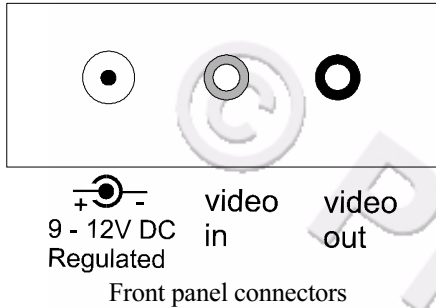


# Keyboard Interface Video Text Overlay with Scroll Message Function

The keyboard interface video text overlay unit allows control of a video text overlay from a PC keyboard. It uses the standard keyboard key mapping as illustrated below. Please read the entire document before using the overlay unit.

## Connections

Before connecting the system to a power supply connect video in and video out via the phono connectors on the front panel. The PS/2 keyboard should be connected to the socket on the left of the enclosure. The unit will only operate with keyboards that have PS/2 functionality. The unit will not operate with a USB only keyboard connected via a USB to PS/2 adapter.



## Power supply

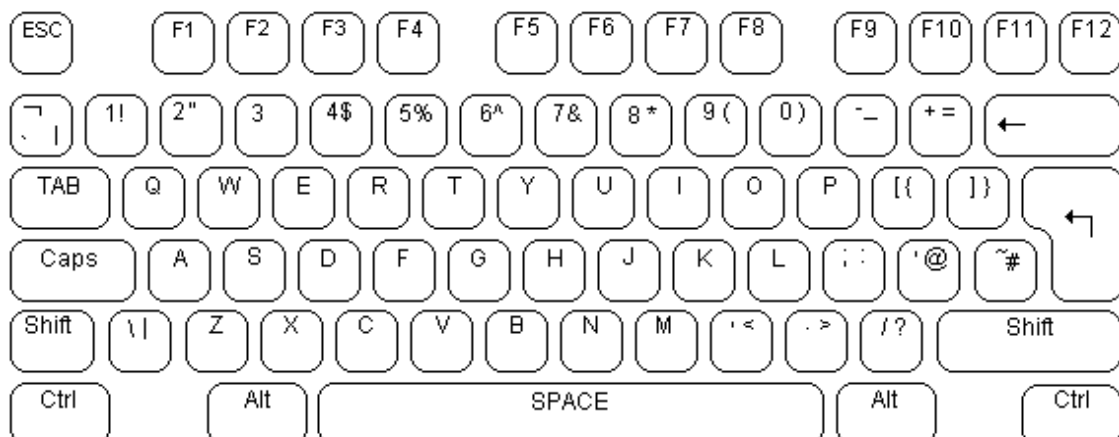
The unit draws approximately 50mA and is designed to be powered from a 9 - 12V dc regulated power supply. The power supply used should be capable of providing 300 - 500mA according to the requirements of the keyboard and camera being used with the overlay unit. The keyboard used should not have a current draw greater than 200mA. For the enclosure option the power supply should be connected via the 2.1mm power connector on the front panel. Otherwise follow the pin out at the end of this document. The unit is designed to be powered from the same power supply as the camera so it does not have a power switch. The battery compartment of the enclosure cannot be opened.

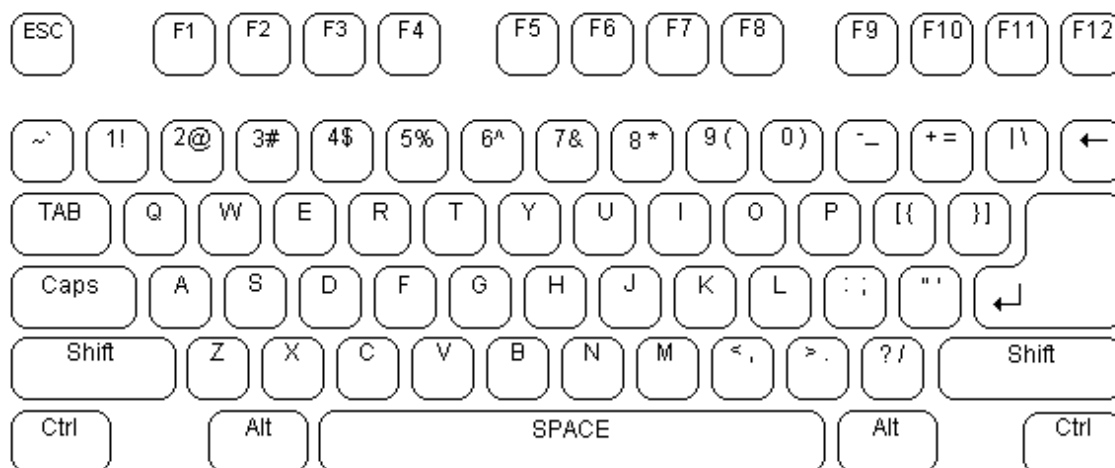
**WARNING!** It is important to ensure correct connection of the video text overlay to the power supply and/or battery. Failure to observe correct power supply connection polarity may result in the electronic failure of the unit or in the battery bursting to cause personal injury and damage.

