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The information contained in this user guide is preliminary, and the products described herein are subject to change without prior notice.



The symbols  and  are used in this publication to indicate Warning and Note respectively.

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1 INTRODUCTION

This LCD data/video panel is a state of the art projection device that can be connected to most computer and video sources.

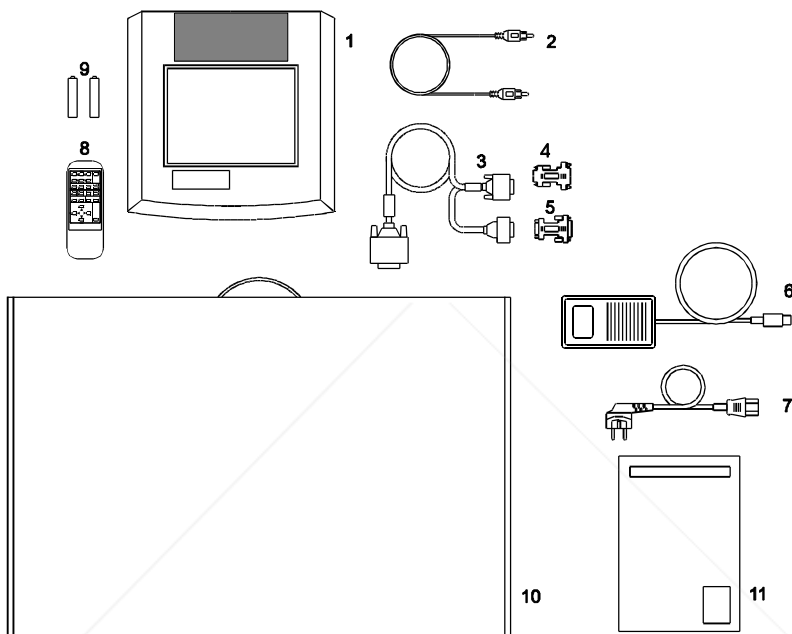
Applications include presentations, software training, educational use, advertising, information boards and other situations where a small or large audience shares information.

2 MAIN FEATURES

- **16.7 million colors**
- **Built in Video interface**
- **Multistandard NTSC/PAL/SECAM**
- **VGA and MAC compatible**
- **User settings memorized**
- **Correct VGA text**
- **Infrared remote control**
- **Housing footprint fits OHP glass exactly**
- **Low weight**
- **Dual Safecool system**
- **False light blocking**
- **4 meters Y cable**

3 SUPPLIED MATERIAL

A complete set includes the following components :



- | | |
|---------------------------|----------------------|
| 1. LCD Panel | 6. Power -5, 12, 5 V |
| 2. Video Cable | 7. Power Cable |
| 3. VGA Cable | 8. Remote Control |
| 4. Cable-Adapt. MAC mon | 9. Batteries |
| 5. Cable-Adapt. MAC comp. | 10. Box |
| | 11. User Guide |

4 SETTING UP THE LCD PANEL

Switch off all equipment before connecting the components. Be aware of static electricity that may build up, especially in the dry season and when operating on synthetic carpets. Discharge any static electricity by touching a metallic surface before you start.

Place the LCD panel on top of a transmissive overhead projector (OHP). Select a high intensity type projector, for instance 400 W halogen or metal-halide. Best results are obtained in a dimmed room with no direct sunlight shining in.

The following are guidelines for first time set-up:

Connect the cables and power supply as described in the rear foldout page (see *Connection Layout*).

Attach power to the LCD panel, turn the overhead projector and computer on. For more information on set-up see the following sections on *Computer and Video*.

4.1 COMPUTER

Connect the LCD panel, computer, monitor and power supply as shown in the rear foldout.

Connect cable (2) between the LCD panel and the computer. Use the Y-split on the computer end to connect the monitor.

If you have a Macintosh computer, insert applicable adapters (4) and (5) as shown.

Connect the power supply to the LCD panel (3).

TO SET UP FROM THE REMOTE CONTROL:

STEP	OPERATION
1	Press RESET for default settings
2	Adjust TUNE for a stable image. *)
3	Position the image correctly using the four POSITION keys
5	Adjust CONTRAST and BRIGHTNESS as desired

*) If a stable image is not achieved using TUNE, try to adjust the CONTRAST/BRIGHTNESS setting as described later.

