



BRAILLEX[®] Trio

The Multi-Purpose Refreshable Braille Tool

User's Manual





Table of Contents

1. Introduction.....	1
1.1 EU Medical Devices Directive	2
1.2 Generalities	3
1.2.1 System Requirements	3
1.2.2 Scope of Delivery.....	3
1.2.3 Copyright and Trademarks.....	3
1.3 Safety Advice	4
1.4 Service and Maintenance	4
2. Getting Started	5
2.1 Physical Description	5
2.2 Initial Operation	6
2.2.1 Important Note: BRAILLEX Trio Operation Modes.....	6
2.2.2 Switching On and Off BRAILLEX Trio	7
2.2.3 Sleep Time	8
2.2.4 The BRAILLEX Trio Braille keyboard	8
2.2.5 Connection with the PC.....	9
2.2.5.1 USB Connection.....	9
2.2.5.2 Bluetooth Connection	9
2.2.6 Help for sighted persons: the BrxCom Viewer software tool	10
2.2.7 Power supply	10
2.2.8 Battery Handling.....	10
2.2.9 Recharging the Batteries.....	11
2.2.9.1 Recharging the Batteries inside the Unit	11
2.2.9.2 Charging Errors.....	12
2.2.9.3 Recharging the Batteries outside the Unit.....	13
2.2.9.4 Checking the Battery Charge.....	13
2.3. Installation.....	14
2.3.1 Installing the Screen Reader	14
2.3.2 USB Connection.....	14
2.3.3 Installing a Bluetooth Connection.....	15
2.3.3.1 Preparing BRAILLEX Trio	15
2.3.3.2 Preparing the PC.....	16
2.3.4 Installing BRAILLEX Trio Screen Reader Drivers and the Communications Program	16
2.3.4.1 IMPORTANT: System Requirements	16
2.3.4.2 Installer.....	17
2.3.5 Modifications of the Installation Settings	22

3. BRAILLEX Trio's Notetaking Mode.....	25
3.1 Braille Keyboard Functions	25
3.2 The BRAILLEX Trio Control Center.....	26
3.2.1 Menu Items	26
3.2.1.1 Yes- and No-Questions.....	27
3.2.2 The Editor	27
3.2.2.1 Cursor Movements within the Editor	27
3.2.2.2 Movements with the Easy Access Bar	28
3.2.2.3 The Clipboard	28
3.2.2.4 File Management within the editor	30
3.2.2.5 Overview of Key Commands within the Editor.....	33
3.2.3 The Calculator	33
3.2.4 Day Planner	33
3.2.4.1 Overview of Key Commands within the Day Planner	35
3.2.5 Date and Time	35
3.2.6 Settings.....	35
3.2.6.1 Set Date and Time	35
3.2.6.2 Bluetooth Settings.....	36
3.2.6.3 Select Braille Table	37
3.2.6.4 Power in USB Operation	37
3.2.6.5 Sleep times	37
3.2.6.6 Dot Firmness	38
3.2.6.7 Auto-save time for editor.....	38
3.2.6.8 Trio start mode.....	38
3.2.7 Tools	38
3.2.7.1 Format Flash Memory.....	38
3.2.7.2 Restore Default Values.....	39
3.2.7.3 Battery Recharge.....	39
3.2.8 Info	39
3.2.8.1 Power	39
3.2.8.2 Memory.....	40
3.2.8.3 Program Version	40
3.3 Overview: Menu Structure and Shortcuts of BRAILLEX Trio's Control Center in Notetaking Mode	41
3.3.1 Braille Table Selections	41
4. BRAILLEX Trio's Terminal Functions	42
4.1 Basic Functions.....	42
4.1.1 Moving the Braille display (Reading Window).....	42
4.1.2 Using the BRAILLEX Trio Braille keyboard to access a PC	43
4.1.3 PC keystrokes with the Braille keyboard	43
4.1.4 Braille-Emulation of PC-Shift, Alt, Ctrl, Win	43
4.1.5 Using contracted (grade 2) Braille with the computer (English and French only)	44
4.2 File Transfer From and To BRAILLEX Trio	45
4.2.1 The BRAILLEX Trio Filemanager	45
4.2.1.1 Copying Files	45
4.2.2 BRAILLEX Viewer	47

4.3 BRAILLEX Trio and JAWS For Windows	48
4.3.1 Selecting the Working Modes	48
4.3.2 Easy Access Bar Assignment in the Three Working Modes	49
4.3.2.1 Navigation Mode	49
4.3.2.2 PC Mode	49
4.3.2.3 Combined Mode	50
4.3.3 Cursor Tracking within JAWS	50
4.3.4 Braille presentation within JAWS	51
4.3.5 Reveal Text Attributes within JAWS	52
4.3.6 Mouse Functions within JAWS	53
4.4 BRAILLEX Trio with Dolphin HAL / Supernova	54
4.4.1 Selecting the Working Modes	54
4.4.2 Easy Access Bar Assignment in the Three Working Modes	55
4.4.2.1 Navigation Mode	55
4.4.2.2 PC Mode	55
4.4.2.3 Combined Mode	56
4.4.3 Cursor Tracking within HAL / Supernova	56
4.4.4 Braille presentation within HAL / Supernova	56
4.4.5 Reveal Text Attributes within HAL / Supernova	57
4.4.6 Mouse Functions within HAL / Supernova	59
4.5 BRAILLEX Trio and Window-Eyes	60
4.5.1 Selecting the Working Modes	60
4.5.2 Easy Access Bar Assignment in the Three Working Modes	61
4.5.2.1 Navigation Mode	61
4.5.2.2 Interactive Mode	61
4.5.2.3 Combined Mode	61
4.5.3 Braille presentation within Window-Eyes	62
4.5.4 Reveal Text Attributes within Window-Eyes	63
4.5.5 Mouse Functions within Window-Eyes	64
4.6 BRAILLEX Trio and Apple VoiceOver	65
4.6.1 BRAILLEX Trio and VoiceOver under Mac OS X	65
4.6.1.1 Using a USB connection	65
4.6.1.2 Using a Bluetooth connection	65
4.6.2 BRAILLEX Trio with the iPhone	66
5. Important Advice	68
5.1 Purpose of the Device	68
5.2 Safety Advice	68
5.3 General Precautions	68
5.4 CE-Marking	69
6. Technical Reference	70
6.1 Updating the BRAILLEX Trio firmware	70
6.2 Battery Charging Error Codes	72
7. EC Declaration of Conformity	74
8. FCC Radio Frequency Interference Statement	75
9. Index	77

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User's Manual BRAILLEX Trio

Revision: July 2010

All technical data, information about and properties of the product described in this manual were compiled to our best knowledge and correspond to the facts at the date of publication.

Modifications and improvements of the product can be introduced at any time.



1. Introduction

BRAILLEX Trio is a real multi-talent. It unites the most modern communications technology with highest ergonomic features in a light, portable Braille note taking device.

BRAILLEX Trio stands for three highlights:

- a 40-cell Braille display with the proven Efficiency Line (EL) and SingleChannel technologies
- a Braille keyboard for connected PCs
- a basic notetaker. The internal functions of BRAILLEX Trio include an editor, a calculator, clock and calendar — and, obviously, the data exchange with other devices.

The newly developed seamless SingleChannel Braille display stands for highest reading comfort: Your fingers slide like on paper on the slightly concave display that is perfectly adapted to the shape of your fingertips.

The ergonomic Braille keyboard is ideally positioned around the Braille display. The space bars and special function keys are located in front of the display, the Braille keys behind. The distance between the Braille keyboard and the display is only 3.5 cm (1.38").

Obviously, BRAILLEX Trio, like all Papenmeier EL displays, is equipped with the patented Easy Access Bar, a long single lever (like a space bar) situated on the front side of the device, all along the Braille display.

You use the joystick-like Easy Access Bar with the thumb of the reading hand. It lets you navigate around the screen without you ever taking your hand off the Braille display. You can go back and forth, up and down - or tab through a dialog box, if you switch it to interactive mode.

Traditionally, Braille displays have a number of function keys, on the front panel, or left and right of the display. In any case, you usually have to take your hands off the display when you navigate around the screen or interact with the computer. With the Easy Access Bar, you can execute the commands from any place on the Braille display. This means less hand movement, more comfort, higher speed, and more efficiency.

With BRAILLEX Trio, you stay connected. Via its USB port, you communicate with a PC or notebook. Thanks to its Bluetooth® interface, BRAILLEX Trio is independent

1.1 EU Medical Devices Directive

from any connection cables. Within a range of 10 meters (33 ft), BRAILLEX Trio talks to other Bluetooth devices.

This document will describe the installation and use of the device, alone and with the different possible peripheral devices.

1.1 EU Medical Devices Directive

BRAILLEX Trio complies with the requirements of the European Union Medical Devices Directive, as an active **class I medical product** intended to be used for the purpose of compensation for a handicap.

This product may only be used in home or office environments. In medical facilities, this product may only be used in office rooms.

Please read this manual and the information on medical devices carefully.



1.2 Generalities

1.2.1 System Requirements

For BRAILLEX Trio's notetaking functions or if you want to make use of its Bluetooth interface, you only need a set of charged batteries (4 standard AA-type batteries) that provide the device with power.

For a full PC functionality, you furthermore need a PC with a USB or and Bluetooth interface running Windows 2000, Windows XP, Vista, or Windows 7 and a screen reader program (JAWS 6 and up, Dolphin HAL / Supernova, Window-Eyes 7 and up) and the appropriate driver (shipped with Braillex Trio)

1.2.2 Scope of Delivery

Braillex Trio ships with the following components:

- BRAILLEX Trio device
- Set of 4 AA-type rechargeable NIMH batteries
- External battery charger
- USB cable
- Soft carrying pouch with shoulder strap
- Software (drivers on CD)
- Manual in print and in electronic format

1.2.3 Copyright and Trademarks

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BRAILLEX® is a registered trademark of F. H. Papenmeier GmbH & Co. KG

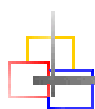
All other trademarks and proper names mentioned in this manual are properties of their respective holders.

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1.3 Safety Advice



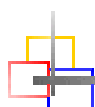
Please read the information in this manual carefully, so you will be able to avoid problems.



Use BRAILLEX Trio in a dry environment only. Even if the device is not powered up, it must not get wet.



Never place any heavy objects on the Braille display.



1.4 Service and Maintenance

Avoid touching the device with dirty hands. You may clean the surface of the device (NOT the Braille cells) with a soft, damp cloth. Do not use any aggressive detergent or soap.

In case of any defect of the Braille display unit, please contact an authorized Papenmeier service center. If you are in doubt about the service center responsible for your area, please contact Papenmeier:

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Talweg 2
58239 Schwerte, Germany

Phone: +49-2304-9460
Fax: +49-2304-946 246
E-mail: info.reha@papenmeier.de

If possible give a short description of the kind of disturbance.

2. Getting Started

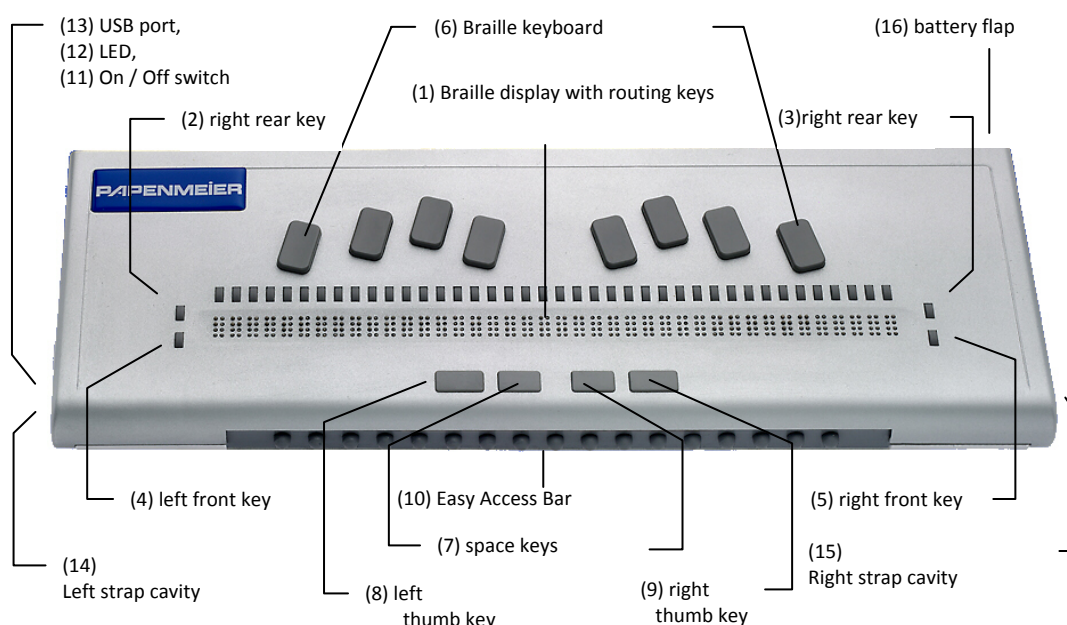
2.1 Physical Description

Let us first of all just describe BRAILLEX Trio physically. In this chapter, you will find the names of the different control elements of the device that will be referred to later in this manual when we talk about how to use the device.

BRAILLEX Trio has a 40-character Braille display (1) with a seamless surface. The Braille display is placed along the front line. It almost occupies the whole width of the device. Behind each of the characters, you will find a routing key. To the left and the right of the display, there are two keys on each side, one behind the other one. We will call them the left and right front keys (4 + 5) and left and right rear keys (2 + 3).

Behind the Braille display, you find the ergonomic 8 key Braille keyboard (6). Two space keys are located in front of the Braille display (8 + 9). When you have your hands on the keyboard, your thumbs will automatically be located above the two space keys. Of the four keys in the space key row, the space keys are the two inner ones. The two external ones will be called the left and right thumb keys (8 + 9). The thumb keys are used for special functions.

In the rounded front you will find the integrated Easy Access Bar (10). The bar has a rubber profile.



2.2 Initial Operation

The only visible connection of the device is on the left side of BRAILLEX Trio.

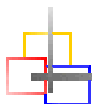
On the left side you find, starting from the front,

- The on-off switch (11)
- A LED indicating the on/off status (12)
- The USB port (13)

On both sides of the device, there is a cavity initially planned for fixing a strap; those are not used, however, as the strap is fixed to the pouch that ships with the device.

On the right side of the back panel (device turned to you in working position), you will find the battery compartment (16).

On the bottom panel, on the left side of the device, you find a small hole. Behind this hole, there is a reset button that you can access with a stylus. This button is typically only used for upgrading the firmware software of the device.



2.2 Initial Operation

The device may only be put into operation if no damages of the device itself or of the connection cables can be discerned.

2.2.1 Important Note: BRAILLEX Trio Operation Modes

The three BRAILLEX Trio functions (Braille display, external Braille keyboard, and note taking) are arranged within two different operation modes. These make BRAILLEX Trio behave like two different devices using the same hardware:

- The TERMINAL mode covers all the functions of the device along with a PC:
 - The Braille display function (where a screen reader program sends the screen information to the BRAILLEX Trio and the device acts like a regular Braille display);
 - The Braille keyboard function (where BRAILLEX Trio acts as a secondary computer keyboard allowing you full control of the PC functions in Braille), and
 - The file transfer between BRAILLEX Trio and the PC. You need not necessarily activate terminal mode to do the file transfer, but the program handling this is a PC program and if you want to monitor that you should activate the display function.
- In NOTETAKER mode, BRAILLEX Trio works as an independent transportable device. It includes an editor, a calculator, clock and calendar as well as various setup functions.

You switch between the two operation modes at any time pressing Space + dots 7+8 on BRAILLEX Trio's Braille keyboard.

BRAILLEX Trio's display and Braille keyboard always act within the activated operation mode. In terminal mode, the keyboard acts as a PC keyboard, and the display as a PC display; in notetaker mode, both act for the internal functions and the device setup. The only exception is Space + dots 7+8, the key combination that switches the modes.

Please also note that the operation mode BRAILLEX Trio will start with when you switch on the device can be adjusted in the Trio settings menu (see chapter 3.2.6.8 Trio start mode on page 38).

Even if you have BRAILLEX Trio connected to a PC and use it as a Braille display, you may switch to notetaker mode at any time in order to use the internal editor. It will act as a display again once you switch back. The editor may stay open during that time. On the other hand, you can start the PC and a screen reader while you are in notetaker mode; as long as the device is physically connected and switched on, the screen reader will find it and you will not get a missing display warning. Once you switch back to terminal mode then, you might need to move the cursor once in order to cause the screen reader to send the updated screen information to the Trio.

2.2.2 Switching On and Off BRAILLEX Trio

You power on BRAILLEX Trio with the on-off switch on the left side of the device. A short beep indicates that the device has been switched on. An LED next to the on-off switch is lit while the device is on.

The first message you will see on the Braille display is the battery and the possible external power status, i.e.:

"bat: 50 % active usb connection", or:
"bat: 100 % no charger connected",
"bat: 0 % charger connected", etc.

This message will disappear after a couple of seconds, or after you press Space + dot 7 for "Escape", or if you move the Easy Access Bar 2 steps up.

If you have batteries inside the device, BRAILLEX Trio will start in the operation mode you selected in the Trio setup (see chapter 3.2.6.8 Trio start mode on page 38 for more details). Default mode is the notetaker mode. If the notetaker mode is selected as startup mode, you will see the last status you had before you switched off the device. In case you were in terminal mode before you switched off, you will see "e editor", i.e. the first item of the main menu. If terminal mode is the startup mode, you will get the screen information sent by the screen reader program. If the screen reader is not running yet when Trio is switched on, you will see the message "terminal".

