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SAFETY PRECAUTIONS

This monitor has been designed and built in conformance with European Community Directives 89/336/CEE and 73/23/CEE (modified from 98/68/CEE) to provide maximum safety and to prevent interference with radio emissions. Follow the operating instructions and precautions, failure to comply with these instructions and/or incorrect use of the monitor may result in damage or lead to risk of fire or electrical shock

This monitor has been designed according to EN60950, Class 1 standards. It should be connected to a reliably grounded 230V~ power source with the cable supplied with the monitor or any other power cable that is in compliance with local safety regulations.
Do not use the monitor if a ground connection is not available
Do not to damage, cut or pinch the power cable.
To disconnect the monitor from the power source, unplug the power cable from the main socket.

This monitor has been build according to EN55022 standards for electromagnetic interference and EN55024 for the immunity of interference

Placement:

This monitor has been designed for indoor use only. Do not expose the unit to rain, moisture, cold or corrosive agents.
When moving the monitor from a low-temperature to a high-temperature environment, or visa versa, you should wait a least 15 minutes before turning it on in order to avoid possible problems caused by condensation.
Do not let liquid enter the air vents.
Adequately ventilate the monitor and do not block the air vents.
Do not expose the unit to heat or place it closer than 10 cm (4 inches) to other electronic equipment.

In case of:

- A fall or being upset;
- Immersion in liquid, penetration of liquid or exposure to high humidity or condensation;
- Damage from shock;
- Damage to the power plug or cord;
- Excessive decline of performance or malfunction;

Do not turn the monitor on and send it to an authorized Service Center.

Never open or remove the rear cover of the monitor. In case of malfunction, please contact an authorized service center that will use original replacement parts and maintain the original level of quality and safety. The monitor does not contain any internal replacement parts or adjustment points that the user needs to access. Replacement of any of the safety components with parts other than those specified and suggested by the manufacturer may cause damage to the monitor and/or entail the risk of fire or electrical shocks.

Environmental precautions:

Each monitor has a battery-powered remote control. Dispose of the batteries properly according to local standards.
Do not dispose of the packaging, save it to transport the monitor that must be protected from falls and shocks to the screen.

WARNING
The information and characteristics in this manual could change without previous notice. The manufacturer does not assume any responsibility for any consequences due to incomplete or modified information herewith in.

USEFUL SUGGESTIONS:

This monitor is best viewed at a distance of approximately three time the width of the screen. Viewing the monitor a shorter distances could cause eye fatigue.

It is suggested that static images, especially those with a high level of brightness, not be displayed on the screen for long periods of time in order to avoid burning the screen.
If it is necessary to display bright images, for example; lists or schedules, brands or bright photos, reduce the brightness and contrast as much as possible using, when possible, the screen saver feature (refer to SCR SAVE on the OSD menu).

TECHNICAL SPECIFICATIONS

Input signal	Pos.	Input specification			Connectors and input impedance
		Standard	Sync.	Level	
VIDEO	1	PAL/SECAM NTSC 4.43 NTSC 3.58	Composite	0,5 ÷ 2Vpp	2 x BNC Loop Through 75 Ohm switched
S-VHS	2	PAL /SECAM NTSC 4.43 NTSC 3.58	Composite	Y=0,5 ÷ 2Vpp C=0,35Vpp	2 x minidin Loop Through 75 Ohm switched
RGB-CGA (analogue) or YUV	3	15.625 kHz	H-V pos/neg Comp/neg. Sinc. on green. Composite on Y	0,7 Vpp ± 3dB Sinc. 0,5 ÷ 5V Y=1Vpp U=0,7Vpp V=0,7Vpp	2 x SUB D9 Loop Through 75 Ohm switched
RGB – VGA (analogue)	4	VGA – SVGA 31 ÷ 38 kHz	H-V pos/neg. Comp.Pos/neg. Sinc. on green	0,7 Vpp ÷ 3 dB Sinc. TTL	2 x D15 H.D. Loop Through 75 Ohm switched
AUDIO 1 Stereo	5	50÷15000 Hz		200 mV rms.	2 x RCA Right/Left with Zi 10K Ohm
AUDIO 2 Stereo	5	50÷15000 Hz		200 mV rms.	2 x RCA Right/Left with Zi 10K Ohm

The local keyboard (6), isn't available on CT version, keys are located on front monitor, maintaining same function, refer to Section 4.3.