## Program Operation

The program runs immediately the unit is connected to a power supply and the text display will appear within approximately 1 second. Without a video input signal the text display will be shown over a dark grey background video signal generated by the unit. The unit can automatically detect when a camera is connected and the text display will then be shown over the video signal from the camera. If the camera is disconnected the unit will automatically switch back to its internal video signal. The unit can also be set to default to its internal video signal regardless of whether a camera is connected. The unit will automatically detect the video standard, PAL or NTSC, at the time the unit is switched on. It will not detect a change in the video standard while the unit is powered, i.e. you cannot hot swap PAL and NTSC cameras. Disconnect the power, connect the new video input signal and connect the power again to select the new video standard. The font and text size are fixed and cannot be changed.

The basic operation of the text overlay unit is straightforward. A flashing underscore cursor indicates the current screen position. This cursor can be moved around the screen by the keyboard cursor keys. The cursor will wrap around the screen left and right, top and bottom. If no key is pressed then the cursor will disappear after approximately ten seconds. The video text overlay unit uses the standard UK keyboard mapping shown below. The standard US keyboard mapping will be supplied for non UK orders. There is no provision for other keyboard mappings or languages other than English. The alphanumeric characters in the QWERTY section of the keyboard and the keys of the numeric keypad can be typed directly to the screen as would normally be expected. Each alphabetic character key is normally lowercase. Uppercase characters can be typed by holding down the shift key or pressing the CAPS LOCK key. The keyboard's LED indicators will not be lit by the unit. To exit CAPS LOCK mode press the key again.





Standard US keyboard mapping. May be ordered as an alternative to the UK keyboard mapping.

When using the SHIFT↑, CTRL or ALT control keys in conjunction with the alphabetic or the function keys the control key must be pressed first, then the required alphabetic or the function key must be pressed and released, before the control key is released. If the SHIFT↑, CTRL or ALT key is pressed or released simultaneously with another key then the correct control function may not be recognised by the unit. If you find that the unit behaves as if one of the SHIFT↑, CTRL or ALT control keys were still being pressed, use the ESC key to clear the setting.

To remove a character from the screen use the backspace key. This will replace the character immediately to the left of the current cursor position with a blank space and move the cursor to that position. The Delete key has no function. The Home and End keys move the cursor position to the left and right of the current line on the screen. The Return key moves the cursor to the beginning of the next line.

Each text character can be displayed with a background, blink and / or an invert attribute. These attributes can be set to control how the text characters are displayed using the F1 & F2 keys as shown in the command table below. Once set each attribute is applied to all characters subsequently typed until the attribute is unset. Each attribute affects each character which is typed while it is set individually.

The video text overlay unit operates in two modes. In the first mode the text is overlaid over the video input signal. When the video signal is removed the unit automatically switches to generating its own internal dark grey background video signal and will switch back to the external video when this is reconnected. In the second mode the unit generates its own video signal internally, but ignores the external video signal. All keyboard commands operate in the same way in both modes. To switch between modes use the F3 key as shown in the command table below. Each page can have this mode set independently.