You switch off BRAILLEX Trio by pressing the on-off switch for more than a second. You will see the message "switch off trio?". If you keep the on-off switch pressed then, the message "off" will appear. The LED goes out and a double beep can be

2.2 Initial Operation

heard when the device is switched off. For a short while, you will also see the message "off" in Braille, and then the Braille will fade away. If you release the on-off switch after you get the first message, you can continue working.

2.2.3 Sleep Time

BRAILLEX Trio will automatically switch off after a period of inactivity defined in the device settings. When you first get the device, this period is 10 minutes. In order to reactivate the device, press the on-off switch.

2.2.4 The BRAILLEX Trio Braille keyboard

BRAILLEX Trio has a Braille keyboard that can be used both for internal (note taking) and external (terminal) functions. It has 8 Braille keys and 4 keys that are activated with the thumb.

Especially in terminal mode, the BRAILLEX Trio Braille keyboard can emulate almost all keys or key combinations of a regular PC keyboard.

Dots 7 and 8 are typically used for computer Braille entry. Dot 7 (to the left of dot 3) for example makes the difference between lower case and capital characters, a capital "A" for example, is written with dots 1+7. Dot 8 is often used in languages that have accented characters. In most (but not all!) Braille tables, a character along with dots 7+8 will generate a control character (i.e.: CTRL-A is written with dots 1,7,8)

Of the 4 keys between the Braille display and the Easy Access Bar, the two internal ones are used as space keys. The two external ones are used for special functions in terminal mode.

Please note that the Braille keys are only activated once they have been **released**.

Function keys used both in notetaking and terminal modes	
Enter	Space + dot 8; alternatively: dot 8
Escape	Space + dot 7
Left arrow	Space + dot 1
Right arrow	Space + dot 4
Up arrow	Space + dot 2
Down arrow	Space + dot 5
Page up	Space + dot 3
Page down	Space + dot 6
Home	Space + dots 1,2
End	Space + dots 4,5
Insert	Space + dots 2,3
Del	Space + dots 5,6
Backspace	Space + dots 6,8; alternatively: dot 7

Special BRAILLEX Trio Keystokes	
Go to Control Center (in terminal mode: Windows key)	Space + dots 1,2,3,4,5,6
Toggle notetaking mode – terminal mode	Space + dots 7+8

2.2.5 Connection with the PC

You connect BRAILLEX Trio with a PC either via the USB port or via a Bluetooth connection.

2.2.5.1 USB Connection

You can use the USB connection under the operating systems Windows 2000, XP, or Vista. Plug the flat end of the supplied USB cable into a free USB port of the PC. The square connector goes into the plug on the left side of BRAILLEX Trio.

Please note that with an active USB connection, and if the connected PC meets the regular USB specifications (i.e. if it provides enough power), BRAILLEX Trio will even work if no batteries are inside the device (see below, chapter 2.2.7 Power supply from page 10).

CAUTION! DANGER! If the active BRAILLEX Trio is connected to the computer while you power on the PC, you will get the "battery recharge off" message. BRAILLEX Trio detects power on the USB line, but as long the operating system is not running, the data line is not active, i.e. the method BRAILLEX Trio uses to differentiate between a USB charger and a PC. **Do NOT try to activate the battery recharging at this point,** it might damage the PC's USB port!

2.2.5.2 Bluetooth Connection

The Bluetooth connection between a computer and BRAILLEX Trio requires a specific setup and has a number of technical prerequisites:

- You need one the operating systems Windows 2000, XP, or Vista.
- On the PC, you need a so-called Bluetooth stack (a piece of software that handles the Bluetooth communication) that is NOT from Microsoft. There is a documented incompatibility between the Bluetooth chip used in BRAILLEX Trio and the Microsoft Bluetooth stack. Papenmeier strongly recommends the use of the Widcomm® Bluetooth stack coming from Broadcom®. In case the Bluetooth chip of your PC does not support the Widcomm stack, Papenmeier recommends the use of an external Bluetooth adapter from Belkin.
- In any case, you will have to adapt the PC Bluetooth settings with the ones in BRAILLEX Trio. For the Bluetooth installation on the PC, please refer to chapter 2.3.3 Installing a Bluetooth Connection starting on page 15; regarding the BRAILLEX Trio Bluetooth setup, please refer to chapter 3.2.6.2 Bluetooth Settings on page 36.

Please note that BRAILLEX Trio requires battery power to run the Bluetooth connection. The Bluetooth communication drains a lot of energy by the way: when you switch Bluetooth off in the Trio settings (see 3.2.6.2 Bluetooth Settings on page 36), the battery autonomy will be doubled.

2.2.6 Help for sighted persons: the BrxCom Viewer software tool

In order to help sighted persons wanting to communicate with a BRAILLEX Trio user while using the notetaker mode, Papenmeier ships the so-called BrxCom Viewer with the device. It gets installed automatically when you install the BrxCom software (the driver suite and the support programs) on the PC (for the installation, please refer to chapter "2.3.4 Installing BRAILLEX Trio Screen Reader Drivers and the Communications Program" starting on page 16. Once you have started the program that you will find on the desktop, the BrxCom Viewer will visualize the contents of the Braille display in a small window on the computer screen, as long as you work in the notetaker mode. It is a good help for sighted persons wanting to assist, especially in the BRAILLEX Trio setup.

2.2.7 Power supply

If BRAILLEX Trio is not connected to a USB port, it is battery powered. For battery operation, you need 4 AA type cells. Papenmeier suggests rechargeable NiMH batteries, if possible the so-called "Ready-to-use" or "eneloop" batteries (see below). Four of those come with the device.

If connected to a USB port of a computer, BRAILLEX Trio may be powered through the USB port, in case it provides enough power. If this is not the case, BRAILLEX Trio takes the power from the internal batteries. As BRAILLEX Trio's battery autonomy is pretty high, higher than that of most notebook PCs, you can also generally use the internal batteries when using the USB connection (this is by the way the default setting when you get the device).

In Bluetooth operation, BRAILLEX Trio is powered by the internal batteries.

Please note that the operation mode (notetaker mode and terminal mode) has no influence on the power supply; you can well work in notetaker mode while draing the power via the USB port, for example.

2.2.8 Battery Handling

BRAILLEX Trio comes with a set of four rechargeable AA type NiMH batteries. Papenmeier ships BRAILLEX Trio with so-called "Ready-to-use" or "eneloop" rechargeable batteries. Those have a slightly smaller nominal capacity than ordinary NiMH batteries, they have a big advantage regarding their auto-discharge behavior, though. While normal batteries lose their charge even if you leave them in a drawer, the eneloop ones keep it over a quite long period. It might be useful though to have them charged before you start using them for the first time.

With freshly recharged batteries, BRAILLEX Trio has an operation time of ca. 20 hours; in Bluetooth operation, you have 10 hours autonomy. Please note that even

if the device is switched off, it will use a minimal amount of energy. So if you know that you will not use BRAILLEX Trio for a longer period, we suggest that you take the batteries out. All data will be safe then, the only thing to do after you put the batteries in will be to set date and time again, as the internal clock does not have a separate battery buffer.

A number of factors will influence the battery autonomy. A very important one is the Bluetooth module inside the device that drains an important amount of energy. By default, this Bluetooth module is active when you first switch on BRAILLEX Trio. If you do not use it, it makes sense to disable it in order to save energy. This is how you proceed:

- From the BRAILLEX Trio Control Center, select "settings", "bluetooth settings", "bluetooth on/off" and chose "bluetooth off". Confirm with Enter (Space + dot 8, or simply dot 8) or push the Easy Access Bar 2 steps down.

2.2.9 Recharging the Batteries

You have two possibilities to recharge BRAILLEX Trio's batteries:

- If you use NiMH batteries (one set of those is provided with the units), you can recharge them inside the unit connecting the provided charger with the USB port of the device;
- You can also take the batteries out and recharge them in a separate charger.

2.2.9.1 Recharging the Batteries inside the Unit

If you want to recharge BRAILLEX Trio's batteries inside the unit, use the provided charger. It is marked with the word "trio" in Braille; it connects to the power outlet via a 3 conductor detachable cord, and to the BRAILLEX Trio via USB cord. For recharging the batteries, please keep in mind a number of rules:

- You have to use the external USB charger. It is not possible to charge the batteries while BRAILLEX Trio is connected to a computer via its USB port — the USB specifications do not allow draining sufficient energy to both run the device and charge the batteries. BRAILLEX Trio is able to detect a computer connected to it and will abort the recharging operation with an error message.
- You must have the right battery type inside the unit. Please make sure not to try and charge Alkaline batteries! Trio will most likely detect those and abort the charging with an error message, but it might be safer not to try. We strongly suggest the use of NiMH batteries.
- **Caution:** If there are no batteries inside the unit when you UNPLUG the charger, you may lose BRAILLEX Trio's memory!
- It is not sufficient to plug in the charger; you must also activate the charge. When you connect the charger to the device, BRAILLEX Trio will automatically go to the "battery recharge" section of the "tools" menu of the Control Center: You will see the message "battery recharge off". Use the Easy Access Bar one step right to get to "battery recharge active" and confirm by pressing the Easy Access Bar 2 steps down. Only then the recharging process will be started, unless any error is detected and the process stopped.

2.2 Initial Operation

- While the batteries are being recharged, you may continue working, either via Bluetooth, or using the notetaking functions of the device.
- The complete recharging process will last approximately 8 hours, so it might be a good idea to do it overnight.
- You may check the progress of the charging process: Select "info" from the Control Center, then "power". Sighted people can also see that the charging process is active, as the LED blinks while the batteries are being recharged. The battery recharge is automatically switched off once the battery is full – after 7 hours approximately.
- Once the charging is coming to an end (about half an hour before the batteries are full), you will hear a single and a triple beep; when the recharge is completed, you will hear a short double beep and find the message "batteries full". Sighted people will notice that the green LED stops blinking and remains dark.
- Like many intelligent chargers, BRAILLEX Trio will NOT try and recharge batteries that are completely drained, because it will consider them defective. If your batteries are completely flat, use an inexpensive external charger to charge them at least a little bit.

CAUTION: Once again, the BRAILLEX Trio message "battery charge active" on the display does NOT mean that the batteries are actually being recharged; this is just the menu entry that allows you to start the charging process. Only after you accepted that menu entry by pressing the Easy Access Bar two steps down (or hitting "Enter" using dot 8 on the Braille keyboard). You will then hear a short beep, you will get the new message "batteries are being recharged" and the LED next to the on-off switch will start blinking.

2.2.9.2 Charging Errors

There are conditions under which BRAILLEX Trio will refuse to charge the batteries. This is the case, for example, when

- BRAILLEX Trio is connected to the USB port of the computer instead of the USB charger (in this case, you will get the error message "active usb connection").
- BRAILLEX Trio is not connected to the USB charger (via the USB connector) or the charger has been disconnected from mains (message: "no charger connected").

CAUTION! DANGER! If the active BRAILLEX Trio is connected to the computer while you power on the PC, you will get the "battery recharge off" message. BRAILLEX Trio detects power on the USB line, but as long the operating system is not running, the data line is not active, i.e. the method BRAILLEX Trio uses to differentiate between a USB charger and a PC. **Do NOT try to activate the battery recharging at this point**, it might damage the PC's USB port!

In other cases, if the batteries in their compartment have the wrong polarity (i.e. they have been inserted the wrong way round), or if they are deep-discharged, you will get the message "unable to charge, check batteries", followed by a one-digit error code. You will find an extensive list of the codes in the chapter 6.2 Battery Charging Error Codes in the Technical Reference, on page 72.

2.2.9.3 Recharging the Batteries outside the Unit

You can easily exchange the BRAILLEX Trio batteries. Please keep in mind, though, that the device will have energy for only about approximately 1/2 minute without the batteries. If you have them out for longer than this period, you will have to reset date and time in the device.

For exchanging the batteries, please proceed as follows:

- You find the battery compartment on the backside of the device, on the right side when you have the device in working position. On the upper edge of the compartment, you will find an easily discernable dot.
- The cover of the compartment has a tactile surface. In order to open it, push the cover towards the bottom of the device. The cover can be completely removed.
- The battery compartment contains four batteries, two in a row at a time. The tactile dot at the upper edge of the compartment indicates the direction (polarity) in which the batteries have to be inserted. The positive pole of the battery also has a tangible rise in the center, whereas the negative pole is flat. The (outer) compartment that is marked with the dot above will get the 2 batteries with the positive pole showing towards the outside, the other 2 ones go in the other way round.
- Please make sure that the battery polarity is correct. Never introduce the batteries the wrong way round!
- Once you have inserted the batteries, you can put the lid back on.



You use the provided external battery charger to recharge the batteries.

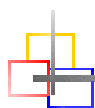
Papenmeier strongly recommends the use of rechargeable NiMH batteries. The recharging time depends on the type of batteries. New batteries should be charged for 14 hours prior to being used.

2.2.9.4 Checking the Battery Charge

You can check the battery charge in the Braille display: In the control center, press "i" for "info" and then "p" for "power". You will get the battery charge in percent.

If the battery level goes below 10% of the capacity, you will get a warning:

"battery capacity less than 10%".



2.3. Installation

Before you can use BRAILLEX Trio in **Terminal Mode**, you will have to install a number of drivers and the BrxCom communications program that handle the communication between BRAILLEX Trio and your PC. Even if you just want to use the notetaker function of the device and want to use the Braillex Viewer, helpful for sighted support, you need to install the programs mentioned in the chapter below.

2.3.1 Installing the Screen Reader

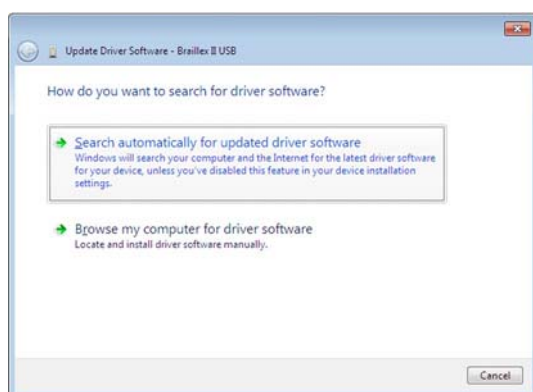
If you want to read the computer screen on the Braille display, you need to install and run a screen reader package. This should be done before you install any further software for BRAILLEX Trio.

2.3.2 USB Connection

You should do this step even if you plan to normally connect BRAILLEX Trio with your computer through a Bluetooth connection; the USB connection will be required for any firmware upgrade of your BRAILLEX Trio, and it is a good idea to have the USB driver installed while you have the CD handy...

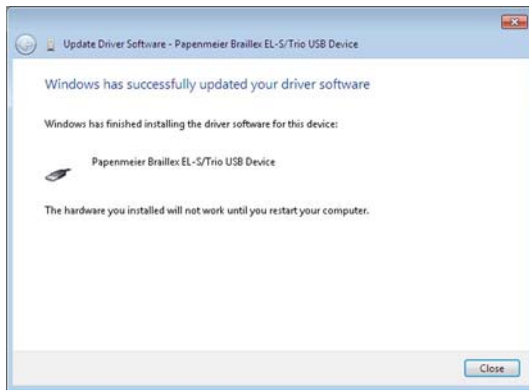
Please insert the supplied BRAILLEX Trio CD into the CD drive of your computer and then connect the BRAILLEX Trio with the PC with the supplied USB cable. After a short while, a box will pop up: "Found new hardware, Braillex II USB".

After a couple of seconds, the Found New Hardware Wizard dialog starts. Hit Enter to activate the Next button.

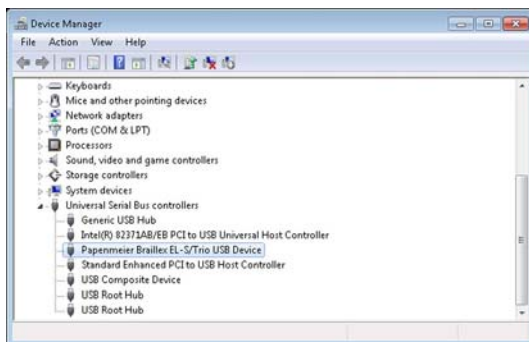


In the next box, select "Search automatically for a suitable driver for my device (recommended)" and hit Enter to activate the Next button.

In the next box, you can specify the search locations to reduce the searching time. Check "CD ROM drives" and hit Enter to activate the Next button. As the current driver is Windows Hardware Quality Labs (WHQL) certified and update enabled, Windows 7 users may also have Windows search the Internet.



The driver will install automatically. Once the installation is done, you are asked to restart the computer before you can use the driver.



Once the installation is completed, you will find the entry "Papenmeier Braillex EL-S/Trio USB Device" in the "Universal Serial Bus Controllers" section of the Windows Device Manager.

2.3.3 Installing a Bluetooth Connection

BRAILLEX Trio behaves like any other Bluetooth device. When you initiate a search for Bluetooth devices, the Bluetooth adapter will automatically recognize BRAILLEX Trio. The connection with the PC occurs via a serial Bluetooth connection. Once the connection is installed, you have to install the Papenmeier BRXCom software to be able to use the connection (see below).

2.3.3.1 Preparing BRAILLEX Trio

In order to proceed to the Bluetooth pairing, you need to know the so-called Bluetooth pin. By default, BRAILLEX Trio's pin is "0000", but you may change it. If you want to verify (or modify) the Bluetooth pin stored in the device, go to the Control Center and select "settings", "bluetooth settings", and then "bluetooth pin". You can now see the current pin. You may overwrite it with a string of (up to 16) digits. Remember the new pin, as you will need it for the pairing procedure.

Another step to identify your BRAILLEX Trio is the Bluetooth name. Unlike the pin described above, this is just a means to help you identify your BRAILLEX Trio on the PC side (and maybe distinguish it from other BRAILLEX Trios). Unlike the pin, you may change this name at any time without interfering with the Bluetooth connection itself. By default, the Bluetooth name is "braillex trio". Selecting "settings", "bluetooth settings", and then "bluetooth name" from the BRAILLEX Trio

2.3. Installation

Control Center, you may add up to 14 characters to this name that help identifying your device from others during the pairing procedure.

