DSP-10

Technical Information

Please keep for further use !

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Guarantee

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Printing

This manual was edited using text formatting software on a DOS personal computer. The text was printed in *Arial*.

Fonts

Italics and **bold** type are used for the title of a document or to emphasize text passages.

Passages written in Courier show text which is visible on the display as well as software menu selections.

"<   >" refers to keys on your computer keyboard (e.g. <RETURN>).

Note

Text following the "NOTE" symbol describes important features of the respective product.

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Revision History

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    Note:
The cover of this document shows the current revision status and the corresponding date. Since each individual page has its own revision status and date in the footer, there may be different revision statuses within the document.

Drawings that are in the appendix have their own revision history.

Document created: 01.04.1999

Revision	Date

<u>Table of contents</u>

1 Description DSP-10

There are various versions of the separate TFT-display:

1. Size of the TFT-cutout:
   - Diagonal 10" / 26,4 cm

2. Design of the front panel:
   - IP65
   - Chemically antireflection coated protection glass
   - Touch Screen

3. Installation:
   - with mounting pins from the back

4. VGA transmission method:
   - VGA (D-Sub 15 pin HD)
   - RGB
   - Panellink

5. Power supply:
   - 15 – 24 V

1.1 Technical specifications

1.1.1 Electrical characteristic data

Resolution:	- **VGA text / graphics mode**
	  - automatical identification and switch-over
	  - Reduction of the 720 active pixels in the text mode by adjustable fade-out of the 9. pixel to 640 pixels (default setting 799 pixels in the graphics mode and 899 pixels in the text mode)
	
	- **SVGA mode**
	  - automatical identification and switch-over
	  - representation of VGA text / graphics mode by horizontal extension

Input signals:	- VGA (D-Sub 15 pin HD) - RGB (optional) - Panellink (optional)
Colour resolution:	256.000 colours, 64 gray levels
Frequency range:	**- Vertical frequency** 640 x 480 max. 72 Hz 800 x 600 max. 60 HZ **- Horizontal frequency** 30 – 50 kHz **- Pixel frequency** 24 – 40 MHz
Voltage supply:	15 – 24 V
Current consumption:	900 mA

1.1.2 Resistance of the front panel foil (Autotex)

Autotex is based on a biaxially oriented polyester foil and therefore has a better resistance to solvents. It is thicker and more durable than other commonly used foils for membrane keyboards and front panels, as e.g. polycarbonate and PVC.

Autotex is resistant according to DIN 42 115 part 2 to the following chemicals during a reaction for more than 24 hours without visible changes:

Ethanol Cyclohexanol Diacetone alcohol Glycol Isopropanol Glycerine Methanol Triacetine Dowandol DRM/PM	Formaldehyde 37%-42% Acetaldehyde Aliphatic carbon hydrides Toluol Xylol Diluents (white spirit)	Trichloroethane Ethyl acetate Diethyl ether N-Butyl acetate Amyl acetate Butylcellosolve Ether
Acetone Methyl ethyl ketone Dioxan Cyclohexanone MIBK Isophorone	Formic acid <50% Ethanoic acid < 50% Phosphoric acid < 30% Hydrochloric acid < 36% Nitric acid < 10% Sulphuric acid < 10%	Chlorine natron < 20% Hydrogen peroxide < 25 % Potassium soap Detergent Tensides Softener Ferrous chlorine (FeCl2) Ferric chlorine (FeCl3) Dibutyl phthaloate Dioctyl phthalate Sodium carbonate
Ammonia < 40% Caustic soda < 40% Potassium hydroxide Alkali carbonate Bichromates Potassium ferrocyanide Acetonitrile Sodium bisulphate	Drill emulsions Diesel oil Varnish Paraffin oil Castor oil Silicone oil Turpentine oil substitute Brake fluid Decon Kerosene Petrol Water Saltwater	

Autotex is resistant according to DIN 42 115 part 2 to pure acetic acid during a reaction for less than 1 hour without visible damage.

The product is not resistant to the following chemicals:

Concentrated mineral acids	Benzyl alcohol
Concentrated alkaline lyes	Methylene chloride
High-pressure steam over 100°C	

1.1.2.1 Resistance to domestic chemicals

Autotex is resistant to the following agents during a reaction for 24 hours (at 50°C) without visible damage:

Top Job Jet Dry Gumption Fantastic Formula 409	Grape juice Milk	Ariel Persil Wisk Lenor Downey	Ajax Vim Domestos Vortex Windex

Very slight discolorations have been detected for the following materials on critical examination:

Mustard
Tomato juice
Tomato ketchup
Lemon juice

1.1.2.2 Environmental values

Lowest temperature of use:

For Autotex, no loss in function has been detected during 0.5 million operations at -40°C.

