the right panel – closer to the user you will find a multi-purpose potentiometer for regulating loudness, paper position and embossing speed.

Mountbatten Braille Tutor connectors include:

On the right hand side of the unit:

- Power Supply connector – use only with the accompanying Power Supply unit;
- Slave USB connector (used to connect to a PC)
- Universal USB master connectors (used to connect external QWERTY keyboard, thumb drives and other USB peripherals)
- Headphone connector

On the left hand side of the unit:

- Printer and other peripherals connectors on the left side

### **Mountbatten Braille Tutor Wireless Keyboard**

**Mountbatten Braille Tutor Wireless Keyboard does feel different to other Braille keyboards you may have used. However, simply practice a little with it, and you will**

find you can Braille faster and for longer periods than ever before, because of the ergonomic design.

**The Mountbatten Braille Tutor keyboard is wireless. Charges always, when put into its cradle in front of the Mountbatten Braille and the unit is connected to mains. Even when the unit is not connected to the mains it charges your keyboard (if in cradle) but only when turned on - to save battery.**

When the keyboard gets discharged (when put away from the main unit for too long) it should be placed in front of the main unit so that the magnets „catch” the keyboard for charging (which we call „put in cradle”). It takes several minutes to start working if the keyboard was completely discharged.

### **Key Descriptions and Layout**

The following abbreviations of the key names are used throughout this manual to describe commands and provide general operating information.

P1 .. P8	=	Perkins keys 1..8
Esc	=	Escape keyboard (upper-left key)
TAB	=	Tab key (below Escape key)
BS	=	Backspace key (upper-right key)
Ent	=	Enter key (below Backspace key)
SP	=	Space (long key in lower part of keyboard)

Command Key (round key in middle of keyboard 4-way manipulator in lower-right part of keyboard)

As you may see, the keys are placed in a similar way as on any **regular PC keyboard**. That serves introduction of concepts existing in devices that the young user is going to use in future (PC computer keyboards).

To navigate the page up and down you may use the 4-way manipulator. As you can see from the above description - there is no manual paper advance knob or wheel in the unit. You need to use the electronic 4-way manipulator or release the paper sheet in the machine lifting the paper lever up. After setting the paper lever back to operating position the unit will assume it is at the beginning of a page now.

Additionally, the potentiometer that is used to set volume (on the right panel of your unit) when moved while Space is pressed will **move paper in small steps**. This helps regulating the vertical paper position in detail.

### **One-Hand Keyboard Mode**

One-Hand Mode is meant for persons with multiple disabilities who can't use both hands in a regular way, to press many keys at a time – the regular way of using Perkins type Braille keyboard. When this mode is on, press space after the dots for each character. For example:

*To type the letter u, you do not have to press dots 1, 3, 6, together. You can press the dot keys separately in any order. For example, using one finger press dot 3, then dot 1 then dot 6. Then press space to emboss the character.*

To turn one-hand mode on you need to use Menu/Keyboard/One hand mode or enter {ku} command. For more information on entering commands please see „**MENU and COMMANDS - How to Use Them**” section below.

To exit unimanual Mode, to return to standard keyboard use, remember to press command, dot 1, dot 3, space, dot 1, dot 3, dot 6, space and enter.

## Using external QWERTY keyboard

The external USB keyboard can be connected to one of the USB connectors on the right side of your Mountbatten Braille Tutor. It is a very handy tool for communication between blind user of the unit and persons who don't know Braille. In a standard setup typing characters on the QWERTY keyboard will produce Braille on paper.

Even more - you can Braille with contractions (when you turn forward translation on). Read about how to use PC keyboard in the Using a PC Keyboard section in Advanced features of MB Tutor/Forward Translation Settings.

## Power and Battery

The MB Tutor has an internal battery which is rechargeable. A universal power supply is provided which, when plugged into the mains, will recharge the battery, at the same time it provides power to the unit. It connects to the MB Tutor through the round connector on the right-hand side of the unit - close to the back.

You cannot over-charge the battery, and leaving the unit permanently charging will not damage it in any way, but to maintain exact information on charge level you may want to discharge the battery from time to time. For regular classroom use, you will typically get a full day use out of the battery. When you do this please ensure to recharge Tutor overnight so it is ready for the next day's work (unless you find out that your battery is good for several days, which happens quite often if you don't emboss too many pages while working on battery).

### How to Check Battery Status

Whenever the Mountbatten is switched on the battery status is spoken. You may check it manually by pressing Enter+SP+B (Press all 4 keys together: Enter, Space, dot 1 and dot 2).

The MB Tutor will also tell you the percentage of the battery charge and if it is charging or not. If the battery is flat, embossing will stop.

*Note:* The causes of a flat battery are:

- The battery hasn't been charged. Connect to power for 4 - 8 hours.
- Wrong power supply is being used (all MB-Tutor units are supplied with a proprietary power supply 110v – 220v Output 15-19VDC 5.5Amp, 90W).
- The power cable could be broken.
- There could be no power coming through the wall outlet.
- The battery is damaged and needs replacing (expected life 4 years, but after 2 years of use the health of battery may worsen and it may lose some of its capacity).

### Powering On/Off Mountbatten Braille Tutor

To power on it takes a short press of the On/Off button in front of the main unit – near left edge. The basic operation starts in few seconds.

The advanced functions (synthetic speech, games, the Internet connectivity, some other unit management features) will take another internal system to start. You will hear "Advanced Mountbatten Braille Tutor functions are available now" when the full functionality is on. This process may take up to 2-3 minutes (typically less).

To power off you need to press and keep pressed the On/Off switch for 5 seconds. First there will be some short beeps telling you that you need to keep pressing the button. Later

you will hear a “bye, bye” prompt while the unit tries to stop all internal systems. Release the key at this point.

In case of any problems with stopping one of the internal systems the power management unit inside the Mountbatten will force-switch off. If you need to force-switch off the system manually keep the On/Off switch pressed for 10 seconds. It is not advised to use this way of switching off as some internal systems will get forced off without being able to save all current data. In an extreme case it may cause system failure on one of future attempts to switch it on.

### Procedure to Reset the Mountbatten

In case you think settings are mistakenly set and you don't know how to reset them to normal, it is advisable to go to System menu and choose „Restore all settings”. This will restore last saved configuration (it is a good practise to save one that fits your needs and works well for your type of work).

If this doesn't work for you, there are two simple methods for resetting your Mountbatten Brailleur Tutor:

1. Soft reset - in case your device becomes non-responsive but you want to retain all settings and just restart the machine, press middle button of the five-way manipulator for at least 5 seconds. This will make the machine start all over but without changing the settings.
2. Hard reset - this method requires a ball-pen or another implement with a sharp tip to press a hidden button that can be found on the right-hand side of the unit between USB type A and USB type B connectors. Pressing this button starts all-over the machine and makes it forget all settings.

## Loading Paper

There are two methods for loading paper. Try each method to find the one that suits you best.

### Loading Paper: Method 1

The first method is very similar to loading paper into a typewriter.

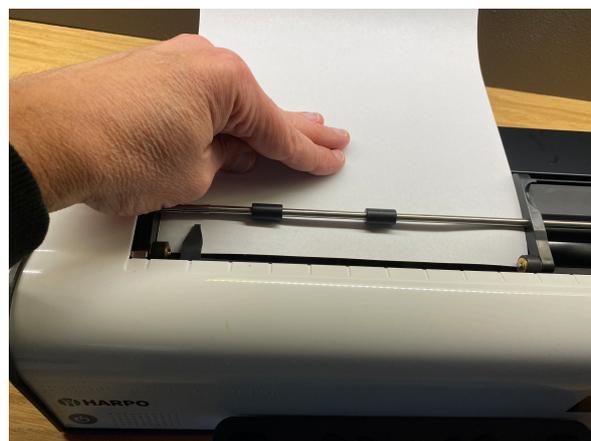




Fig. 4: The four steps for loading paper into the MB Tutor.

1. Lift the Paper Lever, and slide the right-hand margin to the position that suits the paper size being used. Lay the paper flat on the Reading Table. Make sure that the paper is positioned so that it goes underneath the small rollers on the left and right margins and under the embossing head.
2. Slide the paper into the unit. Some people grasp either side of the paper and push it in. Others prefer to slide it in by pressing on the Reading Table and sliding forward.
3. When the paper is fully inserted, align the top of the page on the Reading Table's indentation - behind the paper bail.
4. Check that the paper is placed straight against the left-hand margin. In case it isn't - slide the right margin to the left until it rests against the right edge of the paper. Flip the Paper Lever to the down position. The embossing head will now move across to the right margin adjuster and back again, to check the paper size.

The machine is now ready for embossing.

#### Loading Paper: Method 2

The second method involves inserting the paper from the rear of the MB Tutor.



Fig. 5: Loading paper from the back of the MB Tutor

paper size being used. Then locate the Paper Input Slot at the rear of the Mountbatten Braille Tutor and insert the top of the page into it. Simply push the paper in until it appears on top of the Reading Table. Align the paper, adjust the Right Margin Adjuster as needed, and move the Paper Lever to the down position.

## Removing Paper

To remove paper, simply lift the Paper Lever and pull the paper back and out of the MB Tutor.

For users who cannot reach to pull the paper out of the back of the Mountbatten Braille Tutor, it is possible to eject the page from the keyboard. There are three ways to do this:

- P-chord - Page eject. Press p and space together: dots 1, 2, 3, 4 and space.
- NP - Force a new page command issued with the Command key, the command text and Enter key.
- Menu command „Force new page’ in **Emboss** menu.

Your Mountbatten Braille Tutor will say "Page Eject" and the paper will be rolled out of the machine, ready to be collected.

## Speech Options

All models of the series of Mountbatten Braille Tutor have speech output to support Braille learning. There are two different types of speech output available in MB Tutor:

- *Recorded Speech* is a synthetic voice which has been recorded digitally and all prompts are stored in the machine. It is a high quality voice that is easy to understand, and is intended for the early learner. Only vocabulary that has been recorded can be spoken.
- *Synthetic speech* is a machine voice similar to most talking computers. With synthetic speech, the speech quality and parameters (such as pitch and rate) can be adjusted, and it has an unlimited vocabulary.

The powerful speech options contained in the MB Tutor enable a wide range of features that assist in learning Braille and using Braille as the communication medium of choice.

Speech can be used:

- to re-enforce the learning of Braille,
- to enable silent note-taking (no embossing),
- to enable word processing of files in memory,
- to speak all contractions and unlimited vocabulary.

### Loudness regulation

Mountbatten Braille Tutor has a digital potentiometer on its right side. By moving it away from yourself you will turn volume of all sounds coming from Tutor’s loudspeaker (or from headphones if attached) higher. While you turn it you will hear MB speak „louder”.

Remember not to press any key on Tutor’s keyboard while turning the potentiometer. Pressing some keys while turning the potentiometer has some other functionality described further.

To lower volume you need to turn the potentiometer towards yourself. While you turn it you

will hear MB speak „softer”. When you reach minimum you will hear an announcement so that you don't accidentally leave the unit mute.

Loudspeakers and headphones/earphones

Mountbatten Braille Tutor uses good quality speakers to produce its speech and other sounds. To maintain privacy and not to disturb the persons nearby you may use headphones or earphones if you wish. To connect headphones you need a so called „mini-jack” connector at the end of cord. Connect it to socket next to the loudness potentiometer. When you connect, the loudspeakers will get turned off.

## Embossing

### Paper you can use for embossing

Writing Braille onto paper makes noise. Mountbatten Braille Tutor is low on volume of embossing when compared to other Braille devices. There is no way to avoid noise completely with a Braille writer, however there are strategies and procedures to help minimise it.

The first strategy is to use lighter paper, because it is quieter, but also more affordable. Braille properly produced on lighter paper lasts well and is very readable with good-quality dots.

The MB Tutor has been designed to work best and most quietly with regular office paper. This paper is 80 gsm or 20 lb paper as sold for use in photocopiers and printers.