3.2.3.2 Preparing the PC

The Bluetooth device in or connected to the PC must be activated. It should be set to be able to recognize external devices. The configuration of the Bluetooth adapter depends on the producer of the device; therefore we can only give some generic hints for the preparation of the Bluetooth connection on the PC side.

The Bluetooth adapter of your PC offers the communication via a so-called pair wise connection. For this purpose, a serial Bluetooth connection is established with BRAILLEX Trio, using the search assistant of the Bluetooth software installed on the PC. You need to have administrator privileges to be able to install such a connection.

- Switch on your BRAILLEX Trio and place it close to your computer (max. distance: 10 meters / 30 feet).
- Activate the search for Bluetooth devices in the neighborhood of your PC Bluetooth adapter.
- Select the device named "BRAILLEX Trio" (and eventually, any name addition you might have set, see above).
- When initializing the pair wise connection, enter BRAILLEX Trio's pin number (see above).
- The serial connection is established and a serial port number is assigned for incoming and outgoing connections. You need to remember the port number for outgoing connections for the installation of the BRXCom communications program (see next chapter).

2.3.4 Installing BRAILLEX Trio Screen Reader Drivers and the Communications Program

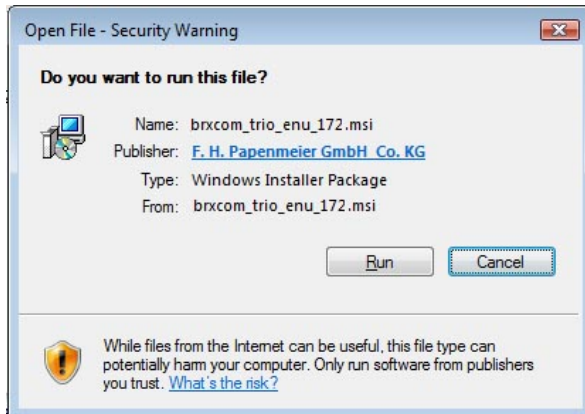
Besides the USB driver (or the serial Bluetooth connection), BRAILLEX Trio requires some more software to be able to communicate with the computer. The programs include special drivers for the screen reader programs, a program for the data transfer back and forth, and a viewer program able to visualize the Braille display contents.

2.3.4.1 IMPORTANT: System Requirements

Once again: The Trio driver suite is based on the so-called service concept, and therefore requires a Windows operating system Windows 2000, Windows XP, Windows Vista or Windows 7. A solution for Win98SE with reduced functionality is available as well, but the following will refer to Windows 2000, Windows XP, Windows Vista or Windows 7.

3.2.4.2 Installer

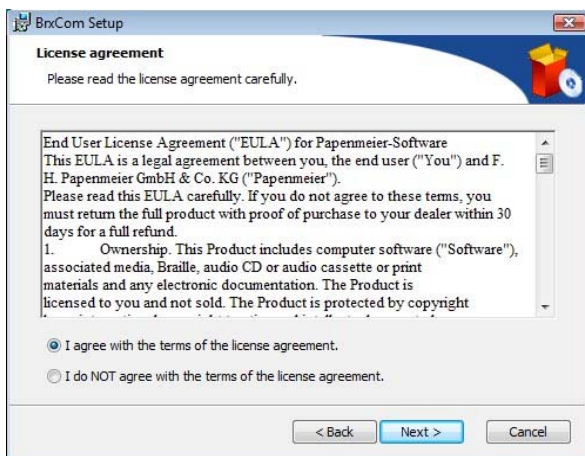
From the Trio CD, run BRXCOM_TRIO_ENU_172.MSI. This will start a setup wizard that will help you doing the installation. If you want to install the software suite under Windows Vista, the following screen will appear:



Press Alt-R to continue. After that, or if you install the software on another platform, you will get the following welcome screen:

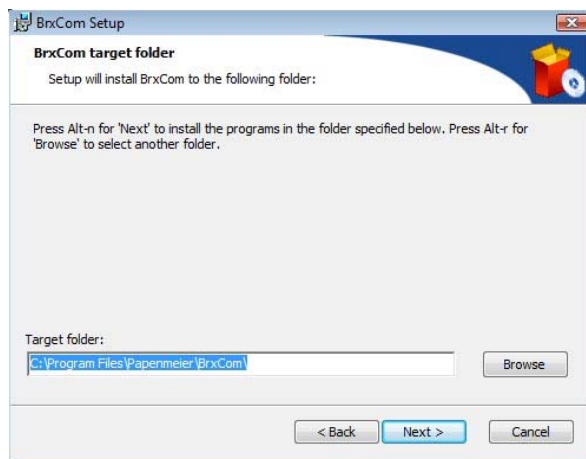


After the start screen, press Alt-N for "Next".

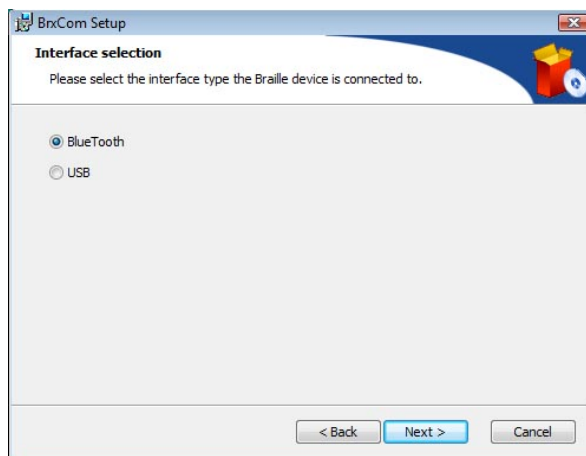


2.3. Installation

Confirm that you accept the End User License Agreement by using the up arrow and hitting Alt-N for "Next".



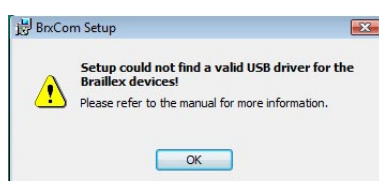
The install program will then suggest a destination folder for the program suite, i.e. C:\Program Files\Papermeier\BrxCom. Press Alt-R for "Browse" if you want to change the folder, or press Alt-N for "Next" to maintain it and continue.



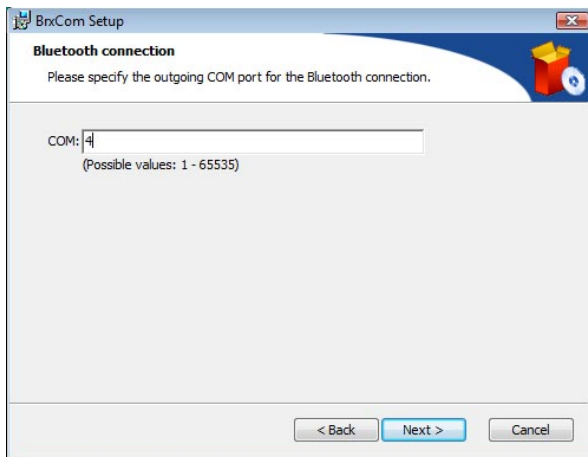
In the next step, you will be asked to specify a communications port for connecting BRAILLEX Trio with the PC. This port will be used for all communications purposes, i.e. for the screen reader and the keyboard functionality as well as for the file transfer in both directions and the viewer.

You have the choice between the USB port and a Bluetooth connection. Select the port you want to use with the arrow keys and press Alt-N for "Next".

In case you select the USB port and you did not install the appropriate driver up front, you will get a warning:

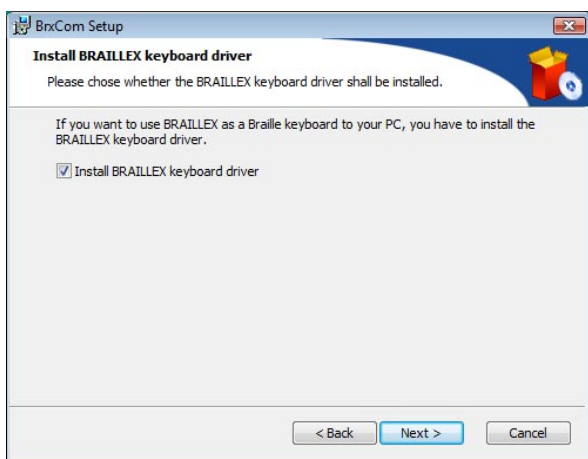


In case you selected the Bluetooth port, another screen will come up that lets you define the virtual COM port that is going to be used:



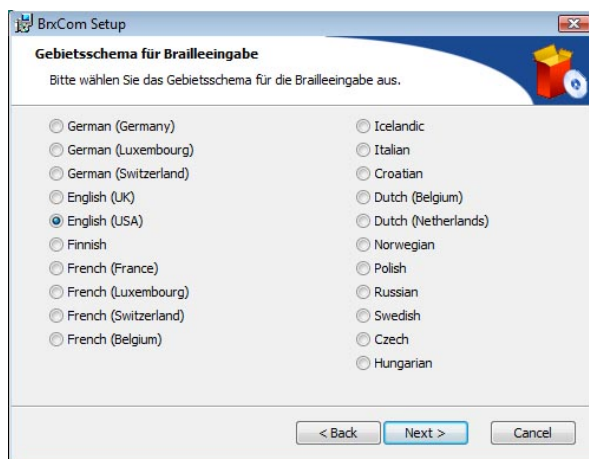
The selection of the serial port must be the same as the outgoing serial port you found out during the Bluetooth pairing installation (see above). Valid ports are COM1 to COM65335. As a selection via a radio button would be too tedious, we preferred using an edit field so select that port. Enter a number between 1 and 99 and press Alt-N for "Next".

In the next window, you will be asked whether you want to install the BRAILLEX keyboard driver. Installing this driver is necessary if you want to use BRAILLEX Trio as a Braille keyboard of your PC.



The default setting of the check box is "checked". Press Alt-N for "Next" if you want to install the keyboard driver. Press the space bar and then Alt-N for "Next" if you do not want to install the keyboard driver.

2.3. Installation

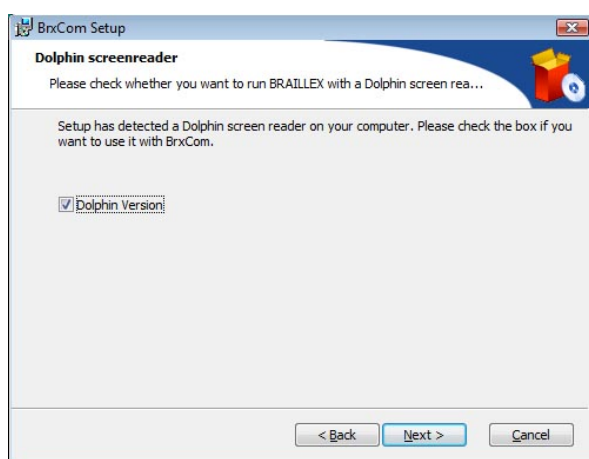


If you choose to install the keyboard driver, you then have to select the localization settings. Select the required keyboard layout and Braille table combination Press Alt-N for "Next" to continue.

The program will then check for the installed screen reader program(s). If you have JAWS installed, a new window will come up showing the different program versions you have installed (if there is more than one). Check the JAWS version(s) you want to install the driver for.

JAWS users will notice that only versions from 6.0 on will appear in the above Window. The BRAILLEX Trio software installation program will install a 2nd generation JAWS driver that is **NOT** compatible with JAWS versions prior to 6.0. If you wish or need to use an elder version of the screen reader program, the same applies as for Windows versions below the Win2000 level: You then have restricted possibilities, i.e. you can then only use BRAILLEX Trio as a display (no PC keyboard function and no file transfer).

Press Alt-N for "Next" to continue.



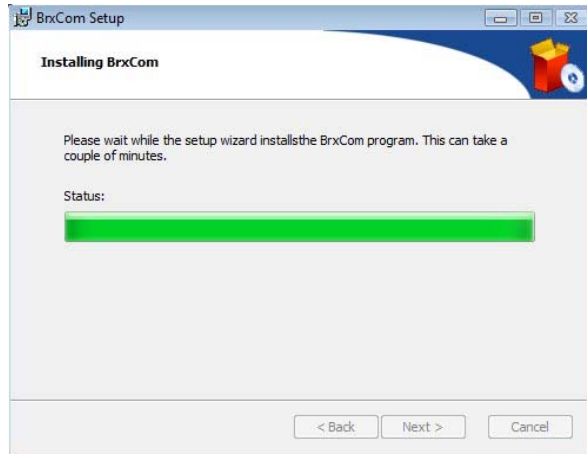
If you have Dolphin HAL or Supernova installed, a new window will come up asking you whether you want to install BrxCom for Dolphin. Check the option.

In the special case you use a Dolphin Pen, you will be asked whether you want to install it on the pen drive, in a separate window. This means the pen drive must be

connected to your computer during the installation if you want to install it there. It also must have the copy protection removed.

Press Alt-N for "Next" to continue.

The setup program now has all user definable settings and is ready for the actual information. If you want to go back and verify the different settings, press Alt-B for "Back"; If not, press Alt-N for "Next" to continue.



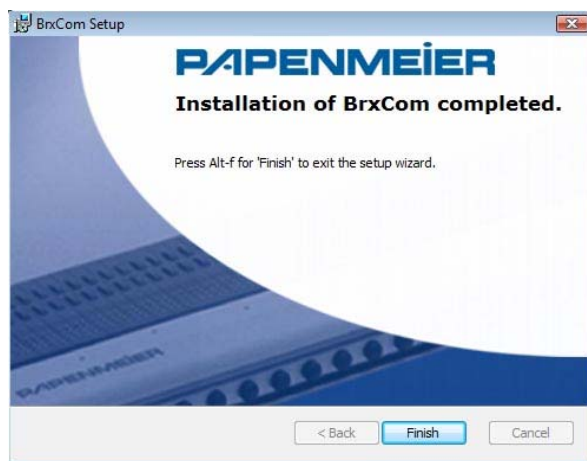
The copy and installation procedure will take some time. If you have JAWS as a screen reader on your system and chose to install the brxcom driver for that program, you will get the following screen:



As the program is unable to install the necessary drivers while JAWS is running, you can now stop JAWS temporarily. The program will be relaunched after the installation is completed. You obviously do not need to stop JAWS if it is not running.

The setup wizard will inform you about the successful installation of BrxCom. In order to complete the installation (and activate the keyboard driver), you have to reboot the system.

2.3. Installation



Once you have finished the installation, you will find two icons on your desktop, the Braillex File manager and the Braillex Viewer:



Furthermore, you will find the same programs in the start menu, under "Braillex".

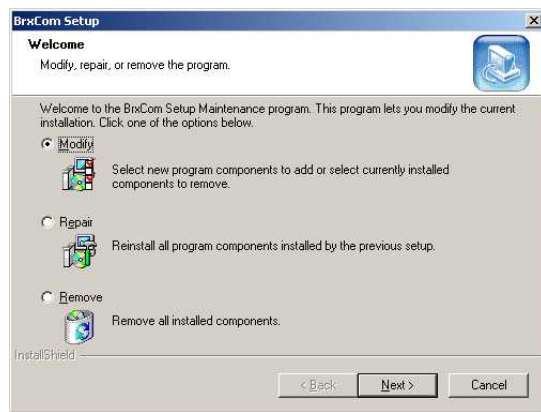
2.3.5 Modifications of the Installation Settings

Two of the settings described above might be subject to frequent changes, so we condensed them in a separate configuration program. From the start menu, under Programs / Braillex, you find the item "BRXCom Configuration". This works in a similar way as the general setup program, but is limited to two parameters: the communication port and the Braille table for the external Braille keyboard.

The first option regards the communications port. As in the setup program, you chose between the USB and the Bluetooth port, and in the latter case, you are also asked to specify the virtual serial port.

The Braille table selection offers less options than the setup program, as in this case, you do not select a combination of Braille table and PC keyboard (regional) settings, but only the Braille table. This means that if your default settings are US keyboard and US Braille, you can here change to French Braille (if you want to write in French), the PC keyboard still being the US key layout.

If you wish to make any further changes to the settings you had chosen above, run Trio_Setup_EN.EXE again. The install shield will offer 3 options: "Modify" (Alt-m), "Repair" (Alt-e), and "Remove" (Alt-r). Select "Modify" with Alt-m, and you will have the same dialogs you had above, allowing you to change your settings.



3. BRAILLEX Trio's Notetaking Mode

As described in the introduction of this manual, BRAILLEX Trio features two operation modes, the notetaking and the terminal mode. While the terminal mode covers the functionality of the device along with a connected PC, the notetaking mode offers the notetaking functions of the device, i.e.:

- Editor – a simple word processor allowing to take notes and to read documents
- Calculator
- Day Planner
- Date and time information
- Settings menu allowing to adjust all kinds of parameters.

Please note that some of the settings adjusted here (especially the communications and power parameters) will also influence BRAILLEX Trio's behavior in terminal mode.

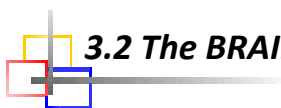
The following chapter will describe these functions in detail.

