



## Nuclear Solutions

# Proton 1.0 Camera System

Full Color HD image (1080i, 720p)

Ultra-reliable integrated pan & tilt device

10x optical zoom

Radiation tolerance (integral dose) 10<sup>5</sup> Rad, waterproof design



MEDIUM



113 °F  
50 °F



### Designed for Versatility and Ease of Use

Diakont's Proton camera system is a compact unit with remote pan/tilt, zoom, and LED lighting that makes it an extremely useful tool for use in the refueling cavity, reactor vessel, and spent fuel pool. The load-carrying cable allows the operator to deploy the camera without a requirement for poles or robotics, making it ideal for use in a variety of inspection and monitoring applications.



### High Performance and Ruggedness in a Compact Package

The Diakont Proton camera system is the optimum solution for refueling support camera systems. With its powerful 10:1 zoom and a state-of-the-art CMOS HD sensor, it's also some of the best video you've ever seen underwater. The Proton is fabricated from durable, easily decontaminated stainless steel, and the straightforward refurbishment process makes for a minimal cost of ownership. Simply deploy and instantly have high-resolution video to support your operation.

#### OPERATING CONDITIONS

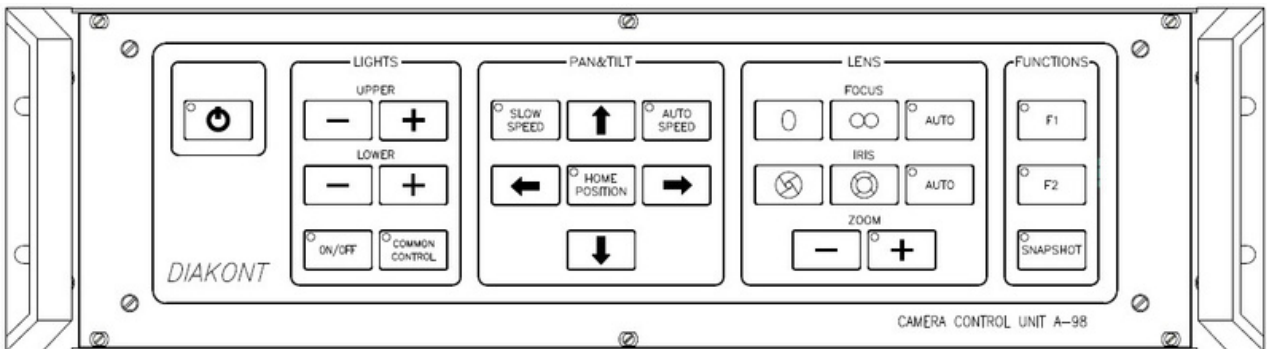
Dose rate .....	10 <sup>4</sup> Rads/h
Integrated dose .....	10 <sup>5</sup> Rads
Waterproof .....	IP68 (40 m)
Depth ratio .....	40 m
Max operating temperature .....	113 °F

### Proton HD Camera Applications

- Monitor reactor assembly/disassembly
- Monitor tool deployment and operation
- Fuel serial number verification (high-speed "core mapping")
- Inspection of reactor internals and steam dryer OD
- Monitor cask-loading activities

### Proton Console System

Diakont's Proton console system incorporates the best-in-class Proton rad tolerant HD camera along with a rack-mounted camera control unit, a monitor, a digital video recorder (DVR), and a microphone, all integrated into a rugged enclosure. By combining the Proton camera with all of the equipment required to successfully complete visual inspections, the Proton console offers a turnkey solution that is ready to use "out of the box."



**PROTON 3.0 CAMERA SPECIFICATION**

Image Sensor	CMOS
Resolution	Full HD (1080i)/HD (720p)
Image	Color
Frame rate (FPS)	25/30
Sensitivity	1 Lux
Signal/noise ratio	50 dB
Optical/digital zoom ratio	10x/12x
Horizontal angle of view (air/water)	From 5.4 to 50°/from 4 to 37°
Operating distance range	From 5 mm
Pan range	350° (±175°)
Tilt range	280° (±140°)
Pan/tilt speed	3.5°/s-10°/s (depending on operating mode)
Lights	LED/4x10W
Lights operating distance	10 m
Laser	Yes (optional)
Zoom control	Remote
Focus and iris control	Automatic/manual, remote
Lights control	Remote, selecting the lights
Housing material	Stainless steel
Operating Temperature range (air/water)	From 0 to 40°C/from 0 to 45°C
Operational dose rate	10 <sup>4</sup> Rad/h
Integral dose	10 <sup>5</sup> Rad
Protection degree	IP68 (40 m)
Dimensions	Ø101×290 mm
Weight	5.5 kg