



# COP UK Support Document

## CCTV Monitor Information

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## CCTV Monitors

CCTV monitors are used to view the pictures from CCTV cameras, converting the electrical signal into an optical image to be presented to a system operator.

They are similar to domestic televisions but they differ in four important respects.

- 1: A monitor has no RF decoding circuitry. Its signal input is 'base-band' or "composite" video as opposed to the aerial input of a television.
- 2: CCTV monitor tubes are of higher resolution than a corresponding domestic television. A good quality monochrome CCTV monitor will have a resolution in excess of 800 lines at the center of the tube. A television is unlikely to be in excess of 400 lines.
- 3: Also a monitor is designed to be run continuously has a longer life tube.
- 4: A monitor should be built onto a steel chassis and housed in a steel case for ruggedness and reliability and to provide a screen to prevent interference with other monitors when more than one monitor is used.

Monitors are mainly defined by their tube size which, like televisions is their approximate diagonal dimension.

Common monitor sizes are as follows:

Monochrome	5",	10",	12",	15",	17",	20".
Colour	5"	10",	12"	14",		28"

It is generally regarded that the optimum size of monitor for a particular application is approximately 1/5 distance from the screen to the operator's position.

CCTV monitors will generally be equipped with BNC rear-panel mounted connectors for video signal input.

Brightness and contrast controls will be provided normally on the front panel. These should be set such that a scene under normal illumination is shown with blacks in the darkest areas of the scene and whites in the lightest areas and a smooth transition of grays in between.

Colour monitors have an additional colour brightness control. This should be set to give a true representation of the coloured objects in the scene. A good reference for this is skin tone of peoples' faces.

Once a monitor's controls have been set, then it should not be necessary for the operator to adjust them further either when switching between cameras in a multi-camera system or a different times of the day on a single camera.

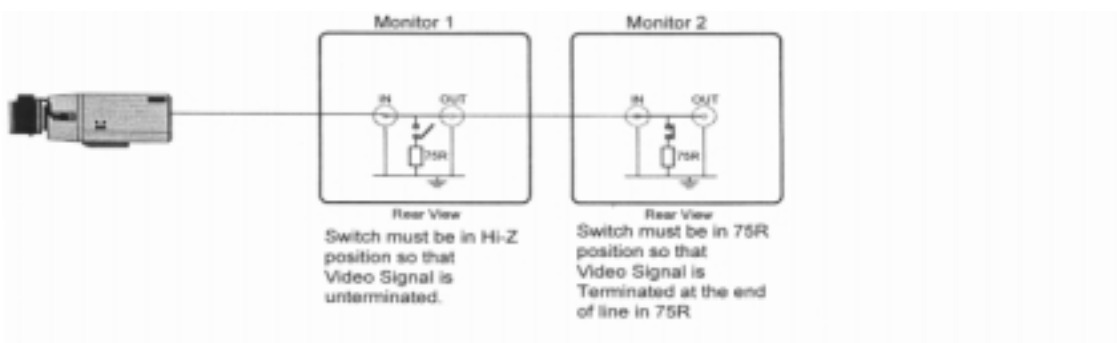
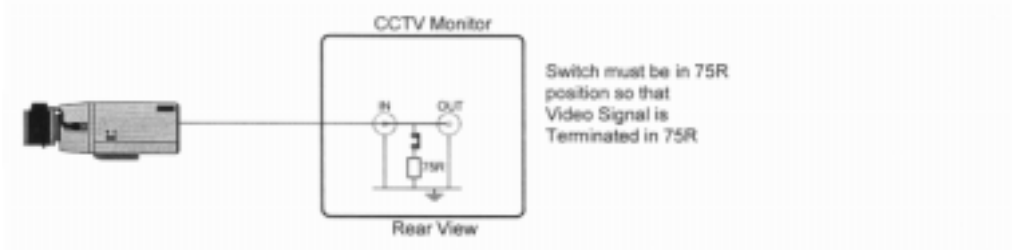
If this is found to be necessary then it indicates that there are problems with the camera signal inputs. It could be that termination is incorrect, iris levels are not adjusted correctly or that video signal levels are attenuated excessively, either by coaxial cable runs being too long or poorly made joints.

## Termination of Video Signals

Every video signal must be terminated with a 75R resistor to ground, once and only once, at the end of the cable run farthest from the video signal source (normally the camera). Note that the outputs from video switchers, telemetry transmitters video multiplexers etc. are themselves video signal sources and therefore must be terminated correctly

### Examples

- 1) Camera to single monitor.
- 2) Single camera to two monitors.



The terminating 75R resistor of Monitor 1 must be removed from circuit otherwise the video signal would be subject to two resistors and so be 'double-terminated'.

Incorrect termination is probably the most common problem found in CCTV systems. Video signals are frequently left either double- or un-terminated causing either excessively dark or bright pictures which is compensated for by under or over-driving the CCTV monitor tube. Incorrect termination can also cause telemetry control systems using coaxial transmission to work intermittently or not at all.

Most monitors are equipped with two BNC type video connectors to enable looping-through. A termination switch will also be provided. This will have two positions, normally termed 75R ie: terminated and Hi ie: un-terminated.

Most video multiplexers and multi screen display devices have looping video inputs and have removable 'handbag' links which must be removed if the video signals are to be fed to additional units e.g. telemetry transmitters etc.

Most video switchers and telemetry transmitters have internal 75R resistors, which require the opening of the unit to remove the resistors from circuit if required.

Some newer pieces of equipment are 'auto-terminating'. These automatically detect whether the video signal is being looped onto another piece of equipment and disconnect their own 75R resistors from the video inputs.