SIEMENS

High Resolution 38cm/15" LCD-Monitor SCD 1597

Operating Instructions

SCD 1597 R
6AV8100-1CA00-0AA0
(Int.ID:6GF6230-6MA)

SCD 1597 RT
6AV8100-1CB00-A00A
(Int.ID:6GF6230-6MB)

SCD 1597 R8S
6GF6232-6MA

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1. Overview

The LCD monitor SCD 1597-R/RT/R8S has been developed and constructed especially for industrial applications. This monitor can be used in applications where a standard CRT-device would be unsuitable, due to space or environmental restrictions.

Its compact enclosure opens up a wide spectrum of possible application areas for the SCD 1597-R/RT/R8S, ranging from air-conditioned computer rooms in a 19" rack, to the immediate vicinity of machinery in a special protective enclosure. As is the case for all industrial systems, the monitor has been designed to withstand the particular demands placed upon such equipment, e.g., it is immune to electromagnetic radiation and can withstand a large temperature range.

The trend-setting LCD technology in this monitor has relegated picture geometry distortion and colour patches to the past. Even at the low refresh rate of 50 Hz. the screen remains flicker-free. The SCD 1597-R/RT/R8S thus fulfils even the strictest ergonomic requirements. Pictures of lesser resolution are expanded to fill the screen.

The SCD 1597-R/RT/R8S can simultaneously display up to 262,144 colours enabling realistic colour images and videos to be displayed. The LCD-monitor contains special hardware to convert a standard analogue VGA video signal for the display controller. Compatibility with conventional CRT monitors is, thus, guaranteed.

It is very easy to adjust the monitor settings using the clearly designed OSD (On Screen Display). The "Automatic Alignment" function does away with the need to carry out tedious adjustments such as picture position and phase. At the press of a button, the monitor performs these alignments automatically.

The SCD 1597-R/RT/R8S is equipped with an active 15.0" TFT display module with a maximum resolution of 1024x768 pixels. The integrated power management system VESA DPMS, allows a significant reduction in power consumption when the synchronisation signal from the computer has been switched off, compared with that under "normal" operation.

1.1 Layout of this Handbook

This handbook should be kept within reach while installing and operating the LCD-monitor. It has been laid out so that even inexperienced users can find the information they require. Chapters are clearly arranged according to subject.
In detail, the chapters are arranged as follows:

- **Chapter 1 Introduction**
  This chapter provides a brief description of the SCD 1597-R/RT/R8S, including its properties, application areas and special features.

- **Chapter 2 Installation**
  This chapter is mainly concerned with preparing the LCD-monitor for use, its installation and cabling.

- **Chapter 3 Operation**
  All operations and adjustment possibilities for the SCD 1597-R/RT/R8S are described here.

- **Chapter 4 Technical Data**
  This chapter contains technical details such as dimensions, power supply, environmental considerations and EMC data.

Important: The manufacturer has gone to great lengths to match the quality of the documentation to the high standard of this product. In achieving this, we are reliant on the support of our customers. If anything in this handbook is not clearly understandable or if there are any errors, then please submit a short note to that effect. The same applies for any suggestions for improvement. We are grateful for all such assistance.

1.2. Warnings and Safety Notes

Transport

The LCD-monitor should only be transported in its original packaging to ensure it will be protected against shocks and rough handling.

Setting Up

When installing the monitor, it should be noted whether any moisture (condensation) has entered the unit during transport or storage. Additional important installation information can be found in the "Technical Data" chapter.

EMC

This is a Class A piece of equipment (industrial use). In domestic situations, it may cause interference. Under such circumstances, the operator can be required to undertake appropriate measures to minimise problems.

This LCD-monitor is a component designed for building into industrial systems. The operator of the entire plant is responsible for maintaining electromagnetic compatibility according to EMC-law.

Repairs

Before the unit is opened, it must be switched off and the power supply disconnected. Only authorised persons may open the unit.

Additions or changes to the unit may damage the system or affect its EMC behaviour.

Cleaning

The unit must be isolated from the power supply before cleaning. If heavily soiled, the LCD-monitor can be cleaned with a damp cloth and mild detergent. Care must be taken to ensure that no moisture enters the unit during cleaning.

