20" CDU 2082/FI02 COLOUR MONITOR UNIT

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This unit is manufactured by FIMI and bears the marking **DSM 28-201 HR** on the front and on the rear of the video and on the Progetto di Gestione. The **CDU 2082/F102** confirmation plate is located on the rear of the video.

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

CHARACTERISTICS

- Cathode ray tube (CRT):   20" Trinitron 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: Video: analog RGB, 75 Ohm/high impedance (selectable)
  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: 160 MHz (rise and fail time 3.5 ns)

- Resolution: Up to 1280x1024 with a refresh speed of 76 Hz
  Support for VGA, Super VGA, 1024x768, 1280x1024 modes with refresh speed of 76 Hz (without flicker), 8514/A

- Front control panel with liquid crystal display for diagnostics and adjustment control.

- Monitor controlled by microprocessor that can store up to 21 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 degress) or a third white background that can be selected by the user.

- Maximum ergonomy and accordance with the latest swedish rules concerning emission.

- Power Saving Function

VIDEO STATUS	HORIZ. SYNC.	VERT. SYNC	VIDEO	POWER SAV.	CONSUMPTION
On	Present	Present	Active	No	Max 180 W
Stand-by	Absent	Present	Dark	Minimum	< 15 W
Suspend	Present	Absent	Dark	Considerable	< 15 W
Off	Absent	Absent	Dark	Maximum	< 8 W

- External controls:

Front side:	Switch on/off key	Horizontal position
	Width	Vertical position
	Height	Vertical convergence
	Horizontal convergence	Side pincushion
	Symmetry	Trapezoid effect
	Orthogonality	Rotation
	Colour temperature	Brightness
	Contrast	Language selection
	Degauss	

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 (H/H+V)

   - Vertical synchronism signal (V).

2. Mini D-SUB 15 pin connector.

3. A power cable connector.
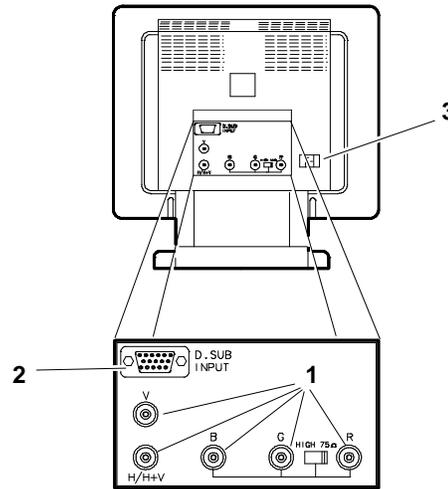
4. 75 Ω/high impedance switch.

Fig. 27-1   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.

5. 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). The monitor should not be used in these conditions with the switch on "HIGH".

   If **more than one monitor is connected to the graphic 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 monitor N. 1 and from monitor N. 1 to monitor N. 2 have the same LENGTH and the same IMPEDANCE.
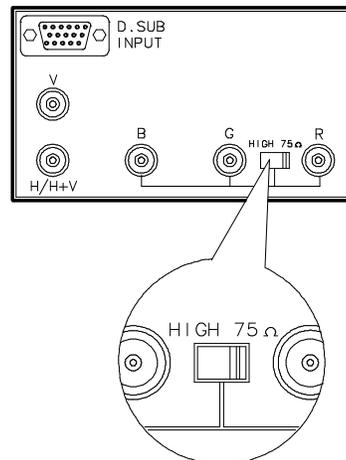

Fig. 27-2   75 Ω or High Impedance Switch

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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 Ω" as illustrated in the figure.
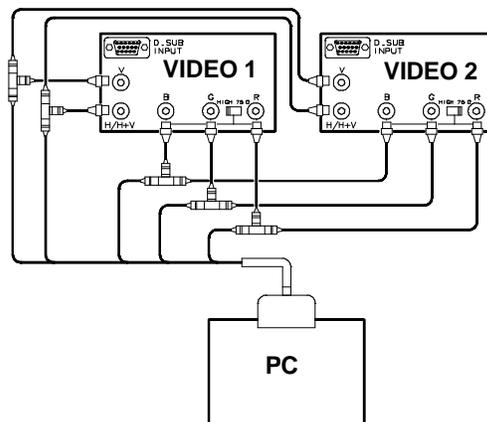

Fig. 27-3   Two Video Connection

6. Connect the signals cable (R, G, B, H/H+V, V) on the rear of the monitor as illustrated in the figure.

7. Power cable connector (A).
    The monitor has a standard power cable for Europe or North America (according to where the monitor has been purchased). Depending 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.
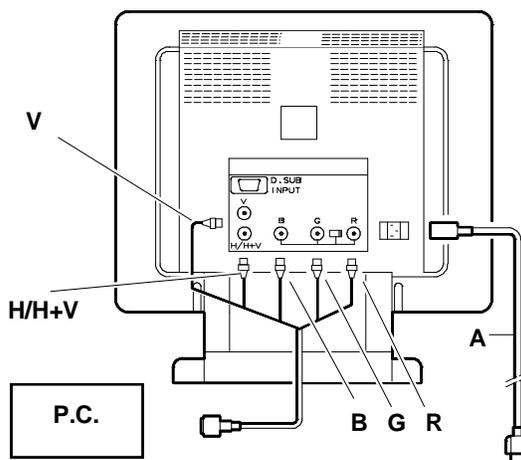

Fig. 27-4   Video Rear Cables Connection

MONITOR POWER UP

To power up the monitor press the power on button.
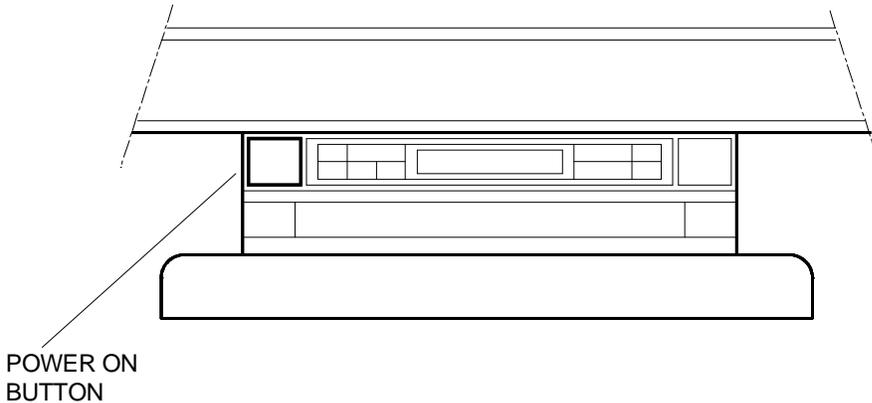

POWER ON
BUTTON

Fig. 27-5   Power On Button Location

At power on, the monitor will automatically carry out a series of internal checks and the following messages are then displayed on the front LCD:

WAIT...START UP
OLIVETTI....(Rev. Number)
TEST IN PROGRESS

NOTE: If proper connection is not established within 10 seconds the LCD will display an error message. If you have problems at this stage please consult the "Diagnostic" section of this chapter.

After the start up procedure, if the timing used by your computer is already known to the monitor, the LCD will display the channel that timing is stored on.
(Example: **VIDEO MODE: 12B**).

If the LCD display NEW MODE, this means that the timing displayed is not recorded in the memory, nevertheless the monitor is properly working.
(Example: **NEW MODE B**).

In the following pages you will find how to store a new timing.

NOTE 1:   The rightmost LCD character of the video mode indication displays the currently selected video input. When the D-sub type is selected, a "D" is displayed; when the BNC inputs are selected, a "B" is displayed.