DEFLECTION

Horizontal frequency range	31÷38 kHz auto sync
Vertical frequency range	45÷120hz auto sync
Horizontal blanking time	4,7 uS
Vertical blanking time	550 uS
V EHT	28 kV ÷ 1 kV
Degaussing system	Automatic at power on and manual or timed 1 or 12hr by OSD choice.
Consumption	160 W
Operating temperature	+5° ÷ 35°C (95% humidity)

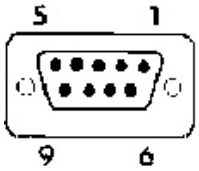
FURTHER TECHNICAL SPECIFICATION

- Available on request the video standard : PALM – PALN
- Usage of COMBFILTER in PAL and NTSC 3.58 with a wider video bandwidth, up to 6 MHz
- Usage of CTI circuit (Colour Transient Improvement) for the colour transition improvement and 4 levels of “sharpness”
- Availability of store priority on all inputs.
- Digital circuit of “still”, 4 angles zoom and noise reduction.
- Availability to store 2 video standards (PAL or SECAM and NTSC 4.43 or NTSC 3.58) and 5 VGA standards (640x400 – 640x480 – 800x600 56Hz - 800x600 60Hz) and a further standard for user requirement.
- Internal test pattern (colour bar, grid, white page)
- Screen Saver available from menu, with 3 different formats and speed.
- Availability of 2 different colour temperature (COL1 or COL2)
- 2 audio input stereo with Pu = 6+6 W, available with any of the input signals.
- 4 VGA standard pre set at:

VGA1	-	640 x 400
VGA2	-	640 x 480
VGA3	-	800 x 600 56Hz
VGA4	-	800 x 600 60Hz
VGA5	-	Free VGA mode for user requirement

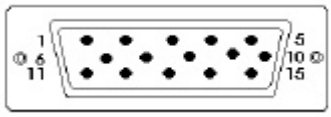
INPUT CONNECTIONS

RGB SUB D9 CONNECTOR



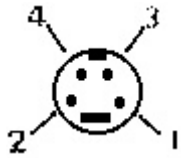
1	Ground
2	N.C.
3	Red
4	Green
5	Blue
6	N.C.
7	N.C.
8	Comp. Sync. or Horiz. Sinc
9	Vertical Sync.

