



FSU202

Replacement for
OPTRONIC OP500
CRT Monitors



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1 Introduction

The Flat Screen Unit FSU202 serves as replacement for OPTRONIC OP500 CRT Monitors, that are connected to a SIEMENS WF470. OPTRONIC AG delivers the FSU202 pre-configured for your application. Hence, the FSU202 simply must be built in and connected. It may be that the image shown on the flat screen is not fully satisfying. In this case, all necessary adjustments can be easily done by use of buttons on the back side of the device. The configuration process is easily operated by use of an on screen menu.

2 Device Assembly

The device consists of a L-shaped plate, whereon the TFT screen, the controller board, the backlight converter, and the power supply are mounted (refer to Illustration 1 and Illustration 2).



Illustration 2: Device front view

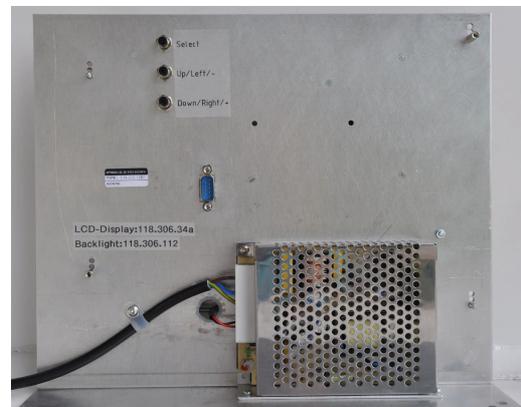


Illustration 1: Device back view

The power supply, a 9-pin connector for connecting the video signal, as well as three buttons are mounted on the back side of the device (see Illustration 1).

3 Concept

The FSU202 analyzes the supplied video signal, and, if possible, assigns it to an internally stored configuration. If the shown picture is not considered satisfactory, a number of parameters can be adjusted. All changes done can be stored nonvolatile.

When the video signal is detected, the image is directly shown on the screen. The following message is shown if no video signal is supplied:

No video signal detected

4 Video Signal/Video Cable

The video signal must be supplied over the 9-pin connector on the back side of the device (refer to Illustration 3). The signals RED, GREEN, BLUE, INT, HSYNC and VSYNC must be digital TTL signals. The pin assignment is shown in the following table:

Pin	Assignment
1	GND (Ground)
2	+5V Power Supply
3	RED (Red)
4	GREEN (Green)
5	BLUE (Blue)
6	INT (Intensity)
7	not used
8	HSYNC (Horizontal synchronization)
9	VSYNC (Vertical synchronization)



Illustration 3: Video connector

5 Buttons

The device is operated by use of the three buttons mounted on the back side (refer to Illustration 4):

Button	Usage
Select	Select, execute
Up/Left/-	Shift up or left, decrease value
Down/Right/+	Shift down or right, increase value



Illustration 4: Buttons on the back side of the device

6 On Screen Menu

The On Screen Menu can be activated by pressing button *Select*. If no active video source is connected, the reduced menu in Illustration 6 is shown. If the FSU202 has detected a video signal, the full menu in Illustration 5 is shown. The full menu offers additional functions that are only useful if a video signal is present. By pressing keys *Up/Left/-* and *Down/Right/+*, a menu line can be selected. The star marks the active menu line. By pressing button *Up/Left/-*, the star is moved one position up, by pressing *Down/Right/+*, the star is moved one position down. By pressing button *Select*, the selected function is activated, or a sub-menu is opened up. The selected function stays active as long as the star remains at the corresponding entry in the main menu. The following table gives an overview about the available menu entries:

Entry	Usage
Show Version ON/OFF	Show or hide window with version information
Store Configuration	Store the actual configuration settings
Load Default Values	Load default configuration settings
Adjust Phase	Adjust the image sampling phasing
Adjust Offset X	Shift image horizontally
Adjust Offset Y	Shift image vertically
Adjust Width	Adjust image width
Adjust Height	Adjust image height
Change Orientation	Rotate and mirror the image

```

* Show Version ON/OFF
  Store Configuration
  Load Default Values
  Adjust Phase
  Adjust Offset X
  Adjust Offset Y
  Adjust Width
  Adjust Height
  Change Orientation
  Manually Select Device
    
```

Illustration 5: On Screen Main Menu

```

* Show Version ON/OFF
  Store Configuration
  Load Default Values
    
```

Illustration 6: Reduced On Screen Main Menu

7 Changing Configuration Settings

The following sub-chapters describe the modifications of the configuration that can be done by use of the On Screen Menu.

