

**THE
MALTRON
EXPANDED
KEYBOARD
Type - EPDIG - USA**

from

PCD Maltron Ltd.

of Stafford U.K.

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The MALTRON EXPANDED KEYBOARD is manufactured for PCD Maltron Ltd

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Welcome to your new MALTRON EXPANDED Keyboard. The well established 'C' type MALTRON EXPANDED Keyboard will work with computers with a PS/2 or Apple Mac (ADB) connection and, using an adaptor, computers with an AT or USB connection.

(For Apple Macintosh users, please see section 2.7. An upgrade kit is also available to convert a Windows based PC to work with a Apple Macintosh – see Section 5)

We hope you will quickly find that the keyboard makes a positive improvement in your ability to access computers and enjoy the benefits of modern technology.

Please share your enjoyment with us by letting us know how you progress, and tell us of any ideas for improving the keyboard further.

Thank you in anticipation.

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1. Setting up your Keyboard for Initial Use

Below is a diagram of the back of your Expanded Keyboard.



From left to right you have,

- **SETUP SWITCH** DIP Switches
- **KEYBOARD RESET** push button
- **LAYOUT SWITCH** push button
- **APPLE START** push button
- **APPLE ADB BUS** 4 pin connector
- **KEYBOARD CABLE** 6 pin connector
- **KEYBOARD SWITCH** slide switch
- **AUX KEYBOARD** 6 pin connector

Simply follow the numbered instructions below.

1 With your keyboard you will find a video case containing:

- 2 x Angle Adjusters
- **Keyboard Cable**, 5-pin plug to 6-pin plug, 2 meters.
- 5-to-6 pin **Adaptor Cable**

2 Turn off your PC, plug the 6 pin mini-DIN end of the **keyboard cable** into the 6-pin mini-DIN socket on the back of the Expanded Keyboard labeled '**KEYBOARD CABLE**'. Next to this socket the **KEYBOARD SWITCH** can be found; ensure that the switch is pushed towards the **keyboard cable**. This selects the Expanded Keyboard for use.

WARNING:

DO NOT PLUG IN THE KEYBOARD WITH THE COMPUTER SWITCHED ON AS THIS CAN PERMANENTLY DAMAGE THE COMPUTER.

3 Connect the other end of the **keyboard cable**, which has a 5-pin DIN plug, into the keyboard socket of your PC. The 5-to-6 pin **adaptor cable** will be required here if you have a 6 pin mini-DIN (PS/2 style) socket on your PC. NOTE: The 5 pin to 6 pin adaptor cable also acts as an in-line safety snap out connector. If using an AT connection, then you are advised to obtain two additional connectors to enable an in-line snap connector feature. You will need 1 x 5 to 6 pin and 1 x 6 to 5 pin adaptor cables, available from your local stockiest or from us.

4 If you need to connect your normal keyboard to the PC as well, plug its cable into the **AUX KEYBOARD** socket on the back of the Expanded Keyboard. Pushing the **KEYBOARD SWITCH** towards this cable then allows the normal keyboard to be used. Please note that only one keyboard can be 'active' at any one time.

5 Turn on the PC. Unless the keyboard has been specifically customer configured, the green light indicating the "QWERTY" – normal layout – will then light and the keyboard is ready for use.

6 If the Maltron (Frequency Of Use) layout is required, please refer to section 2.1

2. Features and Operation.

There are several features incorporated in the Maltron Expanded Keyboard.

2.1 Dual Layout

Both the standard QWERTY Windows 95 layout and the Maltron Frequency of Use (FOU) Layout are provided with every keyboard. To change between the Layouts follow the two steps below.

a Physical repositioning of the keys

In the back of this handbook you will find the drawings of the two Layouts; keycaps to be removed and repositioned are marked in blue. With a size 1 or 2 Posidrive screwdriver, or equivalent, remove the 8 screws holding the top plate (keyguard) to the keyboard and remove the top plate. Retain the screws. Remove all the keycaps marked blue in the drawing, by pulling the keycaps vertically upwards.