3.1 Braille Keyboard Functions

In notetaking mode, all Braille keys as well as the Easy Access Bar work directly onto the unit itself. While in the editor – at least as long as you use it on the BRAILLEX Trio itself – you may use any kind of Braille system for writing text, in other instances you need to use specific codes to reach the functionality you want. In the calculator and in all text entry fields in the so-called Control Center (see below), you need to use computer Braille (according to the table specified in the settings menu). For the navigation within the Control Center menu as well as within all texts, you have a number of specific Braille keyboard commands that complement the Easy Access Bar actions:

Function keys used in notetaking mode	
Enter	Space + dot 8; alternatively: dot 8
Escape	Space + dot 7
Left arrow	Space + dot 1
Right arrow	Space + dot 4
Up arrow	Space + dot 2
Down arrow	Space + dot 5
Page up	Space + dot 3
Page down	Space + dot 6
Home	Space + dots 1,2
End	Space + dots 4,5
Insert	Space + dots 2,3
Del	Space + dots 5,6
Backspace	Space + dots 6,8; alternatively: dot 7

Please note that the Braille keys are only activated once they have been **released**.



3.2 The BRAILLEX Trio Control Center

When you switch on BRAILLEX Trio for the first time, you will get a message "editor". The "editor" is the first and thus the most easily accessible item of the so-called Control Center, BRAILLEX Trio's main menu in the notetaking mode that offers a selection of activities, like the Windows start menu does in your computer. Some (like "editor") will take you to a program right away; some (like "settings") will lead to sub-menus.

Especially the setup part of the Control Center also regards BRAILLEX Trio's terminal mode in some respects (dot strength, sleep mode, communications parameters, and the like). You can only access the setup program from the notetaker mode, though.

All BRAILLEX Trio applications remain active as long as the unit is switched on. The Control Center allows you therefore to navigate between the different applications and setting menus while the notetaking mode is activated.

Inside the Control Center, you can either navigate with the arrow keys (see above), or with the Easy Access Bar. 1 step up or left will bring you to the previous item, 1 step down or right to the next. 2 steps down will select the current item (like Enter), 2 steps up will bring you to the superior level (like Escape).

Within the notetaking mode, you can activate the control center at any time using Space + dots 1,2,3,4,5,6.

Please note that when you switch off the device and on again, it will come back where you left it when you switched it off (unless you specified that it shall always start in terminal mode – see chapter 3.2.6.8 Trio start mode on page 38). So if you had been writing a text, it will come back with the editor open and will show the cursor position. If you want to go back to the control center, press Space + dots 1,2,3,4,5,6. The same applies when you had been working in terminal mode. If the connection to the external device is not active then or as long as no new data have been transferred to BRAILLEX Trio, you will then see the message "terminal". From terminal mode, you switch back to notetaker mode using Space + dots 7+8.

3.2.1 Menu Items

In the following you will see the BRAILLEX Trio Control Center main menu. It contains 7 items. Besides the arrow keys and the Easy Access Bar movements described in the previous chapter you can also use shortcuts to activate the different items of the first 2 levels of the Control Center menu. You see those letters separately before the actual menu item in the Control Center. The separate letters do not appear in all languages, but they indicate the shortcuts that will get you to the functions when you write the corresponding letter in the Control Center:

e editor
c calculator
p day planner
d date and time
s settings
t tools
i info

You can look up the full structure of the Control center menu in the chapter 3.3 Overview: Menu Structure and Shortcuts of BRAILLEX Trio's Control Center in Notetaking Mode on page 41.

3.2.1.1 Yes- and No-Questions

In the BRAILLEX Trio programs, a number of questions need to be answered with "yes" or "no" (example: "close current file? (y/n)"). You can answer those questions by typing the corresponding character, or by pressing the cursor routing button behind the corresponding character.

3.2.2 The Editor

The editor is the BRAILLEX Trio word processing tool. In the control center, select "Editor" (shortcut key: e) and hit Enter (Space + dot 8, or simply dot 8) or push the EAB two steps down. If you had opened a file previously and had not closed it, you will get back to that file immediately. Otherwise, you will get the message "file name?" followed by the cursor sign.

Enter a file name and hit Enter (Space + dot 8, or simply dot 8). In case you misspelled the file name, you can use the routing keys or the arrow keys (see below) to get to the typing error and correct the name. Please note that when editing a file name, you are in insert mode, i.e. new characters are inserted at the cursor location.

Once you have entered the file name, the message will disappear and, if the file name had not been assigned yet, you will have a blank line with the cursor in the first cell, and you can start typing.

If you want to edit a file that already exists, hit Enter (Space + dot 8, or simply dot 8) instead of writing a file name and you will get to the list of existing files. Use the up and down arrow keys to browse your files and once you find the file you want to edit, hit Enter again.

3.2.2.1 Cursor Movements within the Editor

Generally, the Braille display follows the cursor movements. If you move the display with the Easy Access Bar, though, in order to read it, the cursor will not follow. If you want to get back to the cursor position, press the front key to the right of the Braille display.

The cursor movements correspond to those of other word processors:

Cursor movements within the editor		
PC key	Braille Keys	Cursor Movement
Left arrow	Space + dot 1	Move the cursor one character to the left
Right arrow	Space + dot 4	Move the cursor one character to the right
Up arrow	Space + dot 2	Move the cursor one line up
Down arrow	Space + dot 5	Move the cursor one line down
Page up	Space + dot 3	Move the cursor 25 lines up
Page down	Space + dot 6	Move the cursor 25 lines down
Home	Space + dots 1,2	Move the cursor to the start of the line
End	Space + dots 4,5	Move the cursor to the end of the line
Ctrl + A	Dots 1,7,8	Move the cursor to the start of text
Ctrl + E	Dots 1,5,7,8	Move the cursor to the end of text
Routing key		The routing keys move the cursor to the place where the key had been pressed.

3.2.2.2 Movements with the Easy Access Bar

With the Easy Access Bar, you can read texts that you opened with the editor, without changing the cursor position.

These are the Easy Access Bar actions within the editor:

Easy Access Bar movements within the editor	
EAB movement	Action
1 step left	Read backward. Moves the display 40 characters to the left. Once you have reached the beginning of a line, the next movement will bring the display to the end of the previous line.
1 step right	Read forward. Moves the display 40 characters to the right. Once you have reached the end of a line, the next movement will bring the display to the start of the next line.
1 step up	Previous line: Moves the display one line up.
1 step down	Next line: Moves the display one line down.
2 steps left	Start of line: Moves the display to the beginning of the line
2 steps right	End of line: Moves the display to the end of the line
2 steps up	Moves the display 1 page (25 lines) up
2 steps down	Moves the display 1 page (25 lines) down

3.2.2.3 The Clipboard

BRAILLEX Trio has a clipboard that you can use to transfer texts within a file or chunks of text from one file to another. You can copy marked text to the clipboard or cut it out and insert it to the clipboard.

Text that you bring to the clipboard will replace any text that was in the clipboard before. Text from the clipboard can be inserted into any other application.

Mark text

If you want to mark a portion of text (for cutting and pasting, deleting, etc.), please proceed as follows:

Bring the cursor to the start of the text you want to mark.
Press Ctrl+T (dots 2,3,4,5,7,8).

Move the display to the end of text to be marked and get the cursor to that place. You may use the cursor routing key to get the cursor to the place. You will see the marked portion of text underlined with dots 7 and 8.

You can now copy, cut or delete the marked text. You can also disable marking by pressing Ctrl+T again.

Cut text

In order to cut a text area, mark it first (see previous chapter). Now press Ctrl+X ("x" with dots 7 and 8). The previously marked text has disappeared.

Copy text

In order to copy a text area, mark it first (see previous chapter). Now press Ctrl+C ("c" with dots 7 and 8). The previously marked text has been copied to the clipboard.

Paste text

You have cut a portion of text and want to insert it (either at the place where you cut it in order to undo the last command, or elsewhere), move the cursor to the place where you want to insert it and press Ctrl+V ("v" with dots 7 and 8). The text will be inserted at the cursor position and you will find the cursor behind the inserted text.

Search for a word

You can search for a word in the active document, forwards and backwards.

- Start the search procedure with Ctrl+F (dots 1,2,4,7,8)
- Write the word you want to search for
- Press Ctrl+R (dots 1, 2, 3, 5, 7, 8) if you wish to invert the search direction. Backwards search is marked with an (r).
- Hit Enter (Space + dot 8, or simply dot 8) to start the search.
- You will find the cursor on the first character of the word you searched for.
- If you want to search for the same word again, press F3 (right thumb + dots 1, 4).
- If you start the search somewhere in the middle of the document, once the search has reached the end of the document, it will automatically continue the search at the start of the document.

If the word you searched for could not be found, you will get the message "not found ". Confirm this message with any key.

Replace a word

In order to replace a word with another one, please proceed as follows:

- Start the search procedure with Ctrl+H (dots 1,2,5,7,8).
- Write the word you want to replace.
- Hit Enter (Space + dot 8, or simply dot 8). In the second edit field, enter the word you wish to have instead. Hit Enter again.
- If the search word is found, it is automatically replaced.
- You can repeat the same operation with F3 (right thumb + dots 1, 4).

If the word you searched for could not be found, you will get the message "not found ". Confirm this message with any key.

3.2.2.4 File Management within the editor

Create a new file

- Within the editor, with a file open, press the key combination CTRL + N (Braille dots 1,3,4,5,7,8). You will get the message: "close current file?"
- Write the letter "y" to close the current file. Any other key will abort the operation.
- You will be asked to enter a new file name. Enter a filename (maximum: 25 characters) and hit Enter (Space + dot 8, or simply dot 8).

Open a file

- Within the editor, with a file open, press the key combination CTRL + O (Braille dots 1,3, 5,7,8). You will get the message: "close current file?"
- Write the letter "y" to close the current file. Any other key will abort the operation.
- You will get to the list of existing files. Select the file you want to open with the arrow keys or the Easy Access Bar and hit Enter or press the EAB 2 steps down to confirm.
- It might be that the file is too big for being edited; in that case you will be asked whether you want to open it for read only operation.

Delete a file

- Within the editor, with a file open, press the key combination CTRL + O (Braille dots 1,3, 5,7,8). You will get the message: "close current file?"
- Write the letter "y" to close the current file. Any other key will abort the operation.
- You will get to the list of existing files. Select the file you want to delete with the arrow keys or the Easy Access Bar.
- Press Del (Space + dots 5,6). You will get the message "delete?"
- Write the letter "y" to confirm.

Rename a file

- Within the editor, with a file open, press the key combination CTRL + O (Braille dots 1,3, 5,7,8). You will get the message: "close current file?"
- Write the letter "y" to close the current file. Any other key will abort the operation.
- You will get to the list of existing files. Select the file you want to rename with the arrow keys or the Easy Access Bar.
- Press F2 (Right thumb + dots 1,2). You will get the message "new name?"
- Enter a filename (maximum: 25 characters) and hit Enter (Space + dot 8, or simply dot 8).

Toggle between the last 2 files you opened

- Within the editor, with a file open, press the key combination Alt-TAB (Braille dots: right thumb + dots 3+7). This will open the last file you opened before the current one.
- With the same key combination, you get back to the file you came from.

Show of hide non-printable characters

- In the editor, the line ends are marked with a special sign "¶". When reading a longer text, this sign may be disturbing.
- You can hide this sign (and other non-printable characters) by pressing Ctrl + y (Braille dots 1,3,4,5,6,7,8).
- With the same key combination, you have Trio show these characters again.

Handling long files: Read-only and Split-file options

When you download a book or a long file to BRAILLEX Trio, inserting a character in the beginning can cause pretty long delays, due to the relatively small amount of RAM memory of the device. For this purpose, the Braillex Filemanager (see chapter 4.2 File Transfer From and To BRAILLEX Trio from page 45) gives you two options when transmitting a long file to BRAILLEX Trio:

1. Marking the file as "read-only". In that case, it is impossible to modify or save the file when you open it with the editor. In the Trio file list, such a file is marked with the letter "r" in front of the file name.

This is a good option for books you want to read. When you exit a write-protected file, Trio will remember the place where you stopped. When you open the file once again, you will automatically get to the place where you stopped.

If you want to make a modification to such a long file (and accept pretty long response times), you can take away the read-only status by pressing Ctrl + w (Braille dots 2,4,5,6,7,8) while you are in the Trio file list. With the same key combination, you set the read-only status again.

3.2 The BRAILLEX Trio Control Center

2. If you send a large file to BRAILLEX Trio that you want to edit, you can choose to have it split into several smaller pieces, which will considerably increase the editing speed.

Split files are marked by an "s" in front of the file name. In the name itself, you find a tilde "~" and a number behind the actual file name (example: "Trio manual~1.txt").

The split files can now be edited and saved. If you transfer a split file back to the PC, it will automatically be re-composed.

If you try to delete one part of a split file, you will get a warning "split file". When retransmitting the file to the PC, the file will be re-composed anyway, with the corresponding part missing.

External Data Storage

If you want to save files you have written within BRAILLEX Trio's editor on an external media, or if you want to download a file for reading or editing within the device, you use the Braillex Filemanager, a program that is installed along with the drivers and communication programs (called BrxCom).

As the Braillex Filemanager is a PC program, it is explained in detail in the terminal mode section of this manual (see chapter 4.2 File Transfer From and To BRAILLEX Trio from page 45).

3.2.2.5 Overview of Key Commands within the Editor

Key commands in the BRAILLEX Trio Editor	
Ctrl + O	Open a file
Ctrl + N	New file
Ctrl + S	Close file
Ctrl + F	Search in text
Ctrl + H	Search and replace
Ctrl + A	jump to beginning of text
Ctrl + E	Jump to end of text
Ctrl + R	Toggle search direction
Ctrl + T	Set text marker
Ctrl + X	Cut
Ctrl + C	Copy
Ctrl + V	Paste
Alt-Tab (right thumb + dots 3+7)	Toggle between the last 2 documents you opened
Ctrl + Y	Hide (or display) the end-of-line character
DEL (in file list)	Delete a file
F2 (in file list)	Rename a file
Ctrl + W (in file list)	Toggle the read-only status of a file

3.2.3 The Calculator

Once you have selected the calculator from the Control Center (shortcut key: "c"), you get a prompt ">" followed by the cursor sign. You can now start the calculation. The BRAILLEX Trio calculator knows the four basic arithmetic operations.

The calculation starts with a number you type in, followed by an operand (+, - / or *) that makes disappear the number. The operand is displayed in Braille cell 40. You then type the second number (the operand will stay in cell 40) and close the operation either by pressing Enter (Space + dot 8, or simply dot 8) or by pushing the Easy Access Bar 2 steps down.

You abort an operation or clear the memory by pressing Escape (space + dot 7) or by pushing the Easy Access Bar 2 steps up.

3.2.4 Day Planner

The day planner offers you a simple list of your appointments. If you wish, Trio can also remind you of those appointments, as long as it is switched on (alarm function).

The shortcut key for the day planner is "p".

3.2 The BRAILLEX Trio Control Center

When you open the day planner for the first time, you will see the message "no appointments". Once you have entered some appointments into the planner, you will see the next appointment that will come up.

In order to insert a new appointment, enter Ctrl+N (Braille dots 1,3,4,5,7,8). Trio will enter the current date and time. The cursor mark is located on the first date position. You can modify the date and time for the appointment just by overwriting the values. You can also skip parts of the information using the arrow keys or the cursor routing buttons or press the Easy Access Bar two steps to the right (or left, if you want to go back). This latter function will move from the date to the time and then to the object field and back again.

If you enter Ctrl + A (Braille dots 1,7,8), you activate the alarm function. A star "*" will appear behind the date and time data. If the alarm is set, you will get an acoustic signal once the time for the appointment has come up. The alarm will work both in notetaking and in terminal mode; the only condition for the alarm to work is that the device is switched on. If you hit Ctrl + A once again, you deactivate the alarm status again.

Once you have set the correct date and time and, if necessary, modified the alarm status, the cursor will jump to a free field. You can now write the object of the appointment. The text field for the object is limited to 60 characters.

All data within the appointment may be edited. Just place the cursor to the place you want to modify and change it. You can also use Trio's clipboard while editing an appointment to insert an object that you had in a text file, for example (mind the 60 character limit, though!), or vice versa: You can copy the whole appointment and paste it into a text file.

In order to save the appointment you either hit Enter (Space + dot 8, or simply dot 8), press the Easy Access Bar two steps down, or press Ctrl + S (Braille dots 2,3,4,7,8). In any case, you get the question "save appointment?". Insert "y" for "yes" if you want to save the appointment, "n" for "no", or press Escape (Braille space + dot 7) if you had hit Enter by mistake, to be able to continue editing your appointment. Once you have answered the "save appointment" question with yes or no, you will exit the edit mode. You will hear 3 warning beeps if the date for the appointment is in the past.

You are now in the list of appointments. The closest one in the future will be presented first. Use the up and down arrow keys (space + dot 2 or 5) or push the Easy Access Bar one step up or down to browse your appointments. If the object is longer than 20 characters, you can read the rest like any other text, pushing the Easy Access Bar one step right or left.

Pressing the Easy Access Bar 2 steps up or down you will get to the first or the last entry of the list. If you want to modify an entry, hit Enter (Space + dot 8, or simply dot 8). You can also get into the editing mode by hitting Ctrl + E (Braille dots 1,5,7,8), Ctrl + A (Braille dots 1,7,8 — this also modifies the alarm status), or by

pushing the Easy Access Bar 2 steps down. You can also delete an appointment by pressing DEL (space + dots 5,6).

3.2.4.1 Overview of Key Commands within the Day Planner

Key commands in the BRAILLEX Trio Editor	
Ctrl + N	New appointment
Ctrl + E	Edit - modify existing appointment
Ctrl + A	Modify alarm status (on / off; also activates edit mode)
Ctrl + S	Save appointment
Ctrl + C	Copy appointment
Ctrl + V	Paste text from editor
DEL (in list)	Delete appointment
Home (in list)	Go to first appointment
End (in list)	Go to last appointment
Up, Down arrow	Go to previous / next appointment

3.2.5 Date and Time

If you select "Date and Time" from the Control Center (shortcut key: "d"), Trio will show the current time followed by the date. You exit the time and date display by pressing Escape (space + dot 7) or by pushing the Easy Access Bar 2 steps up.

