D320AV

User Guide

&

Installation Instructions

Features

The D320AV offers the following features:-

- ❑ 1V composite PAL/NTSC video input.
- ❑ PCB mounted Audio/Video controls.
- ❑ Backlight dim function controlled by external signal.
- ❑ Optional BNC/RCA Phono Input connectors.
- ❑ Intelligent sync detector, with digital sync filter, for use with noisy sync signals.
- ❑ Sync inserter for use with VCRs.
- ❑ Optional Video Pass through capability.
- ❑ 1V audio signal input.
- ❑ 200mW Audio amplifier for 8Ohm loudpeakers.
- ❑ External Audio mute control.
- ❑ Wide Range Single Input Power supply option.
- ❑ Jumper selectable image invert
- ❑ Image mirror via external signal.
- ❑ CE approved.
- ❑ Fixes to rear of LCD panel.
- ❑ Optional Screening can
- ❑ Analog RGB Full Colour Output
- ❑ Fully adhjustable brightness and contrast control

This card provides the ideal solution to a wide range of automobile and mobile computing applications. It can be purchased as a standalone card or complete with the TFT screen as an integrated module.

It is supplied with all options fitted but may be customised for price sensitive applications by tailoring the exact specification.

This manual provides the hardware related instructions to install an D320AV - iGlass interface card. It explains how to connect the card to the Video source signals and to the LCD, and to set up the parameters to the user's needs.

Support

If you require support for this product please contact Displaze via:-

Phone: 01296-630358
Fax: 01296-630737
E-mail : support@displaze.com

Disclaimer

Revision History

Rev No.:	Date	Description	Checked	Approved	Prepared	Issue Date
2.4	5-5-98	Update of Cable colour codes				

Introduction

The D320AV - iGlass interface card is suitable for driving the NEC 5.5” TFT (Thin Film Transistor) active matrix colour Liquid Crystal Display (LCD). This is a ¼ VGA resolution panel offering 320 x 240 pixels in full colour. The NEC part number NL3224AC35-01.

The User Guide consists of the following sections:-

Technical Description

Board Layout

The board has been designed with ease of integration in mind so that in space critical applications the PCB may be mount directly on the reverse of the LCD with EMC screening can attached. For locations of the appropriate function on the PCB please refer to the attached diagram.

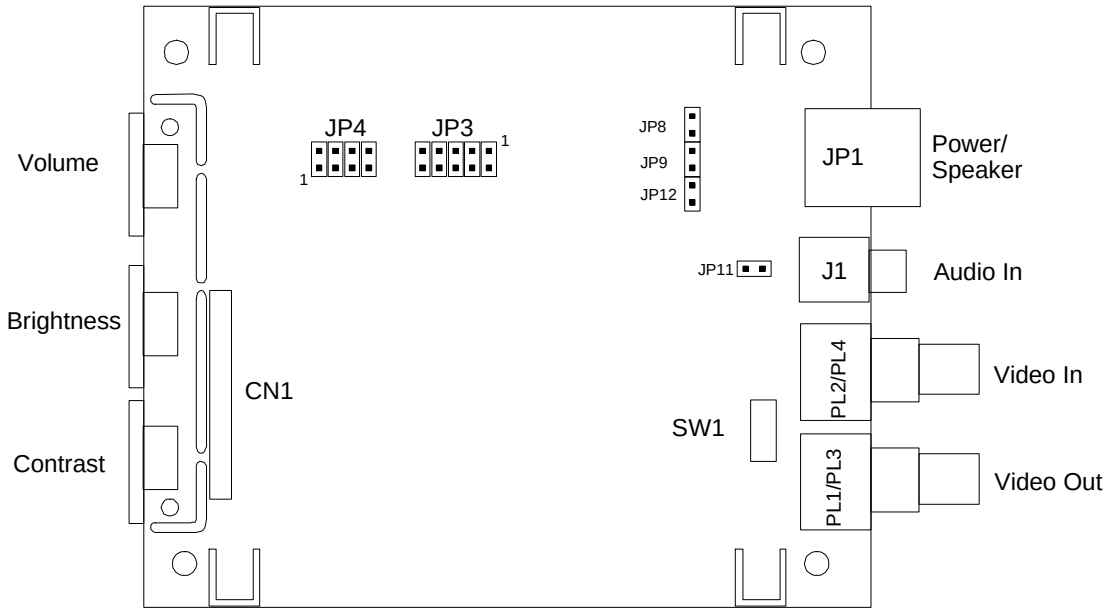

Figure 1: Jumper Location

When supplied as an integrated module all that will be accessible is the Volume, Contrast and Brightness Controls, the Video Termination select Switch and the main I/O connectors. The rear of the module will appear as below:-

