

The FCC Wants You to Know

This equipment generates and uses radio frequency energy. If not installed and used properly, that is in strict accordance with the manufacturer's instructions, it may cause interference to radio and television reception.

It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause 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 the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

Warning

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

2/86

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



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For your own protection, we urge you to record the serial number of this unit in the space provided. You will find the serial number on the back panel of the unit.

Serial Number: _____

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RGB Color Monitor CM-5 Owner's Manual:

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Introduction

Tandy is proud to present the RGB Color Monitor CM-5 designed to display characters and graphics in 16 vivid colors.

The CM-5 has many advantages over other color monitors. These include:

- Fourteen-inch color display providing eye-pleasing graphics.
- Adjustable picture controls that tailor the brightness and contrast to suit your environmental lighting.
- Sharp, *flicker-free* image provided by non-interlaced circuitry.
- RGB direct-drive signal system that provides 320-dot by 225-line display for crisp characters and vivid color graphics.

Description of the CM-5

Figure 1 and Figure 2 will acquaint you with the parts of your monitor.

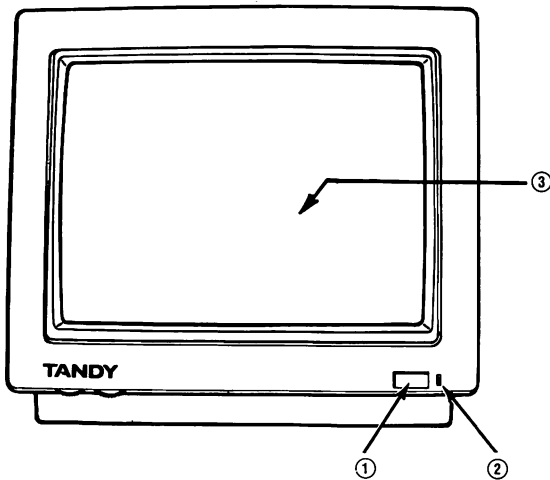


Figure 1. Front Panel

- ① **POWER ON/OFF Switch.** Powers up the CM-5.
- ② **POWER ON Indicator.** Illuminates when the monitor's power is on.
- ③ **Video Screen.** Front viewing surface.

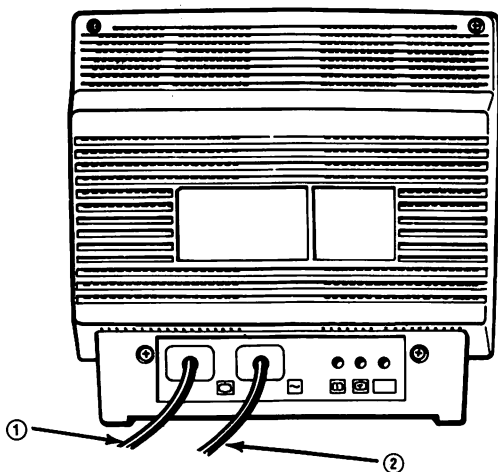


Figure 2. Rear Panel

- ① **Signal Connector.** Connects to the CPU.
- ② **Power Cord.** Plugs into a standard, grounded AC outlet or approved power strip.

Setting Up the CM-5

Your CM-5 Color Monitor is easy to set up.

1. Be sure that power to all components is off.
2. Connect the signal connector to the CPU of a compatible computer.
3. Plug the CM-5's power cord into a standard, grounded AC outlet or approved power strip.
4. Power up all equipment. Use your system owner's manual for instructions on powering up your computer and other peripherals.

Adjusting the CM-5 Display

You may need to adjust the display of the CM-5 before using it. Two of the rotary controls used to adjust the display are located on the front of the monitor, and the other three controls are located on the back of the monitor.

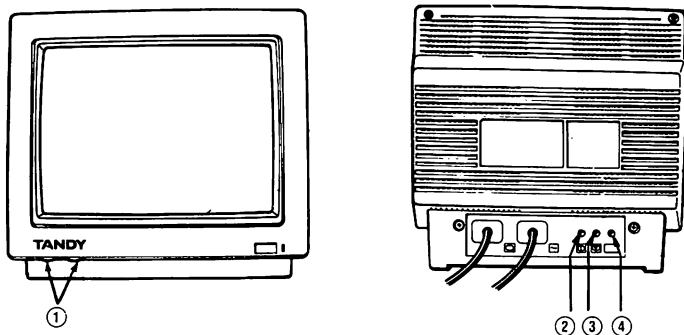


Figure 3. Display Adjustment Rotary Controls

- ① **CONTRAST and BRIGHTNESS.** Use these controls to adjust the screen brightness to compensate for room lighting. Rotate either or both controls clockwise to increase brightness. Rotate either or both controls counterclockwise to decrease brightness. The contrast control is also used to adjust color brilliance—low or high as needed.
- ② **V. HOLD.** Use this control to stabilize the display on the screen.
- ③ **V. SIZE.** Use this control to adjust the vertical height of the picture.
- ④ **H. CENTER.** Use this control to adjust the horizontal position of the picture.