At this place, you cannot change the time and date settings. For this purpose, you have to go to "tools", "set date and time".

Please note that BRAILLEX Trio does not have a separate battery to buffer the internal clock. This means, you will have to adjust the date and time settings when Trio has been without batteries or disconnected from a USB power source for some time. If you just replace the batteries with a set of fresh ones you won't have to adjust date and time.

3.2.6 Settings

Selecting "Settings" from the Control Center (shortcut key: "s"), you can adjust the internal clock, the Bluetooth settings, select the Braille table you want to work with; the battery management when you use Trio in a USB connection, the sleep times, and last but not least the Braille dot firmness.

Within the Settings menu, you use the same commands as in the Control Center, i.e. Enter (Space + dot 8, or simply dot 8) or EAB two steps down for selecting a menu item, Escape (space + dot 7) to exit, etc.

3.2.6.1 Set Date and Time

All time and date settings can be adjusted in this menu. When you select it, you will get to a sub-menu with four entries:

- Time

3.2 The BRAILLEX Trio Control Center

- If you want to adjust the time settings, select this menu item. You see the current clock settings. You can now modify the time in the format hhmmss. If the date format is set to "12 hours am/pm", you should also check this setting and eventually change it entering "a" or "p" at the correspondent place. You may skip (and maintain) part of the settings by moving the cursor sign with the arrow keys (space + dot 4 for right arrow, space + dot 1 for left arrow; the cursor routing keys have no function in this menu). Confirm and exit this menu item with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. You may also cancel the operation with Escape (space + dot 7) or EAB two steps up.
- **Date**
- Select this item to modify the date settings. Depending on the date format settings (see below) you now enter the date in the format ddmmyy (European date format) or in the format mmddyy. In both cases the first two digits "20" of the year are preset and cannot be modified. Confirm and exit this menu item with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. You may also cancel the operation with Escape (space + dot 7) or EAB two steps up.
- **Time Format**
- Select this item to select the time format. You can chose between "24 hours" and "12 hours am/pm" using the arrow keys or the EAB. The star in front of the item indicates the current selection. Confirm and exit this menu item with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. You may also cancel the operation with Escape (space + dot 7) or EAB two steps up.
- **Date Format**
- Select this item to select the date format. You can chose between "European" (dd-mm-yyyy) and "American" (mm-dd-yyyy) formats using the arrow keys or the EAB. The star in front of the item indicates the current selection. Confirm and exit this menu item with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. You may also cancel the operation with Escape (space + dot 7) or EAB two steps up.

3.2.6.2 Bluetooth Settings

In the Bluetooth Settings menu, you find three submenu items that will allow you to activate or disable Trio's Bluetooth port, and to personalize your BRAILLEX Trio.

- **Bluetooth on/off**
- In this sub-menu, you generally activate or disable BRTAILLEX Trio's Bluetooth port. Default is "active". If you do not use the Bluetooth port to communicate with other Bluetooth devices, we strongly suggest disabling it in order to save battery life. With Bluetooth disabled, the battery life will be almost doubled. You can chose between "bluetooth active" and "bluetooth off" using the arrow keys or the EAB. The star in front of the item indicates the current selection. Confirm and exit this menu item with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. You may also cancel the operation with Escape (space + dot 7) or EAB two steps up.
- **Bluetooth Name**
- Here you find the name used to identify BRAILLEX Trio as a Bluetooth device. By default this is "braillex trio". In environments where more than one BRAILLEX Trios may appear, we suggest that you specify the name, adding the serial no. of

the device to its name, for example. Confirm and exit this menu item with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. You may also cancel the operation with Escape (space + dot 7) or EAB two steps up.

- **Bluetooth Pin**
- When two Bluetooth devices are connected, a pin code is used as a security feature. By default, BRAILLEX Trio's pin code is "0000". You can overwrite it with a new one and confirm with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. Please keep in mind that those pin codes may only contain numbers.

3.2.6.3 Select Braille Table

When selecting this item you will enter a list of national Braille codes both for the Braille display and for the Braille keyboard.

Chose the one that fits your preference using the arrow keys or the EAB. The star in front of the item indicates the current selection. Confirm and exit this menu item with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. You may also cancel the operation with Escape (space + dot 7) or EAB two steps up.

Please note that this selection will only concern BRAILLEX Trio's internal functions, not the PC access functions.

3.2.6.4 Power in USB Operation

Here you can define BRAILLEX Trio's power source when in USB operation. The choices are "use USB power" or "use internal battery".

When selecting "use USB power", you decide to drain power from the USB host (typically a PC) BRAILLEX Trio is connected to. If this PC is a notebook PC, the second choice "use internal battery" may make sense, though, as BRAILLEX Trio's batteries last way longer than the notebook batteries typically do.

Make your choice using the arrow keys or the EAB. The star in front of the item indicates the current selection. Confirm and exit this menu item with Enter (Space + dot 8, or simply dot 8) or EAB two steps down. You may also cancel the operation with Escape (space + dot 7) or EAB two steps up.

Please note that in case the PC does NOT supply enough power, BRAILLEX Trio will use the internal batteries, and in case the internal batteries are empty, it will try to get the necessary power from the USB port.

3.2.6.5 Sleep times

This menu contains two items that both open a sub-menu:

- **Sleep Time Display**
- defines the inactivity time before the Braille display is switched off in order to save energy. Default is 5 minutes. Enter the desired sleep time and confirm with Enter (Space + dot 8, or simply dot 8).
- If you do not wish the display to switch off at all, enter "0".

3.2 The BRAILLEX Trio Control Center

- Once the display has gone to sleep, you activate it again by pushing the Easy Access Bar in any key direction.
- **Sleep Time Trio**
- You can also set a time of inactivity before the device completely switches off. Default is 10 minutes.
- If you do not wish the device to switch off at all, enter "0".
- Once Braillex Trio has gone to sleep, you switch it on again using the on-off switch. It will come back in the same situation you left it before it switched off.

3.2.6.6 Dot Firmness

Here you can adjust the firmness of BRAILLEX Trio's Braille dots to your reading preferences. The possible values go from "0" (soft) to "7" (strong).

3.2.6.7 Auto-save time for editor

In order to increase BRAILLEX Trio's data security, the editor has an auto-save function. After a defined time, Trio will automatically save the active file. The time for the auto-save function is set in the new menu item "auto-save time for editor" in the "settings" menu. If you select "0" as the value, the auto-save function is disabled.

3.2.6.8 Trio start mode

Here you can select the operation mode BRAILLEX Trio shall start in when you switch on the device. The three options are:

- **start as notetaker:**
- BRAILLEX Trio will start in its notetaker mode. You can then use it for taking notes, calculating, or setting it up.
- **start as terminal:**
- BRAILLEX Trio will act as a Braille display and a secondary (Braille) keyboard to a computer.
- **select on usb connection:**
- BRAILLEX Trio's start mode depends on whether its USB port is connected to a (running) PC; If a USB connection is detected, Trio will start in terminal mode, otherwise it will start in notetaker mode.

Please note that in any case, you can switch operation modes at any time pressing Space + dots 7+8 on the Braille keyboard.

3.2.7 Tools

The tools menu offers a number of options to reset the device to factory standard and to recharge the batteries.

3.2.7.1 Format Flash Memory

The flash memory contains all data you might have stored in your BRAILLEX Trio. When formatting Trio's flash memory, you do not erase any of Trio's programs, but delete all texts, all day planner appointments, and the contents of the clipboard.

This is how you proceed:

- From the "Tools" menu, select "format flash memory" (shortcut key: "f").
- You will see the message "are you sure? all data will be lost!"
- Confirm the fact that you want to format the flash memory typing "y" or cancel the operation with Escape (space + dot 7) or EAB two steps up. After you have confirmed, you will see the message "formatting flash", and after a short while, "flash successfully formatted".

3.2.7.2 Restore Default Values

When restoring BRAILLEX Trio's default values, you do not modify the contents of the flash memory (see above), i.e. you keep all of your data, but you reset all the settings to the (language depending) default values (Braille character set, sleep times, Bluetooth settings, etc.).

This is how you proceed:

- From the "Tools" menu, select "restore default values" (shortcut key: "d").
- You will see the message "reset default values?"
- Confirm the message typing "y" or cancel the operation with Escape (space + dot 7) or EAB two steps up. After you have confirmed, you will see the message "default values restored".

3.2.7.3 Battery Recharge

You need this menu item if you want to recharge BRAILLEX Trio's batteries with the supplied USB charger.

When activating this menu item, you will get a sub-menu containing two entries: "battery recharge active" and "battery recharge off". By default, it is set to "off". Switch it to "on" if you have the USB charger connected to BRAILLEX Trio's USB port, if you have the right NiMH rechargeable batteries inside the unit, and if you want to start the charging procedure.

For charging Trio's batteries, please also refer to chapter 2.2.8 Battery Handling, page 10

3.2.8 Info

The Info section of BRAILLEX Trio's Control Center contains three items. You can check the battery status, the remaining memory capacity, and Trio's program version. The shortcut key for info is "i".

3.2.8.1 Power

When you select "power" (shortcut key: "p"), you get the current energy status. In the first place, you see the remaining battery power in a percentage value, and then you see the current charging status if applicable.

3.2 The BRAILLEX Trio Control Center

3.2.8.2 Memory

The memory section (shortcut key: "m") shows you the overall memory capacity and then the remaining free memory of BRAILLEX Trio in kb; example:

"total: 4195kb free: 4178kb"

3.2.8.3 Program Version

Here you can check the current program version of BRAILLEX Trio. Example:

"braillex trio rev. 370". The shortcut key for this item is "v".

3.3 Overview: Menu Structure and Shortcuts of BRAILLEX Trio's Control Center in Notetaking Mode

e editor			
c calculator			
p day planner			
d date and time			
s settings	d set date and time	time date time format	12 hours am/pm 24 hours
		date format	european american
	b bluetooth settings	bluetooth on/off	Bluetooth active Bluetooth off
		bluetooth name bluetooth pin	
	t select braille table	Selection of Braille codes (Depending on regional groups)	
	f dot firmness		
	p power in usb operation	use internal battery use usb power	
	s sleep times	sleep time display sleep time trio	
	a auto-save time for editor		
	m trio start mode	start as notetaker start as terminal select on usb connection	
t tools	f format flash memory		
	d restore default values		
	b battery recharge	battery recharge off battery recharge on	
i info	p power		
	m memory		
	v program version		

3.3.1 Braille Table Selections

Space limitations lead to the fact that the Trio firmware for every country of the regions listed below contains the Braille tables only of the corresponding area (plus German and American).

The regions are the following:

Region	Braille tables
Northern Europe	German, American, British, Norwegian, Swedish, Finnish, Icelandic
Western Europe	German, American, British, French, Italian, Dutch, Flemish
Eastern Europe	German, American, Russian, Polish, Hungarian, Czech, Croatian



4. BRAILLEX Trio's Terminal Functions

BRAILLEX Trio offers 40 Braille cells for reading the screen. You can move this **reading window** across the screen with the **Easy Access Bar**. With the **routing keys** integrated into the Braille cells you move the mouse pointer to any desired place on the screen.

4.1 Basic Functions

You control the Braille display either with the Easy Access Bar alone, or in combination with the keys.

In any case, the behavior of the Braille display depends on the screen reader software. Depending on the software package used in conjunction with BRAILLEX Trio, a key or key combination might have different meanings.

Some screen reader programs such as JAWS for Windows and Dolphin HAL/Supernova also support the "Papenmeier Simple User Interface", a series of on-screen menus that make the previous key + Easy Access Bar combinations redundant.

Some of the basic functions are identical for all screen readers, though:

4.1.1 Moving the Braille display (Reading Window)

For navigating across the screen, you just use the Easy Access Bar.

Push the Easy Access Bar one step up to move the display **up one line**. Push the Easy Access Bar one step down to move the display **down one line**. You maintain the column position of your Braille display when you push the Easy Access Bar up or down.

The Easy Access Bar positions one step left and one step right have the meaning "**Read backward**" and "**Read forward**".

- Push the Easy Access Bar one step left to move the reading window 40 columns to the left.
- Push the Easy Access Bar one step right to move the reading window 40 columns to the right.

Using the "Read forward" function, you continuously read the screen, i.e. once the display has finished reading the screen line, it will go to the next line if you continue pushing the Easy Access Bar.

4.1.2 Using the BRAILLEX Trio Braille keyboard to access a PC

If you have installed the keyboard driver during the BRXCom installation, as soon as you switch to terminal mode, BRAILLEX Trio's Braille keyboard becomes a PC keyboard.

Further to the (language dependent) regular Braille codes, BRAILLEX Trio allows to enter most of the PC function keys (and combinations):

4.1.3 PC keystrokes with the Braille keyboard

PC keystrokes with the BRAILLEX Trio Braille keyboard equivalents	
Enter	Space + dot 8; alternatively: dot 8
Escape	Space + dot 7
Left arrow	Space + dot 1
Right arrow	Space + dot 4
Up arrow	Space + dot 2
Down arrow	Space + dot 5
Page up	Space + dot 3
Page down	Space + dot 6
Home	Space + dots 1,2
End	Space + dots 4,5
Insert	Space + dots 2,3
Del	Space + dots 5,6
Tab	Space + dots 3,7
Backspace	Space + dots 6,8; alternatively: dot 7
F1-F12	Right thumb + letters a-l
NumPad 1-0	Right thumb + numbers 1-0
NumPad-operators	Right thumb + "+", "-", "*", "/"
NumPad Enter	Right thumb + dot 8
NumPad NumLock	Right thumb + letter "n"

4.1.4 Braille-Emulation of PC-Shift, Alt, Ctrl, Win

A special problem when emulating a full PC keyboard is the fact that you can combine just about any key with Ctrl, Alt or Shift. Computer Braille typically gives the possibility to write capitalized characters, such as "A" (typically dot 1+7), but there is no generally accepted code for Ctrl-Esc, for example, or Shift-F1.

The Braille keyboard of BRAILLEX Trio enables you to write just about any PC key combination, especially with these keys (and with Insert, which is commonly used in combination with other keys in a popular screen reader program).

Rather than defining a key combination (for example with combinations of thumb keys, space and Braille) for all these key combination, BRAILLEX Trio makes the key modifiers Shift, Alt, Ctrl and Insert available in the way of "sticky keys", as a prefix

4.1 Basic Functions

for combinations with other keys. For this purpose, you will use the thumb keys left and right of Braillex Trio's space keys.

So if you want to write a key combination with Shift for example, you write the "Shift" code first, and the other key afterwards. In case you type one of these prefixes by mistake, you can also disable it again.

Braille keyboard emulation of Shift, Alt, Ctrl, Ins	
Shift	Left thumb + dot 1
Ctrl	Left thumb + dot 2
Alt	Left thumb + dot 3
Shift + Ctrl	Left thumb + dots 1,2
Alt + Shift	Left thumb + dots 1,3
Alt + Ctrl	Left thumb + dots 2,3
Shift + Alt + Ctrl	Left thumb + dots 1,2,3
Insert (as a prefix)	Left thumb + dots 3,7
Win key (as a prefix)	Left thumb + dot 4
Disable prefix	Left thumb + dot 7

Please note that these prefixes currently only apply in the terminal mode, i.e. when you type on the computer connected to Trio. In notetaking mode (i.e. in the editor), Ctrl combinations must be written with dots 7 and 8.

4.1.5 Using contracted (grade 2) Braille with the computer (English and French only)

For English and French, BrxCom offers the possibility to enter your texts in contracted Braille (grade 2). The program will then back-translate the text on the fly, i.e. on the computer screen (and in the documents generated like that) you will see regular text.

The back-translation feature is only enabled if during the installation process you have selected an English or French keyboard layout (i.e. English (UK), English (US), French (France), French (Luxembourg), French (Switzerland), or French (Belgium).

You start or stop the back-translation feature by pressing space + dots 1,4.

Enable / Disable grade 2 back-translation (English and French only)	
Enable / Disable grade 2 back-translation (toggle)	Space + dots 1,4.

Please note that while back-translation is active, BRAILLEX Trio will transfer the text to the PC only once hit a space, i.e. you will not be able to read your entry until you have finished a word.

4.2 File Transfer From and To BRAILLEX Trio

Transferring files between BRAILLEX Trio and a PC obviously also concerns Trio's notetaking mode, as you either transfer files you have written within the Trio editor, or you transfer files from the computer to BRAILLEX Trio so you can read or edit them within Trio's editor. The file transfer itself is handled by a PC program, though, and you typically control the program with your screen reader, and Trio's terminal function.

When installing the drivers for your screen reader programs, you also automatically install two auxiliary programs that help you transferring and managing the files you have stored in your BRAILLEX Trio, and a viewer that will allow sighted people to see what is going on on Trio's Braille display when you are in notetaking mode.

4.2.1 The BRAILLEX Trio Filemanager

With the TRIO Filemanager (BRXCom Filemanager) you can manage the texts stored in BRAILLEX Trio, from your PC. You will find a shortcut to "BRAILLEX Filemanager" on the desktop of your PC.

Before starting the BRAILLEX Filemanager, please make sure BRAILLEX Trio is switched on and connected to the PC (either via a USB or via a Bluetooth connection). For the actual file transfer, Trio's working mode is not important, but if you want to check the transfer on your Braille display you better switch to terminal mode using space + dots 78 and start your screen reader. If BRAILLEX Trio is not properly connected to the PC, the BRAILLEX Filemanager will issue an error message and will not be started.

The BRAILLEX Filemanager first comes up with a blank window. If you press F5 (right thumb key + dots 15), you update the list of files contained in BRAILLEX Trio. You move through that list using the arrow keys.

All files contained in BRAILLEX Trio have file extension, i.e. "test.txt". Behind the file name, you see the size, the date and time of the files. The list is sorted in alphabetical order.