CAUTION:

Care needs to be taken during this operation, if the key switch module is pulled out of the switch mounting plate, the wires from the switch can easily be broken, resulting in the need for repair work by a qualified technician or return to Enabling Computer Supplies or your Dealer.

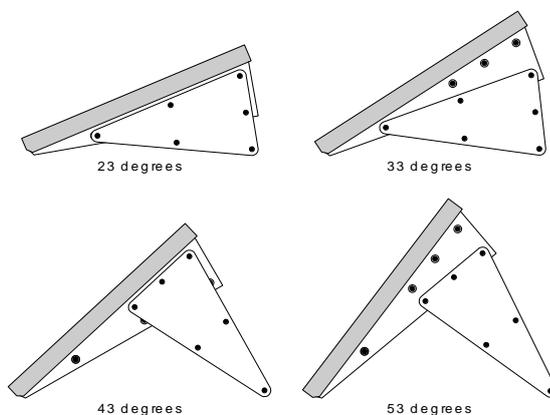
Replace the keycaps to the desired layout, taking care not to bend or break the 4 supporting legs on each cap. Check also that the red and green LED lights are in an upright position, i.e. in line with the holes in the top plate. Replace the top plate, firstly positioning it at the front edge and then lowering the top plate over the lights until it is resting on the pillars. Replace the screws, taking care not to over tighten them.

b Switching the Electronics

To change between the layouts temporarily, simply press the red push button labeled **LAYOUT SWITCH**. This will change the layout and indicate which one is in use with the QWERTY and FOU LED lights. However, if this is a more permanent change of layout, then see section 2.9 for details of how to set up the Keyboard to start up in the layout mode you are using.

2.2 Angle Adjustment

The two Angle Adjusters vary the angle of the top face of the keyboard to suit the user. The keyboard is designed with a 13-degree angle, which can be increased in steps of 10 degrees to a total of 53 degrees by positioning the angle adjusters as shown below.



As required, attach the Angle Adjusters to the ends of the keyboard using the 3 screws per end provided (M4 x 12mm pan head Posidrive). Ensure the screws are tight before use. If the Angle Adjusters are not required, replace and tighten the 6 screws into the ends of the Keyboard and keep the Angle Adjusters in the video case ready for use next time.

2.3 Adjustable Key Top Height

A unique feature of the Expanded Keyboard is the ability to adjust the distance between the keyguard and the key tops. This is easily accomplished and is a useful feature to cater for both finger (keyguard raised) and knuckle (keyguard lowered) users. The keyboard is supplied in the lowered position, i.e. the minimum distance between the keyguard and key tops (approx 2.5mm). To raise the keyguard and increase the distance (to approx 4.5mm), follow these steps:

- 1 With a size 1 or 2 Posidrive screwdriver, or equivalent, remove the 8 screws holding the top plate (keyguard) to the keyboard and remove the top plate. Retain the screws.
- 2 Place one of the nine tubes, now found at the top right corner of the keyboard, over each of the eight support pillars. (The ninth tube is a spare.)
- 3 Replace the top plate carefully, initially placing it over the front of the base and sliding it back until it touches the rubber strips along the front, then lowering the back of the keyguard over the 12 lights.
- 4 Replace the 8 screws being careful not to over tighten them or damage their heads.

To lower the keyguard, simply reverse these steps.

2.4 Integral Switch Box

As mentioned in section 1, at the rear of the keyboard is the **KEYBOARD SWITCH**. This is normally pushed towards the **Keyboard Cable**, making the Expanded Keyboard active. If the switch is pushed to the other position then the Expanded Keyboard will become inactive and a normal Keyboard, if plugged into the **AUX KEYBOARD** connector, will become active. You can switch between the two keyboards, without turning off or needing to do anything else with your PC.

Due to the design of an Apple Macintosh Keyboard, it is not possible to switch between Keyboards in this way and you will need to physically unplug the Expanded Keyboard and plug in your Apple keyboard.

2.5 IBM Key Repeat Rate

This keyboard is fitted with a special facility to allow the key repeat rate to be changed at the keyboard. An 'off' condition and three different speeds may be selected by the combination of the red **LAYOUT SWITCH** push button and function keys F1 – F4.

