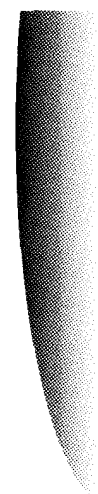
EPSON®

14" SVGA Color Monitor

TC-1428



COLOR MONITOR

energy

EPA POLLUTION PREVENTER

Customer's Record

The serial number of this product appears on the back of the unit.

You should note this serial number in the space provided below and retain this manual as a permanent record of your purchase to aid in identification in the event of theft or loss.

Model number: **TC-1428**

Serial number:

WARNING: To reduce the risk of fire or electric shock, do not expose this Computer Display to rain or moisture.

CAUTION

The power cord is intended to serve as the main disconnect device. Install the socket-outlet near the equipment and in an easily accessible place.

For 120V operation, use only with power cord plug having a parallel blade, grounding type plug, rated 125V 10A.

For 240V operation, use only with power cord plug having a tandem blade, grounding type plug, rated 250V 5A.

VESA DPMS Compliance Product Information

NOTE: The **TC-1428** has been tested and found to comply with the requirement of VESA DPMS standard. The power management features are as follows:

1. The monitor will enter into the power saving state with six seconds of time delay, in the absence of any sync. signal from PC.

2. The monitor will be automatically recovered to the on state by receiving normal sync. signals from PC.

3. The power management states are identified below:

Power Mgmt. States		H-Sync.	V-Sync.	LED Color
Power ON	On	ON	ON	Green
	Stand-By	OFF	ON	Light Amber
	Suspend ON	OFF	OFF	Light Amber
	Off	OFF	OFF	Dark Amber
Power OFF		OFF	OFF	Off

Table of Contents

Note: PC and VGA are trademarks of International Business Machines Corporation.

1. Introduction

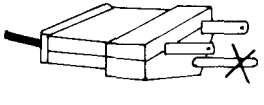
Congratulations on your purchase of a NEW ULTRA VGA monitor. One of the most versatile monitors available today, the **TC-1428** automatically adjusts its vertical and horizontal scanning frequencies to those of your computer's graphics adapter or video chip sets. The **TC-1428** provides crisp text and vivid color graphic displays when used with NEW ULTRA VGA compatible graphics adapters (see specifications).

2. Precautions

1. To prevent electric shock, do not remove screws or cover.
   There are no user-serviceable parts inside the monitor. Refer servicing to qualified service personnel.
   DO NOT REMOVE THE TILT/SWIVEL BASE!

2. The input power source:
   The **TC-1428** is designed to be suitable for low input voltage (100-125V) and high input voltage (200-240V) areas.

3. The monitor is equipped with a three-pronged grounding plug which will only fit a grounded power outlet.
   This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician.



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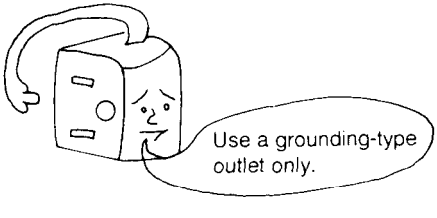


4. Do not put the monitor or other heavy objects on the power supply cord. A damaged power cord may cause fire or electric shock.

5. Do not insert sharp objects into the monitor. They may cause fire or failure.

6. Do not allow liquids to spill into the cabinet.

7. To reduce eye fatigue, avoid using the display in direct sunlight or under bright lighting.

8. Do not operate the monitor beyond the specified temperature and humidity range (see specifications on page 5).

9. For proper operation, keep the monitor adequately ventilated.

10. Keep the monitor away from strong magnetic fields produced by transformers, motors, fans, or other devices.

11. If the monitor does not operate properly, turn the power switch off and then unplug the monitor.

12. When irregular AC Voltages is supplied, a protective circuit will turn off the monitor (the power indicator will also be turned off). If this happens, turn off the power switch, and wait at least 30 seconds before turning it on again.

3. Features

1. The TC-1428 monitor automatically adapts to the vertical and horizontal frequencies of VGA, SVGA, 8514/A, VESA VGA, UVGA, and other compatible graphics adapters.