4.2.1.1 Copying Files

Transferring Files from the PC to BRAILLEX Trio

BRAILLEX Trio can only handle straight texts, no files in a program specific format (such as *.doc; *.rtf; etc.). The file name length must not exceed 32 characters. File names also should not start with a tilde ("~", as this sign at the beginning of a file name indicates a Trio system file. If you want to copy a file from the PC to Braillex Trio, please proceed as follows:

- In the BRAILLEX Filemanager, press Ctrl+T.
- A regular Windows dialog will come up that lets you select the name of the file to be transferred.
- Select the file you want to transfer and hit Enter.
- Handling long files in Braillex Trio is time-consuming. For this purpose, when you want to send a long file to the device, you have the choice to either
 - 1) Mark it read-only. This is used for large file like books that are stored in the devices for reading only. In those cases, it is impossible to modify or save the files.

In the Trio file list (within the editor), such files are marked with the letter "r" in front of the file name.

When you read a write-protected file, Trio will remember the place where you stopped once you exit the editor. When you open the file once again, you will automatically get to the place where you stopped.

- 2) Send it as a split file. If you send a large file to BRAILLEX Trio that you want to edit, you can chose to have it split into several smaller pieces, which will considerably increase the editing speed.

Split files are marked by an "s" in front of the file name. In the name itself, you find a tilde "~" and a number behind the actual file name (example: "Trio manual~1.txt").

The split files can now be edited and saved. If you transfer a split file back to the PC, it will automatically be re-composed.

If you try to delete one part of a split file, you will get a warning "split file". When retransmitting the file to the PC, the file will be re-composed anyway, with the corresponding part missing.

- The file will then be transferred. Especially for longer files, this may take some time. You will get a message when the file transfer has been completed successfully.
- Once you have acknowledged this message by hitting Enter, you will see the updated file list.

Important note: While transferring a file to Braillex Trio, we strongly suggest that you do **NOT** use the device's internal function. Using the editor for writing or editing a file is automatically inhibited during file transfer; in theory it would be possible to read a read-only file in the editor, but as this operation also uses processing power and memory, as said before, we suggest that you wait until the transfer is finished.

Transferring Files from BRAILLEX Trio to the PC

If you want to copy a file from Braillex Trio to the PC, please proceed as follows:

- In the BRAILLEX Filemanager file list, select the file you want to transfer with the arrow keys.
- Once the desired file is highlighted, hit Enter.
- A regular Windows dialog comes up that lets you select the target folder for the file you want to transfer.
- Within a selected folder, you may create a new folder pressing Alt+O.
- Confirm the selected folder with Enter.
- The successful file transfer is confirmed by a message. Acknowledge this message with Enter.

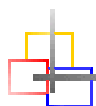
4.2.2 BRAILLEX Viewer

The BRAILLEX Trio viewer is a program that will help sighted persons to visualize the contents on the Braille display when Trio is in notetaking mode.

The viewer is automatically installed on your computer when you install BRXCom. You will find a shortcut named "BRAILLEX Viewer" on the desktop of your PC.

Before starting up the viewer, you need to connect BRAILLEX Trio to the PC and either start the BRAILLEX Filemanager or your screen reader. Once you have started the Braillex viewer, make sure that the display contents changes once (by moving the Easy Access Bar, for example) in order to update the blank viewer window. From that time on, you will be able to see the Braille display contents in this window, at least as long as the connection with the PC is maintained.

Please note that the viewer only shows the display contents when you are in notetaking mode. The screen reader programs JAWS, Dolphin HAL/Supernova or Window-Eyes have their own visualization programs allowing to visually check the Braille display contents on the computer screen.



4.3 BRAILLEX Trio and JAWS For Windows

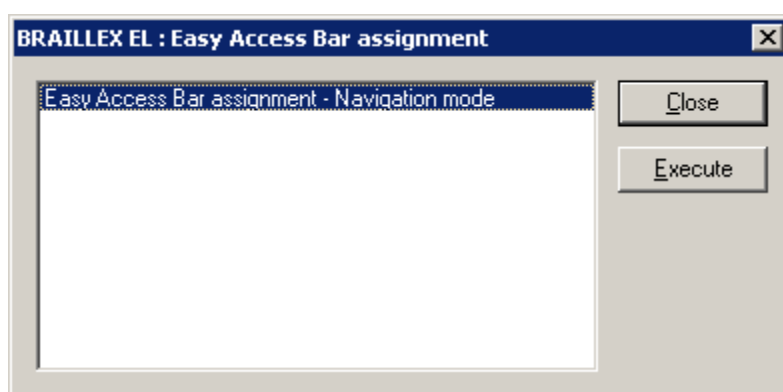
In combination with JAWS for Windows, BRAILLEX Trio works like any other Braille display belonging to Papenmeier's world-famous BRAILLEX EL family. The handling and the functionality are identical.

When navigating in the active window, you can choose between three different working modes, which influence the assignment of the Easy Access Bar:

- **Navigation Mode**
- In the Navigation Mode, you just read across the screen when using the navigation keys as described above; the cursor is NOT moved. This also means that you can explore parts of the screen where the cursor can't go.
- **PC Mode**
- The PC mode is the opposite: Instead of moving the display across the screen when pushing the Easy Access Bar, you move the cursor. Please note that as long as the active cursor moves the Braille display, this obviously also influences the Braille display position.
- **Combined Mode**
- The so-called Combined Mode is a mix of the two modes described above. It is useful especially when it comes to reading long text documents. Whenever you press a reading key and a line border is crossed, the PC cursor is moved to the new line as well. This means that you can read a text without having to bother about screen pages.

4.3.1 Selecting the Working Modes

In order to select the above mentioned Braille display working modes, press BRAILLEX Trio's right rear key next to the Braille display. You will get a dialog box that looks like follows:



The mode displayed is the one currently selected. Move the Easy Access Bar one step left or right to change the values. Once you have reached the end of the list, you will see the first value again. The options are the following:

- Navigation mode
- PC Mode
- Combined Mode

For setting the value temporarily, push the Easy Access Bar 2 steps up. This will set the value displayed and return to the application you came from.

If you want to save the setting as a new default for the current application, push the Easy Access Bar 2 steps down. You will hear the message "settings saved", the value displayed will be activated, and you will return to the application you came from.

4.3.2 Easy Access Bar Assignment in the Three Working Modes

In the following you will see the assignment of the Easy Access Bar in the three different working modes:

4.3.2.1 Navigation Mode

Used for normal screen navigation. The cursor position is not changed. Two marker positions can be reached directly: the title bar (with 2 steps up) and the last window line, which typically corresponds to a status line (with 2 steps down). The main reading functions (read forwards and backwards) have a double assignment: they can be reached with both the first step and the second step right or left.

Navigation Mode Functions within JAWS	
Easy Access Bar	Function
One step up	Moves the display one line up.
One step down	Moves the display one line down.
One step left	Read backwards.
Two steps left	Same as one step left.
One step right	Read forwards.
Two steps right	Same as one step right.
Two steps up	Moves the display to the title bar
Two steps down	Moves the display to the last line of the window.

4.3.2.2 PC Mode

In PC mode, the Easy Access Bar allows to navigate through an application. Easy Access Bar keys will emulate PC keyboard functions:

PC Mode Functions within JAWS	
Easy Access Bar	Function
One step left	PC Left arrow key
One step up	PC Up arrow key
One step right	PC Right arrow key
One step down	PC Down arrow key
Two steps left	(Shift)+(Tab)
Two steps up	(Alt); within a dialog box or menu: (Esc)
Two steps right	(Tab)
Two steps down	(Enter)

4.3.2.3 Combined Mode

The combined mode includes both screen navigation and cursor movement features. When you move the Easy Access Bar up or down, the cursor is moved one line up or down as well (cf. PC mode). When you move the Easy Access Bar to the right, the function is the same as in navigation mode if the text line is longer than the display is. The cursor remains at the original position. Once all the text of that line has been displayed, another “read forwards” command will move both the cursor and the display to the next line. Pushing the Easy Access Bar one step left corresponds to “read backwards” if you are within a long line of text. Otherwise, both cursor and display are moved one line up.

In analogy to the navigation mode, two marker positions can be reached directly: the title bar (with 2 steps up) and the last window line, which typically corresponds to a status line (with 2 steps down). This will NOT move the cursor. The main reading functions (read forwards and backwards) have a double assignment: they can be reached with both the first step and the second step right or left.

Combined Mode Functions within JAWS	
Easy Access Bar	Function
One step left	Read backwards (within a long line), or: move cursor and display to previous line
Two steps left	Same as one step left
One step up	Move cursor and display to previous line
One step right	Read forwards (within a long line), or: move cursor and display to next line
Two steps right	Same as one step right.
One step down	Move cursor and display to next line
Two steps up	Moves the display to the title bar
Two steps down	Moves the display to the last line of the window.

4.3.3 Cursor Tracking within JAWS

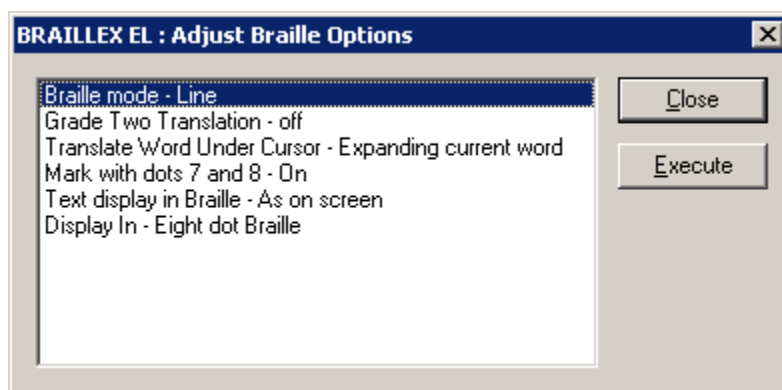
When navigating across the screen with the Braille display, you do not always take the cursor with you. You can return to the cursor position at any time. If the cursor is not present within the Braille display and you want to move the display back to the cursor position, press the right front key next to the Braille display. This will move the display to the cursor location and make sure that when the cursor is moved, the display will follow.

You can also decide not to have the Braille display follow the cursor movements. For this purpose, press the right front key while the cursor is visible on the display. You will hear the message "the active cursor will not move the Braille display", and the automatic tracking is disabled. In order to enable the cursor tracking again, move the display away from the cursor and press front right again.

Cursor Tracking within JAWS	
Key	Function
Right front key while cursor is NOT within Braille window	Enable cursor tracking and move display to the cursor position
Right front key while cursor is visible within Braille window	Disable cursor tracking

4.3.4 Braille presentation within JAWS

When pressing the left front key next to the Braille display, you access a number of Braille presentation options. A dialog box with six different parameters will pop up:



In this dialog, you can adjust the most frequently used Braille presentation options. The choices you have refer to the Braille verbosity settings within JAWS. The settings displayed are the ones that are currently selected.

Move the Easy Access Bar one step down or up to move between the different parameters. Move the Easy Access Bar one step left or right to change the values. The options are the following:

Braille presentation options within JAWS	
Parameters	Options
Braille mode	Line Structured
Grade two translation	On Off
Translate word under cursor	Translating whole line Expanding current word
Mark with dots 7 and 8	On Off
Text display in Braille	As on screen Line up text
Display in	Eight dot Braille Six dot Braille

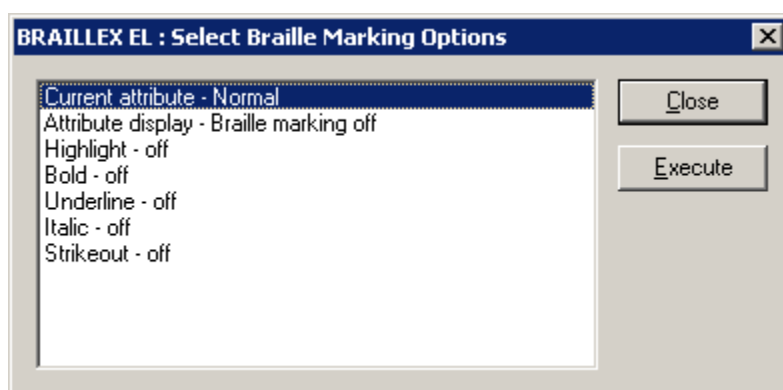
For setting the values temporarily, push the Easy Access Bar 2 steps up. This will set the value displayed and return to the application you came from.

If you want to save the setting as a new default for the current application, push the Easy Access Bar 2 steps down. You will hear the message "settings saved", the value displayed will be activated, and you will return to the application you came from.

4.3.5 Reveal Text Attributes within JAWS

You can have the Braille display reveal different text attributes. The Braille display then underlines the corresponding portion of text with dots 7+8. You can select any of the different attributes directly, or you can choose to get all available attributes revealed. You can, of course, also disable this function.

Press the left rear key next to the Braille display to activate the selection. You will see a dialog that looks like follows:



The first line in the dialog box shows the current attribute value at the cursor position of the application you are in. You can obviously also use this function to just look up the exact attribute at the cursor position.

The next line contains the global attribute display choices:

- Attribute display: Braille marking all
- Attribute display: Braille marking off
- Attribute display: Braille marking see below for current settings

If you select "Braille marking all", all text with screen attributes other than normal will be marked with dots 7 and 8. This only works if in the Braille presentation options, the "mark with dots 7 and 8" option is enabled.

The "Braille marking off" option disables the Braille marking function for all attributes.

If you have chosen one or several attributes you want to get revealed with dots 7 and 8, you get the message "Braille marking see below for current settings".

Push the Easy Access Bar one step to the left or to the right to select the settings.

In the next lines, you see the list of attributes that can be revealed with dots 7 and 8. You enable or disable the marking by pushing the Easy Access Bar one step to the left or to the right. If you modify any of the settings in this part of the dialog, line 2 will change to "Attribute display: modified". If you go back to line 2 you can then also restore the initial selection of attributes to be displayed, by choosing "Braille marking see below for current settings".

For setting the values temporarily, push the Easy Access Bar 2 steps up. This will set the value displayed and return to the application you came from.

If you want to save the setting as a new default for the current application, push the Easy Access Bar 2 steps down. You will hear the message "settings saved", the value displayed will be activated, and you will return to the application you came from.

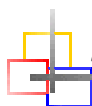
4.3.6 Mouse Functions within JAWS

You can activate mouse functions with all BRAILLEX EL devices, using the routing keys.

In order to execute a mouse click, you first move the Braille display to the relevant position. Then you press a routing key at the desired position. This corresponds to a left mouse click.

You can also use the routing keys to select text, for example in a word processing program. Move the display to the starting point of the marker. Hold the left front key next to the Braille display while you press the routing key at the start position. Then move the display to the end point and repeat the key combination.

Mouse functions within JAWS	
Key	Function
Routing key	Route mouse to the key position and execute a left mouse click
Left front key + routing key	Text selection



4.4 BRAILLEX Trio with Dolphin HAL / Supernova

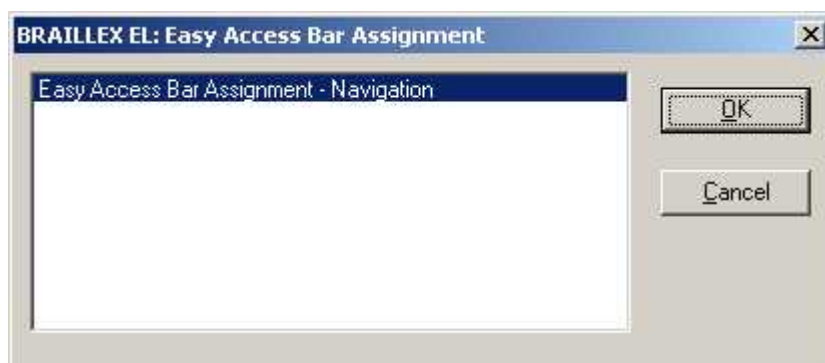
In combination with Dolphin HAL / Supernova, BRAILLEX Trio works like any other Braille display belonging to Papenmeier's world-famous BRAILLEX EL family. The handling and the functionality are identical.

When navigating in the active window, you can choose between three different working modes, which influence the assignment of the Easy Access Bar:

- **Navigation Mode**
- In the Navigation Mode, you just read across the screen when using the navigation keys as described above; the cursor is NOT moved. This also means that you can explore parts of the screen where the cursor can't go.
- **PC Mode**
- The PC mode is the opposite: Instead of moving the display across the screen when pushing the Easy Access Bar, you move the cursor. Please note that as long as the active cursor moves the Braille display, this obviously also influences the Braille display position.
- **Combined Mode**
- The so-called Combined Mode is a mix of the two modes described above. It is useful especially when it comes to reading long text documents. Whenever you press a reading key and a line border is crossed, the PC cursor is moved to the new line as well. This means that you can read a text without having to bother about screen pages.

4.4.1 Selecting the Working Modes

In order to select the above mentioned Braille display working modes, press BRAILLEX Trio's right rear key next to the Braille display. You will get a dialog box that looks like follows:



The mode displayed is the one currently selected. Move the Easy Access Bar one step left or right to change the values. Once you have reached the end of the list, you will see the first value again. The options are the following:

- Navigation mode
- PC Mode
- Combined Mode

If you want to save the setting, push the Easy Access Bar 2 steps down. The value displayed will be activated, and you will return to the application you came from.

If you want to exit without saving the changes, push the Easy Access Bar 2 steps up. You will then return to the application you came from.

4.4.2 Easy Access Bar Assignment in the Three Working Modes

In the following you will see the assignment of the Easy Access Bar in the three different working modes:

4.4.2.1 Navigation Mode

Used for normal screen navigation. The cursor position is not changed. Two marker positions can be reached directly: the title bar (with 2 steps up) and the last window line, which typically corresponds to a status line (with 2 steps down). The main reading functions (read forwards and backwards) have a double assignment: they can be reached with both the first step and the second step right or left.

