

## PIC - STV5730A Project board

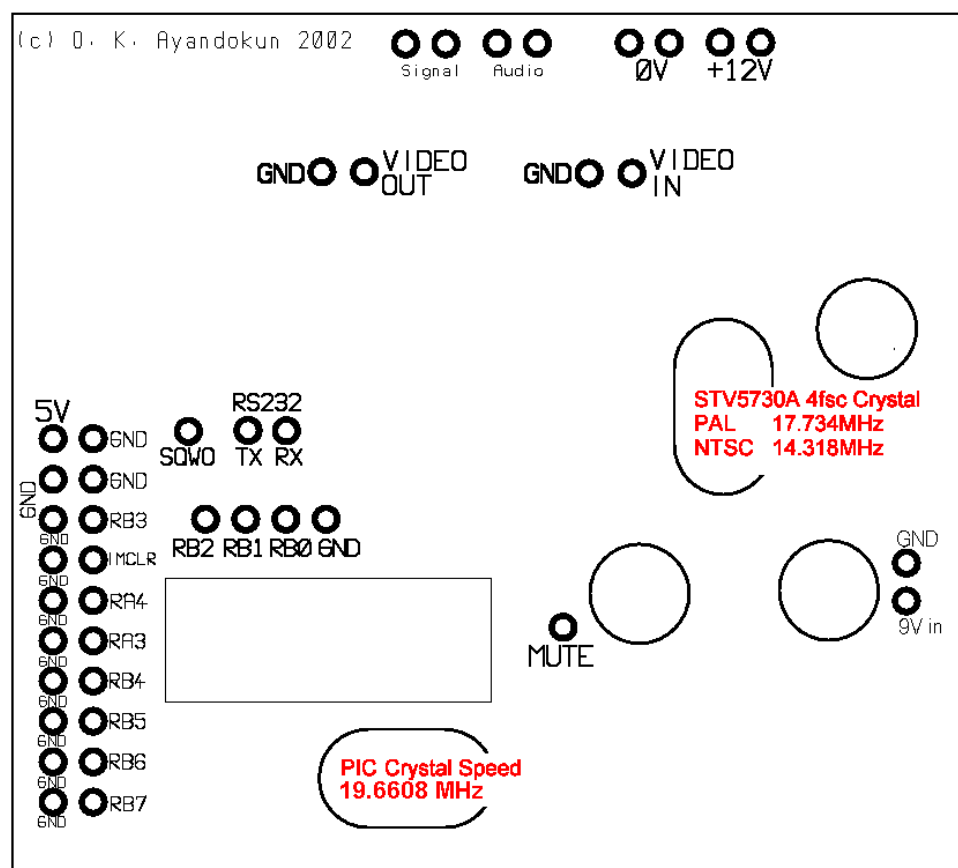
The PIC - STV5730 project board provides a simple platform for the development of PIC driven text over video applications. The PIC is provided programmed with the GPS example program. Connect the serial line, video in and video out before powering the system up. The program should run immediately that power is applied to the board and the text display will appear after approximately 1 second. When in mixed mode if the board is powered up before a video in signal is connected the display may be a fuzzy, rolling picture. In this case the STV5730A has not synchronised to the video in signal. Power off, connect the video in signal and power on again to clear this problem. **Do not remove or replace the serial connector while the board is powered.** See overleaf for program operating instructions.

The diagram below shows the pin out of the connectors on the project board. Most of the signals are self explanatory. The PIC uses RA0..2 to connect to the STV5730A. RB1..2 are connected to the DS275 used for the RS232 serial interface. The remaining i/o pins are available via the 20-way header on the left of the board. MUTE allows connection to pin 10 of the STV5730A. The signal on this pin indicates if a video signal is present on the chip's video input pin. Refer to pg 13 of the STV5730A data sheet for details.

### Power supply

The board is designed to be powered from a 12V dc regulated power supply. A 9V PP3 battery can also be connected. This can either be used as the main supply or as a backup for applications requiring volatile data protection.

**WARNING** It is important to ensure correct connection of the project board to the power supply and/or battery. Failure to observe correct power supply connection polarity may result in the failure of the project board or in the battery bursting to cause personal injury and damage.



Connector pin out diagram

DB9 cable signals		
Female Socket No.	Male Pin No.	Signal
Socket 2	Pin 3	Serial data out
Socket 3	Pin 2	Serial data in
Socket 5	Pin 5	Ground

### 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 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 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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## GPS Video Overlay Example Program

The GPS video overlay unit provides a simple method for displaying the NMEA 0183 data from a GPS receiver (GPSR) over the picture from a video camera.