4.2 VIDEO

Connect the LCD panel to a video source as shown in the rear foldout.

Use a TV set as a local video monitor if desired (the data monitor may not be used as a video monitor).

Connect the video cable (1) to the VIDEO connector on the LCD panel. Then connect the video cable to the video out connector on the video source.

S-VIDEO, often referred to as S-VHS, may be connected using an optional S-VIDEO cable.

TO SET UP FROM THE REMOTE CONTROL :

STEP	OPERATION
1	Press COMP, S-VIDEO or VIDEO depending on input used
2	If necessary POSITION correctly
3	If necessary, adjust COLOR saturation and TINT.
4	Adjust CONTRAST, BRIGHTNESS as desired

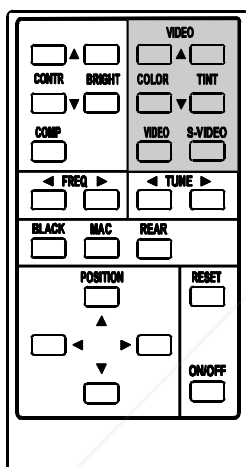
5 USING THE LCD PANEL

The LCD panel has a set of connectors that you need to know in order to operate the device correctly.

5.1 REMOTE CONTROL

The infrared remote control (RC) is the main user interface to the device. The RC is used to set the LCD panel correctly (to get the best possible viewing conditions) and to control the presentation.

The figure shows the different keys of the remote control.



Set-up should be done once with the application(s) you are running most frequently. Allow some minutes for the equipment to warm up before adjusting. Most settings will automatically be memorized individually for each source for future use.

The 'MEM' column in the tables below indicates whether the setting is memorized for each source. For a detailed overview, see the *Features* section.

REMOTE CONTROL KEYS:

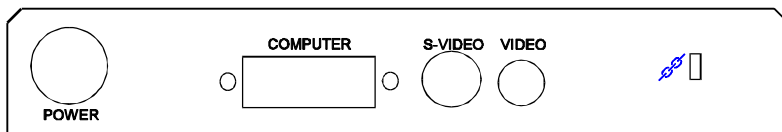
CONTROL	FUNCTION	MEM
CONTR	Contrast (ratio between light and dark colors)	YES
BRIGHT	Brightness (whiteness)	YES
FREQ	Frequency (horizontal width)	YES
TUNE	Stability (phase)	YES
BLACK	Blackens the screen	NO
MAC	Selects standard or LC type MAC	YES
REAR	Flips the image horizontally for rear projection	NO
POSITION	Image position on screen	YES
ON/OFF	Turns the panel on/off	-
RESET	Defaults to standard settings	-

REMOTE CONTROL KEYS:

CONTROL	FUNCTION	MEM
COMP	Selects computer as source	-
VIDEO	Selects composite video as input source	-
S-VIDEO	Selects S-video as input source	-
COLOR	Color saturation of video image	YES
TINT	Hue of video image	YES

5.2 CONNECTORS


All connectors are positioned on the right hand side of the LCD panel. See the technical data section for pinouts of the various connectors.



Do not connect any other devices with similar plugs to the connectors of the LCD panel, as this voids any warranty and may cause permanent damage to the device.

CONNECTOR	FUNCTION
POWER	Low voltage power supply
COMPUTER	Connector for analog RGB in/out
S-VIDEO	S-video (S-VHS) video input
VIDEO	Composite video input

5.3 LOCKING THE PANEL

To avoid having your LCD panel stolen you can use a safety lock. On the connector bracket described above you will find a slot marked with the symbol  for instalment of your safety lock.



Please consult the user instructions included with your lock before connecting it to the panel.

6 FEATURES

The LCD panel has a variety of different features implemented. This chapter explains each feature in detail.

DUAL SAFECOOL SYSTEM

The cooling operation is controlled by the overhead projector light (OHP). This safety feature ensures that the fans are always operating as long as the OHP is turned on. When the OHP is turned off, the fans automatically stop to minimize noise. The power supply must be attached to the panel for the fan to work properly.

SET-UP MEMORY

The user controlled set-up, that usually is done each time the panel is connected to a new computer, is automatically memorized for future use. The set-up information is stored in a non-volatile memory approximately 5 seconds after the last key is pressed.

The memory can store 40 different sources/modes. Some sources are predefined, while the remaining are available for customer set-up of sources. See the *Technical Data* section for compatibility.