The strike force set up in the factory is correct for this weight of paper, and equally correct for thick Braille paper as used with other Braille printers or typewriters.

#### Using Heavy Card or Labels

To emboss on a very thick material like cardboard and plastic labels you can select the number of times each dot is hit by the embosser. In some cases, if you are using a heavy card, or a plastic label with adhesive backing, you may need to use the multi-strike setting to make good Braille. You can choose from single strike (default) up to 4 strikes on each dot.

***From now on the commands and menu items that serve a purpose being described in subsequent sections will be presented in tables for clarity and ease of finding the command description.***

Menu item	Command	Description
Emboss/Multi strike emboss	MS [n]	Multi-strike feature. Set strikes per dot to "n". Useful for brailleing on heavy materials such as plastic Braille label. n = 1 to 4. Default = 1

### Embossing Speed

The Mountbatten has two embossing speeds.

1. *The writing speed.* This is the default speed, still outperforming a regular typist, so you don't need to be worried by losing parts of text typed. In case you can type faster than

Tutor embosses - it has quite large buffer to allow for that.  
 The writing speed has been designed for classroom use for it is quieter.

2. *The embossing speed. If you are primarily using the MB as a Braille embosser, use the faster “embossing speed”. As the MB will emboss faster, it will produce a higher level of noise.*

To set one of the speeds you may use Fast mode toggle in Emboss menu, but you may also use a seamless gradual method - keep **Esc key pressed and use the volume potentiometer**. You will see the effect even while Tutor is embossing.

Menu item	Command	Description
Emboss/Fast mode toggle	M	Fast/Slow mode toggle

## Using Mountbatten Keyboard for typing and controlling your device

### Writing Braille with Mountbatten Braille Keyboard

Mountbatten Braille Tutor has an eight-dot keyboard good both for languages and Braille tables that use 8-dot Braille or 6-dot Braille.

Use the six Braille keys, in exactly the same way as you would type on a regular Braille writer. Whatever you type will be embossed on paper. If you need eight keys for eight dot Braille - use all 8. To use 6 or 8 dots you need to set language with appropriate Braille table.

### How to Move Around the Page

Pressing simple combination of keys offers unparalleled ease of movement around the page. This is of particular importance for setting out math problems.

4-way Down or Space-Enter	=	Move a line down the page in same column
4-way manipulator Up	=	Move a line up the page in the same column
P-chord (Space+P letter)	=	Page Eject
Tab	=	Move the head to next tab position
Space	=	Move one position right
BS	=	Move one position left and erase character at that position (the erasure happens after you type next character - see below)

### Erasing and Correction

Your Mountbatten can erase or correct mistakes. The quality of the corrections is approximately the same as the ‘finger nail method’ and depends also on the quality of the paper used.

#### Erasing

BS	=	moves one space to left and prepares for the last character erasure; next character will replace the one already there
BS+S	=	replaces a character with a space
BS+Correct Dots	=	replaces a character with your desired character

#### Keyboard Echo

When you type the Tutor will say the letters typed, then it may translate Braille to text

(depending on contractions level used) to read words.

Letters	On entering text, each character is echoed as it is entered.
Word	On entering text, the last word entered is echoed when the space, carriage return or linefeed is entered.
Line	Each line you type in is spoken after you enter a new line character or an automatic new line is performed by MB Tutor.
Sentence	Each sentence you type in is spoken after you enter a sentence punctuation (like a period, exclamation mark, question mark etc.).

You may set any combination of the above echo options, including none.

## **USING THE DISPLAY while embossing**

While you emboss the display shows what you emboss (print equivalent of the letters you type and some signs that represent Braille characters that are not letters but contractions) in the upper part of the display. In the lower part of the display it shows the print equivalent of the Braille you type. When you navigate the page you will see previous and subsequent lines of Braille on display too. Cursor will keep showing the place Braille head is just placed if the head was moved. If you navigate to a Braille text and type over it you will see both Braille and display overwritten with the new text (in case of Braille the old contents will get erased).

When in Menu all commands and options will be spoken and displayed on the display.

## **MENU AND COMMANDS - How to Use Them**

Mountbatten Braille Tutor is a sophisticated system with many options and features that can be switched on or off with use of menu or commands. While using menu you get information of the equivalent command. Manual entering of commands is left for those users who know the old models of Mountbatten Braille and are fluent in typing commands in, or simply decide that typing in a command is faster than browsing the menu. Nevertheless, the menu covers most of the commands that exist and the menu shows directly the state of a command if it is a toggle or a number value (see below).

To enter and browse the menu you need to use the four-way manipulator. The manipulator has an action key in the middle. This action key is used to:

- enter the MB menu (short press - shorter than a second) - you will hear „Main menu” and the name of currently selected menu;
- enter a command manually (long press - longer than 2 seconds) - you will hear „Command”
- enter a menu item to access a submenu or issue a command under cursor.

The four-way manipulator may be used to navigate the menu:

- up/down to choose between the menu items on the list;
- left to escape a menu level to a higher one;
- right to enter a submenu, choose one of items on a list (e.g. list of files etc.) or to issue a command.

Around the action key you will find a ring that can be turned left or right. This ring can be used to quickly move to an item lower in a menu or list (by turning the ring right) or higher (by turning it left).

Apart from these two ways of entering commands you can use key combinations with space. They are called Chorded commands (see below).

## Turn Command Key On and Off

It may be useful to switch off the command key initiation when long-pressing the middle key of the four-way manipulator for users that start working with Mountbatten Braille Tutor. Since the same key serves to enter the device's menu, it may ease learning to use it when a short/long press confusion doesn't happen.

To turn the Command Key on or off you need to go to System menu and find Command key on/off item. (###to be implemented)

### 1. Regular Commands.

Regular commands can be found in the menu or can be entered manually: begin with the Command key, and finish with the Enter key.

For example to turn the Word Wrap command on, you may either

- enter the menu by short-pressing the action key, scroll down to Emboss menu item (with down-key of the manipulator or the ring), find Word-Wrap command and press action or right key on the manipulator.
- alternatively long-press the action key, type WW and then hit the Enter key.

Your Mountbatten will say "on" or "off" depending on the original setting. Some commands, like Word Wrap, are "toggle" commands, meaning that they toggle between an on and off state, each time they are invoked. These commands are identified as toggle after the command description.

While browsing menu you will see the format of each command at the end of each menu item. For example you will see {WW} after „Word wrap toggle” menu name.

After the command format you will find state of the command in question. For the exemplary WW you will see either an (OFF) or (ON) - it is a toggle.

**Note:** Where numbers are needed in a command they can be entered as described below:

- when entering commands using menu - you will be presented a list of choices,
- when entering commands manually you need to use the Number sign plus character or alternatively as a "dropped" or "lower" character (for example a dropped "A" letter is dot 2 - one dot lower than the original letter; dropped "C" is dots 2 and 5) .

**Note:** You may enter commands with external QWERTY keyboard attached through USB. To do it wrap the command text with curly brackets: „{,“ and „}” characters. The curly brackets are used in this manual to delimit commands too.

### 2. Chorded commands

Chorded commands use space bar pressed with designated letter key combination. There is only a limited number of chorded commands and they can be used at any time.

Some chorded commands have their alternatives - regular commands listed in the „Command” column in the table below.

Chord Command	Command	Function	Additional description
Chord B	<b>BT</b>	<b>Backtab</b>	
Chord C	<b>CR</b>	<b>Carriage return</b>	feed the paper down one line without returning the head to the initial position
Chord E		<b>End</b>	
Chord F	<b>LF</b>	<b>Line feed</b>	
Chord H	<b>HP</b>	<b>Help</b>	
Chord I	<b>IN</b>	<b>Indent</b>	move to the next tab stop (same as Chord T)
Chord P	<b>NP</b>	<b>Page eject</b>	
Chord R	<b>RL</b>	<b>Reverse Line</b>	this command feeds the paper up one line without returning the head to the initial position
Chord T	<b>TB</b>	<b>Tab</b>	move to the next tab stop (same as Chord I)
Chord Z		<b>Stop the speech</b>	Stops the speech (while speaking)

## Complete Mountbatten Braille Tutor Menu

Below you will find description of all menu items and submenus of MB Tutor. In a later section you will find detailed description of all commands (issued with the use of Command key) and equivalent menu options.

### File menu

Options in this menu serve selecting a file from the device's memory to be either embossed or open in editor. After an option is invoked you will get a list of files in the current memory. With the last setting (Set current memory) you may switch between available devices: internal memory of Mountbatten Braille Tutor, a USB memory connected to the upper USB socket on the right side of Tutor's housing.

- Emboss...
- Open in Editor...
- Set current memory

### Display

The MB Tutor display may be set to show text entered in three font sizes. Depending on font size it may show 8 lines of text (4 lines of text showing sign by sign what you enter in Braille and 4 lines of text converted by Grade 1 or Grade 2 rules, depending on what is set in Forward translation settings), 4 lines (2 lines in Braille and 2 text) or 3 lines (2 lines in Braille and 1 text).

- Small fonts (8 lines)
- Normal fonts (4 lines)
- Big fonts (3 lines)

## **Language**

If you want to change language in which the device speaks to you - go here and choose one from languages list. When you choose a language a default Braille table for that language is selected automatically.

## **Page settings**

- Set left margin
  - Set left margin to column 0 .. 12
- Set right margin
  - Set right margin to column 0 .. 12 counted from right edge of paper
- Set left margin to head position
- Set right margin to head position
- Reset left margin
  - Set left margin to column 0
- Reset right margin
  - Set right margin to last available for the loaded sheet of paper column
- Set top margin
  - Set Braille page Top Margin to line 0 .. 10
- Set bottom margin
  - Sets Bottom Margin of Braille page to line 0 .. 10 counted from bottom edge of page.
- Reset top margin
  - Set top margin to 0 lines
- Reset bottom margin
  - Set bottom margin to 0 lines
- Line spacing
  - Sets Line spacing to 0.5 .. 3 in increments of 0.5

## **Format**

- Centred emboss toggle
  - This feature will make all lines of Braille centred between margins as set by the

user. The actual embossing will take place after the line is closed by either a hard-end of line (Enter key) or when the unit decides the remaining text is going to be moved to next line.

- Right justified emboss (this option is a toggle)

The actual embossing will take place after the line is closed by either a hard-end of line (Enter key) or when the unit decides the remaining text is going to be moved to next line.

### **Forward translation settings**

Forward translation means that you can send regular text to MB Tutor and it will convert it to Braille with all contractions and other rules as set by the user and emboss it on paper or store it as a Braille file in memory. The sources of the text can be from a regular PC keyboard, a wirelessly connected mobile device, or a computer.

- Emboss forward translation toggle

Turns the forward translation to Braille on and off

- Basic translation toggle

Once Forward Translation has been turned on (using the above menu option) you can select a mode called Basic Forward Translation which is useful for working with very early Braille learners and whole of class activities. In Basic mode each word is embossed after the space key is pressed. This function automatically switches to uncontracted Braille (grade 1). Default = OFF.

**Note:** If Forward Basic translation is on, the MB Tutor will ignore “hyphens” and many other Forward translation commands and settings, including formatting commands and the Patterns Commands.

- Set forward translation grade

Choose 1 or 2.

- Literal mode toggle

Used for making columns and tables in Braille. When it is on, each time you start a new line in print, you will start a new line in Braille.

- Set hanging indent

Creates a Hanging Indent. You can choose from values of 0, 1, 2, 3, 4 and 5.

- Suppress blank lines

Suppresses blank lines as well as adding a two cell indent for new paragraphs.

- Automatic indent set

When turned on the current Braille column is stored and subsequent Braille lines are indented to that column.

- Multiple space removal toggle

Replaces all multiple spaces and tabs that are in the text with single spaces in the Braille.