Scouring powders and solvents must never be allowed to come in contact with the unit. The inside of the unit is to be cleaned by qualified service technicians only.

1.2.1. Instructions for Handling Assemblies Susceptible to Electrostatic Shock

Most of the assemblies within the SCD 1597-R/RT/R8S LCD-monitor contain components which can be destroyed by electrostatic voltages. It is also possible for the assemblies to be damaged in such a way that total failure does not occur.

If you (as an authorised service technician) are handling such assemblies then the following precautions should be observed:

- When such assemblies are being handled, a means of electrostatic discharge must be available. This can be, for example, an earthed object, which can be touched to discharge electrostatic voltages.

- This applies to all tools used (insulated). They must also be discharged at an earthed object.

- When assemblies are removed or added to the system, the unit must always be switched off and the power supply cable unplugged.

- Vulnerable assemblies should always be held by their edge. Avoid touching tracks and contact pins.

2. General Installation

Preparation for installing the LCD-monitor include the following points:

- Removal of all packaging

- Checking of components for damage

- Comparison of components received with those on the delivery note

- Connection to the computer system and power supply

- Building into your system, bearing in mind technical and ergonomic aspects

2.1. Removing the Packaging and Checking Individual Parts

After unpacking all the delivered components, they should be checked for completeness and for possible transport damage (visual inspection). If any deficiencies are found then please contact the service department given on the delivery note. Have the delivery note number, serial number and a description of the deficiency to hand.

The original packaging should be kept for future transportation.

2.2. Installing the LCD-Monitor

The SCD-1597-R/RT/R8S has been designed for use in a 19" rack system. In order to guarantee safe and interference-free operation, the following points should be borne in mind during installation:

– **Thermal problems**
– **EMC problems**
– **Safety problems**
– **Ergonomics**
– **Mechanical Installation**
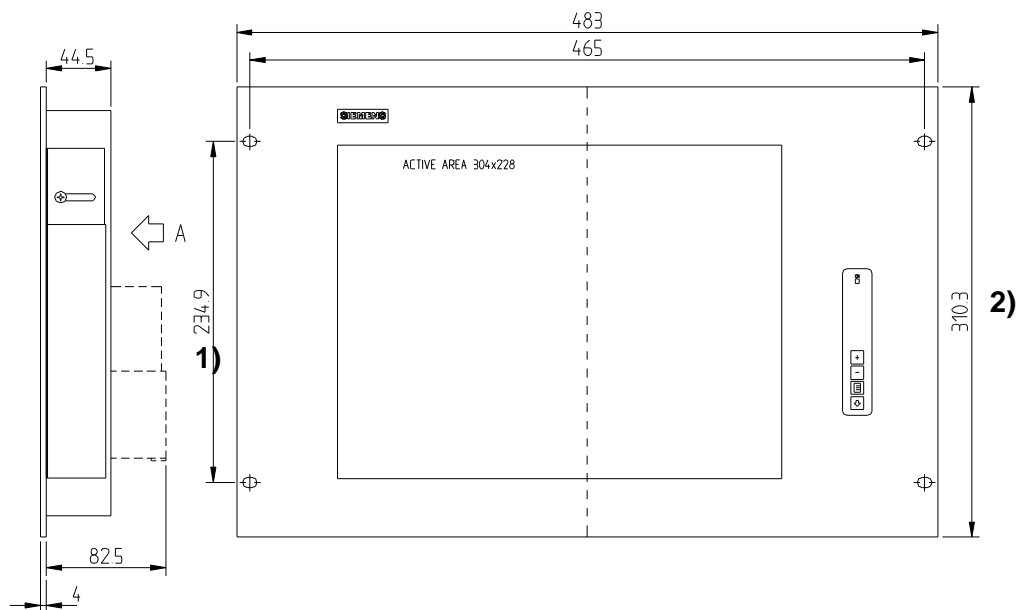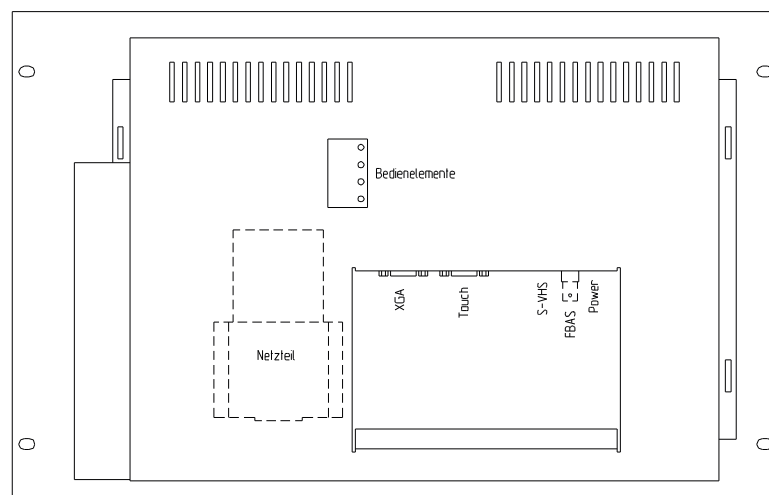
Figure 1: Dimensions of the SCD 1597-R/RT/R8S