CTRL	F1	Free cursor to full display extents
ALT	F1	Lock cursor to visible display extents
SHIFT	F1	Turn the background setting off
	F1	Turn the background setting on
CTRL	F2	Turn the invert setting off
ALT	F2	Turn the invert setting on
SHIFT	F2	Turn the blink setting off
	F2	Turn the blink setting on
SHIFT	F3	Select text over internal video signal
	F3	Auto select text over external / internal video

Command Table 1. Background, blink attribute and display mode selection

The OSD is specified as being able to display 30 characters by 16 rows in PAL and 30 characters by 13 rows in NTSC. However on a normal CRT monitor you will only be able to display 26 characters by 14 rows in PAL or 26 characters by 11 rows in NTSC. On an LCD panel monitor which gives close to the full video frame you will be able to see approximately 28 characters by 15 rows in PAL or 26 characters by 12 rows in NTSC. By default the cursor is locked to the visible extent of the display for a CRT. This can be changed using the F1 function key command if you are using an LCD monitor. You will also need to do this if you wish to create contiguous messages to be scrolled. The position of the display can be controlled with the F7 command. This allows the visible text display to be moved up and down, left or right so that it can be positioned as desired on the monitor. The display position can be restored to its defaults with the F8 command. Use F7 to see the part of the text display not shown by your monitor to create contiguous messages.

The video text overlay unit divides its display between eight on screen pages. Text written to each of these pages will be stored in the unit's non-volatile memory until overwritten. There is no default on screen indication of which page is currently selected. To move between the screen pages use the page up and page down keys or the F10 function key command. Page up moves toward page 1. Page down moves toward page 8. To clear the screen page of text press F9. The character white level or brightness of all the characters displayed can be adjusted via the F11 commands. The setting is stored by the unit. When the unit is turned on the character white level will always default to that set previously.

CTRL	F7	Shift display down
ALT	F7	Shift display up
SHIFT	F7	Shift display left
	F7	Shift display right
	F8	Reset display X - Y position
	F9	Clear the screen

Command Table 2. Screen setting control

CTRL	F10	Page down
ALT	F10	Page up
SHIFT	F10	Set end of scroll position
	F10	Scroll
CTRL	F11	Character white level 1 (darkest)
ALT	F11	Character white level 2
SHIFT	F11	Character white level 4 (brightest)
	F11	Character white level 3 (default)
	F12	Outline screen
	ESC	Clear SHIFT↑, CTRL, ALT and CAPS settings

Command Table 3. Screen setting control

## Outlining

As well as text characters the video text overlay unit is able to generate characters to outline areas of the screen. Like the text characters, these are stored until they are deleted. The outline characters are accessed using the ALT key and the character key as shown in the outline character command table below. In addition to manually outlining specific areas, the central area of the screen display can be outlined using the F12 command. This also places a cross hair in the approximate centre of the screen.

ALT + A	┐	Top left corner
ALT + B	┌	Top right corner
ALT + C	└	Bottom left corner
ALT + D	┘	Bottom right corner
ALT + E	=	Top outline
ALT + F	=	Bottom outline
ALT + G		Left outline
ALT + H		Right outline
ALT + I	├	Mid left
ALT + J	┤	Mid right
ALT + K	┤	Mid top
ALT + L	├	Mid bottom
ALT + M		Mid vertical line
ALT + N	=	Mid horizontal line
ALT + O	┼	Full cross
ALT + P	—	Left cross hair
ALT + Q	+	Centre cross hair
ALT + R	—	Right cross hair
ALT + S	□	Box
ALT + T	=	Top left outline
ALT + U	=	Top right outline
ALT + V	=	Bottom left outline
ALT + W	=	Bottom right outline

Command Table 4 Outline characters



Result of F12 Outline Command

## Time & Date

To set the time and date, press F4. The seconds element of the time will flash. Press the left arrow to cycle through the elements of the time and date. To increment the element selected press the up arrow key. To leave the time set mode press return. There is no protection for the time display area, it overwrites anything you put into that space with the keyboard. The clock can be displayed on a single line either at the top or bottom of the screen. The display is alternated between these positions by pressing F5. The clock can be hidden by pressing CTRL+F4, and displayed when hidden by pressing SHIFT+F4. Press ALT+F4 to toggle the clock background on and off. The clock background setting does not affect background setting for typed text.