- Fraction mode toggle
  - Causes text fractions to be translated to Braille fractions using lower numeral sign for the denominator. A mathematical separation sign is used after the Braille fraction if it is immediately followed by punctuation.
- Upper case input toggle
  - Used when translating capitalised or upper case text. When on, prevents double capital sign before words all in upper case.
- Hyphens at end of line toggle
  - When on, will break Braille words at the end of a line. Default is off.
- Lists on
  - Turns lists (or tables) on. Thanks to this command you can divide text in two columns.
- Lists off
  - Turns lists (or tables) off.
- Table with two equal width columns
  - Allows creation of simple lists or tables. This will produce a table of two columns, each of 50% width.
- Store forward settings
  - Saves all settings that you may have set with the above commands (or more manually entered commands) to the internal memory.
- Restore forward settings
  - Restores previously saved settings from the internal memory.
- Restore default forward settings
  - Restores default, set by the factory, settings. If you think some settings are not correctly set - this is the fastest way to „return to normal“.

### **Back translation settings**

Back translation means that Braille notation typed on MB Tutor or saved in a file will get converted into regular text and sent to an external device or printed (in black-print on an attached printer).

- Set back translation grade
  - Changing the Braille Grade or Code Used. Default = 2.
- Automatic indent set
  - Causes all subsequent print lines to indent to the current cursor position.
- Center toggle
  - When on, causes text to be centred between left and right margins. Default = off.

- Justify toggle  
When on, causes printed text to align with both margins. This may cause extra spaces to be inserted into text. Default = off.
- Right align toggle  
When on, causes printed text to align to the right margin. When off, text aligns to the left margin. Right align takes precedence over Justify. Line length & horizontal margins may not be altered while Right align is on and tabs are converted to single spaces. Default = off.
- Upper case toggle  
Locks output text into upper case when on and returns to normal echo of keystrokes when off. Default = Off.
- Fraction mode toggle  
Causes Braille fractions to be translated to text fractions using the slash character to separate numerator & denominator. Requires use of Mathematical Braille separation sign (Dot 6) between the fraction & any subsequent punctuation. Default = Off.
- Literal mode toggle  
When on, each new line in Braille will produce a new line in print. When off, a new line in Braille is ignored in the print copy (to avoid the print being broken). Default = off.
- Multiple space removal toggle  
Remove hard spaces. Causes multiple spaces and tabs in your Braille to be converted to single spaces and tabs in the print.
- Line spacing set  
Sets the printer line spacing to 1 .. 10. Default = 1.
- Store back translation settings  
Saves all settings that you may have set with the above commands (or more manually entered commands) to the internal memory.
- Restore back translation settings  
Restores previously saved settings from the internal memory.
- Restore default back translation settings  
Restores default, set by the factory, settings. If you think some settings are not correctly set - this is the fastest way to „return to normal”.

### **Common translation settings**

Some translation settings are universal - refer to both forward and back translation, hence Common translation settings.

- UEB mode toggle  
Use UEB Braille Code (Unified English Braille). Unified English Braille Code (UEBC,

formerly UBC, now usually simply UEB) is an English language Braille code standard, developed to permit representing the wide variety of literary and technical material in use in the English-speaking world today, in uniform fashion.

## Speech

To decide on how your Mountbatten Braille Tutor speaks while you type, operate menus or edit files go to this menu. Tutor can speak in two ways: using recorded speech or using synthetic speech. You will find options to change it in this menu. While you use synthetic speech whatever you type can be read as letters, words or complete sentences. This feature is called „echo“. In this menu you will be able to set how Tutor echoes what you type and what else it is going to read.

### - Echo options

#### - Letter echo

Each character you are going to type in will be spoken. Works both for recorded and synthetic speech. Default ON.

#### - Word echo

Each word you are going to type in will be spoken after you enter a space, punctuation or new line after the word. Works for synthetic speech only. Default ON.

#### - Line echo

Each line you are going to type in will be spoken after you enter a new line character or an automatic new line will be performed by MB Tutor. Works for synthetic speech only. Default ON.

#### - Sentence echo

Each sentence you are going to type in will be spoken after you enter a sentence punctuation (like a period, exclamation mark, question mark etc.). Works for synthetic speech only. Default OFF.

### - Synthetic speech

When you want to use naturally sounding synthetic speech that reads not only letters but words and complete text - you need to set this on. This feature is ON by default, but is available only after a minute from turning your Mountbatten Braille Tutor on - the synthetic speech engine needs to start first.

### - Recorded speech

This kind of speech is well suited to the menus and messages that Tutor expresses, but will not read words or sentences that you type. This kind of speech works immediately after you start your Tutor. Before the synthetic speech machine starts it will speak even if it is set to off (for the first minute or so after you start the unit).

- No speech  
Nothing will speak - neither menus, typed characters or words, nor messages.
- Speak prompts only  
Only menus and messages will be announced with voice.
- Speak all keys  
This command makes all keys being spoken either with synthetic or recorded speech, depending on which was previously chosen.

## **Keyboard**

- One hand mode  
This feature serves those users who suffer a condition that bars them from typing with two hands. This feature is described above - in the One Hand Keyboard Mode section.

## **Emboss**

- Emboss ON/OFF toggle  
Turn the embossing function off and on. Default = ON.
- Word wrap toggle  
Word Wrap. When Word Wrap is ON the word is not embossed till the Space Key is pressed. If the word cannot fit on the line it is moved to the beginning of the next line. Thus any word is embossed only after it is completed for the machine to determine if it fits a line or not. Default = OFF.
- Emboss commands  
Emboss command names as they are entered on the keyboard or their equivalents even if they were selected in a menu. Can be helpful for tracking mistakes. Default = OFF.
- Force new page  
This command simply ejects page of paper that is loaded into the machine.
- Graphics mode toggle  
Graphics mode. In Graphics Mode the space between the dots is reduced, giving the appearance and feel of lines instead of dots. There is much scope for creativity and learning about Braille graphics really re-enforces the Braille code for the Braille learner. Default = OFF.
- Multi strike emboss  
Multi-strike feature. Set strikes per dot to 1 .. 4. Useful for braille on heavy materials such as plastic Braille label. Default = 1
- Fast mode toggle  
To set one of the speeds you may use option, but you may also use a seamless

gradual method - keep Esc key pressed and use the volume potentiometer. You will see the effect even while Tutor is embossing.

- Right margin bell toggle

Right margin bell. The bell rings 5 positions from the right hand margin. Default = on.

- Set end of page bell line

Set page bottom warning bell to ring "n" lines before the end of the page.

## **Games**

This menu will show all games that are installed on your machine. At this moment we provide two games with brand new Tutor - you will be able to update your machine for more games. See Games section.

## **System**

In this menu you will find functions essential for the device, like the one to turn it off or connect it to the Internet.

- Close Mountbatten

This option will simply turn the device off. It will last for a better part of a minute to stop all internal processes. You will hear beeps while Tutor switches off. As an equivalent of this command you may press and keep pressed for 5 seconds the on/off switch until you hear "bye bye" from Tutor.

- Emboss version information

This will emboss all basic information on the unit - including its serial number, model, memory etc.

- Remote control

Here you may decide if remote control may be used. It is meant for future use.

- WiFi settings

In here you may set wireless network password so that you unit gets connected to the Internet. Please see "Connecting to the Internet" Section.

- Store current settings

Saves all settings that you may have set to the internal memory.

- Restore saved settings

Restores previously saved settings from the internal memory.

- Developers

Meant for developers only; please don't use this menu.

- Update device

If you have obtained an update file set on a pendrive you may place it in the upper USB socket on the right side of your unit and select this menu option. Some updates may be done over the Internet - without using a USB dongle.

The system will update your unit and restart. The update may include various parts of system (like audio module, display module etc.) and will take several minutes. See Updating your Mountbatten Braille Tutor Section below.

# Games

Mountbatten Braille Tutor comes with a couple of pre-loaded games. Both games serve Braille learning:

## Keyboard Master

This game has four modes. It is good for absolute beginners and for advanced Braille users to test and improve fast typing. To choose the mode go to game settings in the game menu.

When starting working in any mode you will hear a help message explaining what is your task. This message will get obsolete after you hear it once or twice - go to settings and switch help messages off.

### Explorer mode

If you are not acquainted with Braille keyboard please start with explorer mode. This mode is for getting you to know the keyboard. Just press any key and the program will tell you what the key does. Try Perkins (Braille dot) keys and any other keys on the MB Tutor keyboard. To exit this mode just double tap any key.

### Learning mode

This mode is for practicing your typing skills. You will be requested to type specific dots (e.g. dot 3) or the dots that correspond to a letter. In case you make a mistake, you will hear what you've just pressed and the request repeated. If you make 3 mistakes in reply to same request it will get skipped.

### Character contest mode

This mode will test your typing skills. Your task is to press keys that correspond to a requested letter. If you type wrong letter the game just continues - no information about pressed keys will be spoken.

### Word contest mode

Word contest mode is good for practicing your typing skills. You will be asked to type words that contain letters from a letter group.

A letter group is a concept based on the fact that the first ten letters of the alphabet, a–j, use the upper four dot positions. The next ten letters, k–t, are identical to a–j, respectively, apart from the addition of a dot at position 3. There are three groups like this plus punctuation etc.

To choose a group you want to use please go to Settings.

While you play, whenever you press tab, the program will tell you what you have typed so far. If you are not sure what was requested or how to spell the given word, press enter. The program will spell it for you.

Whenever you make a mistake, please use backspace to erase the last letter. You are allowed to use the backspace key one time in each game.

## **Letter Relay Race**

This game is a fun to play alone with the device on with other persons. The purpose of the game is to guess and type (in Braille) words that have first letter equal to the last one of the word entered by preceding player. Mountbatten Braille Tutor may be one of many players (not only when you play one-to-Tutor) and it checks the correctness of whatever word is entered by any of the players. If the word is correct, you will receive a number of points in proportion to the length of the word. You will get a penalty for misspelled words. The game lasts several rounds. The player who earned most points wins.

If you didn't hear the last word you may ask to repeat it by pressing Spacebar.

Good luck.

## Advanced features of Mountbatten Braille Tutor.

Mountbatten Braille Tutor features may be controlled using menu (short press of the middle key of the four-way manipulator opens the menu) or by entering commands (command line is opening after a long press of the manipulator middle key). In this chapter we will explain how the commands work and will use the second column of text to show the corresponding command. You will notice that there are some advanced commands that have no menu equivalent.

### Braille with Speech

The Mountbatten offers many advantages for the Braille student and provides a great deal of flexibility to meet their individual needs. However, it is important to remember that speech output is provided only as a re-enforcement and for instant feedback, in order to develop skills in Braille reading and writing. Listening to the speech feedback should not be used as an alternative to reading with fingers. *Speech output is designed to augment the development of tactile reading skills not be a substitute for them.*

Make sure you are aware of the options available for the speech output and how important it is to match the speech output to the students needs. Speech can promote independence by making the student aware of everything that is happening on their Braille writer. Speech can also help a student gain confidence, and increase typing speeds. The use of speech during early Braille instruction will also assist in skill development relating to a wide range of other technologies that they will encounter.

But the bottom line is that the Mountbatten is a Braille writer. Its primary function is for the development of Braille reading and writing skills, and speech output is secondary to that.

### SPEECH CONTROL

Speech control functions may be set with use of Speech menu items or by commands. There are many options to use speech as an aid to learning to write and read Braille.

Menu item	Command	Description
Speech/Synthetic Speech	<b>SPK S</b>	Turns on Synthetic Speech. Useful for speaking all contractions and unlimited vocabulary.
Speech/Recorded Speech	<b>SPK R</b>	Selects recorded speech.
Speech/Speak All Keys	<b>SPK A</b>	Speaks all keyboard keys, functions and commands. With every key stroke being spoken the user receives immediate feedback every step of the way. As less speech is required one of the following options can be used.
Speech/Speak Prompts only	<b>SPK C</b>	Speaks errors & prompts only. No Braille dot keys
Speech/Speak dots	<b>SPK D</b>	Speaks only Braille dot keys. No function keys.
No Speech	<b>SPK N</b>	No speech. The machine will not produce any speech.