Custom sources are stored only if their sync pattern differs from any of the previous selections. The panel automatically selects a new memory location.

Most settings are stored individually for each mode, including contrast, brightness, tune etc. See the remote control table above.

VGA TEXT

VGA text is compressed correctly from 720x400 to 640x400 mode when the image is positioned correctly. The characters maintain their shape, as every ninth pixel is dropped horizontally between each character.

MULTISTANDARD TV SYSTEMS

The LCD panel incorporates a unique multistandard video decoder that works with all major TV systems. NTSC, PAL and SECAM are automatically detected. See the TECHNICAL DATA section for TV system compatibility. (The PAL M and N systems are not covered).

CONTRAST

The contrast of an image is defined as the relation between dark and light colors. An image of high contrast is often regarded as 'hard', as compared to the 'soft' feeling of a low contrast image. Low contrast is recommended for long term viewing, while high contrast is used to enhance details. Use the CONTR keys on the remote control (RC) to adjust the contrast. Also see *Brightness*. The contrast setting is stored individually for each mode.

BRIGHTNESS

The brightness is the amount of white in an image. The brightness is adjusted to the ambient lighting conditions. Use the BRIGHT keys to adjust brightness. See also *Contrast*. The brightness setting is stored individually for each source.

COLOR

Adjust COLOR saturation using the cursor keys. Only applicable when video is connected.

TINT

This controls the hue of an image, and is only active in NTSC video.

COMPUTER

The computer image is displayed when pressing the COMP key. This is the power on default setting.

VIDEO

The composite video source is selected with this key.

S-VIDEO

The S-VIDEO source is selected with this key.

FREQUENCY

This setting is usually not changed by the user. It is however provided in case of adaptation to special graphic cards that are close to one of those in the compatibility list. Generally, an incorrect frequency setting can be observed as an image too wide or too narrow, combined with vertical, unstable bands.

TUNE

This feature is used to stabilize the image. An untuned image can be seen as sideways instability or 'swimming'. The TUNE function has no effect in VIDEO mode.

BLACK

Use the BLACK key on the RC, if you temporarily want to suspend the display of images. The BLACK key is a toggle function, and the screen goes black when activated. Blanking the image is done using the ON/OFF key. Any key pressed will release BLACK.

MAC LC

The MACII series of computers are equipped with slightly different graphic interfaces that need manual setup on the RC to work correctly. Default is the MACII standard interface of 640 x 480 resolution. Pressing the MAC key toggles between the MACII LC 640 x 480 mode and the standard mode. An erroneous setting will typically be seen as an image too wide or too narrow, as well as vertical unstable bands.

REAR

The REAR mode is used for rear projection, i.e. projection from the back of a screen, mirroring the image.

POSITION

Due to minor variations in graphic cards, the horizontal and vertical position may need adjustment. Select POSITION, then press LEFT and use the cursor keys.

VGA text mode (720 x 400) is correctly displayed when the image is positioned appropriately.

RESET

This feature enables standard settings of most controls (see the 'MEM' column in the remote control description, where YES also indicates a standard setting). RESET will only reset the mode active.

ON/OFF

This switch controls the operation of the panel. When switched on, all functions are active. When switched off, the automatic fan control is still operating, but the image is turned white. The ON/OFF switch is a toggle key.

ON/OFF may also be used to blank the screen.

7 PRACTICAL HINTS AND TIPS

This is a list of what to do when things go wrong. Check the symptoms carefully if you experience any problem. The cure may be at your hands!



Always press the RESET key first. This ensures that *the panel is in a defined state.*

The LCD image is completely white

- Check if the cables are connected and that power is on
- Check the ON/OFF key on the remote control

The LCD image is completely black

- Check the BLACK switch
- Check COMPUTER/S-VIDEO/VIDEO source selection

The LCD image is too dark or too light

- Check the CONTRAST and BRIGHTNESS settings
- Try the RESET key

Some colors are unstable or flickering

- Try to adjust the CONTRAST, BRIGHTNESS or possibly TUNE

The whole LCD image appears unstable or misplaced

- Try to adjust the TUNE or POSITION
- Alternatively, you are most probably connected to an incompatible computer or video card. See the Features section for frequency adjustment and positioning