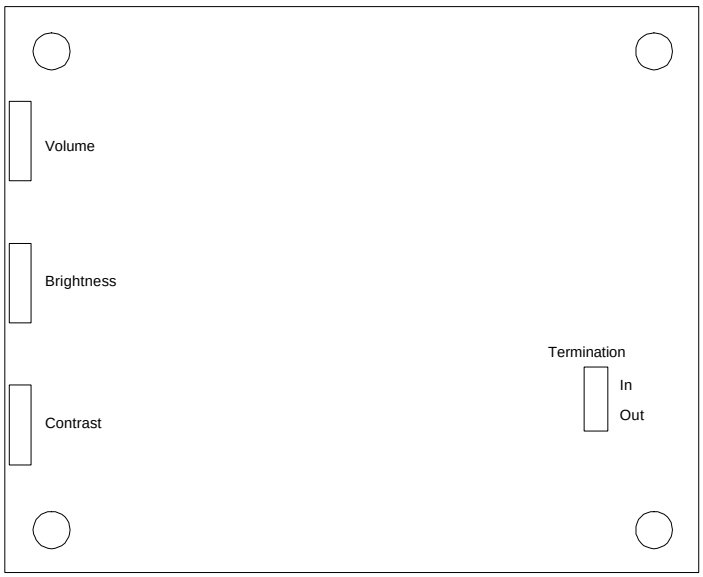

Figure 2: Screen Can

Video Input

The video input section is designed to cope with a 1V composite video signal complying with the appropriate PAL or NTSC specifications. It is capable of autodetecting the video signal source type either PAL or NTSC. An Intelligent sync detector with a digital sync filter, is provided with for use in environments with noisy sync. signals.

$$ PAL/NTSC Auto-detection This function may be removed in cost sensitive applications

The Video is input through BNC connectors as indicated Video In. A build time option is to chose RCA Phono style connectors as used in consumer video equipment.

External control of the LCD Brightness and Contrast is effected through the use of turnable dials. The brightness and contrast control are located on a “break-off” section of PCB to allow remote mount of these controls. If these controls are to be mounted remotely the maximum cable length is 30cm.

Video Pass Through

The video signal may be cascaded to additional units which require the same video input thus reducing system cost by removing the need for multiple video sources or signal cabling.

There is however a practical limit to the number of units which may be “daisy chained” in this manner before signal degradation affects video quality. This limit is caused more by the degradation of the signal through the coax cable and connectors and not due to the D320AV pass through circuitry. If this functionality is required Video Termination Switch SW1 must be placed in the off position in all but the last D320AV in the “daisy chain”.

 **Warning**

It is therefore recommended that no more than 10 units be connected in this manner with a maximum of 30M of cabling from the video source

Video Termination Switch

SW1	Up	Video is terminated by 75R.
	Down	Video is un-terminated to allow pass through to Video output.

Fast Forward VCR Support

In some situations Fast Forward using VCR sources causes loss of synchronisation and resulting in a loss of video image. The D320AV provide special Sync inserter circuitry for use with VCRs enabling a good quality image to be maintained during fast forward and reverse with most VCRs.

Audio Input

Audio is input through a standard RCA Phono connector.

The input impedance of the Audio channel may be varied by the fitting of jumper JP11. When fitted the input impedance will be 600ohms, without it is 10Kohms.

JP11	Fit jumper to terminate audio in 600R.
	Without jumper, the input impedance is 10K.

Audio Output

The Audio signal is fed through a the 200mW amplifier. The Output Volume may be controlled via the turnable dial accessible at the rear of the module.

JP12	Fit jumper to enable audio amplifier.
	Remove to Disable Audio amplifier

External Audio Mute

The Audio amplifier may be muted by the fitting of jumper JP12. This function is also available from JP1 pin 5. For Audio Enable tie pin 5 to +V.

Display Control Functions

Warning

The display is blanked if the input voltage exceeds 22V, is less than 12V, or if there is no input sync.

Invert Image

The TFT panel provides the facility for rotating the image by 180 degrees. The D320AV supports this by the fitting of jumper JP4. This function allows the panel to be mounted either way up to optimise the viewing angle.

JP4	Fit a jumper to pins 5-6 to rotate the image by 180 degrees.

Backlight DIM

This feature is for use with the side light dim function on automobiles. The JP8 function is also brought out to the main connector JP1 pin 4 . When tied to +V the Backlight will be dimmed

JP8	Fit jumper to dim the backlight to approximately 80%.