ALT	F4	Toggle the background of the time and date
CTRL	F4	Hide the clock display
SHIFT	F4	Show the clock display
	F4	Enter time set mode
	RETURN	Exit time set mode
	LEFT ARROW	Select time or date element
	UP ARROW	Increment the time or date element
	F5	Alternate the clock display between 2 screen positions

Command Table 5. Time & Date Display mode selection

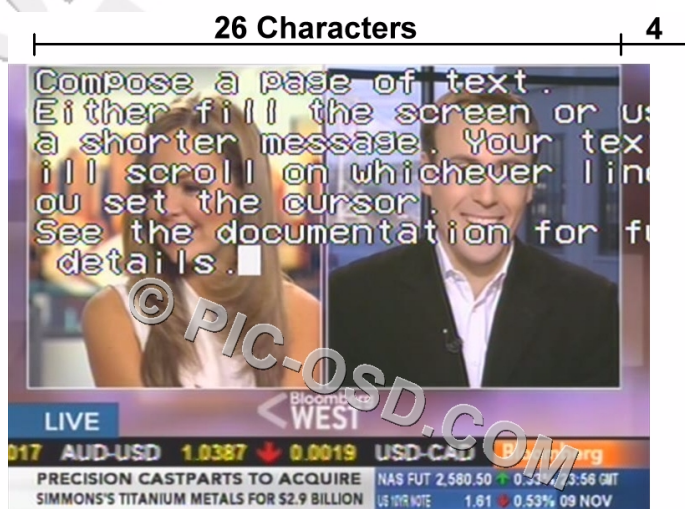
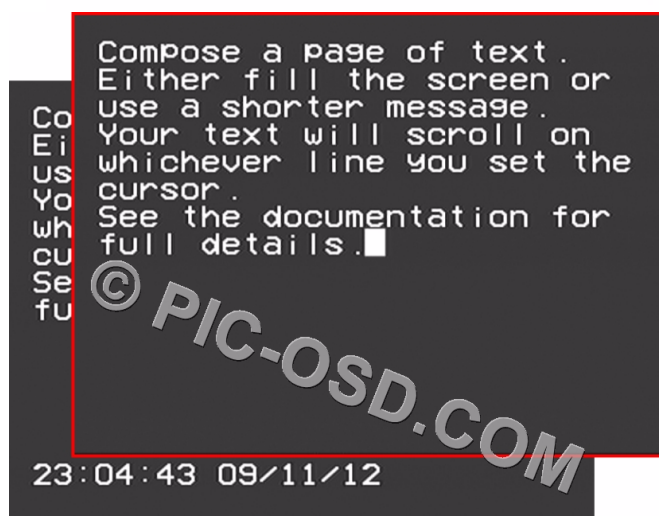


## Scrolling

All the text on a screen page can be scrolled along a single line. To use the scrolling command first type the text that you want see scroll. By default all the text will be scrolled starting from what is typed in the top left of the screen until the last character in the bottom right. To use a shorter message position the cursor at the end of the text and then press the scroll lock key. This will place the block character ■ on the screen. If using a mini-keyboard without a scroll lock key, use the SHIFT + F10 command. The block character indicates the end of the text that will scroll. This character will not be seen when scrolling. When the end of the message is reached scrolling will start again at the beginning of the message. The text will scroll on whichever line the cursor is positioned on when scrolling is started.

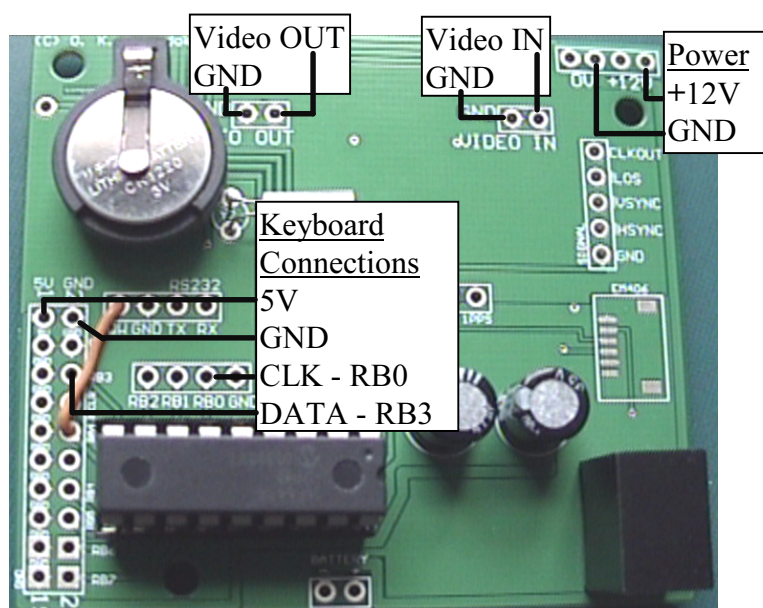
The display width of the OSD is 30 characters per line. The number of characters that can be actually be seen on a line of a screen varies according to the width of the display area. The unit sets this as 26 by default. To type contiguous messages, press CTRL+F1 to free the cursor to the full display width. Use F7 and SHIFT+F7 to move the display area to see the additional character positions.

To start scrolling press F10. The text will start to move across the screen from right to left. When the end of the message is reached the text will scroll off the left of the screen and then start from the beginning. The message will continue to scroll until the return key is pressed. If the unit is switched off while scrolling is in progress, scrolling will start again when power is restored. No keyboard commands or characters can be entered when in scrolling mode therefore the display mode and the text display attributes should be set before entering the scroll command. Select to show or hide the time and date before the scrolling is started.



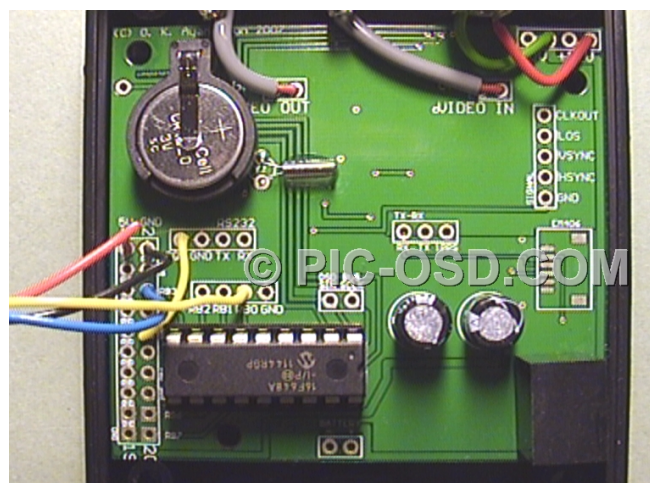
## Connections

If you purchase the board only option you will need to make connections for power, video and keyboard as shown below. Please note that your warranty specifically excludes failure due to improper connection so you should take care and follow the instructions below.



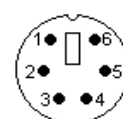
Keyboard, power & video connection points on the board

The keyboard connection points are as shown above. Note that the keyboard data connection is to RB3, not RB1 as it was on previous versions of the unit. The keyboard signal levels are 5V TTL logic.



The board with connections made

Pin	Signal
1	No connection
2	5V
3	No connection
4	DATA
5	GND
6	CLK



PS/2 Connector socket pin out, looking into the connector.

## WARRANTY

The BlackBoxCamera™ Company Ltd. warrants its products to be free of defects in materials and workmanship under normal use and service for a period of twelve months from the date of original purchase. The obligations of The BlackBoxCamera™ Company Ltd. shall be limited within the warranty period, at its option, to repair or replace the product or any part thereof. The company shall not be responsible for dismantling and/or installation charges. To exercise the warranty the product must be returned carriage paid and insured. Under this limited warranty the maximum liability of The BlackBoxCamera™ Company Ltd. shall not in any case exceed the purchase price of the product, which shall be fixed as liquidated damages and not as a penalty, and shall be the complete and exclusive remedy against The BlackBoxCamera™ Company.

**This warranty does not apply in the following cases:** Improper installation, misuse, failure to follow installation and operating instructions, alteration, abuse, accident or tampering, and repair by anyone other than The BlackBoxCamera™ Company.

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