



RADIATION TOLERANT CAMERA

# C981™

## System Camera



**A high-performance, versatile camera range suitable for large multi-camera configurations and single camera channels.**

Major multi-camera system installations are an essential part of the process monitoring requirements for nuclear power stations and waste handling facilities. New safety requirements relating to plant life extensions and new power plant construction demand the use of television systems to continuously monitor machinery and key plant areas within secondary containment.

Mirion Technologies is an experienced, world-leading supplier of large turnkey television surveillance systems to the world's nuclear industry. The C981 camera range has been specifically designed to suit these large multi-camera configurations. Alternatively, single camera channels can be supplied as ideal inspection and surveillance tools.

### FEATURES

- ✓ High performance color picture
- ✓ Pan, tilt, zoom, video and power over three twisted pairs
- ✓ One 19 in. sub-rack to control up to eight cameras
- ✓ 8-channel lighting and microphone sub-racks
- ✓ RS-485 control of sub-racks
- ✓ Change cameras without adjustment
- ✓ Software protocol and hardware can address up to 128 channels of cameras and lighting
- ✓ Seismic qualification available
- ✓ Captions at the source
- ✓ Modular design for easy assembly/install
- ✓ Simple cable
- ✓ Integral version available
- ✓ Option available without pan and tilt
- ✓ Update any channel to a high radiation tolerant channel as required

### APPLICATIONS

- ✓ Process monitoring
- ✓ Safeguard surveillance
- ✓ In-containment viewing
- ✓ Waste management
- ✓ Guidance and posting

## C981 SYSTEM CAMERA

### SPECIFICATIONS AND PERFORMANCE

#### CAMERA OUTSTATION

- Housing Material: Stainless steel
- Operating Temperature: 0 to 40 °C (32 to 104 °F)
- Radiation Tolerance  
100 Gy [<sup>60</sup>Co] (H<sub>2</sub>O)  
10<sup>4</sup> Rad [<sup>60</sup>Co] (H<sub>2</sub>O)
- Operating Dose Rate: 100 Gy/hour (10<sup>4</sup> Rad/hr)
- Sealing:  
IP68 (IEC529) 60 m water depth (W.W. Fischer stainless steel connector type SE105Z069-27)  
IP66 (IEC529) fully washable (LEMO stainless steel remote handling cable connector type FZJ3N318TLMY)
- Maximum Operating Depth: 20 m (66 ft)
- Maximum Submersion Depth: 60 m (197 ft)
- Camera Midpoint Connector: 24-way
- Cable Connection: 18-way remote handling LEMO or 12-way Fischer
- Pan and Tilt  
Speed: 6° per second  
Travel: ± 180° (adjustable)
- Size with Pan and Tilt: 294 x 266 x 240 mm (H x W x D)  
(11.6 x 10.5 x 9.4 in)
- Weight: 13 kg (28.7 lb) without lights or microphone

#### OPTICS

- Zoom Lens: 18x optical (4.1-73.8 mm) 4x digital
- Iris: Auto F1.4
- Electronic Shutter: Auto (1/3-1/10000 s)

#### CCU CONNECTOR TYPES

- AC Power: IEC 320 plug (fitted with T4A fuse)
- Camera Inputs (8 off): 15-way Type D socket
- Video Outputs (8 off): 75R BNC
- Genlock Input: 75R BNC (with 75R termination switch)
- Sync Pulse Output: 75R BNC
- Serial Control Input: 9-way Type D plug
- Serial Control Loop Through: 9-way Type D socket

#### CAMERA CHANNEL PERFORMANCE

- Horizontal Resolution 460 tvl per picture height (optical)
- Illumination 1 lux
- Signal to Noise Ratio 48 dB (weighted)

#### 8-CHANNEL CAMERA SYSTEM SUB-RACK

- Nominal Power Supply Input: 100–120/200–240 V (auto-ranging); 50/60 Hz
- Operation Range: 85–132/170–264 V (auto-ranging); 47–440 Hz
- Power Requirement: 150 VA for a fully populated 8-channel CCU
- Outstation Cable Length: 300 m (984 ft) maximum CCU to camera (consult Mirion)
- Operating Ambient Temperatures:  
Fully populated, convection cooling: 0 to 40 °C (32 to 104 °F)  
Up to six channels, convection cooling: 0 to 50 °C (32 to 122 °F)  
Fully populated, forced air cooling at 500 liters (132 gallons)/minute: 0 to 50 °C (32 to 122 °F)
- Relative Humidity: 20%-75% non-condensing
- Size: 134 x 483 x 300 mm (H x W x D) (5.3 x 19 x 11.8 in) (excluding handles and connectors)
- Weight: 7 kg (15.4 lb)

#### OPTIONAL ACCESSORIES

- Camera Attachments: Camera allows for up to four attachment positions for a combination of microphone and lights
- In-air or Underwater Lights: Up to 300 W using 50, 75 or 100 W lamps
- Lights in Air: Up to 150 W using sealed 50 W lamps or 75 W vented lamps
- Lighting Sub-rack: 8-Channel
- Microphone: For in-air use only
- Microphone Sub-rack: 8-Channel



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TECHNOLOGIES

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