

# FSU203

Replacement for  
OPTRONIC OP500  
CRT Monitors



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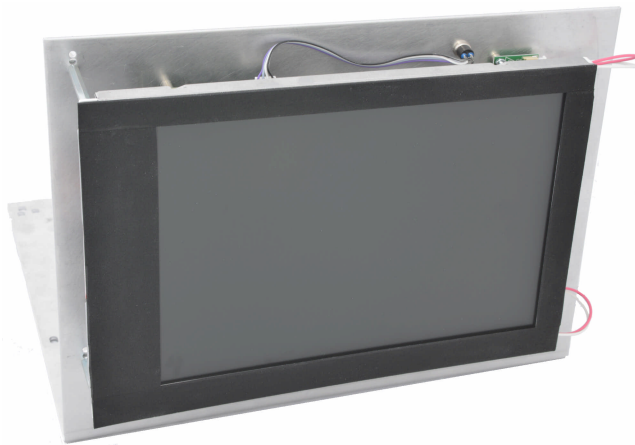
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## 1 Introduction

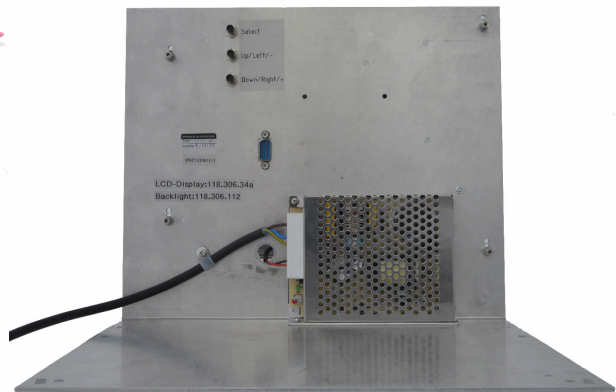
The Flat Screen Unit FSU203 serves as replacement for OPTRONIC OP500 CRT Monitors, that are connected to a SIEMENS WF470. OPTRONIC AG delivers the FSU203 pre-configured for your application. Hence, the FSU203 simply must be built in and connected. It may be that the image shown on the flat screen is 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 FSU203 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 Signals

The video signals must be supplied over the 9-pin plug 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 plug**

## 5 Video Cable

Part of the FSU203 delivery is an active video cable (please refer to Illustration 4), which is used to connect the FSU203 to the WF470. It enables good video quality also with high electromagnetic disturbance near the installation.

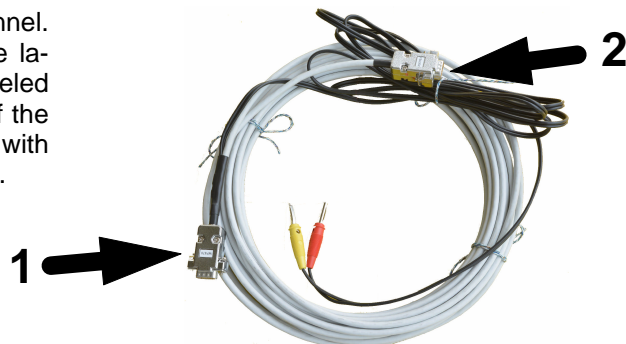
At one end, the cable is equipped with a plug to connect it to the WF470, at the other end with a socket to connect it to the FSU203. The necessary electronics is integrated into the plug and the socket of the cable. Power is supplied to the sender electronics at the WF470 over the power supply of the CNC D150. Therefore, a black double-pole cable is lead out of the plug housing, which has two banana plugs at the end, that must be connected to the power supply of the CNC D150. Power is supplied to the receiver electronics through the video plug of the FSU203.



**Illustration 4: active video cable for FSU203**

Proceed as follows to connect the cable:

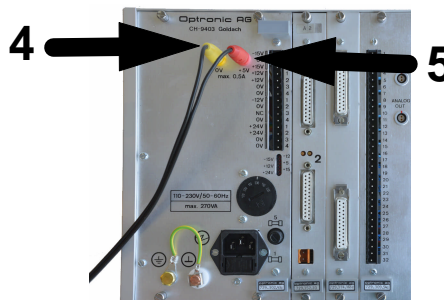
1. If present, remove an already installed video cable. Therefore, unscrew and remove the plug at socket X6 of the WF470. Pull the long connection cable out of the cable channel and unscrew it from the terminal block inside the OP500. Remove the CRT screen, and cut or unsolder the connection cable that leads from the terminal block to the CRT screen and remove it. Afterwards, install the FSU203.  
You can find more detailed information about exchanging the screen in document „Replacing the OP500 CRT Monitor by the Monitor Unit FSU203“.
2. Feed the new cable into the cable channel. Plug and socket at the cable ends are labeled. Make sure that the cable end labeled with WF470 (1) is located at the side of the controller, and that the one labeled with FSU203 (2) is on the side of the OP500.



3. Mount and tighten the plug of the active video cable that is labeled with WF470 at socket X6 (3) of the WF470.
4. Mount and tighten the socket labeled with FSU203 at the video plug of the FSU203.
5. Plug the yellow banana plug into the yellow socket at the power supply of the CNC D150 (4). Plug the red banana plug into the red socket at the power supply of the CNC D150 (5).



3



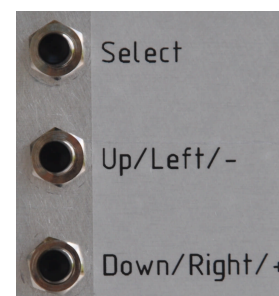
4

5

## 6 Buttons

The device is operated by use of the three buttons mounted on the back side (refer to Illustration 5):

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



**Illustration 5: Buttons on the back side of the device**

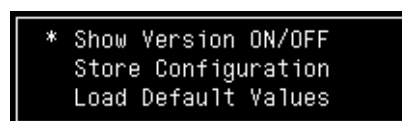
## 7 On Screen Menu

The On Screen Menu can be activated by pressing button *Select*. If no active video source is connected, the reduced menu in Illustration 7 is shown. If the FSU203 has detected a video signal, the full menu in Illustration 6 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



**Illustration 6: On Screen Main Menu**



**Illustration 7: Reduced On Screen Main Menu**

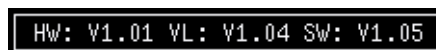
## 8 Changing Configuration Settings

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

### 8.1 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 8), by selecting it again, it is de-activated. 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 8: Version information**

### 8.2 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.

### **8.3 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.

### **8.4 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.

### **8.5 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.

### **8.6 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.

### **8.7 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.

### **8.8 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.

### **8.9 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/+*.





## 9 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.	Use the active video cable. If you use it already, the cause is either a hardware defect, or the electromagnetic disturbance near the active video cable, the FSU203, or the WF470 is very high.
The image flickers continuously, contours are shown blotted, a bright vertical bar is visible.	Adjust the image sampling phase.

**List Of Modifications**

Date	Reason