7.1 Show or Hide Version Information (Show Version ON/OFF)

A window containing version information can be activated by use of main menu entry „*Show Version ON/OFF*“. The first selection activates the window (refer to Illustration 7), by selecting it again, it is deactivated. The meaning of the window contents is explained in the following table:

Abbreviation	Meaning
HW: Vx.y	Hardware version
VL: Vx.y	Low-level firmware version
SW: Vx.y	High-level firmware version



Illustration 7: Version information

7.2 Store Configuration

The currently active configuration can be stored by use of main menu entry „*Store Configuration*“. This function must be called when hand-made changes must be saved over power off. The standard configuration can be recalled at any time by use of main menu entry „*Load Default Values*“. If storing the configuration was successful, the message „*Configuration stored*“ is shown.

7.3 Load Default Values

The standard configuration can be loaded by use of main menu entry „*Load Default Values*“. Normally, only minor or no adjustments should be necessary.

7.4 Adjust Phase

With high probability, a flickering and unstable picture can be corrected by an adjustment of the image sampling phase. Move the star to main menu entry „*Adjust Phase*“, and activate the function by pressing button *Select*. Now, the phase can be corrected by use of buttons *Up/Left/-* and *Down/Right/+*. Values from 0 to 31 are possible. If the shown image does no more change by repeatedly pressing button *Up/Left/-*, you have reached position 0. If the image no more changes by repeatedly pressing button *Down/Right/+*, you have reached the upper end position 31.

7.5 Adjust Horizontally (Adjust Offset X)

The shown image can be horizontally shifted by use of main menu entry „Adjust Offset X“. Move the star to this entry and activate the function by pressing button *Select*. Now, the horizontal image position can be changed by use of the buttons *Up/Left/-* and *Down/Right/+*. If the shown image no more changes, you have reached the left or right end position.

7.6 Adjust Vertically (Adjust Offset Y)

The shown image can be vertically shifted by use of main menu entry „Adjust Offset Y“. Move the star to this entry and activate the function by pressing button *Select*. Now, the vertical image position can be changed by use of the buttons *Up/Left/-* and *Down/Right/+*. If the shown image no more changes, you have reached the upper or lower end position.

7.7 Adjust Width

The image width can be adjusted by use of main menu entry „Adjust Width“. Move the star to this entry and activate the function by pressing button *Select*. Now, the image width can be adjusted by use of the buttons *Up/Left/-* and *Down/Right/+*. If the shown image no more changes, the minimum or maximum possible width is reached.

7.8 Adjust Height

The image height can be adjusted by use of main menu entry „Adjust Height“. Move the star to this entry and activate the function by pressing button *Select*. Now, the image height can be adjusted by use of the buttons *Up/Left/-* and *Down/Right/+*. If the shown image no more changes, the minimum or maximum possible height is reached.

7.9 Change Orientation

The shown image can be rotated and mirrored by use of main menu entry „Change Orientation“. Move the star to this entry and activate the function by pressing button *Select*. Now, you can select between four possible orientations by use of the buttons *Up/Left/-* and *Down/Right/+*.

8 Trouble Shooting

Problem	Lösung
After turning on the device, message „ <i>Erroneous configuration data, default values loaded. Press any key to continue...</i> “ is shown.	The cause of this message is probably a hardware defect. If the problem occurs again, please replace the device. Touch any button to continue, make the necessary adjustments, and store the configuration. Turn the device off and on. If the same message is shown again, the cause of the problem is a hardware defect. Please replace the device.
When storing the configuration by use of main menu entry „ <i>Store Configuration</i> “, message „ <i>Storing configuration failed</i> “ is shown.	The cause of this message is probably a hardware defect. Please retry to store the configuration. If the same message is shown again, the cause of the problem is a hardware defect. Please replace the device.
I have made configuration adjustments, but when I turn off and again on the device, they are lost.	Execute main menu function „ <i>Store Configuration</i> “, after you have made adjustments. Only this way any manual changes are held of power down.
The shown image flickers from time to time, the image is flawed.	Please make sure that the video cable is correctly shielded. For shielding, the ground wire (pin 1 (GND) on the video connector) must be used. Check if the shielding is correct at the video source and the FSU202. In order to improve signal quality, use the active video cable that is available as accessory.
The image flickers continuously, contours are shown blotted, a bright vertical bar is visible.	Adjust the image sampling phase.

List Of Modifications

Date	Reason
16.03.2010	Total number of pages corrected.
30.08.2012	Modified due to changed buttons and new power supply. +5V added to video connector. Active video cable available.