

USC-504

Open frame 5.0 inch colour video module featuring *HyperScan* technology

Display Composition

Model number	USC-504-1PA (PAL type) USC-504-1NA (NTSC type)
Type	Colour filter STN (Super Twisted Nematic) transmissive type, normally black
Driving system	Passive Matrix HyperScan (HPS) drive, 1/110 duty, non-interlaced, linear sequential driving
Resolution	324 x 220
Pixel structure	324 x 3 (RGB) x 220, 213,840 pixels per display RGB vertical stripe arrangement
Driving method (interface)	PAL or NTSC format video signal Analogue red, green and blue video input, 1.4 volts peak-to-peak Separate vertical and horizontal sync or composite sync
Backlight	Single L-shaped cold cathode fluorescent tube with light guide. Inverter included on PCB

Overview

Using Citizen's unique [HyperScan](#) technology, the USC-504 video modules provide an ideal module for use in such applications as video monitoring, door entry systems and in-car information systems. With a resolution of 324 x 220 dots, the display is equally capable of displaying graphical data, such as traffic navigation systems as it is showing video images.

The use of Chip-On-Glass (COG) technology in the display, a technique used, developed and enhanced by Citizen for many years, means

that the unit is extremely compact with a small bezel around the unit. The integral backlight and inverter and single 12-volt power supply means that the unit is simplicity itself to design in and use.

The [HyperScan](#) technology doubles the usual refresh rate of the display from a standard 50 / 60 Hz up to 100 / 120 Hz. This means that the images is brighter, clearer

and has a higher contrast and fast moving video images are not blurred. Once again, Citizen's use of COG technology allows us to produce such an advanced display.

□ Optical Characteristics at 25°C

Item	Symbol	Typical	Unit	Condition
Turn on time	TON	40	ms	q=0°, f=0°
Turn off time	TOFF	35	ms	q=0°, f=0°
Contrast ratio	CR	35	-	q=0°, f=0°
Visual range ("up & down")	q1	-10<q1<+30	degrees	q=0°, CR > 5
Visual range ("left & right")	q2	-40<q2<+45	degrees	f=90°, CR > 5
Brightness	BR	6000	nit	9 locations on display
Tube lifetime	TL	10,000	hours	continuous lighting

□ Electrical Characteristics

Item	Minimum	Typical	Maximum	Unit
Supply voltage	11.50	12.00	12.50	V dc
Current consumption	-	396	460	mA
Video Input Signal		1.4		volts, peak-to-peak
Sync Signal (H, V or C)	-0.3 to +0.3		4.7 to 5.3	volts, positive sync

□ Temperature Range

Item	Minimum	Maximum	Unit
Storage temperature	- 10	+ 60	°C
Operating temperature	+5	+ 60	°C

□ Mechanical Specifications

Weight: 320 grams

□ Connection Details

The input to the display is by means of one 10-pin connector. The connector is a "moulded" wire-type connector. The connector has both horizontal and vertical sync connections. If Composite Sync input is being used, then the Csync signal should be applied to both the Hsync and Vsync terminals (i.e. link them together).

The Brt+ and Brt- terminals (for contrast adjustment) should be connected to a 5K variable resistor. The VBL and VIN signals can be supplied from the same source, but routing the VBL directly from the power supply is preferred. Recommended connector: JST EHR-10.

Pin 1 of the connector is identified by a small triangular impression in the rear of the metal case.

Pin Function

- 1 VIN (12 volts) - display
- 2 H sync (Csync)
- 3 V sync (Csync)
- 4 Brightness +
- 5 Brightness -
- 6 GND (0v)
- 7 Red
- 8 Green
- 9 Blue
- 10 VBL (12 volts) - backlight