2. The monitor features maximum resolutions of 1024 pixels (horizontal) and 768 lines (vertical) in non-interlaced or interlaced modes.

3. Universal 100~240 Vac full-range power supply.

4. Power management complies with VESA DPMS standard, operating states distinguished by the triple color power indicator.

5. Full scan capability allows the use of entire screen as display area.

6. The monitor compatible with the VESA DDC (Data Display Channel) standard with DDC1 and DDC2b functionality (optional).

7. This monitor can be equiped with a built-in amplifier and stereo speakers for multimedia environment applications (optional).

4. Specifications

Power Source:	AC 90~264V, 50/60Hz
Power Consumption:	75W Maximum
Power Management:	VESA DPMS (<5W)
Picture Tube:	14 inches, 90° deflection, 0.28mm dot pitch Viewable size 13.1 inches.
Resolutions	
• Horizontal:	1024 pixels (interlaced)
* Vertical:	768 lines (interlaced)
Input Signals	
* Video:	Analog 0.7 Vp-p / 75 ohm Positive
* Separate Sync:	TTL Level Horizontal . . . . . Positive/Negative Vertical . . . . . Positive/Negative
Synchronization	
* Horizontal:	31.5KHz/35KHz/38KHz
* Vertical:	50Hz~100Hz continuous
Display Colors	
* ANALOG Input:	Infinite colors (262, 144 color range)
Active Display Area	
* Horizontal:	250mm typical (varies by signal timing)
* Vertical:	188mm typical (varies by signal timing)
Dimension	
* (W)x(H)x(D):	370mm(14.6")x355mm(14")x394mm(15.5")
VESA DDC Standard: (Optional)	DDC1, DDC2b
Environmental Conditions	
* Operating Temperature:	0°C~+35°C
* Operating Humidity:	10%-80% (non-condensing)
* Storage Temperature:	-40°C~+65°C
* Storage Humidity:	5%~95%
Interfaces (Optional)	
* Audio Input:	Audio input port
* Audio Output:	Headphone jack

Low Radiation:

* X-ray radiation: < 100n Gylh
* Magnetic field:

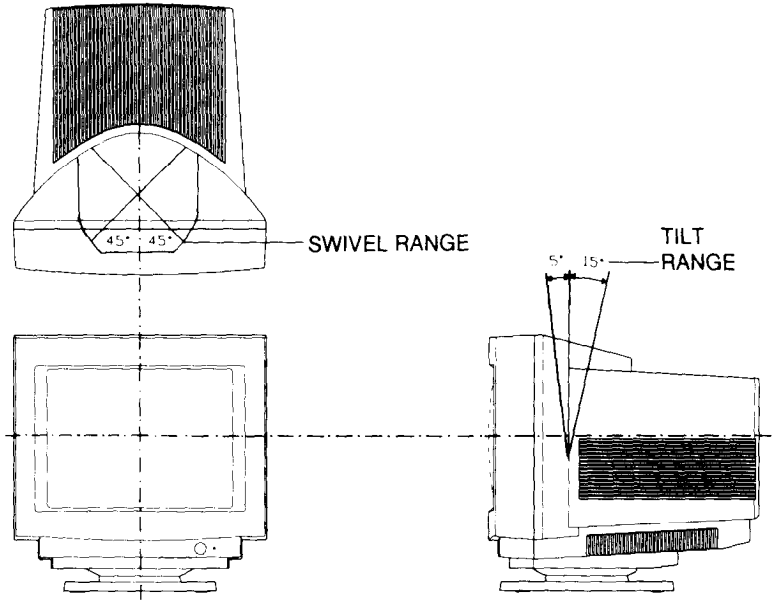
Band I (5KHz-2KHz): < 250nT.
Band II (2KHz-400KHz): < 25nT.

Tilt and Swivel Operation:

The swivel range is normally limited to a range of 45 degrees to the right or left of the front position (marked by a small molded pip on the top front bottom of the base).

The tilt range is normally limited at an angle of -5 degrees forwards and + 15 degrees backwards. This allows you to set the screen angle to the viewing position most comfortable to you.