HD VGA/RGB D15 CONNECTOR



1	Red
2	Green
3	Blue
4	N.C.
5	Gnd
6	Gnd
7	Gnd
8	Gnd
9	N.C.
10	Gnd
11	Gnd
12	Gnd
13	Horiz Sync
14	Vertical Sync
15	N.C.

S-VHS CONNECTOR



pin 1-2	Ground
pin 3	Croma C input
pin 4	Luma Y input

MONITOR FUNCTIONS

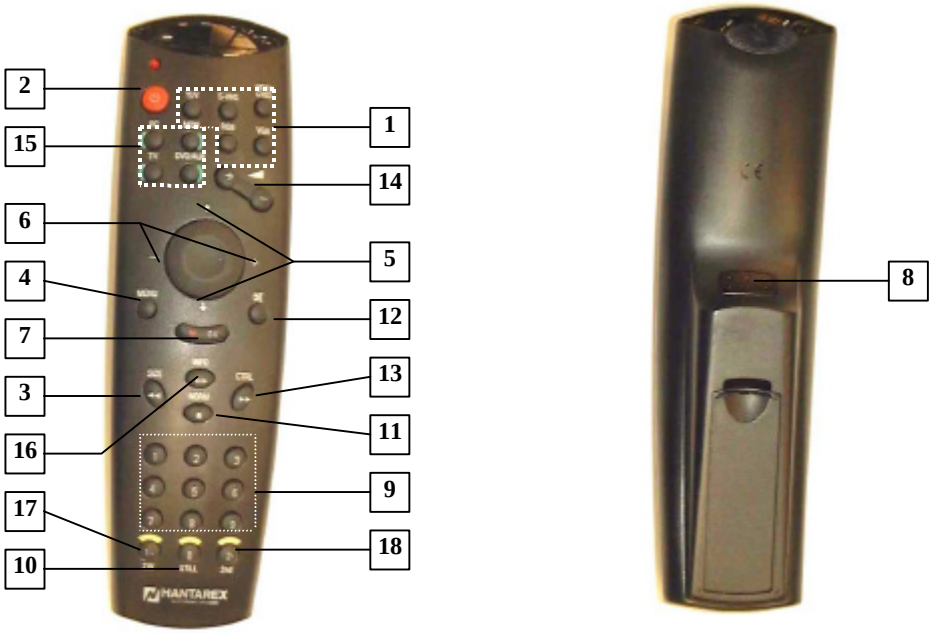
Section A Setup

After installing the monitor as indicated in the precedent chapter, connect a valid VIDEO signal to one of the inputs, (1), (2), (3), or a Personal Computer's VGA output to the input (4). Connect the AUDIO input (5), and turn on the monitor using the mains power switch.
NOTE: the monitor is shipped with the memorized selector on "video". The selector will memorize the last input selected.

Section B Remote Control

The remote control, included with the monitor accesses all the monitor's most used functions with direct local control keypad access (section C) and with an On Screen Display (OSD) menu (section D) for all the others.
Once the OSD menu has been accessed, if inputs are not made before 2 minutes, the menu will disactivate automatically.

Section C **Remote Control Key Descriptions**



Signal Keys (1)
Each of these keys is for a different signal. You can directly go from one signal to another by simply pressing the relative key. Moreover, if the monitor is in "STANDBY", pressing the desired signal's key will reactivate the monitor.

STBY key (2)
Press this key for at least one second to put the monitor in standby. The monitor is ready to be turned on using again this key or one of the Signal keys (1).

SIZE key (3)
Pressing this key in sequence changes the following formats:

NORMAL	: Normal format
COMP	: Compressed format. To view a 16:9 image on a 4:3 monitor. Compression deforms, shrinks, the image in order to see the complete image.
EXP	: Expanded format. To view a 4:3 image on a 16:9 monitor. Compression deforms, enlarges, the image in order to see the complete image.

Menu key (4)
Press this key once to directly access the OSD (On Screen Display) menu. Use the OSD menu to access the various commands available.

↑ and ↓ keys (5)
Use these keys in the OSD menu to select the desired command; they move the cursor up or down as necessary.

+ and – keys (6)
Use these keys in the OSD menu to increase or decrease the values or the available commands or to activate them when sequential adjustment is not available.

OK key (7)
Use this key in the OSD menu to confirm the selection and exit the menu.

RETURN key (8)
This key returns to the superior level of the OSD menu. It is the same as placing the cursor on RETURN or pressing ENTER.

Numerical keys (9)
In normal condition (out of OSD menu), ZOOM function can be activated by using key 1 (upper left zoom), key 3 (upper right zoom), key 7 (lower left zoom), key 9 (lower right zoom) and key 5 for central zoom. To return to normal condition press again key 5 from central zoom activated.

STILL key (10)
Press this key to freeze or restart an image.

NORM key (11)
Press this key to return all values to their original default state. Volume – Contrast – Saturation – Brightness and Hue.

MUTE key (12)
Press this key to turn off the volume. A red "MUTE" note appears on the screen. Press the key again to reactivate the previous volume and the note will disappear.

CTRL key (13)
Press this key once to directly access the principal adjustments: Brightness, Contrast, Saturation, Hue, Volume, Balance, Tone and PLL.
Once the adjustment has been selected, modify the value using the + and – keys (6).
Once selected, the values can be adjusted using the **+** and **-** keys (6).
This modification is automatically memorized. The menu disappears five seconds after the last key is pressed.

VOLUME key (14)
This key adjusts the volume directly.

Source keys (15)
Keys to be used in future enhancement.

Warning:
Pressing the PC key will alter the remote control's transmitting frequency. All the remote control keys, except VOLUME, become inactive. To return to normal, press the MON key.

INFO key (16)
Key to be used in the future. It has no functions at the moment.

2W key (17)
Key to be used in the future. It has no functions at the moment.

2N key (18)
Key to be used in the future. It has no functions at the moment.

Section D On Screen Display

All adjustments to the monitor can be made indifferently from the remote control or the local control keypad on the monitor or via an optional RS232 (available on request) that connected terminal,.

Using the remote control, you can directly access the principle commands as described in the previous section.

The OSD menu accesses all the functions in detail using only 5 keys (↑ ↓ + – ↵), using either the keypad on the monitor or the remote control.
All the following key references must be differentiated between the remote control and the local control keypad on the monitor.

Access the principle OSD menu (MENU 1) with the remote control using Key (4) , pressed for at least 2 seconds, or with the ↵ key on the local control keypad on the monitor.