The cooling fans are not working

- The fan operation is controlled by the overhead projector light. Is the OHP turned on ?
- Check that the power supply is attached
- Do not use the LCD if the fan appears defective, as overheating may occur

Text is not displayed correctly

- Try to position the image horizontally

The remote control is not working

- Check if the batteries need replacement
- Be sure to point at the projection screen or directly at the IR eye in the front of the LCD panel
- You may be too far away from the panel (max. distance 7m/ 23 feet)

Video is black and white only

- Check the COLOR setting
- Check if the TV system is compatible with the system of your country (see Technical Data)



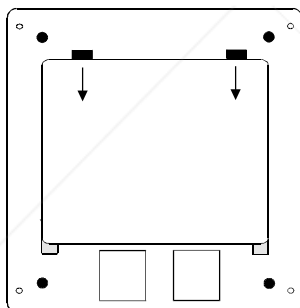
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8 MAINTENANCE

From time to time, the housing and protection glasses may be cleaned with a damp, non abrasive cloth, possibly using a mild detergent to remove spots.

The upper protection glass is not removable, as it only needs cleaning from the outside (the inside is sealed to the LCD module).

The lower protection glass can be removed for cleaning. The glass may be hard to get out, as the springs holding the glass are designed to avoid the glass falling out. Place the unit upside-down on a soft cloth to avoid scratches. Using both hands, press the protection glass out of the guide rail and slide out. Be careful not to touch or to drop any objects inside the housing. Replace the glass after cleaning.



9 SERVICE



This product contains no user serviceable parts. Attempts to modify mechanics or electronics inside the housing will violate any warranties, and may be hazardous..

If for any reason the product fails to work properly, first check the previous chapter on hints and tips. If things still do not work, please contact your dealer for technical support. Prepare a list of the symptoms you observe to make the diagnosing easier for your dealer. Remember to include all cables and power supply when returning the goods.

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If a problem cannot be solved by the dealer, please see the *Service Information* section.

10 TECHNICAL DATA

The technical data may change without prior notice in order to improve the product performance.



The apparatus is designed for indoor use and should not be operated outside the general environmental limits, as this may lead to permanent damage and violation of any warranties.

GENERAL ENVIRONMENTAL LIMITS

STORAGE TEMPERATURE	-20 ~ 60 C (-4 ~ 140 F)
STORAGE HUMIDITY	10 ~ 90 percent relative humidity, non condensing
OPERATING TEMPERATURE	10 ~ 40 C (50 to 104 F)
OPERATING HUMIDITY	20 ~ 80 percent relative humidity

Allow for a slow acclimatization, after storing at extreme temperatures and humidities, to avoid condensation. Should condensation appear, operate for some time on an OHP, as the heat generated will evaporize the water.

DISPLAY UNIT

Full color (RGB) unit connecting directly to external video sources.

SIZE	310 x 310 x 40 mm 12.2 x 12.2 x 1.6 inch
WEIGHT	1700 grams / 3.8 lbs
POWER	-5, -12, 5 V
LCD CELL	Active matrix TFT stripe configuration
COLOR RESOLUTION	16.7 million colors
RESPONSE TIME	30 ms
CONTRAST RATIO	100:1
PIXEL RESOLUTION	640 x 480 x 3 (RGB)
SCREEN DIAGONAL	8.4 "
VIDEO FREQUENCY	25 ~ 35 MHz
HORIZONTAL SYNC	15 ~ 40 kHz
VERTICAL SYNC	60 ~ 76 Hz (VGA) 66 Hz (MACII) 50 ~ 60 Hz (VIDEO)
NTSC SYSTEM	M, 4.43 NTSC
PAL SYSTEM	B, G, H, D, I
SECAM SYSTEM	B, G, H, D, I, K1, L
COMPUTER INPUT	0 ~ 0.7 Vpp
VIDEO INPUT	0 ~ 0.7 Vpp
S-VIDEO INPUT	0 ~ 0.7 Vpp
DEFECTIVE PIXELS	Maximum 25 (black, red, green or blue)
APPROVALS	FCC, Class A, Subpart J, Part 15

POWER SUPPLY

Primary switched universal type AC to DC converter.

INPUT VOLTAGE	100 to 250 VAC
OUTPUT VOLTAGES	+5VDC, +12VDC, -5VDC
CONNECTOR	5 pin DIN male
APPROVALS	TÜV, UL, CSA, N, S, D, FI

REMOTE CONTROL

Infrared wireless remote control.