NOTE 2:   When displaying a full white page on this monitor, you will see two faint horizontal hair lines on the screen. Those horizontal lines are actually the shadows of steel lines which are used to fix a lot of thin steel filaments (called Aperture Grille) tensioned from the top to the bottom of the picture tube. All the TRINITRON CRT based displays show those lines.
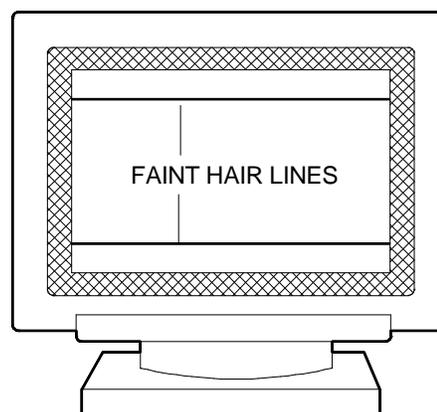

FAINT HAIR LINES

Fig. 27-6   Lines Location

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LANGUAGE SELECTION

When the monitor is first turned on, the LCD is set to display all the adjustment controls in English language. However, you may set the LCD to operate in any one of the following language:

- English
- French
- German
- Italian
- Spanish

To change the menu to the language of your choice, press the **FUNCT** button repeatedly until the message "**MENU**" is displayed on the LCD followed by one of the five languages. Then by using the **-ADJ** and **+ADJ** buttons you can move through the language selection and, when your choice is displayed, just press the **FUNCT** button again to move to the next item. From this point, all messages displayed on the LCD wiil be in the language of your choice.

MONITOR ADJUSTMENTS

FUNCT. BUTTON (F)

By pressing repeatedly this button you can adjust the following parameters:

- Horizontal position
- Width

- Vertical position
- Height
- Vertical convergence
- Horizontal convergence
- Side pincushion
- Side pincushion symmetry
- Trapezoidal distortion
- Parallelogram distortion
- Rotation control
- Colour temperature
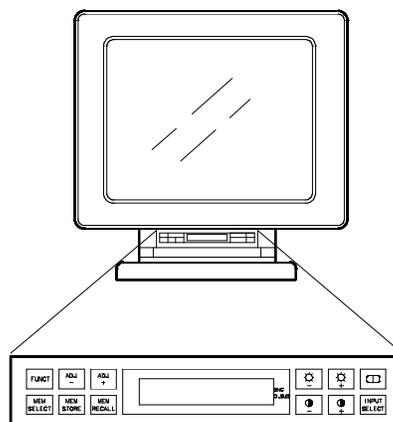- Menu: language selection

Fig. 27-7   Front Control Panel Location

NOTE: The above sequence cannot be changed but you may go backwards by pressing the **MEM. STORE** button repeatedly.

Adjust button (-**ADJ** +**ADJ**): Press these two buttons to adjust the scale change to a chosen parameter. The LCD will display the adjustment scale from 0 to 9.

The horizontal position, Width, Vertical position and Height parameters can be set for each specific video mode. All other functions are related to whole monitor.
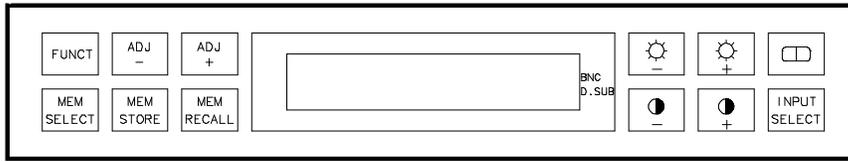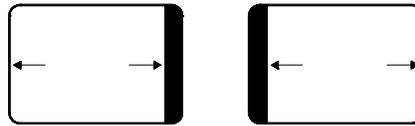
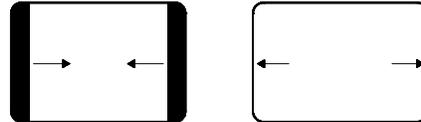Fig. 27-8   Buttons Location on the Front Control Panel

HORIZONTAL POSITION ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the
  -ADJ. and **+ADJ.** buttons.
  By pressing **-ADJ** button, the whole picture
  will move horizontally to the left.
  By pressing **+ADJ** button, the whole picture
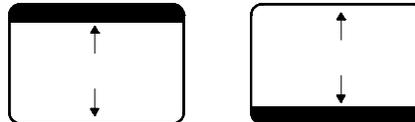 will move horizontally to the right.

WIDTH ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the
  -ADJ. and **+ADJ.** buttons.
  By pressing **-ADJ** button, the horizontal width
  of the picture will be reduced.
  By pressing **+ADJ** button, the horizontal width
  of the picture will be enlarged.

VERTICAL POSITION ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.
- A scale of **0** to **9** is available by pressing the
  -ADJ. and **+ADJ.** buttons.
  By pressing **-ADJ** button, the picture will move
  downwards.
  By pressing **+ADJ** button, the picture will
  move upwards.

HEIGHT ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the
  -ADJ. and **+ADJ.** buttons.
  By pressing **-ADJ** button, the vertical width of
  the picture will be reduced.
  By pressing **+ADJ** button, the vertical width of
 the picture will be enlarged.

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At this point, you may store the settings selected in two ways:

- If the monitor is operating with a new timing (not yet stored in memory):
  to store any modifications you made to the settings, first select the channel (press **MEM. SEL.**), then press **MEM. STORE.** The LCD will display the video mode number you assigned to the current resolution. You can also select the number to assign to the channel.

- If the timing is already known to the monitor:
  to automatically store any modifications you made to the settings, just wait 6 seconds before making any further adjustment and the program will store the setting in the user memory.

VERTICAL CONVERGENCE ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the **-ADJ.** and **+ADJ.** buttons.
  By pressing **-ADJ** and **+ADJ** buttons, you can regulate the convergence of the horizontal lines. These commands allow you to move the RED and BLUE beams while keeping the green beam constant.
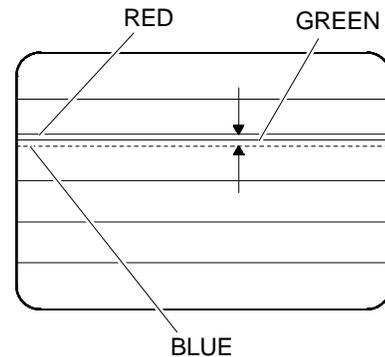
HORIZONTAL CONVERGENCE ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- Same as above but the convergence adjustments are made on the vertical lines.

SIDE PINCUSHION ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the **-ADJ.** and **+ADJ.** buttons.
  By pressing the **-ADJ** and **+ADJ** buttons, you can set both right and left sides so become linear.
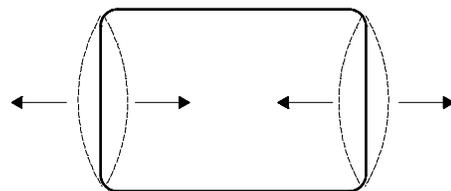
SIDE PINCUSHION SYMMETRY ADJUSTMENT
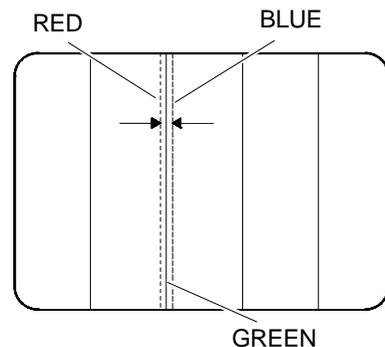
- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the **-ADJ.** and **+ADJ.** buttons.
  You can symmetrically distort both sides of your monitor by pressing the **-ADJ** and **+ADJ.** buttons, and then you can realign both sides through the pincushion control.
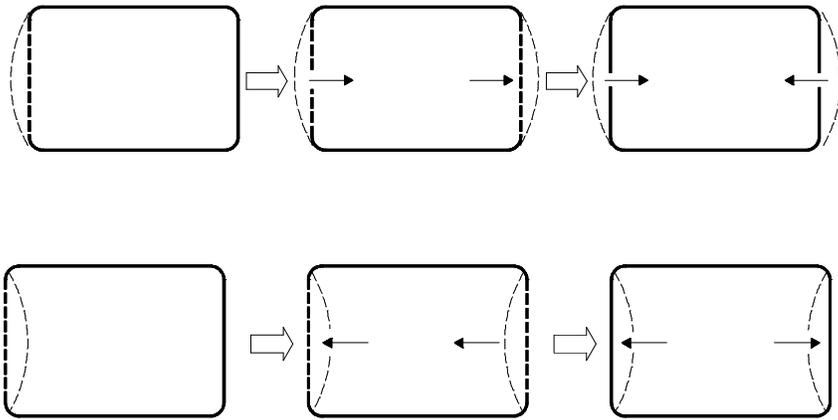
Fig. 27-9   Symmetry Adjustment

TRAPEZOIDAL DISTORTION ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the **-ADJ.** and **+ADJ.** buttons.
  You can adjust the left and right lines by pressing the **-ADJ** and **+ADJ** buttons, as indicated in the figure below.

Fig. 27-10 Trapezoidal Distortion Adjustment

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PARALLELOGRAM DISTORTION ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the **-ADJ.** and **+ADJ.** buttons.
  You can adjust the left and right lines by pressing the **-ADJ** and **+ADJ** buttons, as indicated in the figure below.
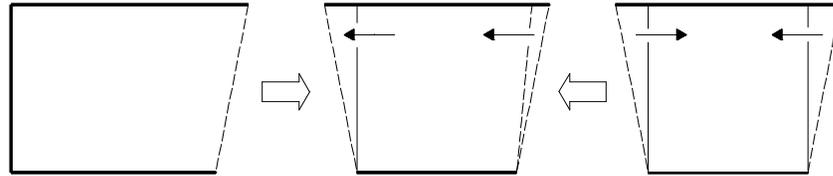
Fig. 27-11 Orthogonality Adjustment

NOTE: After a geometrical adjustment, the new control setting will be automatically stored by the monitor microprocessor within 30 seconds, unless before that time the monitor is switched off, the video mode is changed, or the video input is changed.

ROTATION CONTROL ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- A scale of **0** to **9** is available by pressing the **-ADJ.** and **+ADJ.** buttons.
  Set rotation digital control to eliminate inclination of the picture, as indicated in the figure below.

Fig. 27-12 Rotation Adjustment

Storing the Monitor Settings

Any modification of the previous settings will be automatically stored by the program in the user memory after 6 seconds from the last keyboard operation.

Recalling the Monitor Settings

The monitor settings can be restored to the default position (factory preset) by pressing "**MEM. RCL.**". A message on the LCD will request a command confirmation by pressing "**MEM. RCL.**". The user stored channels are not restored.

COLOUR TEMPERATURE ADJUSTMENT

- Select the adjustment with the **FUNCT.** button.

- You have 3 possible choices. To change colour temperature press the **-ADJ.** and **+ADJ.** buttons to choose between colour temperature 1, 2 or 3. Note that:
    - Colour temperature 1 is factory preset at 9300 Kelvin degrees.
    - Colour temperature 2 is factory preset at 6500 Kelvin degrees.
    - Colour temperature 3 can be set by user.

To select the colour temperature follow this procedure:

1. Press the -**ADJ.** and **+ADJ.** buttons until the LCD displays colour temperature 3; then press the **Funct** button.

2. "Red Adjust" will be displayed in the LCD:

3. A scale of **0** to **9** is available by pressing the **-ADJ.** and **+ADJ.** buttons. By using this command you can increase the amount of red displayed in the screen.

4. Press the **FUNCT.** button again.

5. "Green Adjust" will be displayed in the LCD:

6. Follow the same steps as above to increase the amount of green displayed in the screen.

7. Press the **FUNCT.** button again.

8. "Blue Adjust" will be displayed in the LCD:

9. Follow the same steps as above to increase the amount of green displayed in the screen.

NOTE 1: If you wish to readjust any of the above colours just press the FUNCT. button. Once you are finished, just press one of the brightness or contrast keys to exit these commands.

NOTE 2: To store the colour temperature 3, wait 6 seconds before making a new monitor adjustment.

NOTE 3: The use of characters in primary color blue against a dark background is not recommended (bad legibility may cause eyestrain due to low character contrast).

CONTRAST ADJUSTMENT

- ◗ : These buttons are used to adjust the contrast. By pressing them, a scale (represented by vertical bars) appears on the LCD. By pressing (**+**) or (**-**), you can change the contrast as required. When you reach the maximum contrast an arrow (⇒) will be displayed on the right side of the LCD. If you do not change the contrast after 2 or 3 seconds, the LCD will display the previous message and after 6 seconds the monitor will store your settings The contrast will remain stored even after turning the monitor off.

BRIGHTNESS ADJUSTMENT

- ✷ : These buttons are used to adjust the brightness. The setting of this function is similar to that to the contrast.

FUNCTION BUTTONS

- **MEM. SEL.** : This button is used to store or recall a specified timing. By pressing the **MEM. SEL.** button, the LCD will display the video mode number you are presently on, if the current mode is already present in the monitor memory; the mode number will be pin-pointed by the ⇐ arrow. If the current resolution is not preset, the first available mode number will be displayed (from 13 to 21); by pressing the **-ADJ** and **+ADJ**. buttons you can select the mode number where you wish to store your timing. Please note that you may choose the desired mode number only with not preset standard modes. Once the mode number has been selected, changes can be stored on a specified mode by pressing the **MEM. STORE** button**.** Be careful not to overlap the information.

NOTE: The factory preset channels can be erased by another timing.

- **MEM. STORE:** This button is used to store a video mode. It must be used in conjunction with **MEM. SEL.** to work. Note that the monitor will not let you store 2 identical timings.

- **MEM. RECALL.** : When a preset video mode is active, this button is used to recall the factory adjusted mode settings. To use this function, first select, using the **-ADJ.** and **+ADJ.** buttons, the mode number you wish to restore (valid modes are from 1 to 12) and then press the **MEM. RECALL** button**.**
  The LCD will request a confirmation.
  Press **MEM. RECALL** again to complete the operation.
  This button can also be used to recall the factory values of the monitor settings.

- **INPUT SEL.:** This button allows you to select the type of "video input". The options are: BNC or D-SUB. If you choose a video input not connected an error message will flash on the LCD. After 6 seconds, your choice is stored.

- ⬚ **(D):** This is the degauss button. It is used if distortions or color impurity caused by magnetic fields are present on the screen.

Liquid Crystal Display where all the information regarding the front panel control is displayed. There are three different types of messages that could be displayed in the LCD:

- Normal operational message like the timing displayed etc.

- Messages related to possible changes in the monitor specifications (i.e. contrast or brightness settings).

- Messages related to monitor malfunction or diagnostics.

If the monitor remains inactive for more than 2/3 seconds the original memory channel will appear on the LCD display.

DIAGNOSTIC

- **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 fues is faulty.

- **Problem:**
  One or two colours are missing.
  Solution:
  The monitor signals 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.

- **LCD Messages**

- **The displayed message indicates - NEW MODE**
  This means that the current operating timing has not been previously stored in the monitor memory.
  Solution:
  You may store this mode in a free memory location or continue working.

- **The displayed message indicates - NO H SYNC - V SYNC - H/V SYNC**
  This means that the video cable is misconnected or that the selected video input is the wrong one.
  Solution:
  Check the video connection and proper selection of the video input; if this does not correct it, then check the graphic board.

- **The displayed message indicates - HS NOT VALID**
  This means that the monitor does not recognize the horizontal frequency of the graphic board.
  Solution:
  Check that video controller operates within the 30 to 82 KHz range of the monitor.

- **The displayed message indicates - VS NOT VALID**
  This means that the monitor does not recognize the vertical frequency of the graphic board.
  Solution:
  Check that video controller operates within the 50 to 160 KHz range of the monitor.

- **The displayed message indicates - PLL UNLOCKED**
  This means that there is a problem with the monitor Horizontal Sync processor circuit. Note that this message could be displayed for a while during the transition between different video modes.
  Solution:
  If the LCD still displays the message after few seconds, please contact your dealer. The monitor needs repair.

- **The displayed message indicates - H SCAN FAILURE**
  This means that there is a local failure in the horizontal deflection circuit.
  Solution:
  The monitor needs repair.

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- **The displayed message indicates - V SCAN FAILURE**
  This means that there is a local failure in the vertical deflection circuit.
  Solution:
  The monitor needs repair.

- **The displayed message indicates - HIGH VOLTAGE FAILURE**
  This means that the high voltage generator circuit is not operating.
  Solution:
  Switch the monitor off and on again. If this does not correct it, the monitor needs repair.

- **The displayed message indicates - GENERAL FAILURE**
  This means that the two or more failures have been detected at the same time.
  Solution:
  The monitor needs repair.

PRESET VIDEO TIMINGS

Item	Unit of measure	640x350 VGA mode 1	640x400 VGA mode 2	640x480 VGA mode 3	640x480 VGA Ergo	800x600 Super VGA 1	800x600 Super VGA2
Pixel rate	MHz	25.175	25.175	25.175	31.5	40	50
Horizontal frequency	KHz	31.469	31.469	31.469	37.860	37.879	48.077
Vertical frequency	Hz	70.08	70.08	59.95	72.8	60.310	72.187
Horizontal resolution	dots	640	640	640	640	800	800
Vertical resolution	N. lines/ horiz.	350	400	480	480	600	600
Period	dots	800	800	800	832	1056	1040
Blanking	dots	160	160	160	192	256	240
Synchronism delay	dots	16	16	16	24	40	56
Sycnhronism width	dots	96	96	96	40	128	120
Interface	Y/N	N	N	N	N	N	N
Period	N. lines/ horiz.	450	450	525	520	628	666
Blanking	N. lines/ horiz.	99	49	45	40	28	66
Synchronism delay	N. lines/ horiz.	38	13	11	9	1	37
Sycnhronism width	N. lines/ horiz.	2	2	2	3	4	6
TTL horizontal synchronism	+/-	+	-	-	-	+	+
TTL vertical synchronism	+/-	-	+	-	-	+	+

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Item	Unit of measure	1024x768 VGA +	1024x768 VGA + (ERGO)	1024x768 VGA + (VESA)	1280x1024 H.R.	1280x1024 H.R.	1280X1024 H.R.
Pixel rate	MHz	65	75	78.5	110	125	135
Horizontal frequency	KHz	48.363	56.476	60.023	64.252	75.12	79.976
Vertical frequency	Hz	60.08	70.070	75.029	60.049	71.069	75.025
Horizontal resolution	dots	1024	1024	1024	1280	1280	1280
Vertical resolution	N. lines/ horiz.	768	768	768	1024	1024	1024
Period	dots	1344	1328	1312	1712	1664	1668
Blanking	dots	320	304	288	432	384	408
Synchronism delay	dots	39	24	16	64	32	16
Sycnhronism width	dots	208	136	96	112	128	144
Interface	Y/N	N	N	N	N	N	N
Period	N. lines/ horiz.	805	806	800	1070	1057	1066
Blanking	N. lines/ horiz.	37	38	32	46	33	42
Synchronism delay	N. lines/ horiz.	3	3	1	6	3	1
Sycnhronism width	N. lines/ horiz.	3	6	3	6	6	3
TTL horizontal synchronism	+/-	-	-	+	-	-	+
TTL vertical synchronism	+/-	-	-	+	-	-	+

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