When the red **LAYOUT SWITCH** push button is pressed and held down, the QWERTY & FOU green LED lights flash alternately at the selected repeat rate. However if the repeat is set off then they don't flash.

On completion of one of the following actions, the LED lights will again indicate which layout is in use.

- 1** Press and hold the red button,
then press and release F1.
Release the button
– key repeat is stopped.

- 2** Press and hold the red button,
then press and release F2.
Release the button
– slow repeat rate.

- 3** Press and hold the red button,
then press and release F3.
Release the button
– medium repeat rate.

- 4** Press and hold the red button,
then press and release F4.
Release the button
– fast repeat rate.

To check the key repeat rate, hold down the red button. The green QWERTY and FOU LED lights will then flash at the selected repeat rate.

If the red button is pressed but not held, keyboard operation will change to the alternative letter layout. Press the red button again to return to the required setting.

N.B. With some software programs and machines the repeat rate is set by the computer during program set up and may operate erratically if a setting other than 'off' is attempted from the keyboard.

2.6 Sticky Keys and the Red & Green LED Lights

Bright red and green LED Lights help identify which layout mode is in use; show the state of the CAPS, NUM, SCROLL & SHIFT locks and are also used with the shift keys.

The Control and Alt keys are Locking keys, i.e. once pressed they continue to provide the appropriate function until they are pressed again.

The Shift keys can be set to be 'Locking' in the same way as the Control and Alt keys (see section 2.9 for details of how to do this) but their default setting is Sticky, where they are active for the next key press only

The red LED lights above each Sticky key indicate when they are in use.

The LED lights from left to right are as follows:

Caps lock	(green)	leftmost
Shift Lock	(green)	
LH shift	(red) *	
LH Control	(red)	
LH Alt	(red)	
Alt Gr	(red)	
RH Control	(red)	
RH Shift	(red) *	
Scroll Lock	(green)	
Num Lock	(green)	
QWERTY	(green)	
FOU	(green)	rightmost

** Both shift LED lights come on when either of the shift keys are pressed.*

2.7 Apple Macintosh Keyboard connection details

The normal method of connecting an Expanded keyboard to an Apple Macintosh computer is to simply connect the 6 pin Mini DIN (PS/2) plug end of the short cable into the PC socket at the back of the keyboard, then push together the 5 pin DIN plug on the end of the main power cable into the socket on the end of the short cable, then connect the 'PS/2 to USB adaptor cable' to the other end of the main power cable and plug the USB plug into the computer. This may seem a clumsy method but a) it provides a quick release in-line connector in the event that the keyboard is moved without disconnecting it from the computer, so saving damaging the printed circuit board thereby incurring repair costs and b) it allows for the keyboard to also be used with a Windows PS/2 or USB computer.

Alternatively, an Apple **ADB BUS** connection is available, providing you have a suitable cable to connect the PS/2 plug to the PCB on the keyboard. These are available on request.

The **APPLE START** push button works in the same way as the Start button on your Apple Keyboard.

2.8 Resetting your Keyboard

The black **KEYBOARD RESET** push button is located on the back of the keyboard. In case of difficulty on start up, it is sometimes useful to push this button once. This resets the microprocessor in the keyboard and should clear the majority of any start up problems.

2.9 Setup Switches

On the back of the keyboard, on the left of the row of connectors and pushbuttons are the **SETUP SWITCH** DIP switches. These are used to configure the keyboard for different options. If you change one of these switches, it will then be necessary to reset the keyboard by pressing the **KEYBOARD RESET** push button.

The **SETUP SWITCH** works differently when used with a PC or an Apple Computer. So please refer to the appropriate section below.

2.9.1 For Windows PC Compatible (and Apple Macintosh) mode when using the 6 pin Mini DIN (PS/2) connector / socket on the back of the keyboard.