1) bei SCD 1597-R8S = 279,4 mm

2) bei SCD 1597-R8S = 354,8 mm

Thermal Problems

In order that the LCD-monitor maintains an optimum operating temperature while in use, air must be allowed to circulate freely around the SCD 1597-R/RT/R8S enclosure. It is particularly important that the rear of the system is kept free.

Please bear in mind that increased temperatures can lead to defects and to a significant reduction in the lifetime of the monitor.

EMC Problems

This LCD-monitor is a piece of equipment designed for building into an industrial system. The operator of the entire plant is responsible for maintaining electromagnetic compatibility according to EMC laws.

Safety Problems

All voltage and signal connections must adhere to legal requirements.

Ergonomics

The screen should be easily viewable from all sides and without reflections.

Mechanical Installation

The monitor is built into the system as a standard 19" rack component.

2.2.1. Installation of AC/DC-power supply unit or 24V-DC/DC-converter

Either an AC/DC power supply unit or a DC/DC converter can be used to supply the control panel with 24VDC. If an AC/DC power supply unit is used, it is attached to the enclosure

If the DC/DC converter, which is delivered with the unit, is to be used then it should be inserted below the AC/DC power supply unit. so that the 24V connector is accessible. The DC/DC converter should then be screwed to the enclosure using to the two holes provided for the bracket.
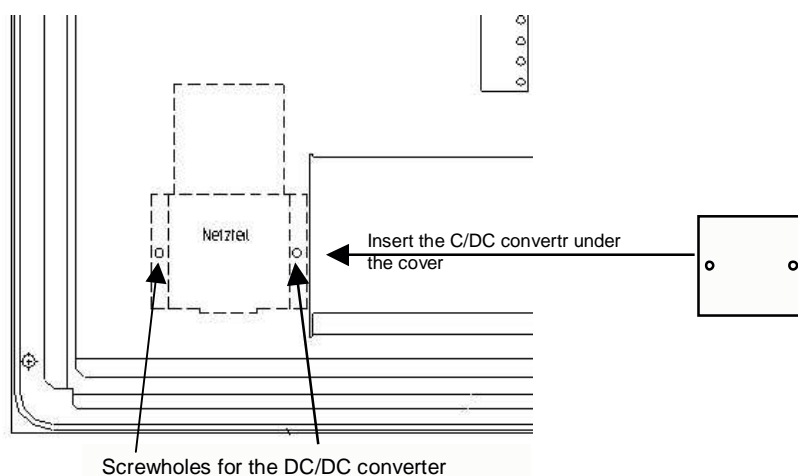
The cable from the AC/DC power supply unit (12VDC) or from the DC/DC converter is plugged directly into the socket (power) on the SCD 1597 R/RT/R8S. It should be secured using a pull-relief.