Care and Maintenance

Your CM-5 should give you a long period of trouble-free service if it is connected to the proper power source and handled gently. If the monitor malfunctions, have it checked by a qualified Radio Shack service technician.

Installation and Location Hints

The CM-5 has openings for ventilation purposes, to provide reliable operation of the monitor and protect it from overheating.

- Install the monitor at least four inches (0.1 meters) away from the wall.
- Never cover the openings with cloth or other material.
- Never block the openings on the bottom of the monitor by placing it on a bed, sofa, rug, etc.
- Never place the monitor in a built-in enclosure unless proper ventilation is provided.
- Never place the monitor near or over a radiator or heat register.
- Never expose the monitor to rain, excessive moisture, or excessive dust. Moisture and dust create fire hazards.
- Never place the monitor on an unstable desk, cart, or stand.

Operation Hints

- Operate the monitor from the power source indicated on the back of the cabinet. Use of a power source that is not marked on the monitor can cause monitor damage as well as improper operation.
- To ensure safe operation, the three-pin plug (supplied) must be inserted into a standard three-pin outlet which is effectively grounded. Extension cords used with the equipment must be three-wire and correctly wired to provide connection to ground. Improperly wired extension cords are a major cause of fatalities. The fact that the equipment operates satisfactorily does not imply that the power point is grounded and that the installation is completely safe. For your safety, if in any doubt about the effective grounding of the power point, consult a qualified electrician.

- To prevent a fire or electrical shock, do not overload wall outlets and extension cords.
- Adjust only those controls that are described in the "Adjusting the CM-5 Display" section. Improper adjustment of other controls can result in damage that will require the services of a technician.
- Do not allow anything to rest on the power cord. The cord should not stretch across a hall or any other high traffic area.
- Unplug the monitor from the AC outlet if it is to be idle during a weekend, vacation, or other extended period of time.
- If the same characters or graphics are shown for a long time with the CONTRAST and BRIGHTNESS controls set to maximum positions, part of the screen may be damaged. Use these controls with care.
- To prevent electrical shock and other hazards, do not remove the back cover of the monitor.
- Do not drop or push objects into the cabinet openings. Some internal parts carry hazardous voltages and contact can result in electrical shock or fire.
- Never spill a liquid of any kind on the monitor. If liquid is accidentally spilled, unplug the unit and have it checked by a Radio Shack service technician before using.

Cleaning the CM-5

Always unplug the monitor before cleaning. Wipe the screen and cabinet with a soft cloth. If the screen requires more than dusting, use a house-hold window cleaner and a soft cloth.

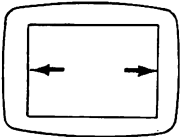
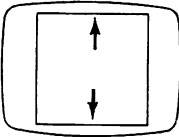
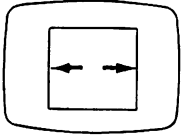
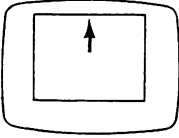
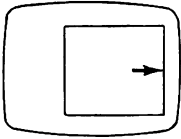
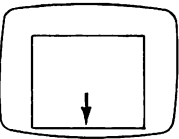
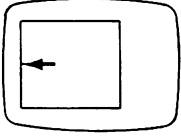
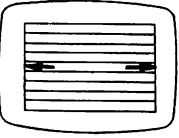
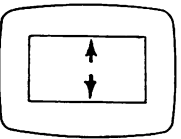
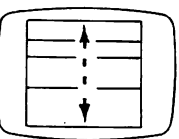
Caution: Do not use benzene, thinner, or any volatile substances to clean the unit. Such substances can permanently mar the finish. Never leave the unit in contact with rubber or vinyl for an extended period.

Occasionally, the internal parts of the monitor may need to be cleaned to prevent a fire or other damage caused by dust particles. It is recommended that you take the unit to a Radio Shack Computer Center for a yearly cleaning.

Technical Information

The CM-5 is designed for connection to a non-interlaced 225 line signal, 15.701 kHz scanning frequency.

When the CM-5 is connected to a computer with an input signal other than that specified, distortion in display image, shape, and position may occur. The following chart illustrates such conditions.