- 1 Must be in “on” position.
- 2 Must be in “on” position.
- 3 Must be in “off” position.
- 4 This sets the layout mode that the keyboard will start up in. The default is “off”.
Set “off” to start in the QWERTY layout mode.
Set “on” to start in the Frequency of Use layout mode.
- 5 Selects alternative key codes for the “backslash/pipe” key. The default is “on”.
Set “on” for normal operation.
Set “off” for the alternative to match older keyboards.
- 6 Must be in “off” position.
- 7 Selects the way the SHIFT keys work. The default is “on”. See 2.6 for an explanation of these options.
Set “off” for locking operation.
Set “on” for Sticky operation.
- 8 Selects alternative use of CAPS LOCK for French keyboards. The default is “off”.
Set “on” for French keyboards.
Set “off” for all other keyboards.

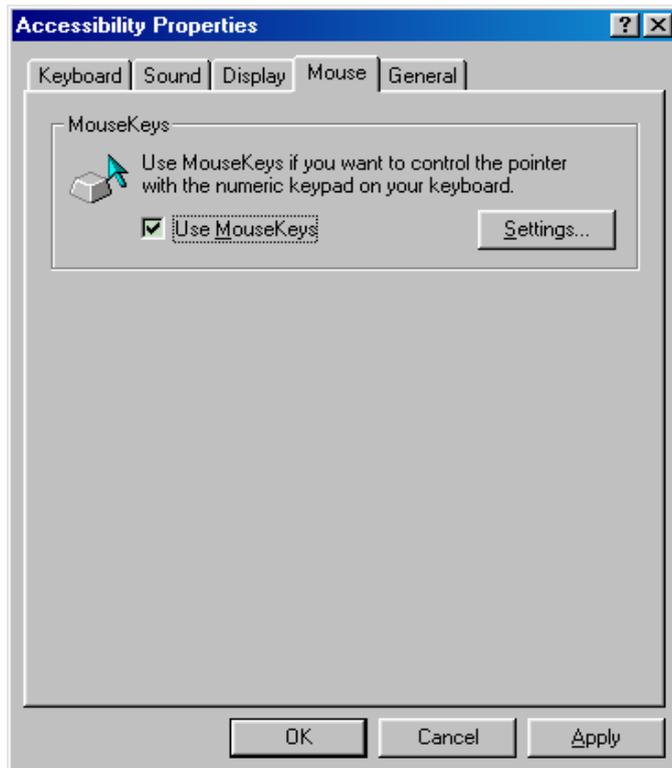
2.9.2 For Apple Macintosh mode when using the ADB bus connector only.

- 1 Must be in “off” position.
- 2 Must be in “off” position.
- 3 Must be in “off” position.
- 4 This sets the layout mode that the keyboard will start up in. The default is “off”.
Set “off” to start in the QWERTY layout mode.
Set “on” to start in Frequency of Use layout mode.
- 5 Must be in “on” position.
- 6 Must be in “off” position.
- 7 Selects the way the SHIFT keys work. The default is “on”. See 2.6 for more details.
Set “off” for locking operation.
Set “on” for Sticky operation.
- 8 Must be in “off” position.

2.10 To use the Number Pad as a Mouse. (with Microsoft Windows)

The Maltron Expanded Keyboard has specially labeled keys to enable you to make the most use of the “Accessibility Options” found within Microsoft Windows. One of these functions is the ability to use the number pad keys as a mouse controller; with the number 5 being used for a click/double click function. According to your system, you may need the Num Lock on.

To use this feature (under Windows XP and earlier versions), open the Control Panel via the Start menu. Click on the **Accessibility Options** link, and on the same named link in the resulting window, to see the Accessibility Properties window shown below. Select the **Mouse** tab and tick the 'Use MouseKeys' box and click OK.



Under Windows Vista™, the process is similar in principle. From the Control Panel select the **Ease of Access** link, then under the heading Ease of Access Centre click the link **Change how your mouse works**. On the resulting 'Make the mouse easier to use' window, tick the box 'Use MouseKeys' and then Apply.

There are a number of other useful features to be found within the Accessibility Options/ Ease of Access. We recommend that you explore these.

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2.11 Securing the Keyboard and Storage

For securing the Maltron Expanded Keyboard to a work surface or bracket etc, use four M4 screws into the pre-tapped holes found on the underside of the base. Ensure that the screws protrude no further than 12mm into the keyboard. The holes for mounting should be drilled at 500 x 55mm spacing.