Insert the C/DC convertr under the cover

Netzteil

Screwholes for the DC/DC converter

2.3. Cable Connections and Pin Assignments

The LCD-monitor has been tested and set-up in the factory. Before use, the power supply and the VGA signals should be connected to the sockets provided. Connections to the monitor should adhere to EMC regulations.

A high-quality 75-ohm coaxial cable must be used for the VGA-signals. Low quality cables can result in interference and shadowing on the display.

VGA-Interface
The VGA interface is a standard 15-pin male HD-D-type connector.
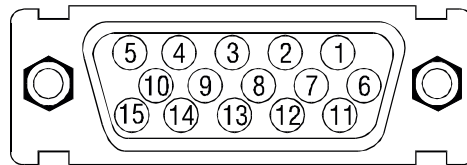
Figure 2: VGA-interface

Pin	Signal
1	Video input RED
2	Video input GREEN
3	Video input BLUE
4	Not used
5	Not used
6	GND (RED)
7	GND (GREEN)
8	GND (BLUE)
9	Not used
10	GND
11	Not used
12	Not used
13	H-Sync.
14	V-Sync.
15	Not used

Power Supply

Power is supplied to the SCD 1597-R/RT/R8S via a standard power connector on the rear of the unit.

Pin	Name	Description
O	GND	Voltage input GND
●	+12V	Power supply +12VDC

2.4. Electrical Installation

Before connecting the SCD 1597-R/RT/R8S to the power supply, a check should be carried out as to whether the VGA connector is plugged in properly and that the screws tightened.
The monitor can be connected directly to the power supply (note the polarity of the supply). If a video signal is connected, the image will appear immediately on the screen.

There are many possible reasons why an image might fail to appear on the display after it has been switched on:

– no video signal connected

– no synchronisation signal connected

– horizontal and vertical synchronisation signals are connected the wrong way round

2.5 Touch-screen version SCD 1597xx/T

The installation of the necessary touch screen driver software is described in the manufacturers original touch-screen manual which is enclosed.

3. Operation and Alignment

This chapter contains a description of all the operating and alignment functions.

3.1. Location of the Operation and Alignment Controls

All controls are accessible from the front and rear of the unit. They are located on the rear of the unit is shown in Figure 1 on page 31 and are used for the OSD-menu.

S1
S2
S3
S4

Compartment for power supply unit   VGA-interface   Touchscreen (option)   power supply
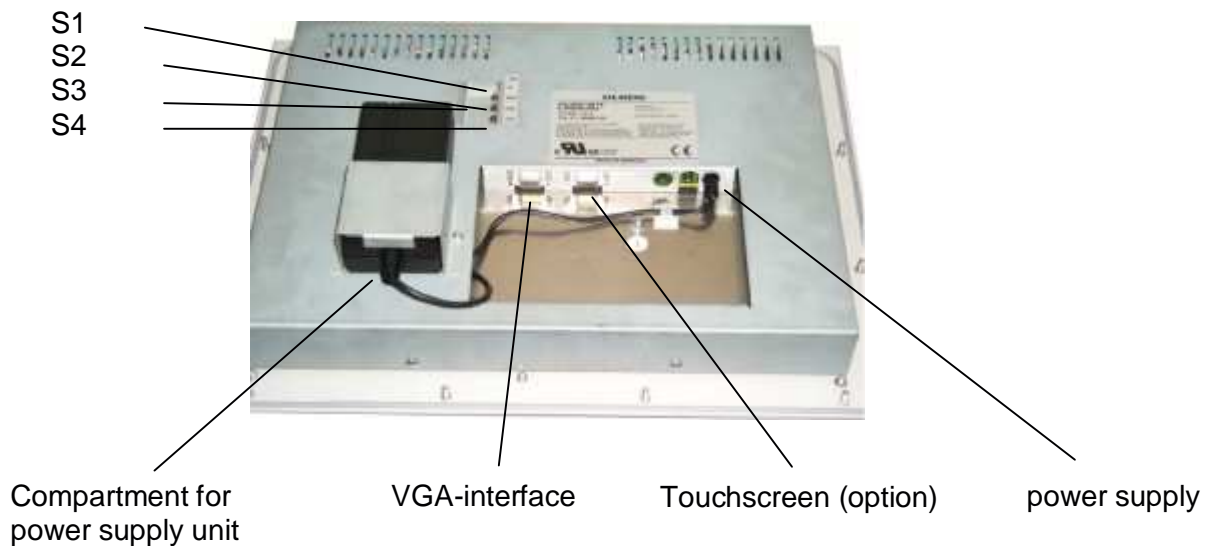
Figure 3: Location of the operation and alignment elements

