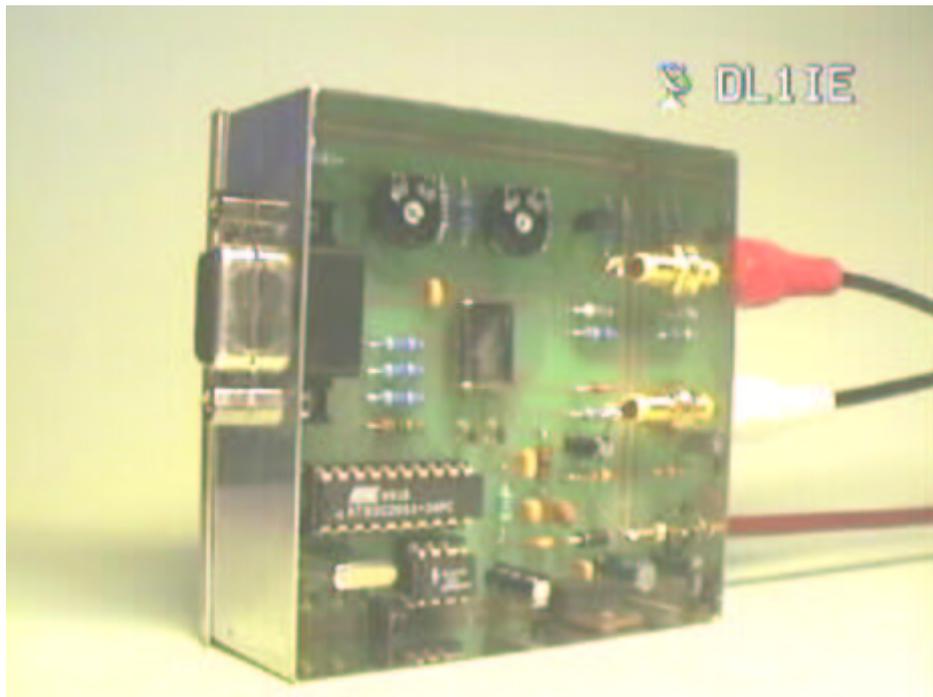


ATV-LOGO

Device for inserting text into a video-signal



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General

The ATV-LOGO is an inexpensive but stable device for inserting text into a video-signal, for example the call-sign in amateur television broadcasting.

The wiring consists essentially of an OSD-chip, a programmed micro-controller and an EEPROM as memory in addition to a voltage stabiliser. The input of characters and the regulation of the unit follows over four keys.

The software version **V1.02** has the following features:

- eight page text memory (pages 0 - 7)
- 95 characters per page can be chosen and inserted
- character set with a 128 characters
- characters can be inserted in various sizes
- inserted text can be displayed as transparent and white
- display in full screen mode with coloured background
- text display can be switched off
- each of the eight text pages can be configured individually
- running text can be switched on and off
- automatic video signal recognition with optical display
- stable text output also in absence of the video signal
- serial interface for external devices

The OSD (on screen display) STV5730A allows complete control of the video signal with relatively few external parts. The micro-controller, a AT89C2051, accommodates the software in an internal Flash-ROM and is responsible for the entire course of events. The input characters and the actual operation mode per page are stored in EEPROM 24C16, such that the data is available for further operations. The voltage can be chosen between 9 and 15 V and can be adjusted to within 5V.

Key Functions in Display Mode

In the display mode, memory text can be output to the screen. The first line of the 8 pages is displayed as running text. The light diode switches on with the appearance of a usable video signal. Browsing the pages does not disturb the previously set configuration.

Key	Function
>	One page forward
<	One page backward
M	Mode change between normal and transparent text display, switch off text output, full screen display or running text
E short	Show running text in the bottom line
E long	Only with running text switched off, the LED stops blinking, switch to input mode

Key Function in Input Mode

Repeated use of the edit key brings one into the input mode. The screen is cleared and the cursor position is shown. In this first position, and only here, can the user change the four possible character sizes by repeatedly pressing the edit key. Has the chosen size been selected, the user can start writing his text. If, however, the user has left the starting position, the character set can no longer be changed, apart from starting the procedure again.

In the first position the actual version of the software is displayed in the appropriate character size. In all other positions the actual row and column, and the remaining page memory is shown.

To close the page and leave the input mode the user must repeatedly press the edit key, until the cursor leaves the screen. Thereafter the user is in the display mode once again.

Key	Function
> short	One character forward
> long	Automatic forward browsing
< short	One character backward
< long	Automatic backward browsing
M short	Accept character, move cursor one position forward
M long	Accept character, move cursor more than one position forward
E 1. Pos.	Character size selection
E	Accept the input line, move cursor one line further

Serial Interface

To display data from a PC, or from sensors (e.g. temperature, S-Meter, clock, date) a serial interface has been integrated.

Warning! The voltage on pin 8 of the SUB-D-plug must lie between 0 and 5V for Low and High. For data transfer from a PC to the ATV-LOGO one requires a little switch for level matching. Other devices, which fulfil the above requirements, can be connected directly.

The requirements for the interface operation are then fulfilled when the ATV-LOGO is in display mode, the text output and actual page are not switched off, and the characters are not enlarged.

On our website the user can find free windows-software for the data transfer from PC to ATV-LOGO.