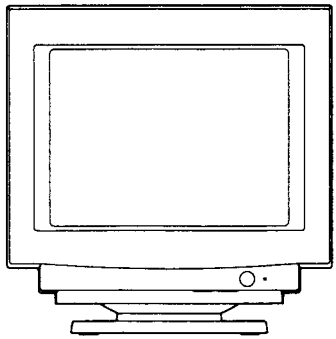
Note: *When this display is operated with the vertical frequency under 55Hz, the image on the screen may flicker.



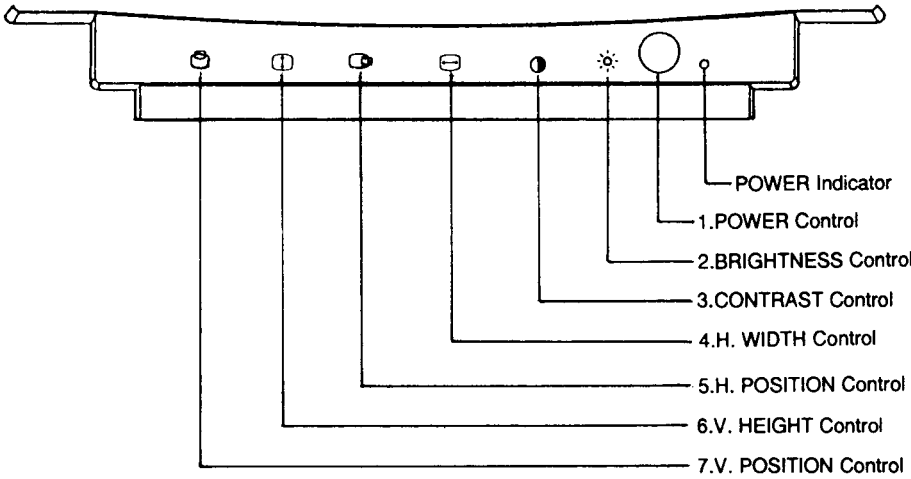
5. Control Locations and Adjustments

Note: The numbers indicate the control item whose description is found on the following page.

