Keyboard Interface Video Text Overlay with Real Time Clock and Counter

The keyboard interface video text overlay unit allows control of a video text overlay from a PC keyboard. Please read the entire document before using the overlay unit.

Front panel connectors

Connections

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

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 the full datasheet. The unit is designed to be powered from the same power supply as the camera. It has a power switch to enable it to be isolated for use in battery powered systems.

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. Turn the power off, connect the new video input signal and turn the power on again to select the new video standard. The font, text size and keyboard mapping are fixed and cannot be changed after a unit is purchased.

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 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.

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 divides its display between eight on screen pages. Text written to each of these pages is 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 SHIFT+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 default to that set previously.

Keyboard Interface Video Text Overlay Command Set

CTRL	F1	Free cursor to full display extents
ALT	F1	Lock cursor to visible display extents
SHIFT	F1	Turn the background setting on
	F1	Turn the background setting off
CTRL	F2	Turn the invert setting off
ALT	F2	Turn the invert setting on
SHIFT	F2	Turn the blink setting on
	F2	Turn the blink setting off
SHIFT	F3	Select text over internal video signal
ALT	F3	Auto select text over external / internal video
ALT	F4	Toggle the background of the time, date and counter
CTRL	F4	Hide the clock display
SHIFT	F4	Enter time set mode
	F4	Show the clock display
	RETURN	Exit time set mode
	LEFT ARROW	Select time or date element
	UP ARROW	Increment the time or date element
SHIFT	F5	Alternate the clock display between 2 screen positions

Command Table 1. Background, blink attribute, display mode selection, time & date display mode selection

ALT	F6	Change decimal point position $0000.0 \rightarrow 000.00 \rightarrow 00.000 \rightarrow 0.0000 \rightarrow 00000$
CTRL	F6	Hide the counter display
SHIFT	F6	Reset the counter to reset preset value
	F6	Show the counter display

Command Table 2. Counter control commands

SHIFT	F10	Enter reset preset mode
	RETURN	Exit reset preset mode and save changes
	ESC	Exit reset preset mode and discard changes
	RIGHT ARROW	Move digit selection to the right
	LEFT ARROW	Move digit selection to the left
	UP ARROW	Increment selected digit by 1 up to 9
	DOWN ARROW	Decrement selected digit by 1 down to 0
	- MINUS KEY	Toggle counter sign either + positive or - negative
	0 ZERO KEY	Set reset preset value to positive zero.

Command Table 6. Reset preset commands

When using the SHIFT⇑, CTRL or ALT control keys in conjunction with the alphanumeric or the function keys the control key must be pressed first, then the required alphabetic or 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.

CTRL	F7	Shift display down
ALT	F7	Shift display up
SHIFT	F7	Shift display left
	F7	Shift display right
SHIFT	F8	Reset display X - Y position
SHIFT	F9	Clear the screen
CTRL	F10	Page down
ALT	F10	Page up
SHIFT	F10	Enter reset preset mode
	F10	Enter prescale set mode
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)
SHIFT	F12	Outline screen
	ESC	**Clear SHIFT⇑, CTRL, ALT and CAPS settings**

Command Table 3. Screen setting control

F10	Enter prescale set mode
RETURN	Exit prescale set mode and save changes
ESC	Exit prescale set mode and discard changes
RIGHT ARROW	Increment prescale value by 1
UP ARROW	Increment prescale value by 10
LEFT ARROW	Increment prescale value by 100
DOWN ARROW	Reset prescale value to 0001

Command Table 4. Prescale set commands

Key	Symbol	Description	Key	Symbol	Description
CTRL+A	⌐	Top left corner	CTRL+M	‖	Mid vertical line
CTRL+B	¬	Top right corner	CTRL+N	=	Mid horizontal line
CTRL+C	⌐	Bottom left corner	CTRL+O	╪	Full cross
CTRL+D	⌐	Bottom right	CTRL+P	–	Left cross hair
CTRL+E	=	Top outline	CTRL+Q	+	Centre cross hair
CTRL+F	=	Bottom outline	CTRL+R	–	Right cross hair
CTRL+G	‖	Left outline	CTRL+S	□	Box
CTRL+H	‖	Right outline	CTRL+T	=	Top left outline
CTRL+I	╠	Mid left	CTRL+Z	=	Top right outline
CTRL+J	╣	Mid right	CTRL+V	=	Bottom left outline
CTRL+K	╥	Mid top	CTRL+W	=	Bottom right outline
CTRL+L	╨	Mid bottom			

Command Table 5. Outline character command table

The unit is able to generate characters to outline areas of the screen. These are stored on each page until they are deleted. The outline characters are accessed using the CTRL key and the character key as shown in the outline character command table. In addition to manually outlining specific areas, the central area of the screen display can be outlined using the SHIFT+F12 command. This also places a cross hair in the approximate centre of the screen.