**The speech mode will revert to the default after the unit is turned off and on again.**

## BRAILLE WRITING

### Formatting Your Braille

The ability to format Braille printout is a great advantage of electronic braille. To judge how difficult it would be without the electronic control think of how to make it by hand to centre your 12-letter title on a Braille page: count the line width, subtract 12 (the length of your title) and divide by two - the outcome of this is the number of spaces to be entered at the beginning of a line to keep the title centred. Doable, but quite complicated isn't it?

The following formatting commands will make formatting an easy and fun task.

Menu item	Command	Description
<i>Position of Braille on the Paper</i>		
Format/Centered emboss	<b>CE</b>	Centre Text. The text to be centred will only be embossed after the new line key is pressed. Default = off. Toggle.
Format/Right justified emboss	<b>RA</b>	Right adjust Braille (the Braille will be printed from the right hand margin). Default = off. Toggle
<i>Margins</i>		
Page settings/Reset left margin	<b>LM</b>	Set left hand margin to 0
Page settings/Set left margin to head position	<b>LMH</b>	Set left margin to embossing head position.
Page settings/Set left margin	<b>LM n</b>	Set left margin to column 'n'
Page settings/Set right margin	<b>RM</b>	Set right hand margin to 0
Page settings/Set right margin to head position	<b>RMH</b>	Set right margin to embossing head position.
Page settings/Set right margin	<b>RM n</b>	Set right margin to column 'n'
Page settings/Set top margin	<b>TM n</b>	Set Braille page Top Margin. n = number of lines.
Page settings/Set bottom margin	<b>BM n</b>	Sets Bottom Margin of Braille page. n = number of lines for bottom margin.
<i>Tab Settings</i>		
	<b>TSH</b>	Set tab at the position of the embossing head.
	<b>TC</b>	Clear all tab settings.
<i>Line Spacing</i>		
Page settings/Line spacing	<b>LS n[m]</b>	Line spacing. Default = 1. If you wanted line spacing of 1.5 lines the command would be LS 1.5

### Braille Writing Commands

Menu item	Command	Description
Emboss/Emboss ON/OFF	<b>EM</b>	Turn the embossing function off and on. Default = on. Toggle
	<b>MAN</b>	Choose between Manual new line & Auto new line. A Manual new line means you have to press the New Line key at the end of each line. Auto New Line means the MB will automatically go to the start of the new line. Default = Auto. Toggle

Menu item	Command	Description
Emboss/Multi strike emboss	MS [n]	Multi-strike feature. Set strikes per dot to "n". Useful for brailleing on heavy materials such as plastic Braille label. n = 1 to 4. Default = 1
Emboss/Force new page	NP	Force a New (Braille) Page. Your current page will be ejected.
	PN [n]	Begin page numbering starting at value of "n". Each time you put paper in your MB the page number will be printed in the top right hand corner.
Emboss/Set end of page bell line	PBELL [n]	Set page bottom warning bell to ring "n" lines before the end of the page.
Emboss/Right margin bell	RMBELL	Right margin bell. The bell rings 5 positions from the right hand margin. Default = on. Toggle
Emboss/Emboss commands	SHOW	Emboss commands as they are entered on the keyboard. Can be helpful for tracking mistakes. Default = Off. Toggle
Emboss/Word wrap	WW	Word Wrap. When Word Wrap is on the word is not embossed till the Space Key is pressed. If the word cannot fit on the line it is moved to the beginning of the next line. Default = Off. Toggle
	<b>COR</b>	Correction Mode. Some teachers may want to turn the erase and correction feature off during an exam! Default = on. Toggle

### Making Braille Files in Memory

The following formatting commands apply to the currently selected memory - External on a USB dongle (pendrive) or internal memory of the unit.

In the following commands [filename] means a name of your choosing up to 16 characters.

Menu item	Command	Description
	BEGIN [filename]	Start a File - Opens a new file, called "filename".
	END	Close a File - Close an open file.
	DIR	Find Out Which Files You Have Stored in Memory - Embosses all filenames and their sizes
	FREE	Embosses the remaining free memory space
	APPEND [filename]	Change the File - Append more information to "filename".
	RENAME filename1 filename2	Rename "filename1" to "filename2".
File/Emboss...	PR [filename]	Print the file named "filename". Uses current settings.
	MPR y [filename]	Print "y" multiple copies of the file named "filename".
File/Set current memory...		This menu option will let you choose between available memory pools: Internal or USB memory.

### Miscellaneous Commands

Menu item	Command	Description
System/Emboss version information	VER	Embosses Braille basic information - including its serial number, model, memory etc.
	HP	Help. Prints command summary.

Menu item	Command	Description
System/Store all current settings	SAVE	Saves all current settings. Use to save your preferred settings (these will then become the default).
Restore all settings	STD	Restore back to factory default settings

ALT n      Enables your MB to accept ASCII characters above 128. 'n' can be any ASCII value

## BRAILLE TRANSLATION

MB Tutor has the ability to translate in either direction and we use the following conventions to describe Braille translation.

*Back Translation* -      **Braille** ← **Print**  
 Converting Braille you type on the MB keyboard into regular text.

*Forward Translation* -      **Print** ← **Braille**  
 Converting regular text (from any source) into Braille.

*Braille Code* -      The Braille code installed in your machine is the appropriate code for your country. The MB can also contain the Braille codes for other languages.

### Braille Exception Table

Some of the functionality below - the most advanced - is only available from typed-in commands.

The MB lets you create exceptions to the Braille rules. The Exception Table allows you to change the code to suit your needs. For example you may want to introduce contractions gradually, or make abbreviations. Up to 128 entries are allowed.

The Braille Exception Table is active in both forward and back translation. The commands and conditions for creating exceptions to the Braille rules are as follows;

Menu item	Command	Description
	ETA text braille position	Text Braille position. Adds an entry to the exception table where „text” is the text to be changed; „braille” is the Braille which will be substituted; position is one or a combination of the five position indicators given below: b - allowed at the beginning of a word m - allowed at the middle of a word e - allowed at the end of a word a - allowed anywhere s - allowed only by itself (except adjacent to punctuation)
	ETC	Clears the exception table
	ETD text	Deletes an entry from the exception table where "text" is the text to be changed
	ETU	Turns the exception table off or on. Default = on. Toggle

## Braille Exception Table - Patterns Series

For users in English Speaking Countries there is a feature for the MB where contractions are organised into 15 groups in accordance with the Braille Patterns series developed by the American Printing House for the Blind, in Kentucky USA.

These groupings represent an ordered introduction of Grade 2 Braille for reading and writing instruction.

With your MB set to Grade 1 translation (Command FGR 1), a particular group of Grade 2 contractions can be introduced sequentially. This means that the introduction of contractions can be matched to the students individual abilities and needs.

Menu item	Command	Description
	PATTERNS n	Use Patterns level n (1 .. 15). The PATTERNS command only works when the translation is set to Grade 1.

A description of each group follows, and the full detailed listing of each group is included in Appendix C.

### Patterns - Grade 2 Braille Ordered for Reading and Writing Instruction

1. Alphabet and Letter Words

#### *Upper Cell Contractions*

2. Whole or Part Words
3. Simulated Letter Words
4. Part Word Signs

#### *Lower Cell Contractions*

5. Simulated Letter Words
6. Whole Words
7. Middle Part Word Signs
8. Beginning Part Word Signs

#### *Multi-cell Contractions*

9. Dot 5 Whole & Part Words
10. Dot 4,5,6, Words
11. Dot 4,5, Words
12. Dot 4-6 Final Letter Contractions
13. Dot 5-6 Final Letter Contractions
14. Dot 6 Final Letter Contractions
15. Short Form Words

Once all groups of contractions have been introduced, then you can turn full Grade 2 translation on.

### FORWARD TRANSLATION - Converting Print to Braille

Forward translation means that you can send regular text to the MB and it will convert it to Braille and emboss it on paper or store it as a Braille file in memory. The sources of the text can be from a regular PC keyboard, a portable note-taker, or a computer.

The most common way of using Forward translation on the MB is via a PC keyboard. In this way anyone can write information on the PC keyboard and have it automatically converted to Braille. This is a very powerful tool in an educational setting, as it allows everyone to participate in Braille. It is also a very useful feature in a variety of other settings for leaving Braille notes and producing a wide range of other Brailled materials

(like birthday cards) that often do not get Brailled.

### Using a PC (QWERTY) Keyboard

- 1) Connect the PC keyboard to the USB port on the right of your MB Tutor,
- 2) Enter the command FE to turn on Forward Translation (in English versions the default is Grade 2)

Now, just start to type on the PC keyboard. The MB will store your information in a buffer and emboss it every 80 characters, or you can empty the buffer by pressing the Enter Key twice. To change the Grade of Braille use FGR 1 for Grade 1 or FGR 2 for Grade 2. Many keys on the PC keyboard have the same function as keys on the MB.

Keys on the PC Keyboard	Keys on the MB Keyboard
Escape	Command
End	Enter
F1	Left Function
F2	Right Function
F3	Left and Right Function together
Enter	New Line
Down Arrow	Space and New Line together
Up Arrow	Space and Backspace together
Left Arrow	Backspace
Right Arrow	Space
Space	Space
Backspace	Erase

Here is a list of forward translation commands:

Menu item	Command	Description
Forward translation settings/ Emboss forward translation toggle	FE	Forward translate and emboss. Toggle
Forward translation settings/Basic translation toggle	FB	In Basic mode each word is embossed after the space key is pressed. This function automatically switches to uncontracted Grade 1 Braille. Toggle
	FM filename	Forward translate and send to 'filename' in memory (turns embosser off).
	FM Append	Forward translate and append to previously stored file with the name 'filename'.
	FM END	Closes file and turns forward translation off. And turns embossing back on.
<i>Change Braille Grade or Code</i>		
Forward translation settings/Set forward translation grade	FGR grade	Select the Translation Grade, where 'grade' may be 1 or 2. Default = 2.

Menu item	Command	Description
	FLN language	Change the Translation Rules language
	FFC language	Foreign character selection. This enables insertion of foreign or accented character into your text (without changing the translation rules where [language] can be one of the following codes: OZ=Australian ITL=Italian DAN=Danish NOR=Norwegian UK=English SP=Spanish FR=French SWE=Swedish GER=German USA=United States GRK=Greek DUT=Dutch FIN=Finnish POR=Portuguese)
<i>Formatting Your Braille</i>		
Forward translation settings/Literal mode toggle	FLIT	Literal Mode. Used for making columns and tables in Braille. When it is on, each time you start a new line in print, you will start a new line in Braille. Default = off. Toggle.
Forward translation settings/Set hanging indent	FLIT n	Creates a Hanging Indent. The variable "n" gives the number of indented spaces and can be 0, 1, 2, 3, 4, 5.
Forward translation settings/Suppress blank lines	FLIT S	Suppresses blank lines as well as adding a two cell indent for new paragraphs. Default = on
<i>Italics</i>		
	FIT	When on, causes the subsequent text to be italicised in Braille. Default = off. Toggle
<i>Hyphens</i>		
Forward translation settings/Hyphens at end of line toggle	FHYP	When on, will break Braille words at the end of a line. Default is off. Toggle
Automatic Indent		
Forward translation settings/Automatic indent set	FIN	When FIN is turned on the current Braille column is stored and subsequent Braille lines are indented to that column. Default = off. Toggle
<i>Multiple Space Removal</i>		
Forward translation settings/Multiple space removal toggle	FSH	Replaces all multiple spaces and tabs that are in the text with single spaces in the Braille. Default = on. Toggle
Fraction Mode		
Forward translation settings/Fraction mode toggle	FFR	Causes text fractions to be translated to Braille fractions using lower numeral sign for the denominator. A mathematical separation sign is used after the Braille fraction if it is immediately followed by punctuation. Default = off. Toggle
<i>Upper Case</i>		

Menu item	Command	Description
Forward translation settings/Upper case input toggle	FCL	Used when translating capitalised or upper case text. When on, prevents double capital sign before words all in upper case. Default = off. Toggle
New Page		
Emboss/Force new page	NP	Forces a new Braille page.
<i>New Paragraph</i>		
	FPA	Forces a new Braille paragraph. Used for flagging a new paragraph that is coincident with the top of a text page.