Image Mirror

This feature is for use with automobile reversing cameras or for Self View mode. The JP9 function is also brought out to the main connector JP1 pin 6. When tied to +V the image will be mirrored.

JP9	Fit jumper to mirror the display left to right.

Power Supply

The D320AV is designed to accept a wide range of voltages from 12V. The typical power consumption at 12V is 0.8A.

$$ Wide Voltage Range PSU. This function may be removed in cost sensitive applications

JP1 pin 2	+V input voltage
JP1 pin 3	0V

Approvals

CE Approvals

To improve EMC shielding a screening can is supplied with the D320AV. It is recommend that this is used in applications requiring CE approvals for the final system. This can fixes to the PCB via four screws.

The D320AV when fitted with the screening can is approved to EN55022:1995 Class B for emissions and EN50082-1:1992 for immunity.

$$ Screening Can. The D320AV may be supplied without the screening can in cost sensitive applications where the final equipment provides satisfactory EMC shielding.

The PCB may be mounted directly on the back of the TFT Panel via the four mounting spacers and screws supplied. See Assembly instructions for details on how the assemble the D320AV, screening can and Panel.

Specifications

Parameter	Rating	Unit	Remarks
Supply Voltage	+12 to +22	V	Wide Range Option
	+12 ± 3%	V	Standard Regulated Input
Storage Temperature	-40 to +95	°C	
Operating Temperature	0 to 60	°C	Contact for details of extended temp.
Humidity	<=85%		Relative Humidity, no condensing, Ta<50°C
Power Consumption	16	W	typical with Panel @ 20V
	10	W	typical without Panel @ 20V
Shock & Vibration	TBA		
Weight	560	g	Inc. LCD & screening can
MTBF	TBA	hrs	
Length	134	mm	including screening can
Width	110	mm	
Height	23	mm	

Connectors;-

Audio	J1	RCA Phono, 1V nominal
LCD Interface	CN1	LCD Interface Ribbon Cable
Video In	PL4	BNC or
	PL2	RCA Phono
Video Out	PL3	BNC or
	PL1	RCA Phono
Power	JP1 pin 1	0V
	JP1 pin 2	+V input voltage, +12V (0.8A typ) to +20V (0.5A typ)
	JP1 pin 3	0V
	JP1 pin 4	Dim (if this option is fitted, tie to +V to Dim backlight)
	JP1 pin 5	Audio Enable (if this option is fitted, tie to +V to enable Audio)
	JP1 pin 6	Mirror (if this option is fitted, tie to +V to Mirror left to right)
	JP1 pin 7	Speaker - 8 ohm minimum
	JP1 pin 8	Speaker +

Connector Information

The mating connector for the power supply JP1 is:-

Connector	Molex Mini Fit	39-01-2080	Farnell Part No.	151-869
Crimp Terminals	Molex	39-00-0078	Farnell Part No.	269-220

LCD Interface Connector CN1

Connector	Molex	52610-3017		
Cable	Sumito Electric Ind.	SUMI-CARD	1.0mm pitch	30 wick, 85°C

If sample cables have been supplied they are wired as follows;-

Black	0V
Orange	+12V
Yellow	Speaker Mute
Grey	Display Dim
Purple	Display Reverse Image
White	Speaker
White	Speaker

D320AV Assembly Instructions

1. Fit the ribbon cable to the NEC panel.
2. Fit the ribbon cable with NEC panel attached into JP2 on D320AV. Contacts facing towards the potentiometers.
3. Place the four ring spacers over the four mounting holes on the back of the NEC panel.
4. Place the D320AV onto the four spacers. Fix to the panel using the four tapped and threaded spacers.
5. Fix the screening can using the four screws.

Partslist

D320AV - Full Specification

Part	Qty	Notes
D320AV	1	Interface PCB
Screening can	1	including 4 fixing screws
Mounting Spacers	4	
LCD Cable	1	80mm, 1.0mm pitch, FFC Ribbon Cable

D320AV - Options

Part No.:	Descritpion	Qty per	Notes
D320PSUCAB	Power Cable	1	1m Cable with Tinned and Soldered ends
D320BCCAB	Control Cable	1	Brightness and contrast extension cable, 30cm
D320LCD2	Long LCD Cable	1	150mm, 1.0mm pitch, FFC Ribbon Cable

Ordering Information:-

D320AV-APC Full Specification card

D320AV- AP Full Specification card without screen can

D320AV- AC Full Specification card with Fixed Voltage Input

D320AV- PC Full Specification card without audio