Highest temperature of use:

Low to middle humidity: 85°C
High humidity (> 90% rel.hum.): 40°C

Outdoor use:

Like all foils based on polyester, Autotex is not suitable for long-term exposure to direct sunlight (see Autotex UV).

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Synoptical table concerning resistance to solvents:

Chemicals	Autoflex	Autotex
Ketones	Very good	Good
Esters	Very good	Very good
Alcohol	Very good	Good
Aliphatic carbon hydrides	Very good	Very good
Fluoric chlorine carbon hydrides	Very good	Very good
Organic acids	Very good	Good
Mineral acids (diluted)	Very good	Good
Diluted minerals	Very good	Very good
Öils and greases	Very good	Very good
Food	Very good	Good
Domestic detergents	Very good	Good

2 Description interface card VGA1-V4

With the interface card VGA1_v4, analog VGA - and SVGA pictures can be represented on a TFT- or plasma display.

The extraction of the pixel clock from the synchronization pulses by means of a PPL allows a direct replacement of the conventional tube monitor by a flat display which is controlled by VGA1_v4.

The user guidance occurs by means of a menu that is faded in on the display.

The user has the possibility to have faded in the logo and address of his company in the user menu.

The setting is normally carried out with 5 keys on the printed-circuit board. It is possible to connect an external keyboard (assignment see figure 1, page 10).

The transformation of the analog signal to a digital signal with 8 bit per colour allows a maximal resolution of 256.000 colours.

It is possible to connect displays with a resolution of 640 x 480 pixels and 800 x 600 pixels. The switch-over of the displays is realized by choosing the display type after a RESET.

The format customization in horizontal direction in the text mode of displays with 640 x 480 pixels is realized by the adjustable fade-out of the 9. pixel.

On displays with a resolution of 800 x 600, VGA-pictures (text and graphics mode) are represented by extending the number of pixels to 1000 in horizontal direction. In vertical direction, the rest of the display is sampled dark (text mode 200 lines, graphics mode 180 lines). While booting the computer, the picture is extended in the text mode with only 400 lines in vertical direction. This depends on the CPU board you are using.

The interface card is adjusted to the displays with special cables which are contained in the standard accessory.

The picture quality depends on various factors and can be well optimized thanks to the adjustable number of pixels and phase position of the sampling rate of the AD-transformators.

The graphics card of the PC, the cable quality and the cable length also have an important influence on the picture quality. Graphics cards with driver output allow a cable length of up to 50 m with loss of quality.

2.1 Start-up instructions

1. Connection of the VGA - signal
2. Apply the supply voltage 15 V up to 24 V (LED1 (internal) must be actuated)

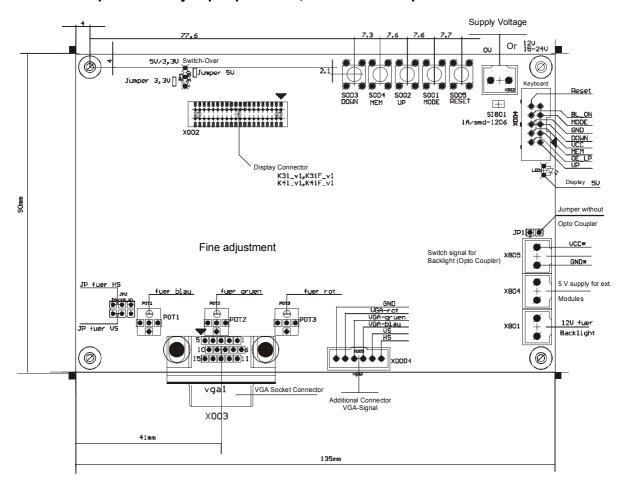### 2.1.1 Description of the jumper positions, terminals and pin connectors

Figure 1: position of the connectors

2.1.1.1 Assignment X004

(Pin connector for the connection of an external keyboard and utilization of the power-off signal for the backlight converter)

1	UP	6	gnd
2	n. c.	7	mode
3	mem	8	bl_on
4	5 V	9	n. c.
5	DOWN	10	reset

(All signals low - active)

2.1.2 Key function

Reset:
- with this key, the hardware and software of the card is reset
- the setting values are read from the EE-Prom, so the setting is valid that was stored the last.