### *Lists / Tables*

These commands simplify building lists or tables, such as spelling lists, tables of contents etc. The command can create two or three columns, using either default settings or user selected settings. Each column is specified as a percentage of the Braille line length.

Menu item	Command	Description
Forward translation settings/Lists on Forward translation settings/Lists off	FLIST	Allows creation of simple lists or tables. This will produce a table of three columns, of 40%, 40% and 20% width. For example: If your Braille page is 40 cells wide then the default will give three columns, each of cell widths 16, 16 and 8. Default = Off. Toggle
	FLIST n1 n2	This command allows you to specify your own column widths, as a percentage of the line length. The values allocated to n1 and n2 will determine if you want two or three columns. If the values of n1 and n2 add up to exactly 100% then you will get two columns with widths in the proportions specified. If they do not add up to 100%, then you get three columns, of which the third column is the remainder. For three columns, the third column cannot be greater than 90% or less than 10%. You cannot have blank columns, except for the first column, and columns two and three are always right justified.

### *Saving Your Preferred Settings*

Menu item	Command	Description
Forward translation settings/ Store forward settings	SAVE FT	Saves all current Forward Translation settings, including Braille Grade, language, and output settings.
Forward translation settings/ Restore default forward settings	STD FT	Restores all default Forward Translation settings. Does not interfere with stored settings.
Forward translation settings/ Restore forward settings	RESTORE FT	Restores all stored Forward Translation settings.

## BACK TRANSLATION - Converting Braille to Print

To produce a print copy at the same time as a Braille copy we have to perform a job called back translation - going from Braille to print. The printout will be directed to a connected Bluetooth mobile device or to a USB printer.

Menu item	Command	Description
<i>Turning Back Translation On</i>		
	BP	Back translate to USB Printer Port (the one on the left of MB Tutor). Toggle Use this when you have a printer connected to the USB port.
	BS1	Back translate to Bluetooth-connected device. Toggle
<i>Changing the Braille Grade or Code Used</i>		
Back translation settings/Set back translation grade	BGR [grade]	Translation Grade, where "grade" may be 1 or 2. Default = 2.
	BFC [language]	Foreign character selection, where [language] can be one of the following codes: OZ=Australian, ITL=Italian, DAN=Danish, NOR=Norwegian, UK=English, SP=Spanish, FR=French, SWE=Swedish, GER=German, USA=United States, GRK=Greek, DUT=Dutch FIN=Finnish, POR=Portuguese Using this command you can insert foreign or accented characters into your text.
<i>Formatting Your Print Page</i>		
Back translation settings/Automatic indent set	BIN	Causes all subsequent lines to indent to the current cursor position. Default = Off. Toggle
Back translation settings/Center toggle	BCE	When on, causes text to be centred between left and right margins. Default = off. Toggle
<i>Columns and Tables</i>		
Back translation settings/Literal mode toggle	BLIT	Literal Mode. When on, each new line in Braille will produce a new line in print. When off, a new line in Braille is ignored in the print copy (to avoid the print being broken). Default = off. Toggle
	BSH	Remove hard spaces. Causes multiple spaces and tabs in your Braille to be converted to single spaces and tabs in the print. Default = Off. Toggle
<i>Margins, Line Length, Paper Size</i>		Note: When setting margins and line length, an error will result if the line length less the margins does not leave at least 10 printable characters across the page.

Menu item	Command	Description
	BLM [n]	Sets width of left margin to 'n' blank spaces from the left-hand edge of the paper. Maximum value of 'n' is 30. Default = 8.
	BRM [n]	Sets width of right margin to 'n' blank spaces from the right-hand edge of the paper. Maximum value of 'n' is 30. Default = 8.
	BTM [n]	Sets a margin of 'n' blank lines at the top of the page before printing begins. The top margin may not exceed the form length less the page length. Default = 3.
	BLL [n]	Sets the width of the print line, including margins, to 'n' characters, at 10 characters per inch. Maximum value of 'n' is 132. Default = 80.
	BFL [n]	Sets the length of the page in "n" lines, at 6 lines to the vertical inch. The maximum value of "n" is 100. Default = 66.
	BPL [n]	Sets the number of printed lines on the page to "n" lines. The page length may not exceed the form length. Default = 60.
Back translation settings/Upper case toggle	BCL	Locks output text into upper case when on and returns to normal echo of keystrokes when off. Default = Off. Toggle
Back translation settings/Fraction mode toggle	BFR	Causes Braille fractions to be translated to text fractions using the slash character to separate numerator & denominator. Requires use of Mathematical Braille separation sign (Dot 6 in English) between the fraction & any subsequent punctuation. Default = Off. Toggle
	BTBC	Clears all current tab stops
	BTBA [n]	Sets an extra tab stop at position "n".
Back translation settings/Line spacing set	BLS [n]	Sets the printer line spacing to "n", which may be from 1 to 10. Default = 1.
Back translation settings/Justify toggle	BPJ	When on, causes printed text to align with both margins. This may cause extra spaces to be inserted into text. Default = off. Toggle
Back translation settings/Right align toggle	BRA	When on, causes printed text to align to the right margin. When off, text aligns to the left margin. BRA takes precedence over BPJ. Line length & horizontal margins may not be altered while BRA is on and tabs are converted to single spaces. Default = off. Toggle
	BPN [n] [p]	Turns page numbering on or off at the desired position 'p' with a value of 'n'. Max. value of 'n' is 1000, and accepted position codes are: TL - Top left; BC - Bottom centre; TC - Top centre; BR - Bottom right; TR - Top right; OFF - Turn off; BL - Bottom left; ON - Turn on page numbering

Menu item	Command	Description
	BPNT [Braille]	Creates a text string to be printed with the page number, where "braille" is the text to be printed. Note: To position text and turn numbering on and off , use the BPN command, as given above. Max. length of text is 15 characters, no punctuation allowed.

## Using the APH Patterns Series

For users in English-speaking countries, Braille contractions can be organised into 15 groups in accordance with the Braille Patterns curriculum developed by the American Printing House for the Blind, in Kentucky USA.

These groupings represent an ordered introduction of contracted or Grade 2 Braille for reading and writing instruction. Teachers can introduce contractions in small groups, matching their introduction to a student's individual abilities and needs. Students can even have fun by 'discovering' Braille contractions themselves.

For instance, if a teacher activates Patterns 1, Alphabet and Letter words, a student can Braille any letter, press the space key and listen to the synthesised speech answer.

b     but  
c     can  
d     do

and so on.

### ***Before using Patterns***

#### **Things to know and do**

Patterns commands will automatically:

- change the Braille translation grade to Grade 1;
- turn synthesised speech on;
- be saved in memory.

Once you have selected Patterns to be turned on, those Patterns will be remembered unless you turn the actual Pattern or Patterns off, or reset the MB Tutor. Turning the Patterns Function off only deactivates the currently selected Patterns.

Any combination of Patterns can be used together; if you wish to select Patterns 1, 7 and 15 together, you can.

## Using a Single Pattern Group

The command to turn individual Patterns groups on is:

ptrn x on    x is the number of the Patterns group you want to turn on.

The command to turn individual Patterns groups off is:

ptrn x off    x is the number of the Patterns group you want to turn off.

You can also use

ptrn off    to turn all Patterns off. Your MB Tutor will say "Patterns all off".

## Using Multiple Pattern Groups

You can also use similar commands to activate multiple patterns on and off at the same time

ptrn x y z on    x, y and z refer to the numbers of the groups you want to turn on. You are not restricted to three groups; you can turn on up to 15 Patterns in one command. Each number should be separated by a space. After the last number, type a space and the word on. Any group number that you included in this command will now be turned on.

ptrn x y z off    Use this command to turn off individual or multiple groups. Again, you are not restricted to three groups; you can turn off up to 15 Patterns in one command. Type a space between each of the numbers, and put a space between the last number and the word off at the end of the command.

## More Patterns Options

ptrn    Turn the Patterns function off or on.

If you have already turned on Patterns 1 and 2, when you enter the command ptrn your MB Tutor will say "Patterns off", and the MB Tutor will produce uncontracted or Grade 1 Braille.

Entering ptrn again will give the response "Patterns 1 2 on".

If no Patterns have been turned on, when you enter ptrn, your MB Tutor will say "Patterns not selected".

## Patterns Curriculum for Reading and Writing Instruction

These are the different groups available in the Patterns series. For the full Patterns Curriculum, including the content of each group, check the Reference Section.

1. Alphabet and Letter Words

### Upper Cell Contractions

2. Whole or Part Words

3. Simulated Letter Words

#### 4. Part Word Signs

##### **Lower Cell Contractions**

#### 5. Simulated Letter Words

#### 6. Whole Words

#### 7. Middle Part Word Signs

#### 8. Beginning Part Word Signs

##### **Multi-cell Contractions**

#### 9. Dot 5 Whole & Part Words

#### 10. Dot 4,5,6, Words

#### 11. Dot 4,5, Words

#### 12. Dot 4-6 Final Letter Contractions

#### 13. Dot 5-6 Final Letter Contractions

#### 14. Dot 6 Final Letter Contractions

#### 15. Short Form Words

## **Adding Braille Rules**

### **Adding Extra Rules to the MB Tutor with an Exception Table**

Your MB has the flexibility to enable you to make exceptions to the standard braille rules you are using, to use the shortcuts or abbreviations of your own choice, or to introduce groups of contractions.

The Braille Exception table is active in both forward and back translation, and you can use the commands and make additions to your Exception Table in either Learn or Advanced mode.

You can add up to 128 entries to the Exception table.

### **Braille Exception Table Commands**

eta text braille position

This is the main command to add an entry to the exception table.

text is the text to be changed;

braille is the braille which will be substituted;

position is any one or a combination of the five position indicators given below:

a - allowed anywhere

b - allowed only at the beginning of a word

e - allowed only at the end of a word

m - allowed only in the middle of a word

s - allowed only by itself (except adjacent to spaces and/or punctuation).

etc Clears the exception table.

etd [text] Deletes an entry from the exception table, where [text] is the text part of the entry.

etu Turns the exception table off or on. This is a toggle command, and the default status is on.

#### Exception Table Examples

eta hello hl s

This command would add a rule to cause the word "hello" to be translated to the abbreviation "hl", but only if "hello" is by itself. It could be surrounded by spaces or by punctuation, but could not be contained within a word.

As an another example if you wish "help" to be translated to "hp" at the beginning and end of a word but not the middle, the command would look like this:

eta help hp be

# Editor

The editor enables you to create and edit text files within the MB memory. It does this in a place called the editor buffer. Once in the editor, text can be entered, inserted, and deleted. You can also search for and replace text, copy, move and paste the text you choose.

## Getting Started

### *Entering the Editor*

EDIT (filename) where *[filename]* is the name of the file you have stored in memory (or the name of the new file if you are starting a new one). If the filename is new, then the MB will say "file not found", "creating new file" and then speak the filename. If no filename is given, then the editor is made active but the file will have no filename. You will be prompted for a filename when exiting.

For whatever reason, if there is previous unsaved data in the buffer, the MB will say: "Unsaved file in editor" "Please clear or save file". You must either clear the editor buffer (by pressing the character "c") or save the file (by pressing the character "s"). After either clearing or saving, you can simply read in another file.

NL+Q Exit the editor

You will be prompted: "Save File First". Answering Y will save the editor buffer as a file, with the filename given, before returning to normal MB mode. Answering N will not save any data and return to normal MB mode.

### *Help*

NL+H Help Menu. Default Off. Toggle

The MB will say "Entering Help mode". By pressing the Left Function key you can scroll through all options available. Pressing the right function key scrolls back through the menu options.

## Moving Around Within A File

### CURSOR COMMANDS

To move around the file we use Cursor Commands. These are known as Chorded Commands. The notation sp + dot 3 means you have to press the space key and dot 3 at the same time.