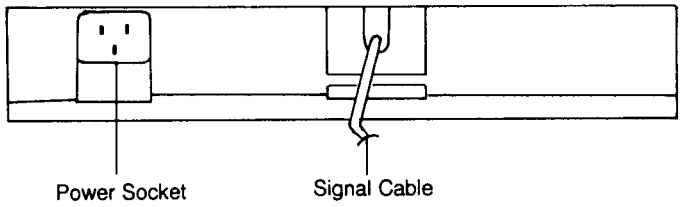
FRONT



Front User Controls



REAR



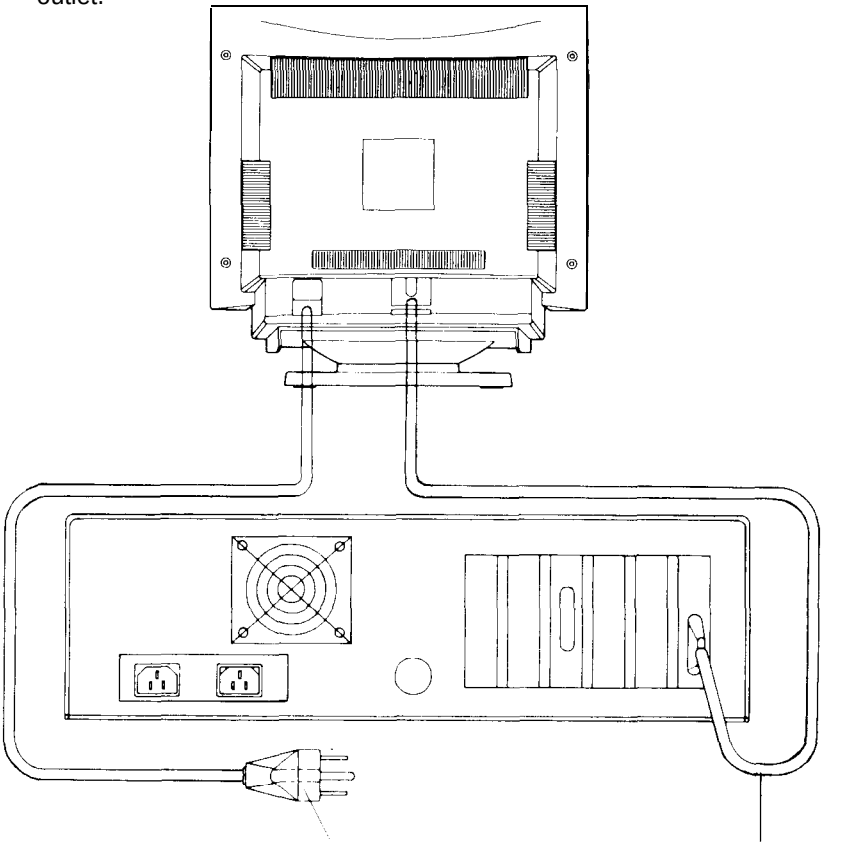
Adjustments

1. POWER Switch	Push to turn the display on, and push again to turn off. The power indicator will light when the display is on.
2. BRIGHTNESS Control	Adjusts the display to the desired brightness level. (factory preset at the center detent of the control knob)
3. CONTRAST Control	Adjusts the display to the desired contrast level.
4. H. WIDTH Control	Adjusts the display to the desired horizontal width. (factory preset at the center detent of the control knob)
5. H. POSITION Control	Adjusts the display to the desired horizontal position.
6. V. HEIGHT Control	Adjusts the display to the desired vertical height. (factory preset at the center detent of the control knob)
7. V. POSITION Control	Adjusts the display to the desired vertical position.

6. Connections

Your monitor has two connecting cables: a Power Supply Cord, which connects to a wall outlet, surge protector or other power source, and a Signal Cable, which connects to the graphics adapter of your computer. To insure safety and correct operation, always follow these four steps when connecting the monitor:

1. Disconnect the power supply cords from your computer and monitor.
2. Connect the signal cable from the monitor to the graphics adapter of your computer. The connector is shaped so that it will only fit when properly aligned.
3. Secure the connection by tightening the two screws on the connector.
4. Plug the power supply cords of the computer and monitor into an AC outlet.

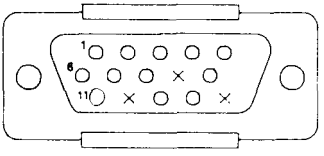


Power Supply Cord

Signal Cable

7. Pin Assignments

The pin assignment of the video signal cable are shown below:



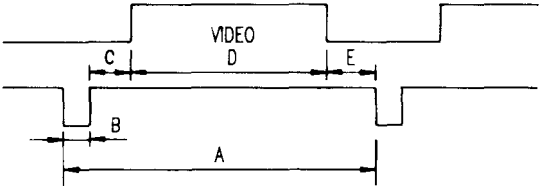
15-Pin Mini D-Sub Male Connector

PIN NO.	SIGNAL
1	RED
2	GREEN
3	BLUE
4	GROUND or OPEN FOR DDC
5	GROUND
6	R-GROUND
7	G-GROUND
8	B-GROUND
9	NO CONNECTION
10	GROUND or OPEN FOR DDC
11	GROUND
12	NO CONNECTION or DDC SDA
13	H. SYNC.
14	V. SYNC.
15	NO CONNECTION or DDC SCL

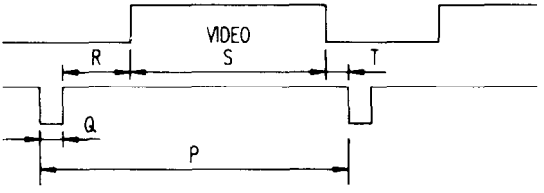
8. Timing Charts

SEPARATE SYNC.