BATTERIES	2 pcs LR03/AAA 1.5V penlight
RANGE	7 m/23 feet

COMPATIBILITY

The unit is predefined for the following interfaces. In addition, the user can configure the panel for other interfaces with a total maximum of 40 definitions altogether (predefined and user defined).

MODE	V FREQ	RESOLUTION
VGA, MCGA	60,70,72	640 x 480 640 x 400 640 x 350 720 x 400 (text, compressed)
MACII	66	640 x 480
NTSC	60	640 x 480
PAL	50	640 x 480
SECAM	50	640 x 480

11 CONNECTORS

The pinouts of all external connectors are described.

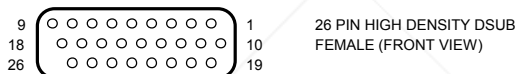
POWER

This connector feeds regulated DC power to the panel.



COMPUTER

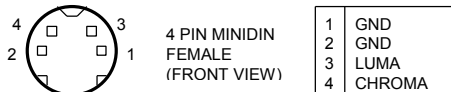
This connector relays all sync and data signals from the computer to the panel and back again to the CRT monitor.



1 ANALOG R IN	10 ANALOG R GND IN	19 HSYNC IN
2 ANALOG G IN	11 ANALOG G GND IN	20 C/VSYNC IN
3 ANALOG B IN	12 ANALOG B GND IN	21 DIGITAL GND
4 NOT USED	13 NOT USED	22 PCID0
5 NOT USED	14 NOT USED	23 PCID1
6 NOT USED	15 NOT USED	24 DIGITAL GND
7 ANALOG R OUT	16 ANALOG R GND OUT	25 HSYNC OUT
8 ANALOG G OUT	17 ANALOG G GND OUT	26 VSYNC OUT
9 ANALOG B OUT	18 ANALOG B GND OUT	

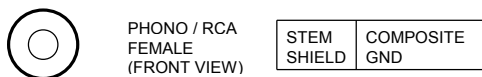
S-VIDEO

This connector is used as S-VHS video input.



VIDEO

This connector is used as composite video input.



12 FCC STATEMENT

This equipment has been certified to comply with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of FCC rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class A limits may be attached to a computer that complies with Class A limits. When connecting to a peripheral device, a shielded input/output cable is required to ensure compliance with FCC rules. The shielded cable that must be used is supplied with the equipment. Operation with non-certified peripherals or non-shielded cables is likely to result in interference to radio and TV reception.

INSTRUCTIONS TO USER


This equipment generates and uses radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of the FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

Reorient the receiving antenna.

Relocate the computer with respect to the receiver.

Plug the equipment to a different outlet so that equipment and receiver are on different branch circuits.

Fasten cables using mounting screws to ensure adequate EMI control.

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You may require the following booklet from the Federal Communications Commission (FCC) : "How to identify and resolve radio and TV interference problems", available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

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13 ENVIRONMENTAL STATEMENT

This product is manufactured to minimize the stress and pollution of the surroundings. Where possible, recyclable materials are used.

<i>ITEM</i>	<i>RECYCLING / HANDLING</i>
PACKAGING	Only recyclable materials are used
MECHANICS	Only recyclable plastics and metal is used. Recycling codes are moulded in the plastic. Metal parts are painted aluminium and steel.
ELECTRONICS	No CFC is used during manufacture. No components that require special handling are used.
LCD MODULE	The liquid does not contain toxic or cancer causing materials. No special ventilation is needed when handling a broken cell. Use gloves and wash your hands afterwards to avoid any irritation to skin. The module is largely made up of glass, so handle broken units carefully to avoid wounds.

14 SERVICE INFORMATION

In cases where a problem cannot be solved by the assistance of your dealer, please call the following number to get an **RMA** (Return Authorization Number) :

+47 69 34 01 55 (Norway)

To return the defective unit, package well (preferably using the original packaging material), enclose a copy of your sales receipt and a description of the problem you experience, and ship **prepaid** to :

ASK AS
Customer Service Department
RMA
N-1602 FREDRIKSTAD
NORWAY



Be sure to include your RMA number on the outside of the shipping box, as units without this number will be returned to sender without processing.

15 CONNECTION LAYOUT

The foldout shows how to connect the LCD panel to the different video and computer sources.



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