SP + DOT 3	Move to previous character and speak it
SP + DOT 2	Move to previous word and speak it
SP + DOT 1	Move to previous line and speak it
SP + DOTS 13	Move cursor to top of previous page
SP + DOTS 123	Move cursor to start of file
SP + DOTS 36	Speak current character

Pressing twice will give phonetic equivalent or dot equivalent for contractions or non-letters

SP + DOTS 25	Speak current word
SP + DOTS 14	Speak current line
SP + DOT 6	Move to next character and speak it
SP + DOT 5	Move to next word and speak it
SP + DOT 4	Move to next line and speak it
SP + DOTS 46	Move cursor to top of next page
SP + DOTS 456	Move cursor to end of file.

**Note:** If you attempt to move past the start or end of the file then the MB will say "top of file" or "end of file". If the MB is speaking as you enter another cursor command the new message will override the old. The cursor automatically returns to the text entry position when new text is entered.

### *Editor Chorded Commands*

Before moving onto the Menu Commands, there are other chorded commands for you to try.

SP + T	<u>T</u> AB. Inserts a TAB at the cursor position in your file.
SP + P	HARD <u>P</u> AGE BREAK. Forces a hard page break at the cursor position in your file.
NL + I	<u>I</u> NSERT/OVERWRITE MODE. Changes the editor between insert and overwrite mode. Default is Insert. Toggle

When in insert mode, move cursor to desired position and write text to be inserted. Then move cursor to new position using one of the movement chorded commands. To delete inserted text before moving, simply press the Command key. If the MB is in Overwrite mode then text will be over-written up until the next command, hard carriage return or hard page break.

NL+C	<u>C</u> HANGING THE <u>C</u> ASE OF TEXT. Text can be stored in upper case, lower case, or with no case conversion. Letters entered via the Braille keyboard are normally treated as upper case, unless changed by this option. No case conversion, is useful if using a PC keyboard for input and you do not want case conversion to be carried out by the MB. In this instance the Shift or CapsLock key on the PC keyboard would be used for entering upper and lower case.
NL+W	<u>W</u> HERE AM I?: This command gives the filename, and current position in the file (page number, line number and column number). If you are in a menu then it gives the name of the menu.
SP+R	<u>R</u> EST OF FILE Speak the rest of a file without moving the cursor using the command:
SP+Z	<u>Z</u> ILENCE COMMAND There is a universal silence command that can be used at any time.

## Keyboard Commands

The following MB keys are used for immediate editor commands.

NL	Newline key is treated as a (hard) carriage return.
BS	Backspace key is the same as the Read Last Character command (sp + dot3), except when you are entering text in response to a prompt, e.g. when asked for a filename, in which case it will act as a true Back Space.
CMD	Command Key will cancel any operation currently in progress.
Ent.	Enter key has no meaning or function when using the editor.

## MENU COMMANDS

For Editing, the MB has a range of commands that are organised into 5 separate menus according to the tasks they do. These are:

**File Menu** for file maintenance (selecting or saving files, re-name file etc.)

**Search Menu** enables you to search and/or replace selected text

**Block Menu** enables you to select, copy, move, or delete sections of text

**Delete Menu** for deleting or restoring characters, words, lines or page

**Edit Menu** provides further editing functions

**Note:** Whenever you are asked for an answer to a Yes or No question then only enter Y or N. Any other answer is ignored.

**Note:** Once you have entered the Menu you can scroll down through the menu options by pressing the left function key. Press the right function key to move back through the menu options. A menu option will be spoken each time you press a function key. To select a function simply press the keys indicated.

## EXITING THE MENUS AND THE EDITOR

SP+E	This is used for all of the menus described. When you exit the menu you will return to the Editor.
NL+Q	Exit the Editor

## FILE MENU

This menu enables file operations such as reading, saving, re-formatting etc.

NL+F	Entering the File Menu: The File menu has the following options:
O	<u>O</u> PEN A FILE AND MOVE IT TO THE EDITOR
R	<u>R</u> ENAME THE FILE This command changes the name of the file in the editor.
C	<u>C</u> LEAR THE EDITOR WORK SPACE If the current Editor file has been changed and not saved then you will be asked if you wish to save this file before clearing the work space.
D	<u>D</u> GIVE <u>D</u> IRECTORY LISTING The directory listing announces the names of files one by one. Once you have entered the command you are placed at the top of the file listing with the following supplementary commands available:
A	Speak the previous filename in the file listing. Moves the file cursor up.

- C Speak the current filename in the file listing
- DOT 4 Speak the next filename in the file listing. Moves the file cursor down.
- O Open a file, at the current "file cursor" position, into the editor. If there is an existing file, still in the Editor, that has not yet been saved, then you will be asked if you wish to save the existing file before reading in the next file.
- D Delete the file at the current "file cursor" position.
- F Give remaining space in the editor buffer
- P PROTECT / UNPROTECT THE FILE Default Unprotected. Toggle. While in this mode the MB will say "File protected" any time you try to enter any characters in the document, either in insert or overwrite mode.
- F RE-FORMAT THE FILE Although this is done automatically when the file is saved or when text is moved around, there may be a time when you would like the file to be reformatted (perhaps before listening to a final version).
- S SAVE THE CURRENT EDITOR FILE When you use this command the file you are working on is reformatted to fit within the current margins and saved. However, the following conditions apply:
- If **no filename** has yet been assigned to this file, then you are asked to enter one.
  - If the **file already exists** then you are asked if you want to overwrite it or not. If you answer N then you are returned to the Editor.
  - If there is **not enough room in memory** to save the whole file you will be asked if you wish to save the file regardless, in which case it will be cut short to fit. Answering N will return you to the Editor.
  - If necessary, to **make more room**, exit the Editor and use the normal MB commands to clear out any old files. Then enter and re-save the Editor file.
- SP + E EXIT THE MENU

## EDIT MENU

The Edit Menu has commands for finding out how much space is left in the Editor, the size of the file you are working on, or to find a page number in your file. It also allows you to enter MB commands into the file for things such as formatting the Braille output, or changing the Braille grade.

- NL+E Enter the Edit Menu: Edit menu has the following options.
- S SIZE OF CURRENT FILE
  - R REMAINING WORK SPACE
  - W WHERE AM I? Gives current page, line, cursor position.
  - F FORM NEW PARAGRAPHS This command can be used to join broken lines (as will happen if a file sent from a computer has different margin settings to the MB). All existing paragraph formatting is maintained.

- J     JOIN CURRENT AND NEXT PARAGRAPH This command can only be entered on the last line of the current paragraph.
- D     DELETE HARD PAGE BREAKS IN FILE
- G     GO TO a selected page number. The Editor will say "Enter page number". You can enter a page number in Text or Braille format. The number must be followed by the NEWLINE key. If the page number is valid, the editor cursor is moved to the first character of the page number requested. If the number entered is greater than the number of pages in the file, the message "Invalid input" is given.
- C     ENTER MOUNTBATTEN COMMAND If you want to enter a normal MB command (e.g. for formatting) in your file, you need to use this command. When you press C, the MB will say "Enter MB Command". Simply enter the command as you would normally and then press the "Newline" key to terminate the command. Do not press the "Enter" key as it has no meaning within the editor. After pressing "Newline" the MB will say "Please Wait" and then "Finished" when the command has been inserted.
- T     TAKE AWAY MOUNTBATTEN COMMAND To delete commands within a file, position the cursor on top of the command and then press T . The MB will say "Please Wait" and then "Finished", when the command has been deleted. If the cursor is not on a command then the instruction is ignored and the message "Command Not Found" is given.
- SP + E     EXIT THE MENU

## BLOCK MENU

The block menu is used to move sections of text around the editor. You can copy, move and delete blocks of text. This is done using a standard "cut and paste" operation. Once text is selected or "cut" it is placed in a "clipboard" from where it can later be "pasted" into the new location.

- NL+B     Enter the Block Menu: You have the following options:
- B     BEGIN BLOCK marker. The cursor must be moved to the first character to be included in the block and the command given. The MB will say "Block Begin". The maximum size of the block is 1200 characters if the block is to be copied or moved. When deleting a block, size does not matter
- E     END BLOCK marker. The cursor must be moved to the first character *after* the text to be included in the block and the command given. The MB will say "Block End".
- C     COPY BLOCK to cursor position. The block can be copied or moved to any cursor position, other than within the block area itself, and will be inserted immediately before the current cursor position.
- M     MOVE BLOCK to cursor position. The block markers are not deleted when a move command is given. This is to enable you to move the block to another position if you

- realise you have moved it to the wrong position.
- P PASTE BLOCK This copies any information in the clipboard to the current cursor position.
- S SPEAK BLOCK Speak the contents of a block.
- D DELETE BLOCK

After entering any block option you are automatically returned to the editor on completion of the operation.

After any of the operations, apart from the setting of markers, the document is automatically re-formatted. The MB says which operation is being carried out, e.g.: "Move Block" followed by "Please Wait" and then "finished".

SP + E                      EXIT THE MENU

## DELETE MENU

The commands in the Delete Menu duplicate many of the chorded commands. This Menu is helpful if you cannot remember the chorded command or if you have difficulty pressing both keys at the same time.

- NL+D            Enter the Delete Menu: You then have the following options.
- C                DELETE CURRENT CHARACTER
- W                DELETE CURRENT WORD On deleting a word, any attached punctuation and following spaces up to the next word or end of line will also be deleted.
- L                DELETE CURRENT LINE On deleting a line, the following carriage return and/or linefeed will also be deleted. If a page break terminates the line then this is NOT deleted.
- P                DELETE CURRENT PAGE. On deleting a page, any text between the previous page break and the next one is deleted. The page break is also deleted.
- Dot3            DELETE PREVIOUS CHARACTER
- Dots 256        DELETE TO END OF WORD
- Dots 145        DELETE TO END OF LINE
- R                RESTORE LAST DELETION

The document is **NOT** automatically re-formatted after a deletion. You must use the format command in the File Menu to re-format.

SP + E                      EXIT THE MENU

## SEARCH AND REPLACE MENU

The search and replace menu enables you to search for and, if desired, replace selected text. You can choose the direction of the search, the case of the text you are searching for, or whether it should match whole words or not.

- NL+S            Enter the Search Menu: You then have the following options.
- D                DIRECTION OF SEARCH - the options are;
  - Search to cursor
  - Search from cursor

Search whole file from start

Each time you press D, an option is spoken. The last spoken option is the one selected.

C            CASE SENSITIVITY OF SEARCH - the options are;  
                  Case sensitive  
                  Case insensitive

Each time you press C, an option is spoken. The last spoken option is the one selected.

W            WORD MATCHING or not - the options are.  
                  Matches whole words only.

                  Matches anywhere (the word you are searching for can be part of another word)

Each time you press W, an option is spoken. The last spoken option is the one selected.

**Note:**        If you start or end a search string with a space character (i.e. NEWLINE, SPACE, FORMFEED etc) the space character is treated as the end of a word.

S            SEARCH FOR TEXT

R            SEARCH AND REPLACE TEXT

L            RESTART LAST SEARCH

Before a search or replace is initiated the proper operating selections must be set up.

### Entering Search and Replace Strings

When you start a search, you are asked to enter the **search string** (the letters or words that you are looking for). You may use any alphanumeric or space character. You can look for a string at the end of a line by entering NEWLINE after your search word, or look for a string at the beginning of a line by entering NEWLINE as the first character of the search string. If you press Backspace the last character entered is deleted (the MB will say the character just deleted). You cannot enter "nothing" as a search string.

The search and replace strings are terminated by Chord-E (sp + E).

After the search string has been entered then, if you choose the replace option, the MB will say "Enter **replace string**". The same character combinations can be used with the replace string. However, you can choose to have nothing as the replace string (this will delete any occurrence of your string in the file). To do this enter sp+E as the first character in the replace string. Keep in mind that there may be a space before or after the word you want to delete, so incorporate that extra space at the end of your search string. Of course this will mean it will not find a match if the word is followed by punctuation. You may have to try it with and without the space to be sure you get all occurrences.