HORIZONTAL



VERTICAL



Sync. Polarity: Positive/Negative

PRESET TIMING-VGA/SVGA

Mode / Item	VGA			SVGA	
	640x350	720x400	640x480	800x600	800x600
Fh (KHz)	31.468	31.468	31.469	35.156	37.879
A µs (Line time total)	31.778	31.778	31.778	28.445	26.400
B µs (Synch. pulse)	3.813	3.813	3.813	2.000	3.200
C µs (Back porch)	1.907	1.907	1.907	3.556	2.200
D µs (Active)	25.423	25.423	25.422	22.222	20.000
E µs (Front porch)	0.636	0.636	0.636	0.667	1.000
Fv (Hz)	70.000	70.000	59.940	56.250	60.317
P ms (Frame time total)	14.286	14.286	16.683	17.778	16.579
Q ms (Synch. pulse)	0.063	0.063	0.064	0.057	0.106
R ms (Back porch)	1.937	1.143	1.049	0.626	0.607
S ms (Active)	11.111	12.698	15.253	17.067	15.840
T ms (Front porch)	1.175	0.381	0.318	0.028	0.026
	Separate Sync.	Separate Sync.	Separate Sync.	Separate Sync.	Separate Sync.
H. Sync. Polarity	Positive	Negative	Negative	Negative	Positive
V. Sync. Polarity	Negative	Positive	Negative	Negative	Positive
Interlaced	No	No	No	No	No

PRESET TIMING-8514A/VESA VGA/UVGA

Mode / Item	8514/A	VESA VGA				UVGA
	1024x768	640x480	540x480	800x600	800x600	1024x768
Fh (KHz)	35.520	37.500	37.860	46.875	48.077	48.363
A µs (Line time total)	28.153	26.667	26.413	21.333	20.800	20.677
B µs (Synch. pluse)	3.919	2.032	1.270	1.616	2.400	2.092
C µs (Back porch)	1.247	3.810	4.064	3.232	1.280	2.462
D µs (Active)	22.810	20.317	20.317	16.162	16.000	15.754
E µs (Front porch)	0.178	0.508	0.762	0.323	1.120	0.369
Fv(Hz)	86.960	75.000	72.809	75.000	72.187	60.000
P ms (Frame time total:	11.500	13.333	13.735	13.333	13.853	16.667
Q ms (Synch. pulse)	0.113	0.080	0.079	0.064	0.125	0.124
R ms (Back porch)	0.563	0.427	0.740	0.448	0.478	0.601
S ms (Active)	10.810	12.800	12.678	12.800	12.480	15.880
T ms (Front porch)	0.014	0.026	0.238	0.021	0.770	0.062
	Separate Sync.	Separate Sync.	Separate Sync.	Separate Sync.	Separate Sync.	Separate Sync.
H. Sync. Polarity	Positive	Negative	Negative	Positive	Positive	Negative
V. Sync. Polarity	Positive	Negative	Negative	Positive	Positive	Negative
Interlaced	Yes	No	No	No	No	No

9. Troubleshooting

Before you call an authorized service center, please check if the following items are properly connected or not.

If a non-IBM personal computer or graphics adaptor is being used, make sure the pin assignments of signal input connector and the signal timing meet the specifications inducated above.

PROBLEM	CHECKS	LOCATION
No Picture or POWER Indicator off.	* AC Cord plugged in * POWER Switch on * Signal Cable connected	Rear Front Rear
No Picture, POWER Indicator off, AC cord plugged in, POWER switch on.	* Turn off POWER switch, wait at least 30 seconds, turn it back on.	Front
No picture, POWER Indicator on.	* CONTRAST Control * BRIGHTNESS Control	Front Front
Image is not centered.	* V. POSITION Control * H. POSITION Control	Front Front

Federal Communications Commission Requirements

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, of not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

. . . ..Reorient or relocate the receiving antenna.

. . . ..Increase the separation between the equipment and the receiver.

. . . ..Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

. . . ..Consult the dealer or an experienced radio/TV technician for help.

If necessary, consult your dealer's service representative for additional suggestions. The user may find the booklet, "Something About Interference", prepared by the Federal Communications Commission, helpful. This booklet is available from the U.S. Government Printing Office, Washington DC 20402.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.

FCC Warning: To assure continued FCC emissions limit compliance, the user must use only the provided shielded power supply cord and interfacing cable when connecting to a host computer. Also, any unauthorized changes or modifications to this equipment could void the user's authority to operate this monitor.

Canadian Department of Communications Requirements

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numberiques de classe B prescrites dans le Reglement sur le brouillage radioelectrique edicate par le Ministere des Communications du Canada.

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