The OSD is made up of three principle menus as shown below, from which it is possible to access single commands or necessary adjustments.

MENU 1

MORE...	**COLOR T**
SOURCES	**GEOMETRY**
PICTURE	**SET VGA**
SOUND	**EXIT MENU**

MENU 2

MORE...	**TEST**
INP SET	**STATUS**
DEGAUSS	**IDTV**
SCR SAVE	**RETURN**

MENU 3

PASSWORD	**RESERVED**
	Pcmode %
	RETURN

Instructions:
The cursor's position is identified by the parameter highlighted in the menu.
Use the ↑ or ↓ key to move the cursor to the required command.
Confirm the choice by pressing the ↵ key.
Use the + or – key to increase or decrease the selected parameter's value when necessary.
To pass to the next menu, place the cursor on **MORE…** and press ↵ .
The monitor automatically exits the OSD menu after 2 minutes of inactivity.

At menu start, whatever priority has been set, it will be ignored.

Choosing a parameter from the principle menu automatically takes you to the sub-menu.
The various sub-menus available are:

SOURCES **Choose the signal input and priority**

IN. xxx
PRI. xxx
RETURN

IN = Signal input; PRI = Priority choice

IN = choose between : CVBS-SVHS-RGB-VGA
PRI = choose between: CVBS-SVHS-RGB-VGA-OFF

OFF priority selection means that the priority has been disabled.

PICTURES **Image adjustment**

IN = sss		**MORE...**
CONTR	**xxx**	**HUE xxx**
BRIGH	**xxx**	**NORMAL**
SATUR	**xxx**	**RETURN**

MORE...		**NoiseR xxx**
COMB_F	**xxx**	**PLL xxx**
CTI	**xxx**	
PEAK	**xxx**	**RETURN**

YC_DEL	**xxx**	
GAMMA	**xxx**	
B_STR	**xxx**	**NORMAL**
		RETURN

IN = (VID= CVBS or SVHS, RGB= RGB, VGA =VGA) Active signal indications available to be adjusted.

CONTR = Contrast (from 00 to 63)
BRIGH = Brightness (from 00 to 63)
SATUR = Saturation (from 00 to 63)
MORE… = Pass to the next menu
HUE = Hue, active only in NTSC (from 00 to 63)
NORMAL = Return all values to those set at the factory
COMB_F = Comb Filter (choose YES or NO)
CTI = Color Transient Improvement (choose YES or NO)
PEAK = Image details (from LEV1 to LEV4) where LEV1=Soft and LEV4=Sharp
NoiseR = Noise Reduction (choose YES or NO)
PLL = Phase Locked Loop, time constant (available VCR0-1-2-3) where VCR0= slow VCR3= fast. With videocassette recorder use VCR.
YC_DEL = Brightness/ Crominanza delay adjustment (from 00 to 63)
GAMMA = Gamma adjustment (from 00 to 63)
B_STR = Blue Stretch (choose YES or NO)

SOUND **Sound adjustment**

AUD1	**sss**	**AUD2**	**sss**
VOLUME	**xx**	**STEREO**	**xx**
BALAN	**xx**	**NORMAL**	
TONE	**xx**	**RETURN**	

AUD1 and AUD2 = Signal input choice between VIDEO=(CVBS, SVHS, RGB) – VGA – ALL - OFF and the relative audio input.
EXAMPLE: It is possible to set the volume low with DVD signal (SVHS) and an AUDIO 1 input while keeping the volume high on AUDIO 2 when you pass to a Personal Computer (VGA signal).

VOLUME = Volume (adjustable from 00 to 63)
BALAN = Balance (adjustable from 00 to 63)
TONE = Tone (adjustable from 00 to 63) dove flat=32, Alti=00, Bassi=63
STEREO = Stereo (choose YES or NO)
NORMAL = Return to the settings as set at the factory.

When a single audio font will be common to all input, set menu as follow:

AUD1=ALL; AUD2=OFF or AUD1=OFF; AUD2=ALL

NOTE: In absence of a video signal, the volume will correspond to zero, the Automatic MUTE feature.

COLOR TEMP **Color temperature adjustment**

VID xxx	**VGA xxx**
COLOR ADJ	**COLOR ADJ**
	RETURN

VID = Choose the Video input color temperature input (choose between COL1 – COL2-USER)
VGA = Choose the VGA input color temperature input (choose between COL1 – COL2-USER)

COLOR ADJ = Adjust the color for Video and VGA respectively.