**Note:**        Keep in mind which format you are using to enter information. If you are using Grade 2 Braille then you cannot search for a word in Grade 1 Braille.

## The Search Sub-Menu

If your search string is found in the file and this is a search only command, then you have available the following options:

W	Speak word that contains search string.
L	Speak line that contains search string.
N	Ignore this one and find next.
Command Key	Stop search and return to main search menu.
sp+E	Stop search and return to main editor

## The Search and Replace Sub-Menu

If the search string is found and you have chosen to replace it, you have available the above Search sub-menu options as well as the following:

W	Speak word that contains search string.
L	Speak line that contains search string.
N	Ignore this one and find next.
Command Key	Stop search and return to main search menu.
sp+E	Stop search and return to main editor
R	Replace this occurrence
A	Replace all occurrences

When you exit the Main search menu, after a replace has occurred, the document will be reformatted before control is returned to the editor.

## Abandoning Search

A search can be abandoned, at any time, even during the setting up of the search or replace strings, by pressing the Command key.

If the search string is not found, you are returned to the Search menu, so that you can change the search string or one of the conditions of the search.

To leave the Search Menu, use the command.

SP + E                      EXIT THE MENU

## EDITOR DEFINITIONS AND CONCEPTS

When using the Editor there will be references to various terms and concepts with which you will need to be familiar. These include;

### Hard and Soft Carriage Returns.

A Soft carriage return usually marks the end of a line within a paragraph. It is automatically inserted by the editor at the end of each line.

A Hard carriage return is something you enter into text yourself by pressing the "enter" or "new line" key, usually at the end of a paragraph or to insert a blank line.

### Hard and Soft Page Breaks

---

Normally the editor uses "soft" page breaks to distinguish the end of a page and the start of a new one. If subsequent text is inserted or deleted, by whatever means, and the document is reformatted, then the position of the page break changes accordingly.

"Hard" page breaks, however, do not move. They will always force the start of a new page. If you wish to force a Hard page break then merely enter the "New Page" or "Form Feed" character from the MB keyboard or Control-L from an attached QWERTY keyboard. This will insert a Hard page break at the current cursor position.

## **Printing Files**

Files can only be printed after leaving the Editor. You cannot print or emboss files from within the editor. Printing of the files uses the normal PR command.

Valid options for page numbering can still be used and are discussed in the User Guide dealing with printing files.

## **Speaking Commands**

If the "Speak Commands" option in the Speech Menu, is set to YES (ON) then when a command is found, the word "Command" is spoken and the command following is spelt. As the commands are intermingled with the text, it may sound strange, but it allows you to locate commands easily.

# Mountbatten Braille Tutor Connectivity

## Connecting to a PC or Notebook

To connect your Mountbatten Braille Tutor to a PC/Notebook PC you will need a USB A-B type cable plus MB-Comm software. The USB cable needs to be connected to the USB-slave port of Mountbatten Braille Tutor at the right side of the unit.

MB-Comm software is free and available at the [mountbattenbraille.com](http://mountbattenbraille.com) web page at Resources section. It is a Windows PC application that enables the transfer of files between a PC and a Mountbatten Braille Tutor.

To install:

1. To use the USB connection you must first load the Mountbatten USB drivers.
2. Double-click the MB-Comm Setup file and the installation will begin.
3. The installation checks your computer for Windows NET components and loads them if required. This may take several minutes.

Found New Hardware Wizard.

For the first time USB connection of the Mountbatten to the PC, the PC will detect a new USB device and bring up a Found New Hardware Wizard.

The wizard may ask to search the Web or Microsoft Update, please select “No, Not this time” and select Next.

Then select “Install the software Automatically (recommended)”.

At some stage during this procedure you may hear the Mountbatten say “USB connected”.

Accept any prompts to “continue anyway”.

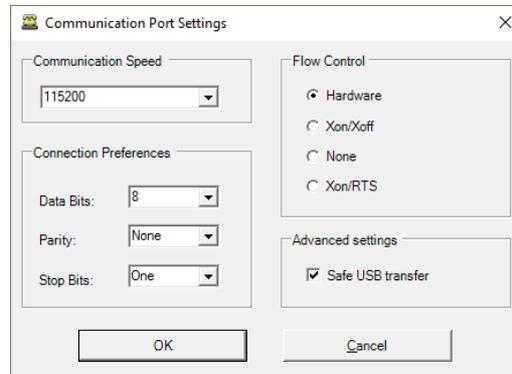
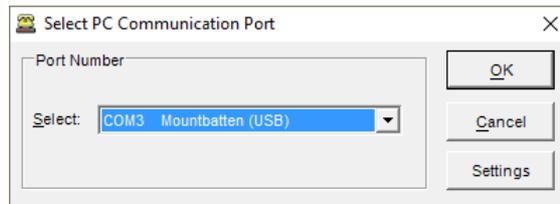
When finished, the PC should indicate that the new hardware has been installed successfully.

If you encounter any problems with communication between Mountbatten Braille Tutor or Mountbatten Braille Whisperer and MB-Comm software through USB cable (connection errors, missing letters or whole words during embossing), please select an option “Safe USB transfer” in connection settings. This setting will be stored and you won't need to change it in the future.

Detailed instructions:

- select “Connect Mountbatten” from menu “Device”
- click button “Settings” in displayed dialog box
- in displayed window check “Safe USB transfer” option in section “Advanced settings”
- confirm this settings with “OK” button.

The following screenshots show described steps:



### ***Starting MB-Comm.***

When starting MB-Comm while connected to the Mountbatten you will hear a series of tones while connection is being established. If you don't hear any tones, make sure the Mountbatten is on, connected and has paper loaded; if all this is in place, and no connection is made, contact your dealer for assistance.

### ***Transferring files to/from Mountbatten Braille Tutor***

Text files can be Embossed on the MB directly from your Computer or sent to the MB memory for later embossing. Or, files held in the MB memory can be sent to the Computer for saving.

From the File Menu select either:

- Send Text File to MB
- Emboss File on MB
- Receive and Save File from MB

Hint: It is recommended that when sending to the MB the Send Text File to MB function is used, as this is much quicker and allows you to Emboss the material at your leisure.

#### ***Other features***

On the Computer screen, you may

- Display File from MB

You can also interact with the MB through a Chat mode.

At any time, using the Device Menu, you may turn the Embosser On or turn the Embosser Off. You may also Connect or Disconnect the MB or Mimic or use MB Memory Management to report on the MB memory.

### **MB-Comm Menus**

You may also click the lights to Connect and Disconnect or turn the Embosser On or Off.

## **File Menu**

- Receive and Save File from MB
- Receive and Save File from Mimic
- Display File from MB
- Display File from Mimic
- Send Text File to MB
- Send Text File to Mimic
- Emboss File on MB
- Chat Mode
- Save Display to File
- Clear Display Window
- Exit

### **Receive and Save File from MB      R**

When selected, this option will query the MB and pop up the list of files held in the MB memory. Select the file you wish to send to the computer. When you click OK the Windows file selection menu will pop up with the MB file name offered as the default file name. You may browse to another directory if needed and/or change the file name before saving the file.

When you click Ok, the file will be sent from the MB. The MB will beep during the file transfer to indicate progress.

Once saved in the Computer, the files may be edited by using any of the Windows word processing programs. The text file editors, such as Notepad or Wordpad are very handy for text editing, or you can use programs like Word or WordPerfect as long as you save the file as a text file.

### **Receive and Save File from Mimic      R**

Mimic is a legacy device that is still supported by the MB-Comm software but may not be available for purchase any more. The Mimic is not covered by this manual - it is only mentioned to explain why Mimic is serviced by MB-Comm software.

### **Display File from MB      D**

Selected from the File Menu this function enables you to directly View a text file sent from the MB to the Computer.

When selected, a menu will pop up showing the MB files available. Choose the file for viewing and click ok. The file will be sent directly to the computer screen for viewing. Use the Windows controls to scroll through the text.

Note that you cannot Edit any displayed text. It is simply for viewing.

### **Display File from Mimic      D**

A legacy feature.

### **Send Text File to MB      S**

Selecting this option will pop up a Windows file selection menu. Choose the file you wish to send, using the Browse facility if needed. When you click OK, the MB will beep several times and then present its own file menu. You will then be asked to nominate a file name that the MB can use. The default selection will be the Computer file name. The file will then be sent to the MB and stored in the MB memory with the file name you selected.

If there is any problem with the file name you will receive an appropriate error message with advice on the problem.

If the file already exists, you will be prompted to overwrite or not.

The MB will beep during the file transfer to indicate progress.

You may Cancel the transfer at any time by selecting the Cancel button on the screen. The computer will stop sending but the MB will continue to beep for a time until the buffer has been emptied. The MB will then be left with a partial file in memory. If necessary you may Delete this file using the MB Memory Management.

### **Send Text File to Mimic      S**

Selecting this option will pop up a Windows file selection menu. Choose the file you wish to send, using the Browse facility if needed.

When you click Ok the file will be sent to the Mimic and will be appended to the bottom of the text already in the Mimic.

**Hint:** To quickly find the start of the new text, set a bookmark at the end of the display before sending the file.

### **Emboss File on MB      E**

Selecting this option will pop up a Windows file selection menu. Choose the text file you wish to Emboss, using the Browse facility if needed.

The file will then be sent to the MB and Embossed. You may use the MB Print Control facilities to either Pause or Abort the Embossing if necessary.

**Note:** Make sure that the MB has paper loaded and is ready to receive the file before sending.

### **MB Print Control**

If you need to pause Embossing, then press the Command (Control) key. The Embossing may not stop immediately, but will when the buffer is emptied. You may then either continue embossing or abort the process. To continue, press either the New Line, Space, Enter or Backspace key. To Abort, press any of the Braille Dot keys.

### **Chat Mode      M**

This is a Toggle function. When selected, it will be ticked. To de-select it, simply click it again.

Selecting Chat Mode allows interaction between the MB and computer keyboard. What is typed on the Computer keyboard is Brailled on the MB and what is typed on the MB keyboard is displayed on the Computer screen.

Text displayed on the Computer from the MB will be Grade Zero or what is known as Computer Braille Code. If you wish to see correct text displayed on the Computer, when using Chat Mode, then turn on the MB Back Translation.

If you wish to type on the Computer and get correct Braille, then turn on Forward Translation.

**Note:** You cannot edit the computer screen and you can only translate one way at a time. You cannot have Back and Forward on at the same time.

You may also send MB Commands from the Computer keyboard by using the Curly Brackets "{" and "}". The opening bracket "{" substitutes for the Command key and the closing bracket "}" substitutes for the Enter key.

### **Save Display to File      a**

You may save the text displayed by MB-Comm. Using the Save Display function from the File Menu all the text able to be viewed in the MB-Comm window, not just the visible portion, will be saved.

## **Clear Display Window      C**

All the text able to be viewed in the MB-Comm window, not just the visible portion, will be erased.

Before erasing, you will be asked if you wish to save the display contents as a text file. You may answer Yes, No or Cancel. If you answer Yes, the usual File Save Window will pop up and prompt for a file name. If No, then the screen is immediately erased. Cancel simply leaves the screen as is and waits for the next action.

## **Exit      x**

You may exit at any time. If there is any text being displayed on the screen, you will be asked if you wish to save it.

## **Device Menu**

- MB Connect
- MB Disconnect
- Mimic Connect
- Mimic Disconnect
- Embosser On
- Embosser Off
- MB Memory Management

## **MB Connect      M**

## **MB Disconnect      B**

Mimic Connect      o

Mimic Disconnect      s

Disconnecting either the MB does not Exit the program, it simply breaks the communication between the computer and the MB (or Mimic) and allows you to use them as you normally would. MB-Comm will simply wait for a new connection.

Before Disconnecting, you will be prompted to confirm your action.

This function is also available by clicking the indicator lights labelled Mimic or MB Connected / Disconnected. The indicator toggles according to the state of the connection. When connected it will be green. When disconnected, it will be red.

