ISEC MONITORING SYSTEMS

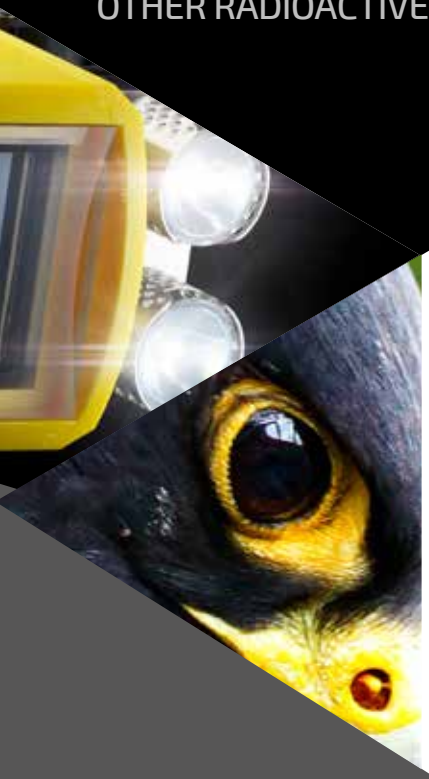
radcam

- High resolution color sensor camera
- New patented design – for excellent protection of camera and electronics
- Integrated radiation sensors
- Pan / Tilt / Zoom with variable speed
- 28x optical zoom
- Focus: Auto / Manual
- Iris: Auto / Manual
- 2x halogen lamps, spot & wide
- Video output: Coax and 2-wire
- Audio output: FM audio via 2-wire
- Communication ports
  - LONWORKS® with protocol for AVISS
  - RS-485 with protocol to other systems
- Advanced self diagnostics
- Trouble-free installation and service
- Custom adopted to existing
- Cable connector and bracket
- Option: Rugged Microphone Kit

RADCAM®

RADCAM® IS A COLOR SENSOR CAMERA WHICH IS DESIGNED FOR INSTALLATION WITHIN THE REACTOR CONTAINMENT BUILDING AND OTHER RADIOACTIVE AREAS

"Nothing Goes Undetected"



LEADING RADIATION TOLERANT CAMERA SYSTEMS

The RADCAM® is a proven standard when it comes to advanced audiovisual process surveillance within NPPs.

With its patented neutron absorbing outer body, its high tolerance to gamma radiation, and an effective on board cooling system, the RADCAM® from ISEC is a camera that is designed to survive within the harshest of environments.

The RADCAM® is the first of a new series of cameras developed for the specifi c needs and environment in the NPPs. All camera models are adapted to be integrated with the AVISS system and they can also easily be integrated with other control systems. RADCAM® incorporates a new patented camera shielding and cooling technology that will protect the CCD camera and its control logic. The result is a camera that is very reliable in the environment of the reactor containment building and other radioactive areas.

The RADCAM® also has additional qualities that are requested in a modern control room by the reactor and turbine operators - high availability, brilliant picture and sound quality, auto focus, 28x optical zoom, low light sensitivity, high temp tolerance (up to 90°C) and easy maintainance (replacement of spare parts/camera module in less than 5 minutes) makes RADCAM® the ideal camera for nuclear power plants.