COLOR ADJ (VID) **Color temperature adjustment (only Video)**

VID	**T = xxx**
R_GAIN xx	**REF LEV**
G_GAIN xx	**NORMAL**
B_GAIN xx	**RETURN**

VID	**T = xxx**
R_REFL xx	
G_REFL xx	**NORMAL**
B_REFL xx	**RETURN**

T = Present color temperature to be modified.
R_GAIN = Red gain (from 00 to 63)
G_GAIN = Green gain (from 00 to 63)
B_GAIN = Blue gain (from 00 to 63)
REF LEV. = Go to the next sub-menu
R_REFL = Red reference level (from 00 to 63)
G_REFL = Green reference level (from 00 to 63)
B_REFL = Blue reference level (from 00 to 63)

NOTE: GAIN= white adjustment; REFL= black adjustment

COLOR ADJ VGA **Color temperature adjustment (only VGA)**

VGA	**T = %%**
R_GAIN xx	**REF LEV**
G_GAIN xx	**NORMAL**
B_GAIN xx	**RETURN**

VGA	**T = %%**
R_REFL xx	
G_REFL xx	**NORMAL**
B_REFL xx	**RETURN**

T = Present color temperature to be modified.
R_GAIN = Red gain (from 00 to 63)
G_GAIN = Green gain (from 00 to 63)
B_GAIN = Blue gain (from 00 to 63)
REF LEV. = Go to the sub-menu
R_REFL = Red reference level (from 00 to 63)
G_REFL = Green reference level (from 00 to 63)
B_REFL = Blue reference level (from 00 to 63)

NOTE: GAIN= white adjustment; REFL= black adjustment

GEOMETRY **Image geometry adjustment**

PRG= sss	**MORE...**
H_SHFT xx	**V_SHFT xx**
H_AMP xx	**V_AMP xx**
NORMAL	**RETURN**

PRG= sss	**MORE**
EW TOT xx	**EW MID xx**
EW COR xx	**EW BAL xx**
NORMAL	**RETURN**

PRG= sss	**MORE...**
V_SIMM xx	**TILT xx**
V_LIN xx	**TRAP xx**
NORMAL	**RETURN**

PRG= sss	
H_AMPp xx	**V_SHTp xx**
HshfFB xx	
NORMAL	**RETURN**

PRG= Present program which the available adjustments refer to:
The available programs are:
PRG VID (CVBS or SVHS input)
PRG RGB (RGB input)
PRG VGA1 ….VGA5 (VGA modes defined with precise standards at the factory)
PRG VGA6 (VGA mode different from the standard settings).

For each program, the following adjustments can be made:

H_SHFT	= Horizontal shift	(from 00 to 63)
H_AMP	= Horizontal amplitude	(from 00 to 63)
V_SHFT	= Vertical shift	(from 00 to 63)
V_AMP	= Vertical amplitude	(from 00 to 63)
EW TOT	= East West width	(from 00 to 63)
EW COR	= East West angle correction	(from 00 to 63)
EW MID	= Midline correction	(from 00 to 63)
EW BAL	= East West balance	(from 00 to 63)
V_SIMM	= Vertical symmetry	(from 00 to 63)
V_LIN	= Vertical Linearity	(from 00 to 63)
TILT	= Tilt	(from 00 to 63)
TRAP	= Trapezoid	(from 00 to 63)
H_AMPp	= Preset amplitude	(from 00 to 63)
V_SHTp	= Preset vertical shift	(from 00 to 63)
H_shfFB	= Preset horiz phase (15kHz)	(from 00 to 63)

SET VGA **VGA mode memorization**

VGA	**PRG=**
Hf= xx	**Vf= xx**
CLEAR	**STORE**
	RETURN

Use + and - keys for program selection:
OK key to store.
PRG= ss RETURN

PRG= Present program in use (VGA4 are VGA modes set at the factory, VGA5 is a free mode, VGA6 is an unrecognized mode and cannot be memorized).
Hf = Horizontal synchronism frequency and polarity (kHz)
Vf = Vertical frequency and polarity (Hz)
CLEAR = Cancel the memorization of the selected program.
STORE = Memorize the VGA mode in use presently (go to the next sub-menu)
PRG = To choose the memorized program (from VGA1 to VGA5)

Storage procedure:
Suppose to want store the following VGA mode, giving the program number 5.
VGA mode 1024x768 @ 87hZ int.