For the MB, before connecting, you will be prompted to insert paper and ensure that the MB and Computer are connected properly.

If you do not have paper in the MB before connecting, you will receive a connection error. Also, if you do not have a charging adaptor connected, make sure that the MB is awake. Once connected, the MB will stay awake as long as the connection is maintained.

## **Embosser On      O**

## **Embosser Off      s**

This function is also available by clicking the indicator light labelled Embosser Off / On. The indicator toggles according to the state of the embosser. When On, it will be green. When Off, it will be red.

This can be toggled to prevent the MB from embossing when in Chat mode.

If Sending files to the MB as opposed to Embossing, then regardless of whether embossing is on or off, the file will be sent without embossing.

## **MB Memory Management      e**

Selected from the Device Menu, the MB will beep a few times as MB-Comm gathers file information.

A list of the files held in the MB memory will be shown. It also shows remaining available free memory and offers the ability to delete files.

If you make a mistake and delete a file you should not have, then you can Un-Delete it, provided you do it immediately after you make the mistake.

## Connecting to iOS or Android devices

MB Tutor is equipped with Bluetooth to connect to smartphones and tablets that work with mobile operating systems: iOS or Android. In Apple AppStore and in Google Play Store there is a free app available: MBMimic. The MBMimic is a communication app that supports the production of hard copy Braille output and interaction with a Braille user. The app can be operated by the sighted as well as by the blind. It is fully accessible when VoiceOver is running on your iOS device.

### **With the MBMimic you can:**

1. Create a list of users (e.g. students)
2. Assign folders with specific content to each student
3. Transfer files among your students
4. Transfer files from apps like Documents to MBMimic
5. Retrieve files from your students' Mountbattens
6. Read files stored in your students' Mountbattens
7. Send files to your students' Mountbattens
8. Email files retrieved from the Mountbatten
9. Emboss files stored in your iOS device
10. Chat with the Mountbatten user using the Chat application
11. Help your students learn to spell words using the Whiteboard application
12. Check if your student can read contracted or uncontracted Braille

MBMimic is made up of three tabs: Active Users, Archived Users, and Mountbatten. The Active Users tab is meant for lists of users, e.g. students, who actively use the Mountbatten.

The Archived Users tab was created to let the teachers keep information from previous years so that they do not interfere with current users.

The Mountbatten tab is used to establish connection with the Mountbatten, interact using the Chat or Whiteboard applications, check the Mountbatten's memory, or find out the firmware version of the Mountbatten unit.

To run the app locate it on your iOS device, tap and wait for the app to open. Tap one of the three tabs you want to work with at the bottom of the screen.

### **Active Users**

When you tap the Active Users tab you will see a long button Add user... . Tap this button to open the Edit user box where you are asked to enter the full name of the user as well as the display name. Once you have completed the information tap Done and your first active user will be added to the list.

NOTE: It is recommended but not necessary to complete all the fields in the Edit user box.

To add more users, tap the plus sign (+) in the top right corner of the screen and follow the same steps.

When you have created your user list, you may want to organise their files by creating folders.

First tap a user to open the main folder. Next tap the plus sign and select from the menu if you want to add a folder or add a file from the Mountbatten. Tap Add folder... and when a small box pops up, type the name of this new folder. Tap OK to finish.

Both, the folders and files can be deleted when not needed anymore. First tap the Edit button placed next to the Add button (the plus sign). You will notice red round icons pop up on the left hand side. When you tap on it, the Delete button will appear on the right hand side. Use this button to continue deleting. You will be asked again to confirm your decision. Tap the Delete button to remove the item.

There is also another way to delete an item. After you have tapped the Edit button, tap on the item you want to delete. A three-option menu will pop up. The topmost option is Delete. Tap it, confirm your selection, and the item will be deleted.

The same method lets you move or rename the item. You can move a folder or a file to a different user. When you have tapped the Move option in the menu, you will be given a list of users where you can move the item to. Once you tap on a different user, the item (file or folder) will be moved to a new location.

Files stored in the User main folders or in subfolders can be manipulated in a number of ways.

Once the file is tapped, a file menu opens up with the following actions:

- View – preview the content of the file
- Send to Mountbatten – send to Mountbatten Memory
- Move – move to a different location
- E-mail – send it by e-mail
- Emboss – emboss on the Mountbatten

NOTE: In the case of Send to Mountbatten and Emboss, if your MBMimic is not connected to a Mountbatten, the connection process will begin before the selected action is executed.

### **Connecting to a Mountbatten Braille**

Before you beginning connecting to a Mountbatten Braille, please make sure that the Braille is turned on and paper is loaded.

Tap on the Mountbatten tab at the bottom of the screen of your iOS device. The program will be looking for any active Mountbatten in the vicinity. After a list appears, select the unit you want to connect to. A connection screen will show up saying "Connecting to Mountbatten". You should hear the Mountbatten beep several times and after a few seconds, your MBMimic will connect with braille. Tap Done and you will be taken to the home screen.

NOTE: The MBMimic looks only for a Mountbatten. It will not display any other Bluetooth-enabled devices so you never have to browse through long lists of devices to find the one you want to connect to.

From now on, you can begin interacting with the Mountbatten.

The home screen gives you the following options:

**Chat** – an application for chatting between the Mountbatten user and the iOS user.

**Whiteboard** – an application for various writing activities between the Mountbatten user and the iOS user

**Connection Status** – shows whether you have successfully connected to a Mountbatten

**Files** – this option shows how many files are stored in Mountbatten memory; the Show button allows you to open the Mountbatten directory listing the files stored in its memory

**Language** – this option informs you about the default language

**Braille table** – this option informs you about the default Braille Table

**Mode** – this options shows you which mode the Mountbatten is currently in; it can be either Learn or Advanced

**Firmware** – this option provides information about the firmware version Model – this option shows the model version of your Mountbatten Serial No: - this option provides the serial number of your Mountbatten

## The Whiteboard

When you tap on the Whiteboard application a new screen opens with an edit area and a screen keyboard (see Figure 15). Every word you type will get embossed after the space bar is pressed on the screen keyboard. Similarly, every word gets brailled on the Mountbatten will be displayed on the screen once the Mountbatten user presses the space key on the Brailier.

In the top right corner you will find two buttons – Grade 1 and Grade 2. These two buttons correspond to contracted and uncontracted Braille output respectively. When you want your Braille output to be contracted make sure the Grade 2 button is pressed.

## The Chat

When you open the chat program, you will see a large white field, an edit box, and the screen keyboard (see Figure 16). The text is entered into the edit box but it will not be embossed until the Enter key or the OK button is tapped. When the Mountbatten user is brailing their entry, text will be displayed only after the New Line key is pressed on the Brailier.

In the top right corner you will find two buttons – Grade 1 and Grade 2. These two buttons correspond to contracted and uncontracted Braille output respectively. When you want your Braille output to be contracted make sure the Grade 2 button is pressed.

### **Embossing on Mountbatten Braille**

A. Embossing directly after transferring text to MBMimic.

1. Turn the MB Braille on.
2. Take your iPad.
3. In MBMimic find your file that you want to emboss. Tap this file and menu will open up. select Emboss.
4. The Connect to Mountbatten dialog will open up. Wait a few moments until your Mountbatten Braille will show up in the list. Tap the number that will pop up. You will hear the Mountbatten beep several times.
5. You will be asked if you want to translate the file to Braille or not. If your text does not have any embedded commands, and this text was created in a standard print format, it is recommended to choose Yes - use forward translation to Braille.
6. Once you tap your option, the Mountbatten will begin to emboss.
7. When the first page is embossed, put in a new sheet of paper . The embossing will resume automatically.

### **Transferring files from Mountbatten to MBMimic.**

1. Run your MBMimic and make sure the Mountbatten is also switched on.
2. After establishing connection between the MBMimic and the Mountbatten select the Mountbatten tab at the bottom of the screen. Locate the Show button and tap on it.
3. A list of files stores in your Mountbatten will show up. Select the one you want to transfer by tapping on it and choosing View from the menu.
4. The content of the file will open up. In the top right corner find the Save button. When you tap on it, you will be moved to Active Users tab. Select the student whose folder you want to transfer the file to, then select the location and tap the Save here button.
5. Then tap Done button in the next two dialogs, to complete the transfer. To check if the file was moved, go to Active Users, and locate the file in the previously selected directory.

### **Connecting to printers**

Connecting to printers (the black-print ink or laser printers used with regular computers) is easy and is fully automatic - you just need to connect a USB cable between the printer and MB Tutor USB port on the left side of the unit. If connected for the first time it may take

several minutes to load drivers and install the printer (even more than 10 minutes in some cases). It is recommended to connect the MB to the Internet to make more drivers available if the printer is a new or rarely used model. After the printer is installed you may use back translation features to print from the MB Tutor memory to the printer.

### Connecting to the Internet

To connect to the Internet you may use wifi hub that is present at your place of work or study. You will need the advanced Mountbatten Braille Tutor functions available (to enable those functions it may take few minutes after you switch the unit on). After you hear the "Advanced Mountbatten Braille Tutor functions available now" message you may go to System menu and choose Wifi settings. You should see a list of available wifi networks. If the one you want to connect to is not listed - you may refresh (the first option on the list).

After you find your network choose it with Enter key and you will be prompted for password. Down under the network list there is an additional switch to show or hide password while it is entered.

The connection should be established immediately after you give the right password.

# Updating your Mountbatten Braille Tutor

Updating of your MB Tutor may be done on three levels:

- Basic Mountbatten Braille Operating Firmware
- Advanced Features Software Firmware and Games

Each level is updated in a different manner:

## Updating Basic Mountbatten Braille Operating Firmware

To update the basic firmware you need the firmware update file set from the Producer of Mountbatten Braille Tutor. It comes in a folder that should be placed in the root of a pendrive memory that needs to be placed in the upper USB socket on the right side of your MB Tutor. While the pendrive is being placed in the socket (when Tutor is on) you will hear "USB memory connected" message. Choose menu System -> Update device. After an additional prompt the update process will start automatically.

After the basic firmware update is done the unit will get restarted automatically.

## Updating Advanced Features Software Firmware and Games

To update the advanced firmware you either need the firmware update file set from the Producer of Mountbatten Braille Tutor or set up the Internet connection.

### ***Updating from a file on pendrive:***

The advanced firmware update comes in a folder that should be placed in the root of a pendrive memory that needs to be placed in the USB socket on the **left side** (different to the basic software) of your MB Tutor. While the pendrive is being placed in the socket (when Tutor is on) you will hear "USB memory connected" message. Choose menu System -> Update Advanced Functions Firmware -> Install from USB memory. After an additional prompt the update process will start automatically.

After the advanced firmware update is done the unit will restart its Advanced Functions Engine and get ready to work.

### ***Updating from the Internet:***

The advanced firmware update is placed on a server in the cloud and Tutor can find it itself if only it is connected to the internet. Tutor will determine the newest firmware and update automatically. Simply choose menu System -> Update Advanced Functions Firmware -> Install from Network. After an additional prompt the update process will start automatically.

After the advanced firmware update is done the unit will restart its Advanced Functions Engine and get ready to work.

## Making Braille Graphics

The following formatting commands apply in both Learn and Advanced Mode.

Menu: Emboss/Graphics mode toggle

GF Graphics mode. In Graphics Mode the space between the dots is reduced, giving the appearance and feel of lines instead of dots. There is much scope for creativity and learning about Braille graphics really re-enforces the Braille code for the Braille learner. Default = off. Toggle

**Note:** There are dedicated Braille graphics programs that you can run on your PC such as Picture Braille. Another exciting way to make tactile diagrams is using 'swell' paper and the Pictures in a Flash - PIAF. For more information on either of these products please refer to our web site [int.harpo.com.pl](http://int.harpo.com.pl)

# Technical Specifications

Power: proprietary power supply 110v – 220v Output 15-19VDC 5.5Amp, 90W).

Weight:

Size [mm]:

