
20" CDU 2082 PHILIPS COLOUR MONITOR UNIT

This monitor is manufactured by **PHILIPS** and is specifically for use with the more well-known graphic monitor controllers. This type of monitor can only be adjusted externally, therefore the disassembly procedures are not indicated.

CHARACTERISTICS

- Cathode ray tube (CRT) 20" Triniton tube for greater brightness.
Grid type CRT (Triniton) Pitch 0.31 mm
H.E.A. panel with antistatic treatment
Light transmission 39%
- Power supply: Universal 90 to 132 V a.c., 180 to 264 V a.c.
- Input signals Monitor: analog RGB, 75 Ohm/high impedance (selectionable).
Horizontal and vertical synchronisms:
Composites on green.
Composite at TTL level.
Separated at TTL level.
- Scanning frequency: Horizontal: 30 to 82 KHz
Vertical: 50 to 160 Hz
(Continuous range Self-scanning)
Automatic scanning of all horizontal frequencies from 30 to 82 KHz and all vertical frequencies from 50 to 160 Hz.
- Monitor bandwidth: 150 MHz (rise and fall time 3.5 ns.)
- Resolution: Up to 1280x1024 with a refresh speed of 76 Hz
Support for VGA, Super VGA modes, 1024x768, 1280x1024 with refresh speed refresh of 76 Hz (without flicker), 8514/A.
- Liquid crystal display for diagnostics and adjustment control.
- Monitor controlled by microprocessor that can store up to 22 different graphic resolutions.
- Up to three different "White Colour Temperatures" can be selected. This means that there is a choice of a white background tending to red (6500 Kelvin degrees), a white background tending to blue (9300 Kelvin degrees) or a third white background that can be selected by the user.
- External controls:
Front side: Switch on/off keys
Horizontal phase
Horizontal width
Vertical displacement
Vertical height
Vertical convergence
Horizontal convergence
Colour temperature
Brightness / Contrast
Degauss.
- Rear side: 75 Ohm/high impedance switch

CONNECTING THE MONITOR

As can be seen in the figure, on the rear of the monitor there are:

1. Five BNC input connectors which are:
 - RED analog monitor signal (R)
 - Combined GREEN analog monitor signal + synchronism signal (G)
 - BLUE analog monitor signal (B)
 - Horizontal or composite synchronism signal (OS)
 - Vertical synchronism signal (VS)
2. Mini D-SUB 15 pin connector
3. A power cable connector.

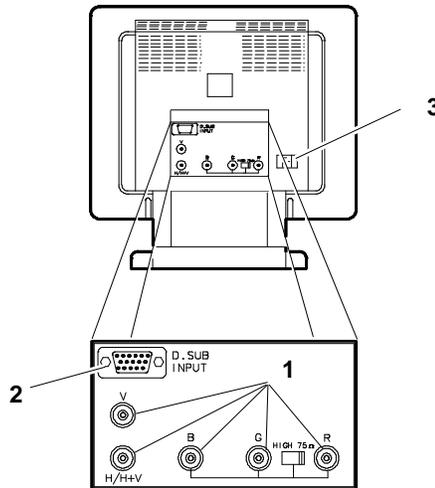
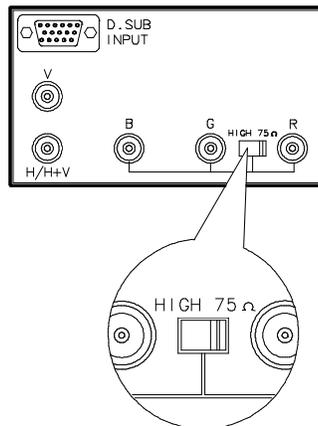


Fig. 13-1 Video rear connectors

NOTE: Before connecting the signal cables to the monitor, consult the documentation relevant to the video graphic controller board. Make sure that the monitor is switched off.

4. If **only one graphic board is connected to the monitor**, the switch indicated in the figure must be positioned on "75 Ω" (The monitor is already adjusted to 75 Ω) before shipping. The monitor should not be used in these conditions with the switch on "HIGH" (HIGH).



If **more than one monitor is connected to the graphics board**, the switch indicated in the figure must be positioned on "HIGH". To obtain the best results with this type of configuration, make sure that the cable from the computer to the monitor N° 1 and from monitor N° 1 to monitor N° 2 have the same LENGTH and the same IMPEDENCE.

Fig. 13-2 75 Ohm or high impedance switch

NOTE: If the connectors “T-BNC”, are used to connect more than one video, that last monitor must have the monitor impedance switch positioned on “75 Ohm” as illustrated in the figure.