Activate menu:
Enter in the SET VGA menu with the VGA signal connected. Attention : It is possible to enter in this function only if VGA signal has been selected.
Place cursor on STORE. Please note that parameters related to the input VGA mode are displayed as: Hf=35.4kHz Vf=57hZ with related polarity
Press OK
Using the + and – keys assign PRG=VGA5, then press OK.
The storage has been succesfully completed in a MEMO world on green letters appear, blinking for 2 seconds.
Attention: If no signal VGA has been connected to the input, then the NO SYNC world in red letters will appear and no storage will be done.

INP SET **Input settings**

75 VID xx	**YUVset xx**
75SVHS xx	
75 RGB xx	
75 VGA xx	**RETURN**

75VID – 75SVHS – 75 RGB – 75 VGA. For each individual input, specify if the 75-Ohm load resistance must be inserted (YES) or must be open (NO). The load resistance must be inserted only for the last monitor of a loop through connection. The load resistance of a single monitor must be inserted (YES).
YUVset = Choose YES or NO to specify if a YUV signal is applied to the RGB input.

NOTE: Setting YUV to YES, the RBG input accepts only YUV signals..

DEGAUSS **Degaussing**

DEGAUSS
TIME sss

RETURN

TIME = Set the degaussing timer. Choose between:
1hr – 12hr – OFF.
Place the cursor on OFF and press ↵ to apply a degaussing impulse.

SCR SAVE **Screen saver**

SCR SAVE
SPEED xx **SIZE xx**

RETURN

SPEED = Screen saver speed (choose 0=OFF , 1=normal, 2=fast)
SIZE = Entity size (choose 0=small, 1=normal, 2=big)

NOTE: Active only with the menu off!

TEST — **On screen image generator test activation**

TEST		
TEST	**ss**	
OSDshf	**xx**	**NORMAL**
		RETURN

TEST= choose GRID= Network, COLB= Color bar, MULB= Multi-bar, W_PG= White screen, OFF
OSDshf = OSD movement (from 00 to 63)

STATUS — **Present status**

IN	**sss**	**Rel. 1.00**	
STD	**xx**		
PRG	**xx**	**T**	**xx**
Hrs	**xxxx**	**RETURN**	

IN = Present active input signal
Rel. = Software Release level installed (necessary for service)
STD = Standard active color (B/W – PAL – SECAM – NTSC)
PRG = Present program being used
T = Present color temperature being used
Hrs = Total operating hours

IDTV — **Specific IDTV characteristic selection**

ZOOM	**%**	
SIZE	**%**	
STILL	**%**	
		RETURN

ZOOM — Digital zoom, available choices: OFF, UP_L= upper left part, UP_R= Upper right part, DW_L= Lower left part, DW_R= Lower right part, CENT= Central

SIZE — Image format, available choices: NORM= Normal, COMP= Compressed (on a 4:3 monitor view 16:9 images), EXP= Expanded (on a 16:9 monitor view 4:3 images)

NOTE: Using a format that is different from normal will deform the images

PASSWORD — **Access features protected by a password**

Enter Password
RETURN

The default parameters are protected by a password. Modifying these parameters could compromise the monitor's performance if performed incorrectly. Access to these parameters, therefore, is reserved and exclusively used by the factory.

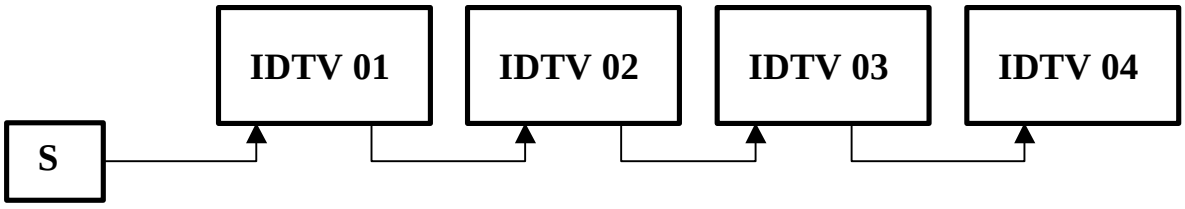
Section E Loop-through Connections

E1 – Video and VGA Signals.