If you wish to store the keyboard on a wall there are two escutcheon (slot) holes set 50cm apart in the base.

3. Service and Maintenance

Supplied with each Keyboard, are the following spares,

- 3 x Cherry MX 1A-11NN switch modules. These are located at the left hand end of the Switch Mounting Plate, inside the keyboard, and are hidden from view when the top plate is in position. These may be required in the event that a switch becomes damaged. Contact your supplier for details and further instructions for replacing a switch module.
- 1 x 17mm long x 10mm diameter spacer.

All the steel metal work of your keyboard has been powder coated, ensuring it is easy to clean and provides a long life in physically demanding areas. However, do not clean with scourers but rather a soft, damp cloth.

For Technical Support on your Expanded Keyboard or Number Pad, please call us.

4. Optional Numeric Keypad (ENGIA NumPad)

This Numeric Keypad has been designed to give users access to the cursor & number keys primarily to the left of the keyboard, but the pad could be placed wherever it is needed.

With the NumPad you should find,

- 2 x Angle Adjusters
- 1 x Cable - 37 way D connectors on either end of a flat ribbon cable

The NumPad is connected to the Keyboard via the 37 way D connectors on the back of the keyboard and NumPad, using the above cable

The NumPad can be angled in the same way as the Expanded Keyboard, using its Angle Adjusters.

NB: Please note that the Expanded keyboard will need to be returned to have the 37 way D connector fitted. Please allow 2 weeks for this to be completed and tested.

5. Optional Apple Macintosh Kit and key cap change-over

The kit contains the necessary items to adapt a PC Windows based keyboard to work with an Apple Macintosh USB computer. The kit comprises of the following parts.

- 1 x set of 6 replacement key caps with apple markings as below.
- 1 x Microprocessor (if necessary) + 1 x Instruction Sheet + PS/2 to USB adaptor.

Mac Symbol	No. of caps	Cap color	=	PC Symbol	No. of caps	Cap color
	2	Yellow	=	Win Flag	2	Yellow
F13	1	Pink	=	Pnt Scrn	1	Yellow
F14	1	Pink	=	Scrl Lock	1	Yellow
F15	1	Pink	=	Pause	1	Yellow
Blank	1	Yellow	=	Win Apps	1	Yellow
	1	White	=		1	White

Letter Layouts

ESC	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	print scrn	scroll lock	pause	
bs del ↓	~ ` 1	\$ 4	% 5	Z space	Q space	J space	X ^	6	& 7	= +	= +	bs del ↓	ins del	home pg up	/ @ =	
← →	# space	3	Y space	G space	M space	F space	U space	L space	* 8	{ [	} ]	4 ←	end pg dn	8 ↑	* 9
caps lock	? /	@ 2	K I	S A	T H	P ;	{ [}]	enter ↵	shift ↑	W O	N E	R V	0	> ;	3 +
shift lock	ctrl alt	space	C B	D space	alt ctrl	space	←	→	enter ↵	shift ↓	bs del ↓	0 .	enter ↵	num lock	7	enter ↵

Maltron US 'Frequency of use' layout, expanded keyboard, IBM 105 key compatible

ESC	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	print scrn	scroll lock	pause	
bs del ↓	! 1	@ 2	# 3	\$ 4	% 5	^ 6	& 7	* 8	(9	) 0	= +	= +	ins del	home pg up	/ @ =	
← →	Q	W	E	R	T	Y	U	I	O	P	{ [	} ]	end pg dn	8 ↑	* 9	
caps lock	~ ` 1	A	S	D	F	G	H	J	K	L	: ;	enter ↵	↑ ←	2 ↓	3 +	enter ↵
shift lock	shift ↑	Z	X	C	V	B	N	M	< ,	> .	? /	shift ↓	↓	0 .	enter ↵	enter ↵
num lock	7	space	space	space	space	space	space	space	alt ctrl	alt ctrl	space	←	→	num lock	7	enter ↵

Qwerty US layout, expanded keyboard, IBM 105 key compatible