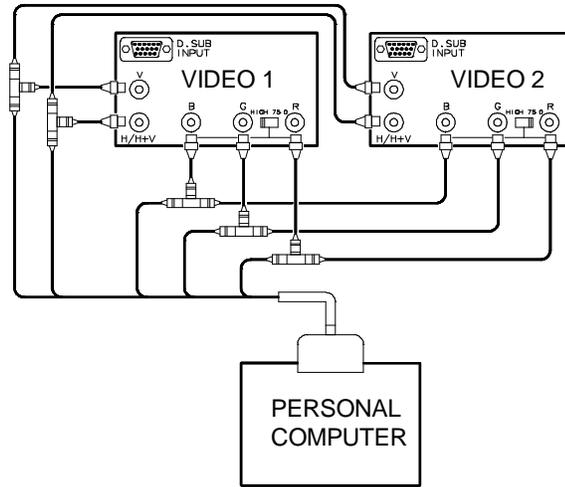


Fig. 13-3 Two video connection

5. Connect the signals cable (R, G, B, VS, OS) on the rear of the monitor as in the figure.
6. Power cable connector (A) The monitor has a standard power cable for Europe and North America (according to where the actual monitor has been purchased). Based on the standards used in each country, it may be necessary to fit a different power cable.

As the monitor has a universal power unit (90 to 264 V) it is not necessary to check the voltage or change the fuses.

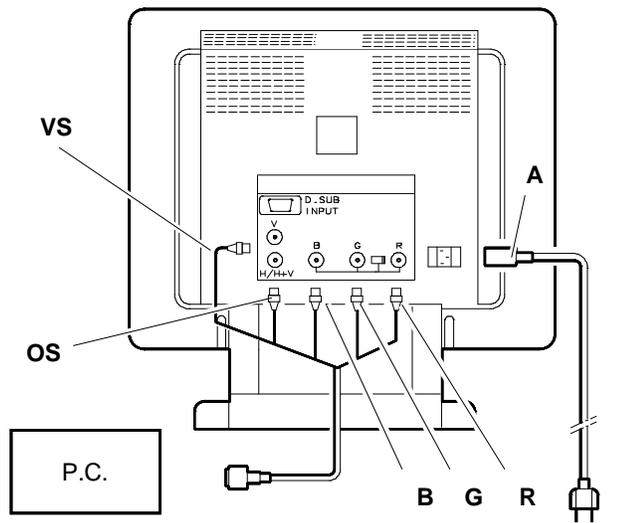


Fig. 13-4 Video rear cables connection

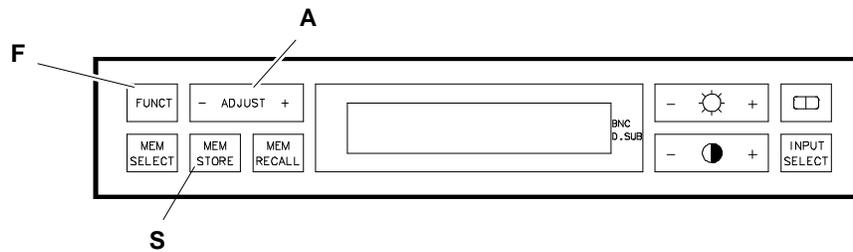


Fig. 13-6 Front control panel key positions

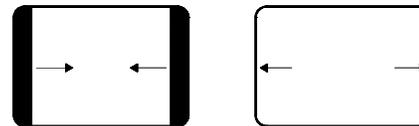
ADJUSTING THE HORIZONTAL PHASE

- Press the **FUNCT. (F)** key once.
- When the **ADJ. (A)** key is pressed a scale from 0 to 9 becomes available. Pressing (-), the entire picture moves horizontally to the left. Pressing (+), the picture moves horizontally to the right.



ADJUSTING THE WIDTH

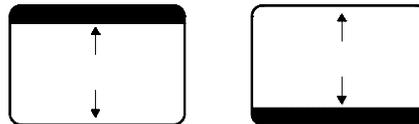
- Press the **FUNCT. (F)** key twice.
- Pressing the **ADJ. (A)** key a scale from 0 to 9 becomes available. Pressing (-), the horizontal width of the picture is reduced. Pressing (+), it increases.



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ADJUSTING THE VERTICAL CENTERING

- Press the **FUNCT. (F)** key three times.
- Pressing the **ADJ. (A)** key, a scale from 0 to 9 becomes available. Pressing (-), the picture moves downwards, whereas pressing (+) the picture moves upwards.



ADJUSTING THE HEIGHT

- Press the **FUNCT. (F)** key four times.
- Pressing the **ADJ. (A)** key, a scale from 0 to 9 becomes available. Pressing (-), the picture vertical width decreases, whereas it increases with (+).



At this point the **MEM. STORE** can be pressed to store the setting relevant to a particular channel.

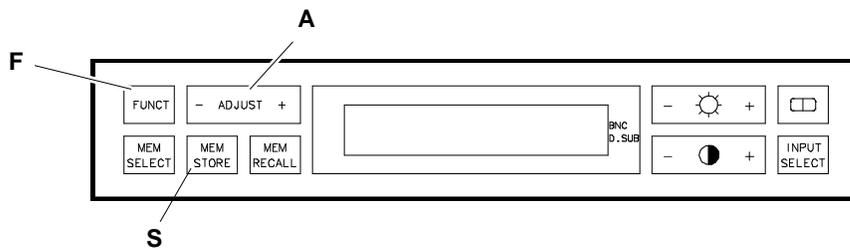
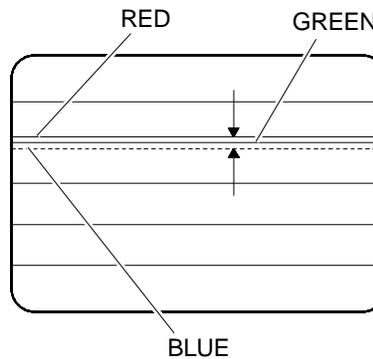


Fig. 13-7 Front control panel key positions

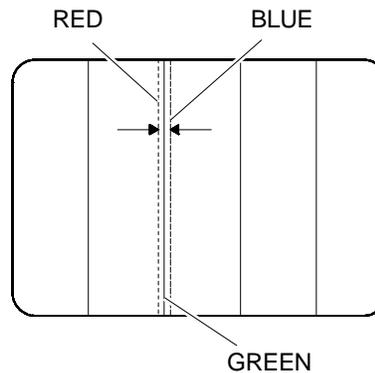
ADJUSTING THE VERTICAL CONVERGENCE

- Press the **FUNCT. (F)** key five times.
- Pressing the **ADJ. (A)** key a scale from 0 to 9 becomes available. Pressing (-) or (+) the convergence of the horizontal lines can be adjusted. With these commands the RED and BLUE beams can be moved, at the same time keeping the green beam stable.



ADJUSTING THE HORIZONTAL CONVERGENCE

- Press the **FUNCT. (F)** key six times.
- The description given above is valid, the difference being that the adjustment is for the vertical lines.



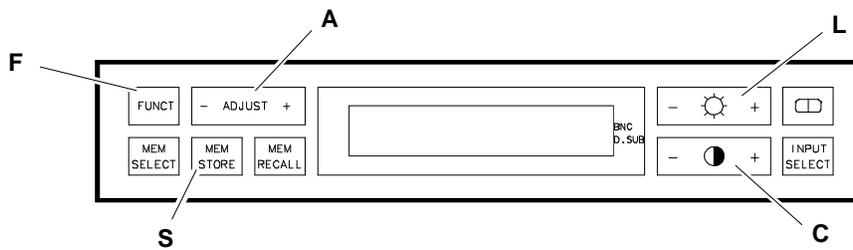


Fig. 13-8 Front control panel key positions

ADJUSTING THE COLOUR TEMPERATURE

- Press the **FUNCT. (F)** key seven times.
- There are three choices. To modify the colour temperature, press the **ADJ. (A)** key to select temperature 1,2 or 3. Remember that:
 - Colour temperature 1 is set before shipping at 9300 degrees Kelvin
 - 2 is set at 6500 degrees Kelvin.
 - Colour temperature 3 can be selected by the user.

The procedure to select the colour temperature is the following:

7. Press the **ADJ. (A)** key until the display shows "Color Temp. 3"; then press the **Funct. (F)** key.
8. The message "Red Adjust" is displayed:
9. Pressing the **ADJ.(A)** key a scale from 0 to 9 becomes available. Using this command the quantity of red on the screen can be increased.
10. Press **Funct.(F)**, again.
11. The "Green Adjust" message is displayed:
12. Proceed as before to increase the amount of green displayed on the screen.
13. Press **Funct.(F)** again.
14. The message "Blue Adjust" is displayed:
15. Proceed as before to increase the amount of blue displayed on the screen.

NOTE 1: To return to one of the previous colours for further adjustment, press the "Funct." key. Having completed the adjustment, press the key for brightness (L) or contrast (C) adjustment to exit from the above commands.