The VIDEO (1), S-VHS (2) , RGB-CGA (3) and VGA (4) inputs are doubled to allow loop-through connections, AS LONG AS:

- The connection cables have 75 ohm impedance, are high quality and have efficient RF shielding (including ferrite fillers for VGA cables);
- The length of the connection cables is not longer than 8 meters for a total length of 20 meters.
- The line load option for input use, menu options, is set to "OFF", load excluded, for all the monitors but the last monitor that is set to "ON"

For example, the four monitors in the figure below receive the signal from a source called "S"; it could be a synthesizer, VCR, video camera, etc.
Suppose that you are using the Video input (1) for all the monitors, they are connected one to the next with a coaxial cable so the signal will be passed from one to the other with a double connector on the control panel. The last monitor will naturally have only one cable. All the monitors that have two connection cables to the inputs (1) must be configured in the Options sub-menu with CVBS 75 ohm = OFF. The last monitor that has only one cable connected to only one of any of the inputs (1) and must set the option to CVBS 75 ohm = ON. This setting is the normal setting for a single monitor. The same considerations are valid for double S_VHS (2) and VGA (4) inputs. In the Options sub-menu, you will find the respective options to insert or disinsert the line load for each of them.



OPTIONS :	CVBS 75ohm OFF	CVBS 75ohm OFF	CVBS 75ohm OFF	CVBS 75ohm ON

The setup above is suggested for loop-through connections.

E2 –RS232 serial interface (optional on request)

Loop-through connections are possible to control more than one monitor from a distance with a serial cable. One or more monitors in a given position can be controlled from a distance using a PC to send the commands. In this case, follow the instructions below to make a loop-through connection:

- The serial cable between two monitors must not be greater than 3 meters for up to 16 monitors and 6 meters for up to 8 monitors.
- In any case, the length should not be greater than 15 meters.
- Only special shielded cables for data transmission should be used.

Each monitor, prepared for serial line, has an input and output serial to connect the loop-through monitors. Each monitor should have a different address, (from 00 to 63).

CALIBRATION AND TEST PROCEDURES

STEP	TEST INPUT	SIGNAL CONTROL	SET UP	INSTRUMENT	ADJUSTMENT CONNECTION
1	Power supply section and check	NO signal	IMPORTANT: The monitor has to be connected to the Mains via an isolation transformer	Voltmeter on TP1. Oscilloscope on TP2.	Adjust RV1 for the following table
1A		SVGA 800x600 56Hz			

CRT 21” 4/3	VTP1= 127V
CRT 29” 4/3	VTP1= 134V
CRT 34” 4/3	VTP1= 135V

2	CUTOFF ADJUSTMENT	NO signal		Oscilloscope to the cathode with highest level	Adjust G2 potentiometer to the line transformer fort 140V of black level pulse during the frame interval
3	Horizontal calibration interface mod.	VGA 640x480 56Hz VGA 800x600 60Hz	Connect pin 2-3 of J8 Connect pin 1.2 of J9 Connect pin 2-3 of J9		Adjust RV4 for the steadiest picture Adjust RV1 for the steadiest picture Adjust RV2 for the steadiest picture
	Horizontal phase adj.	VGA 640x480 56Hz	HSHIFT=32		Adjust RV3 for the best picture centring
4	Focus adjustment	VGA 800x600 60Hz Grid pattern	FOR DOUBLE FOCUS CRT ONLY		Adjust the red Pot for the best focus compromise of horizontal lines Adjust the black Pot for the best focus compromise of vertical lines
5	L3 Bridge coil adjustment	VGA 640x480 56Hz		Oscilloscope with 1:100 probe to T3 collector	Adjust the L3 core to avoid a distortion in a falling edge of flyback pulse

MICROPROCESSOR SELF DIAGNOSTIC

In the event of malfunction only, after power up the led will begin a blinking sequence followed by A led off status.
A pulse code will give status information of detected fault.
The following table will resume the meaning of blinking sequence

LED BLINKS	FAULT MEANING
2	IIC bus forced high or low
3	no acknowledgement of EEPROM IC5
4	Data loss in EEPROM IC5
5	No acknowledgement of DAC0 IC10
6	" " of OSD IC3
7	Wrong write on EEPROM IC5
8	No acknowledgement of DAC1 IC2
9	" " of DAC2 IC8
10	" " of DAC3
11	" " of DAC5
12	" " of DAC7 IC1
13	" " of TDA 4780
14	" " of TDA 9321 IC15
15	" " of SDA9206 feature box
16	" " of SDA 9220 " "
17	" " of SDA 9280 " "