Symptom	Cause	Symptom	Cause
Display area is spread horizontally. 	Display time is over 44.5μs	Display area is spread vertically. 	Vertical frequency is below 60 Hz
Display area is too narrow. 	Display time is under 44.5μs	Display area is positioned toward the top. 	Back porch time is under 1.6 ms
Display area is positioned too far to the right. 	Front porch time is less than 6.7μs	Display area is too far toward the bottom. 	Front porch time is under 0.6 ms
Display area is too far to the left. 	Back porch time is less than 7.8μs	Picture moves from side to side. 	Horizontal sync is not within the range of 15.701 kHz ± 0.3 kHz
Display area is reduced vertically. 	Vertical frequency is over 60Hz	Display area rolls up and down. 	Vertical sync is not within the range of 57-63Hz

Input Signal

Video Signal	Horizontal Sync.	Vertical Sync.
RGB and Intensity Separate TTL Positive	TTL Positive	TTL Positive

Input Connector

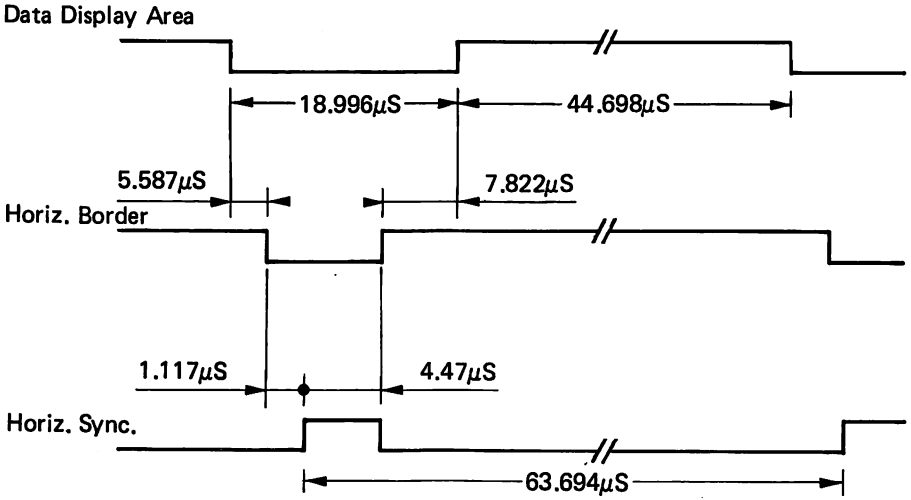
The connector is a 9-pin, D-Sub.connector.

The relation between the pins and signals is as follows:

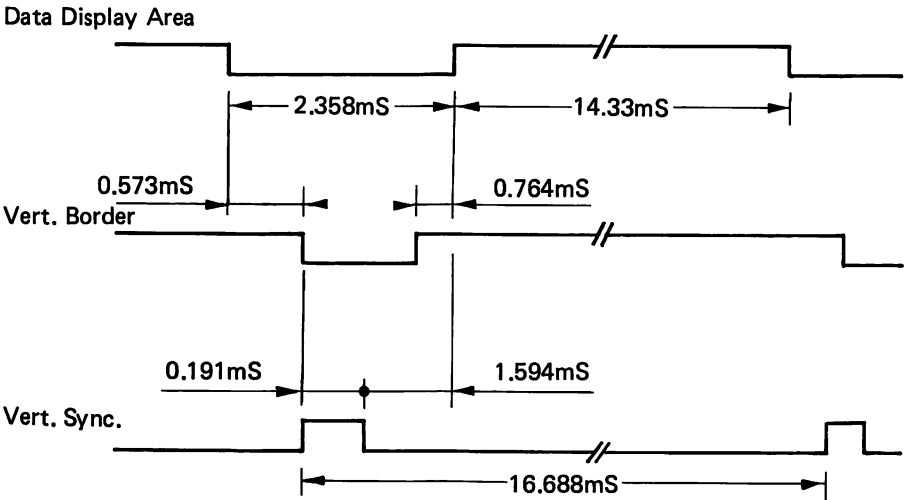
Pin	Signal (16-color)
1	Shield ground
2	Signal ground
3	RED
4	GREEN
5	BLUE
6	Intensity
7	Unused
8	Horizontal Sync.
9	Vertical Sync.

Signal Timing Chart

* HORIZONTAL *



* VERTICAL *



Specifications

Power Supply	AC 120V, 60Hz
Power Consumption	65W
CRT	14", 90° deflection, glare, 0.63 dot-pitch
Input Signal	R,G,B,I,H-sync, V-sync
Input Level	Video, TTL-positive; intensity, TTL-positive; horizontal synchronization, TTL-positive; vertical sync, TTL-positive
Scanning Frequency	Horizontal, 15.701kHz Vertical, 60 Hz
Display Size	9.45" x 7.09" (240mm x 180mm)
Resolution	320 dots x 225 lines
Cabinet Dimensions	11 7/8" x 13 15/32" x 14 13/16" HWD (302 x 342 x 376 mm)
Weight	Approximately 28.66 lbs. (13kg).
Heat Output	222 BTU/HR.