NOTE 2: To store the colour 3 temperature, wait 30 seconds before proceeding with the next monitor adjustment.

ADJUSTING THE CONTRAST

-  (C): This key is used for contrast adjustment. When it is pressed, a scale (vertical bars) is displayed. Pressing (+) or (-), the contrast can be adjusted as desired. When the maximum adjustment is reached, an arrow is displayed (▶) on the right of the screen. If the contrast is not modified within 2 or 3 seconds, the previous message is displayed again and after 20 seconds the monitor stores the setting and it remains stored even if the monitor is switched off.

ADJUSTING THE BRIGHTNESS

-  (L): This key is used to adjust the brightness. The setting method is similar to that for the contrast.

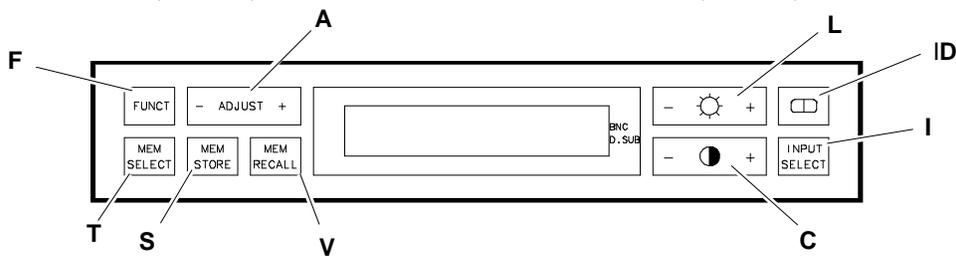


Fig. 13-9 Front control panel key positions

FUNCTION KEYS

- **MEM. SEL. (T):** The key is used to store or call up a specified mode. When the **MEM. SEL.(T)**, key is pressed the first channel free to store the selected mode is displayed. The channels that are already occupied are indicated by an arrow (▶). Remember that, for convenience, the screen has already been set-up before shipping. Pressing the **ADJ. (A)** key the number of the channel for the mode storage can be changed: To store the data, after the channel has been selected, press the **MEM. STORE. (S)** key. Take care not to overwrite the data.

NOTE: Another temperature may delete the channels set before shipping.

- **MEM. STORE (S):** The key is used to store a channel. For operation, use together with **MEM. SEL. (T)**. Remember that the monitor will not accept the storage of two identical modes.
- **MEM. RCL. (V):** MEMORY RECALL is used to bring the monitor back to the default setting of a particular channel. First select, using the **ADJ.(A)** key, the channel number that is to be restored (channels 1 to 14) then press **MEM. RCL (V)**. A message is displayed requesting confirmation of the command. To complete the operation, press **MEM. RCL. (V)** again.
- **INPUT SEL.(I):** This key is used to select the type of "monitor input". These may be: BNC or D-SUB. If a monitor input that is not collected is selected an error message will blink. After 20 seconds the selection is stored.
- **(D):** The degauss key used when there are colour distortions or impurities due to the magnetic fields in the screen.

The liquid crystal display shows all the information regarding the front control panel. Three different types of messages can be displayed:

- Normal operating messages such as displayed modes, etc.
- Messages relevant to possible monitor specification changes (brightness or contrast adjustment, for example).
- Messages relevant to monitor faults or diagnostics.

If the monitor remains inactive for more than 2/3 seconds, the display visualizes the original storage channel.

DIAGNOSTICS

- **Problem:**
The power supply indicator does not light up when the monitor is switched on.
Solution:
The power supply cable is not plugged in. The electric socket is not live. The monitor or the fuse is faulty.
- **Problem:**
One or two colours are missing.
Solution:
The monitor signal cables (red, blue or green) are not connected correctly.
- **Problem:**
Coloured dots appear on the screen (colour impurities).
Solution:
Press the degauss key. Electromagnetic interference. Remove any electromechanical equipment away from the monitor.
- **THE DISPLAYED MESSAGE INDICATES - MODE NOT FOUND**
The current mode has not been previously stored. The monitor is not operating in an adequate manner.
Solution:
The monitor automatically selects a free channel. The mode can be stored in this channel or it can be passed over.
- **THE DISPLAYED MESSAGE INDICATES - H SYNC OFF or V SYNC OFF or H & V SYNC OFF**
The monitor cable connections are not correct.
Solution:
Disconnect the cable and consult "Connecting the Monitor" Section. If the problem persists, check the graphics board.
- **THE DISPLAYED MESSAGE INDICATES - V OUT OF RANGE**
The monitor does not acknowledge the graphics board vertical frequency.
Solution:
Check that the graphics board operates within a range between 50 and 160 Hz.
- **THE DISPLAYED MESSAGE INDICATES - H OUT OF RANGE**
The monitor does not acknowledge the graphics scale horizontal frequency.
Solution:
Check that the graphics scale operates within a range between 30 and 82 KHz.
- **THE DISPLAYED MESSAGE INDICATES - PLL OUT OF SYNC**
The monitor logic board is faulty.
Solution:
Change the monitor.
- **THE DISPLAYED MESSAGE INDICATES - V DEF. FAILURE**
There is a problem in the vertical deflection.
Solution:
Change the monitor.
- **THE DISPLAYED MESSAGE INDICATES - H DEF. FAILURE**
There is a problem in the horizontal deflection.
Solution:
Change the monitor.
- **THE DISPLAYED MESSAGE INDICATES - HI VOL. FAILURE**
There is a problem in the high voltage generator.
Solution:
Switch the monitor on then off. If the problem persists, change the monitor.

