CR2224 Two Piece Compact Nuclear TV Camera

The CR2224 is a two piece radiation tolerant camera which will operate in dose rates up to 1 x 10^6 Rads/hr (3 x 10^5 with no picture degradation) and accumulated dose of 3 x 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.

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 50°C, although they can work in temperatures up to 100°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 (Direct output from camera or output from control unit).
Video Processing	Auto and manual Black level adjustment. Auto variable gamma correction and aperture correction, AGC on peak white level.
Scanning Format	525 lines, 60 fields/second, 2:1 Interlace (EIA RS170) or 625 lines, 50 fields/second, 2:1 interlace (CCIR).
Sync System	Crystal controlled: automatic locking to external source of mixed sync or composite video.
Image Format	2/3 inch
Resolution (limiting)	>650 TV lines per picture height.
Scene Illumination	150 lux for top quality pictures, 10 lux for acceptable pictures (when fitted with f2 lens)
Spectral Response	375 - 725 nm (50%)
Camera housing	Stainless steel
Environmental Tolerance	Max Operating temperature: 0 - 50°C Operates in air or water to depths of 50m
Radiation tolerance (gamma)	Nuclear radiation: Total accumulated dose 3 x 10^8 Rads Dose Rate 1 x 10^6 Rads/hour
Internal focus	30 mm to Infinity Close focus possible with optional motorised internal focus
Cables	40m standard PVC cable, terminated with a connector at both ends. Alternative lengths and types may be available upon request.
Connector	Latching Fischer connector. Optical shroud for waterproof applications.
Signal transmission	Miniature multicore, 18 way screened, 8.5mm dia (max 50m)
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.

	CR2224	CR2224Z
Lens	6, 9, 15 and 25 mm fixed focus	8-24mm zoom - motorised zoom focus and Iris
Focus Range	30mm to infinity in air	50mm to infinity in air
Dimensions: Weight Diameter Length	900g 34mm 200mm	1300g 41mm 281mm
Lighting	n/a	LED internal lighting

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