

# CR2225 Single Piece Radiation Tolerant Camera



The CR2225 is a single piece radiation tolerant camera. It will operate in dose rates up to  $10^6$  Rads/hr and accumulated dose of  $10^8$  Rads. High quality tubes are used to ensure maximum picture quality and to minimise possible image burn. The cameras are light and easy to handle. They are typically used for surveillance and viewing in radiation areas, such as waste management and vitrification facilities. Close inspection of components can also be performed using the macro-focus facility. The CR2225 cameras operate fully automatically, i.e. power in, video out.

### Construction

The cameras can be supplied with a range of lenses with different field angles. A motorised zoom lens and a macro mode with internal motorised close focus are also available. Two housings can be provided, aluminium or stainless steel. Both offer protection against dust and water ingress. The stainless steel case offers the greatest protection, to IP68 standard, meaning it is submersible in up to 50m of water. Typically an aluminium housing offers protection up to IP65. The housing can also be adapted to allow the cameras to be used in high magnetic fields.

The cameras are certified to operate in temperatures up to  $50^{\circ}\text{C}$ , although they can work in temperatures up to  $100^{\circ}\text{C}$  if cooled with an additional jacket. LED or quartz halogen lights can be fitted to provide further illumination. Cables can be standard or underwater PVC. The waterproof cables have a connector at the CCU end only, whilst the non-waterproof versions are connected at both ends. Radiation tolerant versions of these cables are available.

For surveillance purposes the cameras are normally on pan and tilt units, also supplied by Centronic Raditec.

### Control

Controls can be rack mounted on the front panel of a standard unit. If a number of cameras are required, they can be controlled using a Video Receiver and Multiplex Unit (VRMU). Up to 256 cameras can be controlled using a Type B controller and a rack with 8 VRMU cards.

## CR2225 Camera Technical Specification

|                                 |  |
|---------------------------------|--|
| Video Signal                    | Composite to EIA or CCIR standard (switchable); peak white limit at +0.9V; sync pulses - 0.3V (Direct output from camera or output from control unit).   |
| Video Processing                | Black level clamp, variable gamma correction, aperture correction, automatic dark current compensation.  |
| Scanning Format                 | 525 line, 60 fields/second, 2:1 interlace (EIA RS170) or 625 line, 50 field/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%)   |
| Dimensions & Weight of Camera   | 63mm dia. X 172mm long. 725gm without lens   |
| Typical Length with lens fitted | 16 - 96mm zoom: 368mm long<br>22 - 90mm zoom: 278mm long<br>8 - 24mm zoom: 238mm long<br>4.5mm fixed focus: 198mm long<br>9mm fixed focus: 200mm long<br>25mm fixed focus: 195mm long  |
| Focus range                     | Varies with lens, e.g. with 9mm lens, 500mm to infinity. Closer focus possible with optional motorised internal focus.   |
| Environmental tolerance         | Operates in air or water to depths of 50m.<br>Operating temperature: 0 - 45°C  |
| Radiation Tolerance (gamma)     | Total dose > 10 <sup>8</sup> Rads<br>Dose rate > 10 <sup>6</sup> Rads/hour   |
| Camera housing                  | IP54 dustproof<br>IP65 washable by spraying from an angle<br>IP68 submersible to 50m in water<br>Black hard anodised aluminium<br>304 stainless steel<br>High temperature to 100°C air cooled with total loss of cooling air<br>For high magnetic fields, additional $\mu$ metal screening external to case  |
| Lighting                        | High power LED's, 130 candela, 20° angle<br>35W quartz halogen lamp, stainless steel housing, 35° angle<br>50W quartz halogen lamp, stainless steel housing, 10° angle<br>Lamp bracket to attach 35W or 50W lamp to camera   |
| Cables                          | 40m standard PVC cable, Fischer connector at camera end and Lemo at CCU end<br>40m underwater PVC, Fischer waterproof connector at camera end and Lemo at CCU end<br>40m standard rad hard, Fischer connector at camera end and Lemo at CCU end<br>40m underwater rad hard, Fischer waterproof connector at camera end and Lemo at CCU end<br>Non standard lengths of all cables are available |
| Connector                       | Latching Lemo or Fischer connectors.<br>Jupiter FET type for telemanipulator connectable/disconnectable applications.  |
| Signal transmission             | Minature multicore + coax, 10.1mm dia (max length 300m)  |
| Control Unit                    | 2U high 19 inch rack mounted version unit with front panel controls.<br>Contains multiplexer to control camera and pan & tilt unit functions with camera and lighting power supplies.  |

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

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