The board operates immediately power is connected. There is an approximately 1.5 second delay before the screen display starts. With no valid GPS data the initial screen displays "GPS BAD" and the 12 character identification string. After ten seconds without activity on the serial line the display will be cleared. The identification string is set via a user command which is sent via the serial link from any serial terminal program on a PC or other computer. The terminal settings should be 4800 baud, 8 data bits, no parity, 1 stop bit. Please note that the unit does not display a prompt when connected and that the characters that you type will not be echoed. All the commands use the alt key and the numeric keypad to generate non ascii command characters. Alt character sequences are used to avoid conflict with valid ascii characters in the NMEA checksums. If using a laptop you may need to refer to its documentation for the method required to emulate the numeric keypad. Follow single character commands with a **RETURN**. It is recommended that the commands are used to set the unit up immediately after it is switched on. If commands are not acknowledged type **RETURN** to reset the input. The command settings are stored in the unit when it is switched off.

Command Table	
Command	Function
<b>ALT + 0219</b>	This command sets the ID string. Hold down the ALT key and type 0219 on the keyboard's numeric keypad ( <b>ALT + 0219</b> ). Release the ALT key and type up to 12 characters. Strings under 12 characters in length should be terminated by a carriage return.
<b>ALT + 0220</b>	This command toggles the character background on and off. Please note that the character background change will affect the next characters written to the screen.
<b>ALT + 0221</b>	This command sets the time zone offset between UTC and the time displayed. Type <b>ALT + 0221</b> followed by either a minus or plus character, '-' or '+', for the sign of the time zone then the actual offset as two digits. For example enter -05 for EDT or +01 for CET. The time zone will be displayed on the screen when the command is entered as an offset from 00:00:00 UTC. Entering +05 will be acknowledged by the display of 05:00:00 U+05.
<b>ALT + 0222</b>	This commands toggles the display of the date between the DD/MM/YY standard format and the MM/DD/YY format used in the USA, and maybe elsewhere. Entry of this command is acknowledged by display of the date 31/01/01 in the format selected.
<b>ALT + 0223</b>	This command selects whether the altitude is taken from the \$GPGGA data sentence and displayed in metres or taken from the \$PGRMZ sentence and displayed in feet. When entered this command is acknowledged by the display of an M or F on the screen. Please check your receiver is able generate the \$PGRMZ sentence before selecting this option.
<b>ALT + 0224</b>	This command selects between the display of speed in knots or mph. When mph is selected the value displayed is calculated from the speed in knots from the \$GPRMC sentence. The command is acknowledged by the display of K or M on the screen.
<b>ALT + 0225</b>	Display line 1 & 2 only.
<b>ALT + 0226</b>	Display lines 1, 2, & 3.
<b>ALT + 0227</b>	Display lines 1, 2, 3, & 4
<b>ALT + 0228</b>	Display line 1 only.

Line 1	LAT	LON
Line 2	TIME	DATE
Line 3	ID	ALTITUDE
Line 4	SPEED	HEADING

Before connecting your GPSR to the board please ensure that it has been correctly set up to transmit NMEA data. If you are doing this for the first time refer to the GPSR manufacturers instructions for the method to select NMEA output. We recommend that you connect your GPSR receiver to your PC and open a PC terminal window, settings as above, and check the output data format. You may need to select the output of each sentence individually or a number of data sentences may be transmitted by your receiver once NMEA output is enabled. The board parses the \$GPRMC data sentence to generate the display of position, speed, heading, date and time. The altitude in metres is taken from the \$GPGGA data sentence. If you have a Garmin GPSR which outputs the \$PGRMZ data sentence the altitude may be displayed in feet. The altitude is displayed in metres or feet dependent on the option selected with the **ALT + 0223** command described above. The board ignores all other data sentences. Once you have confirmed that your receiver is correctly set up to transmit NMEA data it can be connected to the unit. **Ensure the unit is not powered when the serial line is connected.** The data from the GPSR will be displayed immediately it is connected and the display will be updated each time a complete data sentence is received. If invalid data is indicated by the data sentence's quality markers the data display is cleared and the message "GPS BAD" is displayed. If the GPSR is switched off, after 10 seconds of inactivity on the serial line the program will clear the display.