It is also possible to transfer data from dedicated evaluation circuits and therefore, especially through ATV-Relays, into the actual broadcast. With regard to this point, some technical details.

In the display mode, if one broadcasts the byte FFhex at least 5 times after one another to the ATV-LOGO, the serial interface operation changes mode. The actual text display is deleted and the following broadcast characters are displayed directly.

The character set used corresponds to the OSD IC's. You will find the data sheet for the STV5730A on our website. All characters from 00hex to FBhex are displayable. The following bytes have a special function:

FChex clears the screen, FDhex places the cursor on position 1, and with FEhex one can exit the interface operation. The byte FFhex causes a short pause - i.e. no output.

Following the characters FChex - to clear the screen - and FDhex - for position 1 - new characters cannot be entered for approximately 5 ms. This means, that FFhex, for no output, has to be inserted a few times.

Output of the word "TEST" would look as follows:

```
5x   T E S T  
FF ... FF 1F 10 1E 1F
```

The 5 times FFhex at the beginning enable switching into interface operation!

The interface works with a speed of 1200 Baud, no parity, 8 databits, 1 stopbit and without handshake.

Remark: During the interface operation no video signal can be evaluated. Hence, in the event of the video signal being switched the output signal is no longer signalled. By pressing the mode key one returns again to the display mode.

Circuitry

The entire circuit is on a single etched side of a conductor plate with dimension 71,6 x 71,6mm. Since the entire circuit board comes with the necessary holes, the insertion and soldering the parts should not be a problem. For the OSD however, due to the use of SMD for which the conducting side should be soldered, a steady hand a good eye is required. The other parts are soldered as usual. For the micro controller and the EEPROM an IC-socket is foreseen in both cases.

It is recommended to build the completed circuit board into the corresponding casing. The voltage supply is connected over a 1nF capacitor to Ls1. The mechanical operations of the casing should be completed before soldering. The circuit board should then be build in approximately 5mm from the bottom side and soldered point by point. As the last step, the 4 key boards are connected with the SUB-D-plug.

Operation and Comparison

Before the finished product is brought into operation for the first time, the "Trimmptis" should be brought to the middle position. Then a camera is connected to the video input, a monitor to the video output and the key boards to the SUB-D-switch.

If everything works properly, switching on power will lead to initialisation message and software version number appearing on the bottom line of the monitor. In the event that the message EEPROM? appears on the screen, together with a blinking diode, an error has occurred.

Following the initialisation which occurs during the first operation, the presence of a video signal and the corresponding picture will appear on the monitor together with the number 0 on the top left hand side. The brightness of the displayed characters can be adjusted with the help of the tuning potentiometers ("Trimmpotis"). The constant voltage on P1 should be set to 1.8V, this corresponds to a value of approximately 0,5V over the darkness level. Switching with the (M)ode key to full screen display allows the brightness of the background colour to be adjusted to a medium blue with the tuning potentiometer P2. With the adjuster on P2 a value of 1.5V should be set, corresponding to a value of approximately 0.38V over the darkness level. If an oscilloscope is at hand the adjustments can be made with the output signals - this is more exact. With these two simple steps the entire procedure is completed.

The current uptake of the circuit amounts to 70mA by 12V and switched on LED. For constant operation, e.g. during the operation in ATV-relays, the voltage stabiliser IC1 should be additionally cooled by connecting to the casing.

In the event the system must be initialised again, similar to being brought into operation for the first time the voltage should be applied with the jumper covered over. Following initialisation the jumper is to be removed.

Remark: All texts saved in the EEPROM will be deleted and be replaced by standard values.

Liability and Copyright

The circuits published here can be used by anyone for private purposes only. Commercial application, of any or parts of the circuit requires permission of the author.

The author accepts no responsibility whatsoever for any damage arising from the use or construction of the circuits published here.

Any feedback, positive or negative, on the operation of the software will be greatly appreciated. Technical questions are also welcome during normal working hours.

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Partlist

Resistors

R1	8k2
R2	100
R3	68
R4	180
R5	390
R6	220
R7	75
R8	1k2
R9	3k9
R10	22k
R11	4k3
R12	820
R13	1k2
R14	470
R15	470
R16	470

Condenser

C1	10 μ /25V
C2	100n
C3	100n
C4	10 μ /16V
C5	2 μ 2/16V
C6	33p
C7	33p
C8	2 μ 2/16V
C9	220p
C10	22n
C11	22 μ /16V
C12	220n
C13	220n
C14	39p
C15	39p

Diverse

P1, P2	Poti 1k
L1	Inductivity 10 μ
X1	Quarz 12 MHz
X2	Quarz 17.734 MHz
Jp	Jumper 2 pin
SUB-D1-9	SUB-D-connector 9 pin 90° female
T1-T4	Key (debounced)
Bu1, Bu2	Cinch connector PCB 71,6x71,6mm SUB-D-connector 9 pin, male IC-socket 20 pin IC-socket 8 pin Case 74x74mm special condenser 1n Soldereyelet 3,2mm

Semiconductors

IC1	7805
IC2	AT89C2051 (programmed)
IC3	24C16
IC4	STV5730A
T1	BC548B
D1	1N4001
D2	BAT42
LED1	LED 3mm

Placement

Circuit

RS232-adaption

Mechanic

Sale by

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