front		rear
+	S1	UP
-	S2	DWN
▤	S3	MEN
↓	S4	SUB

The OSD is a menu system which allows the monitor to be adjusted using the controls. Only four keys are necessary for the OSD shown on figure 3.

The keys are used to navigate through the menus and to select and adjust parameters. The control keys are located on the rear of the monitor and have the following functions:

UP   This key has two functions:

- activates a sub menu function selected by the SUB key

- increases the value of the currently selected parameter, e.g., brightness.

DWN   - reduces the value of the currently selected parameter, e.g., brightness.

MEN   Menu key

- calls up the OSD menu

- proceeds to the next menu point.

SUB   Sub menu key

- selects a sub menu point

3.2. OSD Menu Structure

The following figure shows the structure of the OSD menu with a pictogram for each function. This menu is called up by pressing the menu key. The individual functions are invoked by repeatedly pressing the menu key. Where sub menu points appear, they can be selected by pressing the SUB menu key and activated by pressing the "UP" key. Once a function has been selected, e.g., brightness, it can be adjusted by pressing the "UP" and "DWN" keys.

Brightness Kontrast   Colour temperature   Frequency Phase   Status   Position

Scaling   Sharpness   Zooming   Language   Utilities
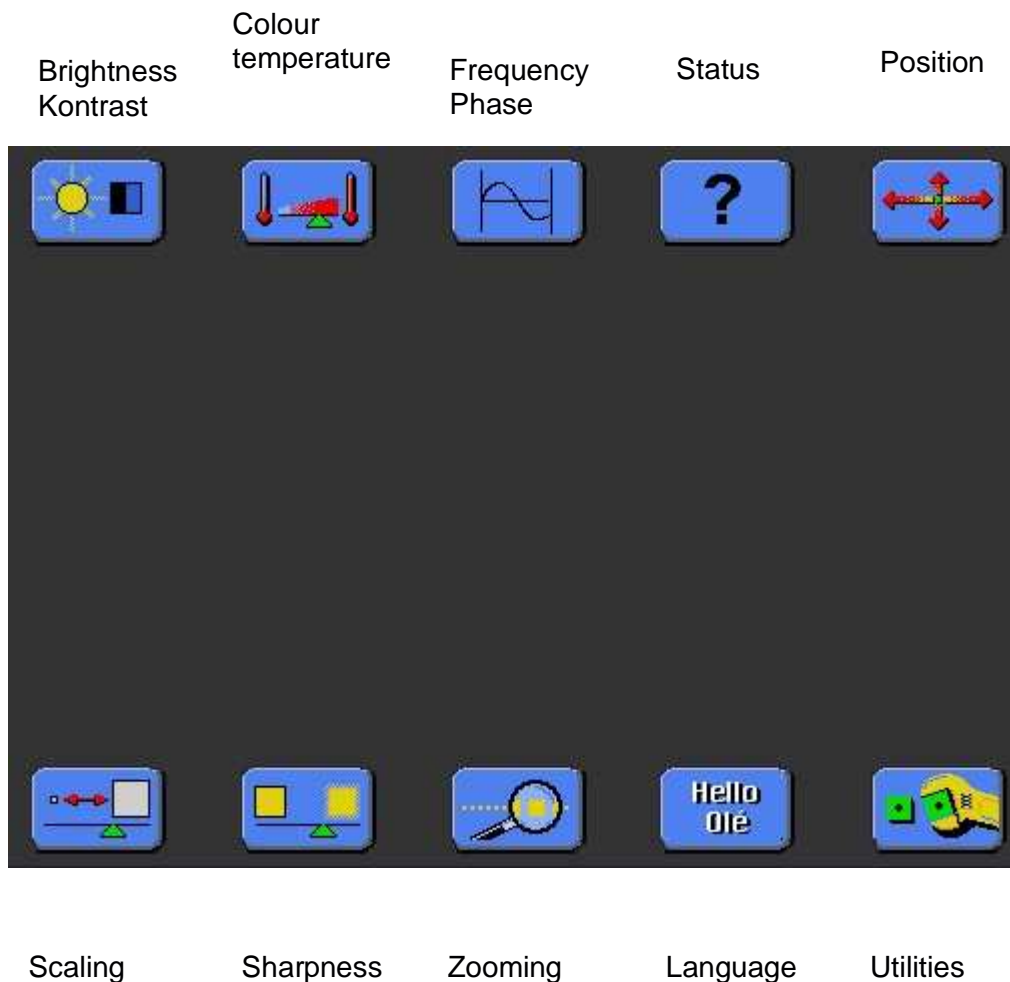
The individual functions and settings are described below.

