

## CR2224 Two Piece Compact Radiation Tolerant TV Camera



The CR2224 is a two piece radiation tolerant camera which will operate in dose rates up to  $1 \times 10^6$  Rads/hr ( $3 \times 10^5$  with no picture degradation) and accumulated dose of  $3 \times 10^8$  Rads. It is a small diameter camera and uses high quality tubes to ensure maximum picture quality and to minimise possible image burn in. The two piece construction means the camera is light, easy to handle and flexible. This camera is mainly used for inspection purposes because of its small size and flexible deployment capability. Examples of applications include pipe inspection and difficult access areas such as reactor core shrouds. The CR2224 is supplied with a vidicon tube.

### Construction

The camera is supplied with a standard wide angle 6, 9, 15 or 25 mm lens or there is an 8-24mm zoom option. The housing is stainless steel giving protection against dust and water to IP68. This ensures the camera is submersible in up to 50m of water. The housing can be adapted to allow the camera to be used in high magnetic fields.

The cameras are certified to operate in temperatures up to  $60^\circ\text{C}$  in water, although they can work in temperatures up to  $100^\circ\text{C}$  if cooled. The zoom version of the camera has a low power internal lighting ring but external lighting may be fitted if required. Standard and underwater PVC cables are offered. The cable assembly is PVC and is waterproof with connectors at both the CCU and Camera ends. Radiation tolerant versions of these cables are available if required.

Various methods of deployment methods may be used and these depend on the actual application. Centronic Raditec engineers will normally advise on the most appropriate method.

### Camera Control Unit (CCU)

All camera controls are mounted on front panel of a standard 2U high 19 inch rack unit. The CCU contains all necessary camera and lighting power supplies and is factory set for CCIR (PAL)/EIA (NTSC) operation at 240V or 110V. Front panel controls for Auto/Man Gain, Black level, Auto/Man Iris, Focus, Zoom and lights adjustment.

## CR2224 Camera Technical Specification

Video Signal	Composite to EIA (NTSC) or CCIR (PAL) standard peak white limit at +0.7V; sync pulses -0.3V.
Video Processing	Auto and manual Black level adjustment. Auto and manual gain control. Gamma correction and aperture correction.
Scanning Format	525 lines, 60 fields/second, 2:1 Interlace (EIA ) or 625 lines, 50 fields/second, 2:1 interlace (CCIR).
Sync System	Crystal controlled: Locking to external source optional.
Image Format	2/3 inch
Resolution (limiting)	650 TV lines per picture height (measured centre field).
Scene Illumination	200 lux for top quality pictures, 20 lux for acceptable pictures (when fitted with f2 lens)
Spectral Response	400 - 650 nm vidicon
Camera housing	Stainless steel
Environmental Tolerance	Max Operating temperature: 45°C in air - 60°C in water Operates in water to depths of 50m
Radiation tolerance (gamma)	Nuclear radiation: Total accumulated dose $3 \times 10^8$ Rads Dose Rate $1 \times 10^6$ Rads/hour
Focus Range	30 mm to Infinity
Cables	40m standard PVC cable, terminated with a connector at both ends. Alternative lengths and types may be available upon request.
Connector	Latching environmentally sealed Fischer connector.
Signal transmission	Camera to Control unit cable 50m max without signal conditioning
Connector clearance	Allow 150mm at rear for installed connector and cable, 180mm if connector must be removed.
Control Unit	2U high 19 inch rack mounted version unit with front panel controls.

	<b>CR2224</b>	<b>CR2224Z</b>
Lens	6, 9 and 15 mm motorised focus and iris.	8-24mm zoom - motorised zoom focus and Iris
Focus Range	30mm to infinity in air	50mm to infinity in air
Dimensions:		
Weight	900g	1300g
Diameter	34mm	41mm
Length	200mm	281mm
Lighting	n/a	LED internal lighting

Due to our policy of continual improvement Centronic Ltd reserves the right to change specification without notification

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