Mode:
- with this key, the various adjustment possibilities can be called up
  - colour contrast
    (simultaneous adjustment of all 3 colour sections, fine adjustment with the potentiometers POT1, POT2, POT3)
  - mode (see table 1, page 13)
  - vertical picture position
  - horizontal picture position
  - fade-out
    (with this, you can choose the pixel of a character which is faded out in the text mode (720 x 400) when a display 640 x 480 is connected)
  - Pixels

	Graphics	Text mode	SVGA- mode
Display 640 x 480	799	899	844
Display 800 x 600	1000	1000	1055

   (Warning: Display 800 x 600: adjust at least 820 pixels for LQ12S41 and 1000 pixels for AC26-11 and AC31-12;
   Display 640 x 480: don't adjust count value under 790)

  - Phase: adjustment of the sampling time for an optimal picture quality

Up:
- with this key, you can set higher count values in each mode, after RESET the display type is incremented with this key.

Save:
- with this key, the current setting values can be stored in the EE-Prom

Down:
- with this key, you can set lower count values in each mode, after RESET the display type is decremented with this key.

Double functions:
- by pressing and holding the mode key simultaneously to a short reset, the default setting values are written from E-Prom into EE-Prom without changing the display type.

2.1.3 Setting of the display type

If the display type does not correspond to the connected display or the card is used for the first time, the right type must be set.

This should be done in the graphics mode. Every time the picture is improved, the settings should be stored with the SAVE key because it may happen that the indication becomes too bad. In this case, the RESET key should be pressed.

The following steps are necessary:

- Press RESET
- Then **slowly press** UP or DOWN about 6 – 7 times, until the mode number corresponds to the value given in table 1 or just until a good picture becomes visible.
- SAVE
- Press MODE
- Skip MODE-KONTR (KONTR = contrast)
- Press MODE
- Adjust MODE BILD-Vertical (BILD = picture) with UP or DOWN until picture is centered.
- SAVE
- Press Mode
- Adjust MODE BILD-Horizontal (BILD = picture) with UP or DOWN until picture is centered.
- SAVE
- Press MODE
- Skip MODE AUSBL (AUSBL = fade-out)
- Press MODE
- Adjust MODE PIXEL with UP or DOWN according to the table on page 11. In case this isn't possible, change by 1, 2 or 3 in one of the two directions. The picture should start at the left edge. It might be necessary to readjust with BILD-H to make the picture end at the right edge.
- SAVE
- Press MODE
- Press MODE PHASE-AD with UP or DOWN just until an optimal sharpness is achieved. If you can't achieve any sharpness, increment or decrement the number of pixels by one.
- SAVE
- Press MODE
- Skip MODE
- Press MODE
- Adjust desired brightness with MODE KONTR UP or DOWN (KONTR = contrast)
- SAVE
- RESET

The default settings are made by a certain key combination (see page 11).

(**If the type no. is changed, the default values for setting of the E-Prom are used; until the memory key is pressed, the preset values in the EE-Prom survive)**

Table 1:

Manufacturer	Display type	Resolution	Size	Voltage	Mode no.
NEC	AC26-11	800 x 600	10,4"	3,3 V	5
NEC	AC31-12	800 x 600	12,1"	3,3 V	7
NEC	AC33-18	640 x 480	10,4"	3,3 V	2
NEC	AC33-24	640 x 480	10,4"	3,3 V	2
NEC	AC33-27	640 x 480	10,4"	3,3 V	2
NEC	AC20-06	640 x 480	6,5"	3,3 V	4
SHARP	LQ12-S41	800 x 600	12,1"	3,3 V	1
SHARP	LQ10D42	640 x 480	10,4"	5 V	0
	LQ10D345				
	LQ10D341				
	LQ64D341				
SHARP	LQ10S21	800 x 600	10,4"	3,3 V	5

If there are display types which are not mentioned in above table, a type no. has to be chosen that ensures a steady picture (a destruction of the display due to a wrong type no. is impossible).

3 Appendix

3.1 Pin assignment

Connector	Pin	Signal	Colour
Power:	1	15 – 24 V DC	- -
	2	GND	- -
	3	n. c.	- -
	4	n. c.	- -
VGA:	1	75 ohm	red
	2	75 ohm	green
	3	75 ohm	blue
	4	n. c.	- -
	5	GND	- -
	6	GND	- -
	7	GND	- -
	8	GND	- -
	9	GND	- -
	10	GND	- -
	11	GND	- -
	12	n. c.	- -
	13	HS	- -
	14	VS	- -
	15	n. c.	- -
Touch:		Standard RS232	- -