3.2.1.   Brightness / Contrast

The picture brightness (not backlight) and the contrast are adjusted here.

3.2.2.   Colour Temperature

Four different colour temperature values are available here (9500K, 8500K, 6500K, 5000K). The desired temperature is selected by pressing the SUB menu key. Pressing the "UP" key calls up a sub menu where the selected colour temperature value can be adjusted. There are three adjustment elements for the three colours, allowing the desired colour temperature or colour tone, to be set.

3.2.3.   Frequency / Phase

The frequency setting allows the pixel clock frequency to be adjusted. This will only have to be adjusted if the automatic alignment was unable to determine the correct pixel clock frequency.
The phase setting allows slight picture disturbances to be eliminated.

3.2.4.   Status

This displays the current display resolution and the horizontal and vertical frequencies.

3.2.5.   Position

This menu point allows the picture to be shifted in the horizontal and vertical directions.

3.2.6.   Scaling

This contains four sub menu points which influence the manner in which images of greater or lesser resolution than that of the display are represented.

3.2.7. Horizontal / Vertical Pan

This setting enables the screen contents to be shifted horizontally and vertically when pictures with a greater resolution than the display are shown. This requires "Normal Scaling Modes" to be set to "One to One". If, e.g., a 1280x1024 picture is to be shown on a display of 1024x768 pixels then, with the "One to One" setting, only a part of the entire picture will be visible. Here, the desired part of the entire image can be displayed.

Normal Scaling Modes

There are three possible values for this menu point, with the following functions:

One to One	This setting causes the picture to be displayed without expanding or contracting it. If the picture has a lower resolution than the display then a black frame will appear. If the picture has a greater resolution than the display then only the top left-hand corner of the picture will appear.
Fill Screen	This setting causes the picture to fill the entire display.
Fill to Aspect Ratio	This setting expands the picture as much as possible while maintaining the height to width ratio of the picture.

Non Linear Scaling Parameters

In this sub menu point the are three possible settings each for the horizontal and vertical sizes allowing the picture height and width to be adjusted independently.

Horiz Clipping	Horizontal expansion of the picture
Horiz Offset	Horizontal shifting only if the picture width, set by the horizontal clipping, is larger than the displayable picture width.
Horiz Stretch	This is a horizontal linearity setting for the picture width, i.e., if the value is negative, the picture is compressed more at the horizontal edges and stretched more in the middle. A positive value has the opposite effect.
Vert Clipping	Vertical expansion of the picture.
Vert Offset	Vertical shifting only if the picture height, set by the vertical clipping, is larger than the displayable picture height.
Vert Stretch	This is a vertical linearity setting for the picture height, i.e., if the value is negative, the picture is compressed more at the vertical edges and stretched more in the middle. A positive value has the opposite effect.

3.2.8. Sharpness

Five levels of sharpness are available. The sharpness can only be adjusted if the picture has a higher or lower resolution than the display. Assigning a relative unsharpness can, to an extent, reduce interpolation artefacts which occur during picture expansion. This means that the user finds characters more easily readable. A value of 1 gives minimum non-sharpness and 5 give maximum non-sharpness.