Navigation Mode Functions within HAL / Supernova	
Easy Access Bar	Function
One step up	Moves the display one line up.
One step down	Moves the display one line down.
One step left	Read backwards.
Two steps left	Same as one step left.
One step right	Read forwards.
Two steps right	Same as one step right.
Two steps up	Moves the display to the title bar
Two steps down	Moves the display to the last line of the window.

4.4.2.2 PC Mode

In PC mode, the Easy Access Bar allows to navigate through an application. Easy Access Bar keys will emulate PC keyboard functions:

PC Mode Functions within HAL / Supernova	
Easy Access Bar	Function
One step left	PC Left arrow key
One step up	PC Up arrow key
One step right	PC Right arrow key
One step down	PC Down arrow key
Two steps left	(Shift)+(Tab)
Two steps up	(Esc)
Two steps right	(Tab)
Two steps down	(Enter)

4.4.2.3 Combined Mode

The combined mode includes both screen navigation and cursor movement features. When you move the Easy Access Bar up or down, the cursor is moved one line up or down as well (cf. PC mode). When you move the Easy Access Bar to the right, the function is the same as in navigation mode if the text line is longer than the display is. The cursor remains at the original position. Once all the text of that line has been displayed, another “read forwards” command will move both the cursor and the display to the next line. Pushing the Easy Access Bar one step left corresponds to “read backwards” if you are within a long line of text. Otherwise, both cursor and display are moved one line up.

In analogy to the navigation mode, two marker positions can be reached directly: the title bar (with 2 steps up) and the last window line, which typically corresponds to a status line (with 2 steps down). This will NOT move the cursor. The main reading functions (read forwards and backwards) have a double assignment: they can be reached with both the first step and the second step right or left.

Combined Mode Functions	
Easy Access Bar	Function
One step left	Read backwards (within a long line), or: move cursor and display to previous line
Two steps left	Same as one step left
One step up	Move cursor and display to previous line
One step right	Read forwards (within a long line), or: move cursor and display to next line
Two steps right	Same as one step right.
One step down	Move cursor and display to next line
Two steps up	Moves the display to the title bar
Two steps down	Moves the display to the last line of the window.

4.4.3 Cursor Tracking within HAL / Supernova

When navigating across the screen with the Braille display, you do not always take the cursor with you. You can return to the cursor position at any time. If you want to move the display back to the cursor position, press the right front key next to the Braille display. This will move the display to the cursor location.

Cursor Tracking within HAL / Supernova	
Key	Function
Right front key	Move display to the cursor position

4.4.4 Braille presentation within HAL / Supernova

When pressing the left front key next to the Braille display, you access a number of Braille presentation options. A dialog box with six different parameters will pop up:



In this dialog, you can adjust the most frequently used Braille presentation options. The choices you have refer to the Braille verbosity settings within JAWS. The settings displayed are the ones that are currently selected.

Move the Easy Access Bar one step down or up to move between the different parameters. Move the Easy Access Bar one step left or right to change the values. The options are the following:

Braille presentation options within HAL / Supernova	
Parameters	Options
Braille mode	Logical Physical
Literary Braille	On Off
Cursor at word uncontracted	On Off
Enhanced characters	On Off
Expand gaps	On Off
Display in eight dot	On Off

If you want to save the setting, push the Easy Access Bar 2 steps down. The value displayed will be activated, and you will return to the application you came from.

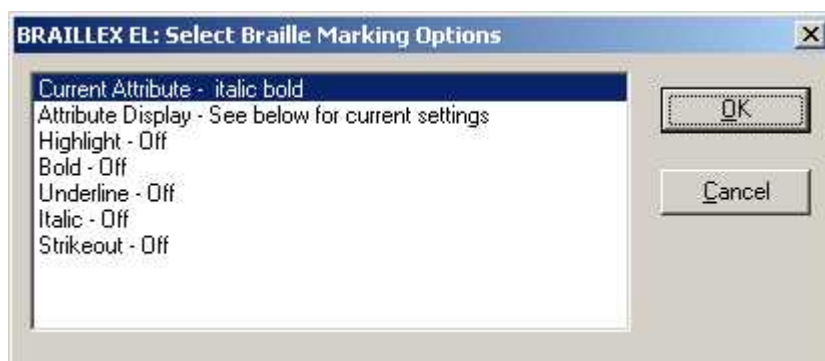
If you want to exit without saving the changes, push the Easy Access Bar 2 steps up. You will then return to the application you came from.

4.4.5 Reveal Text Attributes within HAL / Supernova

You can have the Braille display reveal different text attributes. The Braille display then underlines the corresponding portion of text with dots 7+8. You can select any of the different attributes directly, or you can choose to get all available attributes revealed. You can, of course, also disable this function.

4.4 BRAILLEX Trio with Dolphin HAL / Supernova

Press the left rear key next to the Braille display to activate the selection. You will see a dialog that looks like follows:



The first line in the dialog box shows the current attribute value at the cursor position of the application you are in. You can obviously also use this function to just look up the exact attribute at the cursor position.

The next line contains the global attribute display choices:

- Attribute display: Braille marking all
- Attribute display: Braille marking off
- Attribute display: See below for current settings

If you select "Braille marking all", all text with screen attributes other than normal will be marked with dots 7 and 8. This only works if in the Braille presentation options, the "mark with dots 7 and 8" option is enabled.

The "Braille marking off" option disables the Braille marking function for all attributes.

If you have chosen one or several attributes you want to get revealed with dots 7 and 8, you get the message "Braille marking see below for current settings".

Push the Easy Access Bar one step to the left or to the right to select the settings.

In the next lines, you see the list of attributes that can be revealed with dots 7 and 8. You enable or disable the marking by pushing the Easy Access Bar one step to the left or to the right. If you modify any of the settings in this part of the dialog, line 2 will change to "Attribute display: modified". If you go back to line 2 you can then also restore the initial selection of attributes to be displayed, by choosing "Braille marking see below for current settings".

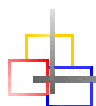
If you want to save the setting, push the Easy Access Bar 2 steps down. The value displayed will be activated, and you will return to the application you came from.

If you want to exit without saving the changes, push the Easy Access Bar 2 steps up. You will then return to the application you came from.

4.4.6 Mouse Functions within HAL / Supernova

You can activate mouse functions with all BRAILLEX EL devices, using the routing keys. In order to execute a mouse click, you first move the Braille display to the relevant position. Then you press a routing key at the desired position. This corresponds to a left mouse click.

Mouse functions within HAL / Supernova	
Key	Function
Routing key	Route mouse to the key position and execute a left mouse click



4.5 BRAILLEX Trio and Window-Eyes

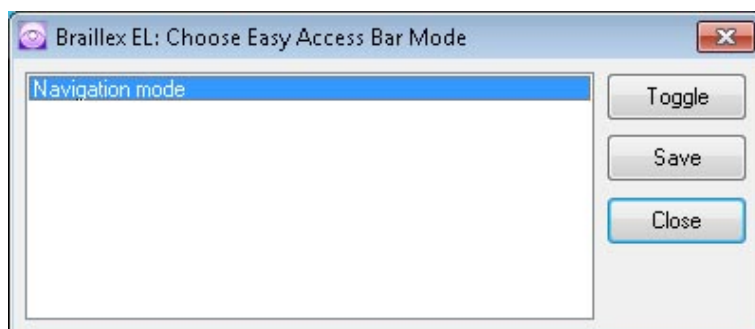
In combination with Window-Eyes, BRAILLEX Trio works like any other Braille display belonging to Papenmeier's world-famous BRAILLEX EL family. The handling and the functionality are identical.

When navigating in the active window, you can choose between three different working modes, which influence the assignment of the Easy Access Bar:

- **Navigation Mode**
- In the Navigation Mode, you just read across the screen when using the navigation keys as described above; the cursor is NOT moved. This also means that you can explore parts of the screen where the cursor can't go.
- **Interactive Mode**
- The interactive mode is the opposite: Instead of moving the display across the screen when pushing the Easy Access Bar, you move the cursor. Please note that as long as the active cursor moves the Braille display, this obviously also influences the Braille display position.
- **Combined Mode**
- The so-called Combined Mode is a mix of the two modes described above. It is useful especially when it comes to reading long text documents. Whenever you press a reading key and a line border is crossed, the PC cursor is moved to the new line as well. As at the bottom of the screen the text will start scrolling, this means that you can read a text without having to bother about handling screen pages.

4.5.1 Selecting the Working Modes

In order to select the above mentioned Braille display working modes, press BRAILLEX Trio's right rear key next to the Braille display. You will get a dialog box that looks like follows:



The mode displayed is the one currently selected. Move the Easy Access Bar one step left or right to change the values. Once you have reached the end of the list, you will see the first value again. The options are the following:

- Navigation mode
- Interactive Mode
- Combined Mode

For selecting the value, push the Easy Access Bar 2 steps down. This will set the value displayed and return to the application you came from.

4.5.2 Easy Access Bar Assignment in the Three Working Modes

In the following you will see the assignment of the Easy Access Bar in the three different working modes:

4.5.2.1 Navigation Mode

Used for normal screen navigation. The cursor position is not changed. Two marker positions can be reached directly: the title bar (with 2 steps up) and the last window line, which typically corresponds to a status line (with 2 steps down). The main reading functions (read forwards and backwards) have a double assignment: they can be reached with both the first step and the second step right or left.

Navigation Mode Functions within Window-Eyes	
Easy Access Bar	Function
One step up	Moves the display one line up.
One step down	Moves the display one line down.
One step left	Read backwards.
Two steps left	Same as one step left.
One step right	Read forwards.
Two steps right	Same as one step right.
Two steps up	Moves the display to the title bar
Two steps down	Moves the display to the last line of the window.

4.5.2.2 Interactive Mode

In Interactive mode, the Easy Access Bar allows to navigate through an application. Easy Access Bar keys will emulate PC keyboard functions:

Interactive Mode Functions within Window-Eyes	
Easy Access Bar	Function
One step left	PC Left arrow key
One step up	PC Up arrow key
One step right	PC Right arrow key
One step down	PC Down arrow key
Two steps left	(Shift)+(Tab)
Two steps up	(F10); within a dialog box or menu: (Esc)
Two steps right	(Tab)
Two steps down	(Enter)

4.5.2.3 Combined Mode

The combined mode includes both screen navigation and cursor movement features. When you move the Easy Access Bar up or down, the cursor is moved one line up or down as well (cf. Interactive mode). When you move the Easy Access Bar to the right, the function is the same as in navigation mode if the text line is longer than the display is. The cursor remains at the original position. Once all the text of that line has been displayed, another “read forwards” command will move both the

4.5 BRAILLEX Trio and Window-Eyes

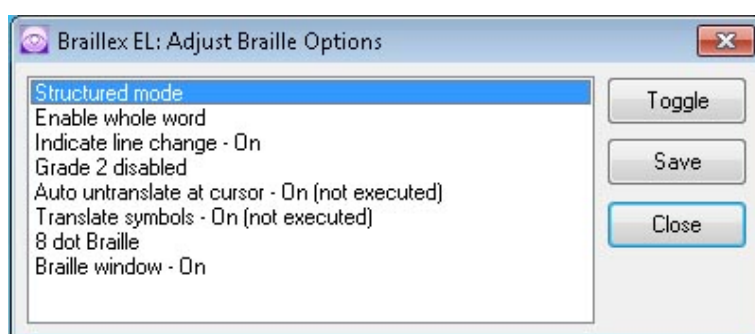
cursor and the display to the next line. Pushing the Easy Access Bar one step left corresponds to “read backwards” if you are within a long line of text. Otherwise, both cursor and display are moved one line up.

In analogy to the navigation mode, two marker positions can be reached directly: the title bar (with 2 steps up) and the last window line, which typically corresponds to a status line (with 2 steps down). This will NOT move the cursor. The main reading functions (read forwards and backwards) have a double assignment: they can be reached with both the first step and the second step right or left.

Combined Mode Functions within Window-Eyes	
Easy Access Bar	Function
One step left	Read backwards (within a long line), or: move cursor and display to previous line
Two steps left	Same as one step left
One step up	Move cursor and display to previous line
One step right	Read forwards (within a long line), or: move cursor and display to next line
Two steps right	Same as one step right.
One step down	Move cursor and display to next line
Two steps up	Moves the display to the title bar
Two steps down	Moves the display to the last line of the window.

4.5.3 Braille presentation within Window-Eyes

When pressing the left front key next to the Braille display, you access a number of Braille presentation options. A dialog box with eight different parameters will pop up:



In this dialog, you can adjust the most frequently used Braille presentation options. The choices you have refer to the Braille settings within Window-Eyes. The settings displayed are the ones that are currently selected.

Move the Easy Access Bar one step down or up to move between the different parameters. Move the Easy Access Bar one step left or right to change the values. The options are the following:

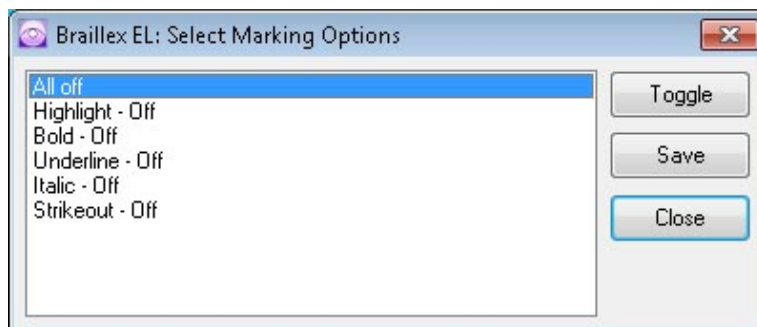
Braille presentation options within Window-Eyes	
Parameters	Options
General presentation option	Structured mode Line mode Speech box mode
End-of-display behavior	Enable whole word Clip words at display end
Indicate line change (beep when the display shows new text line)	on off
Grade 2 presentation	Grade 2 enabled Grade 2 disabled
Auto untranslate at cursor	on off
Translate symbols	on off
Braille presentation	8 dot Braille 6 dot Braille

For setting the values, push the Easy Access Bar 2 steps down. This will set the value displayed and return to the application you came from.

4.5.4 Reveal Text Attributes within Window-Eyes

You can have the Braille display reveal different text attributes. The Braille display then underlines the corresponding portion of text with dots 7+8. You can select any of the different attributes directly, or you can choose to get all available attributes revealed. You can also, of course, disable this function.

Press the left rear key next to the Braille display to activate the selection. You will see a dialog that looks like follows:



The first line of the menu contains the global attribute display choices:

- Attribute display: All off
- Attribute display: All on
- Attribute display: Custom (see below)

4.5 BRAILLEX Trio and Window-Eyes

If you select "all on", all text with screen attributes other than normal will be marked with dots 7 and 8.

The "all off" option disables the Braille marking function for all attributes.

If you have chosen one attribute you want to get revealed with dots 7 and 8, you get the message "Custom (see below)". Please note that Window-Eyes allows to reveal only one attribute at a time; when you active one, all the other ones will be deactivated.

Push the Easy Access Bar one step to the left or to the right to select the settings.

In the next lines, you see the list of attributes that can be revealed with dots 7 and 8. You enable or disable the marking by pushing the Easy Access Bar one step to the left or to the right.

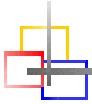
For setting the values, push the Easy Access Bar 2 steps down. This will set the value displayed and return to the application you came from.

4.5.5 Mouse Functions within Window-Eyes

You can activate mouse functions with all BRAILLEX EL devices, using the routing keys.

In order to execute a mouse click, you first move the Braille display to the relevant position. Then you press a routing key at the desired position. This corresponds to a left mouse click.

Mouse functions within Window-Eyes	
Key	Function
Routing key	Route mouse to the key position and execute a left mouse click



4.6 BRAILLEX Trio and Apple VoiceOver

Both Apple computers running Mac OS X (version 10.6 and above) and Apple iPhones (with software version 4 and above) include a free screen reader called VoiceOver that supports BRAILLEX Trio as a terminal (in- and output unit). In the following we will talk about how to install the Braille support.

4.6.1 BRAILLEX Trio and VoiceOver under Mac OS X

Mac OS X v10.6 Snow Leopard includes support for BRAILLEX Trio both via USB and Bluetooth connection.

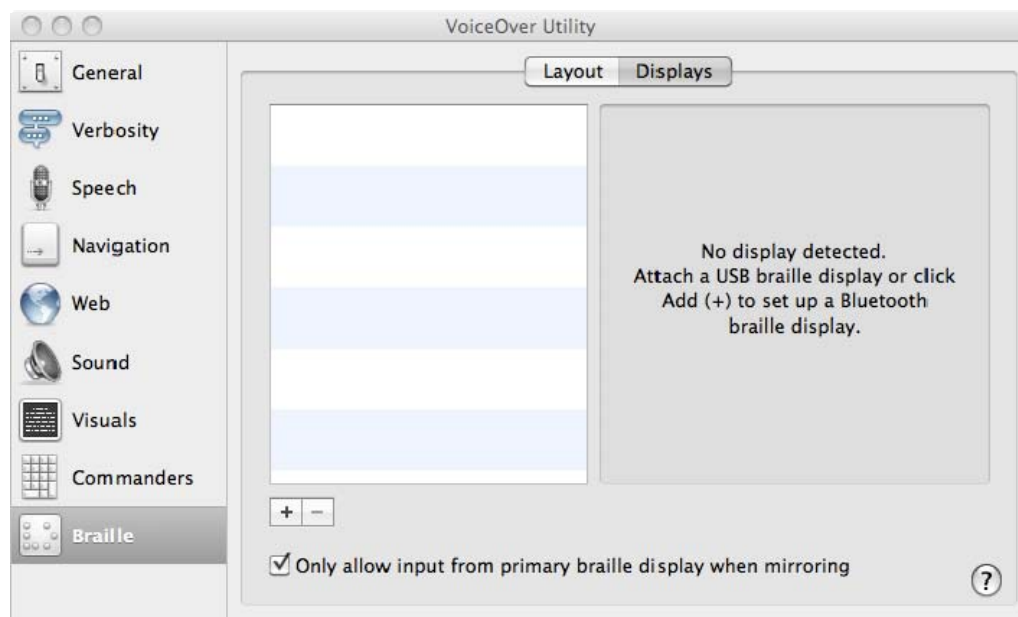
4.6.1.1 Using a USB connection

If you have your BRAILLEX Trio connected to your computer via USB cable, VoiceOver automatically detects it and sends it information about what is displayed on the screen.