- THE DISPLAYED MESSAGE INDICATES - GEN. FAILURE
Two or more faults have been detected at the same time.
Solution:
Change the monitor.

MONITOR MODE SETTINGS

| Item | Measuring unit | 640x350 VGA mode 1 | 640x400 VGA mode 2 | 640x480 VGA mode 3 | 800x600 Super VGA |
|-----------------------|---------------------|-----------------------|-----------------------|-----------------------|----------------------|
| Pixel frequency | MHz | 25.175 | 25.175 | 25.175 | 40 |
| Horizontal frequency | KHz | 31.468 | 31.468 | 31.468 | 37.88 |
| Vertical frequency | Hz | 69.93 | 69.93 | 59.94 | 60.3 |
| Horizontal resolution | dots | 640 | 640 | 640 | 800 |
| Vertical resolution | N°horiz./ lines | 350 | 400 | 480 | 600 |
| Period | dots | 800 | 800 | 800 | 1056 |
| Switch off | dots | 160 | 160 | 160 | 256 |
| Synchr.delay | dots | 16 | 16 | 16 | 40 |
| Synchr. width | dots | 96 | 96 | 96 | 128 |
| Interlacing | Y/N | N | N | N | N |
| Period | N° horiz./ lines | 450 | 450 | 525 | 628 |
| Switch off | N° horiz. lines | 99 | 49 | 45 | 28 |
| Synchr.delay | N° horiz./ lines | 38 | 13 | 11 | 1 |
| Synchr. width | N° horiz./ lines | 2 | 2 | 2 | 4 |
| Synchr. on "green" | Y/N | N | N | N | N |
| TTL horiz. synch. | +/- | + | - | | + |
| TTL vert. synch. | +/- | - | + | | + |
| TTL comp. synch | +/- | | | | |

| Item | Measuring unit | 1024x768 8514/A | 1024x768 VGA + | 1024x768 VGA * (ERGO) | 1280x1024 64 KHz/60 Hz | 1280x1024 75 KHz/70 Hz |
|-----------------------|-----------------|-----------------|----------------|-----------------------|------------------------|------------------------|
| Pixel frequency | MHz | 43.59 | 65 | 75 | 110 | 125 |
| Horizontal frequency | KHz | 34.49 | 48.36 | 56.47 | 64.25 | 75.12 |
| Vertical frequency | Hz | 87/43.5 | 60 | 70 | 60 | 71 |
| Horizontal resolution | dots | 1024 | 1024 | 1024 | 1280 | 1280 |
| Vertical resolution | N°horiz./ lines | 768 | 768 | 768 | 1024 | 1024 |
| Period | dots | 1264 | 1344 | 1328 | 1712 | 1664 |
| Switch off | dots | 240 | 320 | 304 | 432 | 384 |
| Synchr. delay | dots | 8 | 39 | 24 | 64 | 32 |
| Synchr. width | dots | 176 | 208 | 136 | 112 | 128 |
| Interlacing | Y/N | Y | N | N | N | N |
| Period | N° horiz lines | 817 | 805 | 806 | 1070 | 1057 |
| Switch off | N° horiz. lines | 25/24 | 37 | 38 | 46 | 33 |
| Synchr. delay | N° horiz. lines | 0,5/0 | 3 | 3 | 6 | 3 |
| Synchr. width | N° horiz. lines | 4 | 3 | 6 | 6 | 6 |
| Synchr. on "green" | Y/N | N | N | N | | |
| TTL horiz. synch. | +/- | + | + | - | | |
| TTL vert. synch.- | +/- | + | + | - | | |
| TTL comp. synch. | +/- | | | | | |

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