3.2.9. Zooming

This function enables information in the middle of the display to be enlarged as if viewed through a magnifying glass. The selected zoom factor remains active after the OSD-menu has been exited.

3.2.10. Language

The language of the OSD is selected here.

3.2.11. Utilities

Various settings are available here to control the behaviour and testing of the monitor.

User Settings

Six possibilities are available in this sub menu, as follows:

OSD Horz Position	Horizontal position of the OSD on the display
OSD Vert Position	Vertical position of the OSD on the display
OSD Backround	Adjust the OSD background.
	Translucent = transparent
	Opaque = not transparent
User Timeout	This allows the time which elapses between the last key press and the disappearance of the OSD to be set. Settings between 5 and 50 seconds in steps of 5 seconds are allowed.
DPMS	Activates/deactivates the power management. If the DPMS is active then the monitor switches off automatically when there is no sync. signal, i.e., the screen goes dark. Before it switches off, a "NO signal" message appears on the screen.
	If the DPMS is not active then the "NO signal" message stays on the screen until a valid video signal is applied to the monitor.
Auto Source Select	This has no function.

<u>Gamma Adjust</u>

This function allows the "gamma curve" to be adjusted in 32 steps, i.e., the incoming colour values are modified by a particular factor and passed on to the display. One of the 32 points can be selected from an index. The output values for red, green and blue can then be set for the selected point. A linear interpolation occurs between the 32 points.

This adjustment should only be carried out by qualified personnel.

<u>Test Pattern</u>

This causes a staircase in red, green, blue and grey to be displayed on the screen for test purposes.

<u>Reset to factory defaults</u>

This function causes all settings to return to the factory default values.

3.3.12. Automatic Alignment

Automatic alignment of the monitor is automatically activated if a picture is displayed which has never been displayed before. This function can also be activated manually by pressing the "+" key while the OSD menu is **not** currently being displayed. A window appears which contains information on the video signal source. Pressing the "-" key then causes the automatic alignment procedure to start. The message "Auto in Progress" appears on the screen during the alignment. After the procedure has finished the previous picture is restored to the screen. The brightness, contrast, frequency, phase and picture position are all automatically adjusted.

If, due to insufficient picture information, the automatic alignment does not work correctly, the parameters can all be adjusted manually as described above.

4. Technical Data

4.1. Display Module

Type	Colour active TFT-LCD
Diagonal	38.1 cm (15.0")
Display area (WxH)	304.1 x 228.1 mm²
Resolution	1024 x 768 pixels
Pitch	0.273 x 0.273 mm²
Colours	262144
Backlight	2xCCFT (**C**old **C**athode **F**luorescent **T**ube)
Brightness (typical)	approx. 200 cd/m²

4.2. Power Supply

Input voltage	11.4 – 12.6V$_{DC}$
Power consumption (normal operation)	approx. 18W
Power consumption (StandBy)	approx. 5W

4.3. Operating Conditions

Operating temperature	0 to +40°C
Storage temperature	-25 to +60°C
Humidity	max. 95% (non condensing)

4.4. Protection

Protection class	Front IP65
Front screen	none

4.5. Enclosure

Weight	approx. 3.9kg
Enclosure material	steel
Enclosure colour	light basic

4.6. Input Signals

Level (Video)	0.7Vss RGB analogue at 75Ω
Bandwidth	140Mhz (-3dB)
Impedance	75Ω
Synchronisation	- Sep. Sync. (TTL) - Sync on green - Composite Sync
H-Frequency	30 to 100 KHz
V-Frequency	50 to 100 Hz**

4.7. EU Declaration of Conformity on EMC

Product   LCD-Monitor
                     SCD 1597-R/RT/R8S

Test foundations   EU framework guidelines   No. 89/336/EWG
                                                    No. 92/031/EWG
                                                    No. 73/23/EWG
                                                    No. 93/68/EWG

Harmonised standards used   EN 55022 Class A   Edition 05/1995   Interference emissions
                     +A1/EN55022/A1   Edition 08/1994
                     EN 50082-2   Edition 02/1996   Interference resistance
                     EN 60950   Edition 11/1997   Safety