



# Innovative Industrial Solutions

Unreal Innovation. Real Solutions.

## **N35HR**

**Black and White Underwater TV-Camera**



### **Application:**

- **Special inspection in high radiation areas and spaces**
- **Core grid verification**
- **Monitoring offload and refueling of fuel assemblies and control rods**
- **Inspecting fuel assemblies and nozzles**

N35HR is a high radiation tolerant black and white tube TV camera. The camera is fitted with a special high radiation tolerant non-browning Chalnicon or Vidicon camera tube, which combines high sensitivity and high temperature tolerance. It is equipped with non-browning lens and front-glass that withstands high radiation without decreasing its optical performance.

N35HR is a reliable solution for both single-camera application and for multi-camera CCTV networks. No separate adjustment of the camera is needed during or before operating.

It is, compared to conventional black and white cameras, a high-resolution camera designed for excellent image reproduction as well as high radiation tolerance.

**Innovative Industrial Solutions, Inc.**  
**2830 Skyline Dr. Russellville, AR 72802**  
**479-968-4266**

**[www.i-i-s.net](http://www.i-i-s.net)**



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## N35HR Black and White Underwater TV-Camera

### Benefits

- Ideal for inspections of high radiation parts of reactor vessels and internal parts in reactors of any type
- Special inspection of areas with high radiation and spaces with difficulties of access
- Core grid verification
- Surveillance during fuel assembly examinations

### Features

- High image quality
- Modular design for easy maintenance
- Internal lightings
- Genlock facility standard
- 3x zoom lens available 8-24 mm (58°- 19°)
- Standard lenses 9 mm (54°) or 25mm (20°)
- High sensitivity, only 20 lux with AGC
- Minimum object-to-lens distance 50 mm
- Close-range focusing, high resolution
- Resolution more than 700 TV lines
- Remote control of focus and iris
- Radiation tolerance (total dose)  $>1 \times 10^6$  Gy ( $>1 \times 10^8$  rads), with vidicone tube  $2 \times 10^6$  Gy
- Radiation tolerance (dose rate)  $>10^4$  Gy/hour ( $>10^6$  rads)/hour

### Technical data

Diameter	35 mm, 40mm with zoom lens or internal lightings
Length	270 mm (including internal focus)
Length with zoom lens	290 mm
Weight	1 kg (1.2 kg with the zoom lens)
Housing material	Stainless steel SS2333. or Aluminum
Front window	Non browning glass
Connector	C32M-19P or C30M-24
Maximum temperature in air	50°C
	in water 60°C
Watertight to	5 bar (73 lbs <sup>2</sup> )



### Electrical data

Tube	2/3" high radiation non-browning Chalnicon or Vidicon
Video signal	1V composite to CCIR standard; peak white limit at +0.9V; sync pulses -0.3V. Black level clamp, variable gamma correction, aperture correction
Scanning system	625 lines, 50 fields/sec, 2:1 interlace (CCIR) or 525 lines, 60 fields/sec, 2:1 int. (EIA RS170)
Resolution	$>700$ TV-lines
Video out	1 V p-p, 75Ω, unbalanced
Signal-to-noise ratio	$>40$ dB
Minimum illumination	20 lux
Sensitivity	1.5 lux on faceplate for full image quality 0.15 lux at max. video gain (reduced quality)

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