	RADCAM® EPSILON	RADCAM® OMEGA
Camera module		
Sensor	¼" day/night color sensor w/ 670 TVL	Utilizes the same camera module as used in the RADCAM
Minimum lighting	0.7 lux at F1.6, 1/50s and 50 IRE	
Optical zoom	28x f=3.5mm (Wide) to f=91mm (Tele)	
Viewing horizontally	55.8°–1.6° from wide to tele	
S/N ratio	75 dB due to thermoelectric cooling	
Focus	Yes, auto and manual	
Iris	Yes, auto and manual	
Signal output	PAL or NTSC	
Microphone (optional)		
Microphone element	Designed to withstand radiation	Designed to withstand radiation
Characteristics	Omni directional	Omni directional
Frequency Response	20 – 20,000 Hz, ± 3 dB	20 – 20,000 Hz, ± 3 dB
Pan/Tilt unit		
Pan	± 180°, .045° / step, full turn in 11 s	± 165°, .045° / step, full turn in 11 s
Tilt	± 90°, .045° / step, half turn in 7 s	± 90°, .045° / step, half turn in 7 s
Protected position	Yes, Automatic in use with AVISS	Yes, Automatic in use with AVISS
Variable speed pan/tilt	Yes, 0 – 45° / s	Yes, 0 – 45° / s
Manually adjustable pan limits	Yes, limits are set via internal keyboard	Yes, limits are set via internal keyboard
Lamp(s)	2x 35W following the Pan/Tilt	2x 35W following the Pan/Tilt
Video output		
Unbalanced for coax	BNC Connector: 1 VPP / 75Ω	BNC Connector: 1 VPP / 75Ω
Balanced for 2-wire	System connector: 1 VPP / 120Ω	System connector: 1 VPP / 120Ω
Audio output		
Modulation	Frequency modulation, 400 kHz	Frequency modulation, 400 kHz
Balanced for 2-wire	Syst. Connector: FM-signal 1 Vpp/120Ω	Syst. Connector: FM-signal 1 Vpp/120Ω
Communication ports		
LonWorks	System Connector in use with AVISS	System Connector in use with AVISS
RS-422 / RS-485 /	Optional: Different protocols installed	Optional: Different protocols installed
Power requirements		
Voltage and frequency	Power: 230/110/100/24 VAC - 50/60 Hz	Power: 230/110/100/24 VAC - 50/60 Hz
Effect	200 VA	200 VA
Fuse	Slow 2A/230 VAC and 5A/ 100-110 VAC	Slow 2A/230 VAC and 5A/ 100-110 VAC
Physical charachteristics		
Size	H: 430mm L: 460mm W: 350mm	H: 394mm L: 410mm W: 300mm
Free space around unit	Radius: 320mm, Height: 430mm	Radius: 277mm, Height: 394mm
Weight	30kg (66.1 lbs)	23kg (50.7 lbs)
Environment		
IP class	IP 65 (camera module)	IP 65 (camera module)
Operational temperature °C	5 – 65°C, max 90°C for 8 hours	5 – 60°C, max 85°C for 8 hours
Operational temperature °F	40 – 150°F, max 195°F for 8 hours	40 – 140°F, max 185°F for 8 hours
Humidity	0 – 100% RH, non-condensing	0 – 100% RH, non-condensing
Vibration	2 – 9 Hz 1.5mm, 9 – 200 Hz acc. 5m/s²	2 – 9 Hz 1.5mm, 9 – 200 Hz acc. 5m/s²
Pressure	5 Bar above normal atm. pressure	5 Bar above normal atm. pressure
Radiation		
Type of protection	Neutron and gamma protection and Internal radiation sensors.	
Internal sensor(s)	Camera Module gamma Co60: Min 2.200 Gy or 200Gy/h Camera Module gamma/neutron mixed field: Min 6.600 Gy or 200Gy/h (90/10 operating cycle with Protective Mode).	

EDP numbers	PAL	NTSC	PAL	NTSC
230 VAC (audio ready)	992-0334	992-0340	992-0323	992-0329
115 VAC (audio ready)	992-0335	992-0341	992-0324	992-0330
24 VAC (audio ready)	992-0336	992-0342	992-0325	992-0331
Options				
Radiation hardened Microphone Kit	992-0310		992-0310	
Camera Module PAL	992-0316		992-0316	
Camera Module NTSC	992-0317		992-0317	
Control Module CPU w. cooling pod	992-0311		992-0311	
Spare Part Kit PAL*	992-0301		992-0301	
Spare Part Kit NTSC*	992-0300		992-0300	

* consists of 1 Camera Module, 1 Control Module, 2 fans and 2 halogen lamps

BHI energy

ISEC MONITORING SYSTEMS

BHI Energy
640 Douglas Ave Suite 1504
Altamonte Springs, FL 32714
Phone: 407.339.6113
Email: ams@bhienergy.com