The display should appear in VoiceOver Utility after choosing Braille and clicking the Displays tab.

4.6.1.2 Using a Bluetooth connection

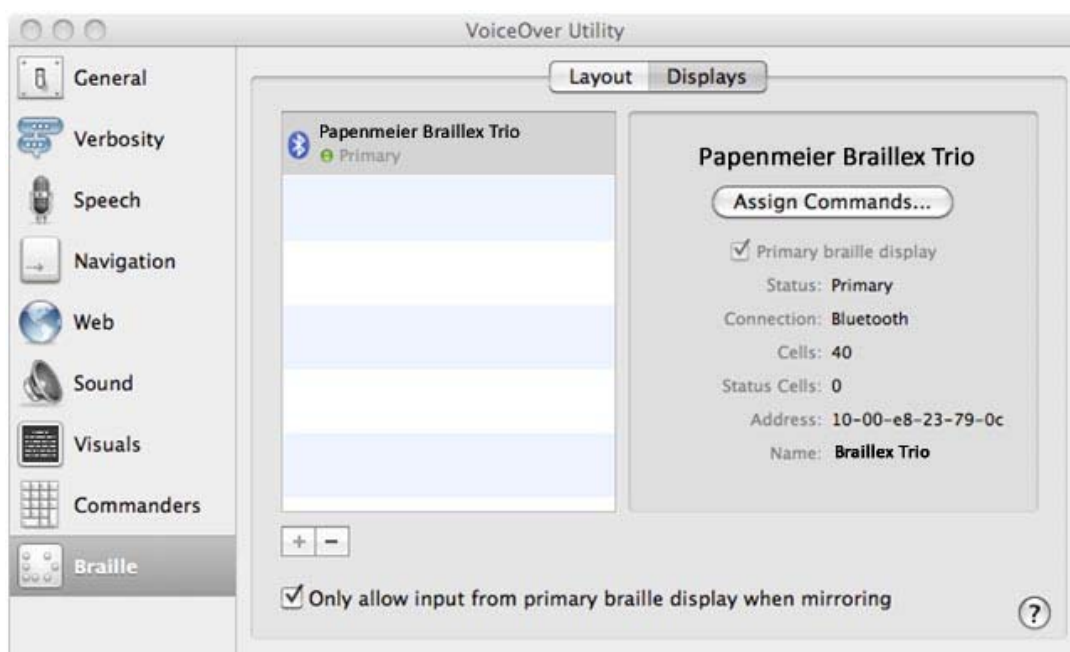
1. If you wish to use BRAILLEX Trio via Bluetooth, make sure the display is powered on and Bluetooth enabled. Also make sure that Bluetooth on the Mac is on by clicking the Bluetooth icon on the menu bar, or opening Bluetooth preferences in System Preferences.
2. Open VoiceOver Utility, which should discover any Bluetooth-enabled Braille displays near your Mac. It may be necessary to click the "+" sign to begin setting up a Bluetooth Braille display.



3. Select your Braille display from the list and click the Select button. A pairing request dialog appears.



4. Enter Trio's pin code (default: 0000).
5. After successfully completing the pairing, the Braille display should automatically be configured and available in VoiceOver Utility.



Note: If you follow these steps to configure your BRAILLEX Trio but don't see any Braille output, please switch the display to "Terminal Mode".

For detailed information regarding the use of the Apple accessibility features please refer to the Apple web site under <http://www.apple.com/support/snowleopard/> and tab forward to "Accessibility".

4.6.2 BRAILLEX Trio with the iPhone

You can use Braillex Trio to read VoiceOver output in Braille (software version iOS 4 and above). In addition, you can use Braillex Trio's Braille keyboard and the Easy Access Bar to control the iPhone when VoiceOver is turned on.

1. Turn on BRAILLEX Trio. Make sure Bluetooth on the device is activated (see chapter 3.2.6.2 Bluetooth Settings starting on page 36).
2. On iPhone, turn on Bluetooth:
In Settings, choose General > Bluetooth, then tap the Bluetooth switch.

3. In Settings, choose General > Accessibility > VoiceOver > Braille, then choose BRAILLEX Trio as your Braille display.

Please note that the first contact may take some time. Once your BRAILLEX Trio has been found, you will have to enter Trio's pin code (default: 0000).

This setup operation has to be done only once; afterwards, the iPhone will recognize BRAILLEX Trio every time both devices are switched on, Bluetooth is enabled on both devices, they are within reach and finally, VoiceOver is activated.

For a full manual, the iPhone User Guide for iOS 4, please refer to http://manuals.info.apple.com/en_US/iPhone_iOS4_User_Guide.pdf

5. Important Advice

5.1 Purpose of the Device

BRAILLEX Trio is intended to be used for the purpose of compensation for the visual handicap of blind people.

According to the European Council directive 93/42/EEC (Medical Devices Directive), they have therefore been classified as active class I medical devices.

These products may only be used in home or office environments. In medical facilities, this product may only be used in office rooms.

The connected PC must comply with the standards regarding safety and EMC (electro-magnetic compatibility) relevant for the area where it is used.

5.2 Safety Advice

Before starting to operate the BRAILLEX EL device, the user should read this manual. The device shall only be installed by a trained person.

The device may only be used with the original accessories and in combination with the products foreseen for this purpose by F. H. Papenmeier. If a combination with other devices is necessary, those devices must comply with the relevant standards.



- The device may only be used in closed and dry rooms. The ambient temperature must not exceed 40° C (ca. 105° F). Do not expose the device to direct sunlight or humidity (rain).
- Repairs and maintenance work may only be undertaken by Papenmeier or by authorized service centers.

There are no known risks for your health that might be caused by the use of this product.

5.3 General Precautions

Our products guarantee optimum safety and reduce to a minimum the strain caused through over-exertion. However, when respecting some precautions you can contribute to avoid prejudice to your health or damage to the product.

If a cellular phone is used close to the product, a minimum distance of 30 cm (1 ft) shall be respected.

Do not expose the product to strong pressure, and do not drop any objects on the product. This might damage the product or lead to misfunctions.

In order to avoid repetitive strain injury at your hands caused through long-time use of the function elements and reading the Braille display, we suggest pauses and

relaxation exercise. In specialized bookshops you also find literature on how to equip a workplace in an ergonomical way and on how to avoid strain through an appropriate sitting position.

5.4 CE-Marking

The BRAILLEX EL devices and their original accessories comply with the relevant standards regarding the electro-magnetic compatibility (EMC) and the safety, and are marked with the CE sign.

FHP cannot guarantee however that these products still comply with these EMC standards if they are connected to cables or devices not produced by F. H. Papenmeier. In this case, the person(s) who connected the cables or devices are responsible for taking care that the combination complies with the required standards. In order to avoid EMC problems, you should observe the following advice:

- Only connect accessories and devices marked with the CE mark.
- Only use shielded connecting cables.



6. Technical Reference

In the following, you will find a number of hints for technicians.

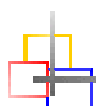


6.1 Updating the BRAILLEX Trio firmware

The firmware is the internal program of BRAILLEX Trio. It contains all internal programs and also all messages of the device, so there is one firmware for every language version available for BRAILLEX Trio.

- 1) Connect BRAILLEX Trio with the PC via USB cable. This is independent from how you normally connect Trio with the PC (via USB or Bluetooth). The device may be switched on or off, it doesn't matter.
- 2) Use the PC file manager to go to the folder that contains the "launch-brxflash.cmd" program. You will find it in the BrxFlash sub-directory of the BrxCom folder (typically: C:\Program Files\Papenmeier\BrxCom\BrxFlash\launch-brxflash.cmd).
- 3) Run launch-brxflash. This stops the service required to have Trio communicate with the PC and launches the program brxflash.exe. Once brxflash.exe is running, you get a small menu: "File - Options - Help".
- 4) **CAUTION!** Do NOT start the brxflash.exe program in the same directory; it will not work unless you stop the brxcom service first (for this purpose, see Windows start menu / settings / control panel / administrative tools / services / Braillex communication service).
- 5) Press Alt-O for "Options", select "Update" and hit Enter. You get a list of available files (for the US version for example, this looks like "trio_375_us.hex" Select the file and hit enter.
- 6) Now the program will ask you to reset the device (Caution: This message will typically NOT be read by most of the screen readers!). You reset Trio by pressing the reset button that is hidden behind a small hole on the bottom of the device, close to the left rear corner. You can use a paperclip or a stylus to press the button (you will hear a beep when you have pressed it). Please be aware that brxflash.exe has a timeout function. If the reset button is not pressed within a given time (roughly a minute), the operation will be aborted with an error message.
- 7) You get a progress bar showing you how far the program has gotten. After roughly 2 minutes, you get a message box "Firmware successfully installed" and Trio is switched off. In case of whatever kind of a disturbance, i.e. if you do not get the success message within 5 minutes, disconnect USB cable from BRAILLEX Trio, wait a couple of seconds, connect it again, and start the procedure again.
- 8) After a successful installation, if you normally use a Bluetooth connection between the PC and Braillex Trio, now disconnect the USB cable.

- 9) When you switch BRAILLEX Trio on again, it will come back in the language version you have selected. Please note that if you install another language version than the one that was installed before, you might need to activate the corresponding Braille code. For this purpose, either go to the "Tools" menu, select "restore default values" and answer the question with "y", or go to the "Settings" menu, select "select Braille table", and chose the appropriate Braille code.
- 10) You end brxflash.exe pressing Alt-F for "File" and "x" for "Exit". If you have launched the program with launch-brxflash.cmd, the service is started again.



6.2 Battery Charging Error Codes

There are conditions under which BRAILLEX Trio will refuse to charge the batteries. This is the case, for example, when

- BRAILLEX Trio is connected to the USB port of the computer instead of the USB charger (in this case, you will get the error message "active usb connection").
- BRAILLEX Trio is not connected to the USB charger (via the USB connector) or the charger has been disconnected from mains (message: "no charger connected").

CAUTION! DANGER! If the active BRAILLEX Trio is connected to the computer while you power on the PC, you will get the "battery recharge off" message. BRAILLEX Trio detects power on the USB line, but as long the operating system is not running, the data line is not active, i.e. the method BRAILLEX Trio uses to differentiate between a USB charger and a PC. **Do NOT try to activate the battery recharging at this point**, it might damage the PC's USB port!

In other cases, if the batteries in their compartment have the wrong polarity (i.e. they have been inserted the wrong way round), or if they are deep-discharged, you will get the message "unable to charge, check batteries", followed by a one-digit error code. Below you will find a list of possible errors and their codes:

Battery charging error codes		
Error code	Description	What to do
0	The connection with the charger was momentarily interrupted, or the battery compartment was opened Another possible reason for this error message is that one or more of the batteries are defective.	Check the battery compartment and the power supply of the charger. If both are ok, try another set of batteries.
3	Batteries defective or too old (battery tension too high)	Replace batteries
4	Error in battery charging circuitry	Try starting the charging cycle again. If this doesn't work, contact the Papenmeier after sales service or your local service center.
5	No rechargeable batteries in compartment, or: Batteries deep-discharged, or: One or more batteries with reversed polarity (wrong battery direction in the compartment)	Check the polarity of the batteries in the compartment and try again.
6	The expected charging tensions could not be reached. There are alkaline (non-rechargeable) batteries in the compartment or the batteries are defective.	Please check whether you have alkaline batteries in the compartment. If not, try another set of batteries.

7	Batteries are deep-discharged or defective.	Take the batteries out of the compartment and let them rest for a couple of hours. Then try again charging them. Alternatively, use an external charger to recharge the batteries.
8	The battery charging tension is too high. The batteries are either too old or defective.	In case the battery autonomy of BRAILLEX Trio is considerably reduced as compared to the specifications, the batteries are most likely too old or defective. In this case you should consider replacing the batteries with new ones. ¹
batteries full 1	The maximum charging time was reached. The capacity of the batteries used in the system is too high or the batteries are defective.	See above (8).

¹ Old or defective batteries do not reach their nominal capacity after recharging. Either the charging cycle lasts way longer than it should or the required charging tension is too high. Both the limited charging time and the limited charging tension help avoiding further damage to the batteries. When the charging time or the tension reach their predefined limits the battery recharge is finished.



7. EC Declaration of Conformity

acc. to Article 10.1 of the Directive 89/336/EEC (EMC-Directive)

We,

F. H. Papenmeier GmbH & Co KG

Talweg 2

D-58239 Schwerte, Germany

Name and address of the manufacturer or of the introducer of the product on the market
who is established in the EU

herewith take the sole responsibility to confirm that the product:

Braille Terminal **BRAILLEX Trio**

is in accordance with the following standards or standardized documents:

- | | |
|---|----------------------|
| 1. EN 55022:1998 + A1:2000 + A2:2003 Kl. B | RF emission |
| EN 55022:1998 + A1:2000 + A2:2003 Kl. B | conducted noise |
| EN 55022:1998 + A1:2000 + A2:2003 Kl. B | radiated noise |
| EN 61000-3-2:2000 + A2:2003 Kl. B | harmonics |
| EN 61000-3-3:1995 + A1:2001 | flicker |
| 2. EN 55024:1998 | immunity |
| EN 61000-4-6:1996 + A1:2001 | injected HF currents |
| EN 61000-4-3:2002 + A1:2002 | radiated HF fields |
| EN 61000-4-4:1995 + A1:2001 + A2:2001 | Burst |
| EN 61000-4-5:1995 + A1:2001 | Surge |
| EN 61000-4-11:1994 + A1:2001 | voltage variations |
| EN 61000-4-2:1995 + A1:1998 + A2:2001 | ESD |
| EN 61000-4-8:1993 + A1:2001 | magnetic fields |

(Title and/or number and date of the standard(s) or other standardized documents)

The following operating conditions and installation arrangements have to be presumed:

This confirmation is based on test report

21126235_001

TÜV Rheinland Product Safety GmbH, 51101 Köln, Germany

Jürgen Bornschein, Chief Engineer

F.H. Papenmeier GmbH & Co KG, Talweg 2, D-58239 Schwerte, Germany

Schwerte, August 24, 2006

Name, address, date and legally binding signature of the person being responsible



8. FCC Radio Frequency Interference Statement



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Federal Communication Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

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

FCC Caution : To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Product name:

BRAILLEX Trio

FCC-ID: UI9-1860-TRIO



9. Index

A

Attributes (Dolphin)	59
Attributes (Jaws)	53
Attributes (Window-Eyes)	64

B

Bluetooth	
name	16, 37
on/off	36
Pin 16, 37	
Preparing the PC	17
Braille keyboard	8
Braille presentation options (Dolphin)	58
Braille presentation options (Jaws)	52
Braille presentation options (Window-Eyes)	63
Braille table	
select	37

C

Calculator	33
CE sign	67
Cleaning	4
Connection	
Personal computer	10
Copyright and Trademarks	3
Cursor	
active cursor (Jaws)	52
disable cursor tracking (Jaws)	52
move to cursor position (Dolphin)	57
Movements within the editor	27

D

Date	
adjust	36
read	35
Date format	
select	36
Day Planner	33

E

Easy Access Bar	
Movements within the editor	28
EC Declaration of Conformity	72
Editor	
Clipboard	28
Copy text	29
Cut text	29
Delete file	30
External Data Storage	32

Launching	27
Mark text	29
New file	30
Open file	30
Paste text	29
Read-only and Split-file options	31
Rename file	31
Replace	30
Search - invert search direction	29
Search for word	29
Show of hide non-printable characters	31
Toggle between files	31
EU Medical Devices Directive	2

F

FCC Radio Frequency Interference Statement ...	73
Features	
Efficiency Line	1
ergonomic Braille keyboard	1
SingleChannel Braille display	1

I

Info	
power	40
program version	40
remaining memory capacity	40
Installation	
Bluetooth connection	16
USB connection	15

M

Misfunctions	66
--------------------	----

N

Navigation	
Screen navigation	42

O

Operation mode	6
Notetaker mode	6
Terminal mode	6

P

Power supply	
batteries	11
Battery charging errors	13
Battery Operation Time.....	12
Battery type.....	11
Recharging the Batteries	12
USB Connection.....	11
USB operation	37

R

Repair service	4
Routing	
Mouse routing (Dolphin)	60
Mouse routing (Jaws)	54
Mouse routing (Window-Eyes).....	65
Text selection (Jaws)	54

S

Safety	66
Scope of Delivery	3
Settings	35
Braille dot firmness	38
Sleep time	
display	38
Trio	38
System Requirements.....	3

T

Technical reference	
Firmware update.....	68
Time	
adjust.....	36
read	35
Time format	
select	36
Tools	
battery recharge.....	39
format flash memory	39
restore default values	39

W

Working Modes	
Combined mode (Dolphin)	57
Combined mode (Jaws)	50
Combined mode (Window-Eyes).....	62
Interactive mode (Window-Eyes).....	62
Navigation mode (Dolphin)	56
Navigation mode (Jaws)	49
Navigation mode (Window-Eyes).....	62
PC mode (Dolphin)	56
PC mode (Jaws)	49

