

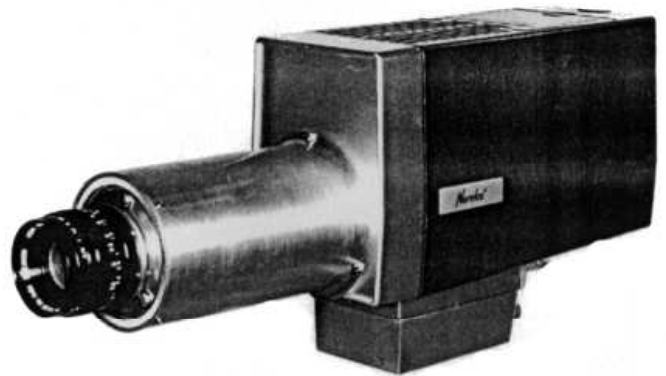
# Norelco®

## LOW LIGHT LEVEL TELEVISION CAMERA TYPE LDH-0051-LLL

### High Sensitivity Television Camera for Security/Surveillance Use; Scientific, Medical, and Military Applications

#### FEATURES:

- Excellent performance from  $10^{-5}$ fc to  $10^{-1}$ fc photocathode illumination (9 shades-of-gray discernible with modulation depth of 25% at 400TV Lines).
- Acceptable pictures obtained at  $1 \times 10^{-6}$ fc photocathode illumination (8 shades-of-gray discernible with modulation depth of 5% at 300TV Lines).
- Limiting horizontal resolution is 450TV lines minimum above  $10^{-5}$ fc photocathode illumination.
- Self-contained construction provides simultaneous video and modulated RF outputs (channels 2-4) with 2:1 interlace meeting requirements of EIA Standard RS-330. Camera operates from AC or DC power.
- Completely automatic with dynamic range of 100,000:1 ( $10^{-6}$  to  $10^{-1}$ ). Optional lens and automatic iris unit permits operation from scenes with brightness as high as  $4 \times 10^4$ fL to those as low as  $2 \times 10^{-5}$ fL (dynamic range of  $2 \times 10^9$ ).
- Optional Sync Adapter permits synchronization from separate horizontal and vertical drive pulses. Camera automatically reverts to internal mode upon failure of either or both input pulses.



The Norelco Type LDH-0051-LLL Low Light Level Camera provides unique capability in a camera of its size, weight, and price. Using a 2-stage image intensifier coupled to a vidicon via fiber optics, the camera sensitivity is extended by 10,000 to 30,000 times that of a normal vidicon. Through the use of intensifier automatic brightness control, vidicon automatic sensitivity control, and automatic iris control (optional) with special extended range iris elements, dynamic range to cover day-through-night conditions can be achieved.

To achieve reliable operation and excellent environmental specifications, circuit components are mounted on high quality glass epoxy printed wiring boards, and all active circuit components are of silicon solid-state construction.

Minimum circuit noise is assured through the use of a high performance field effect transistor (FET) preamplifier. A power mode selector (AC-ON or DC-ON) is the only external control.

## Electrical

### Input Voltage

AC: 117 V  $\pm 10\%$ , 50/60 Hz

DC: -12 V  $\frac{+1}{-4}$  V

AC operation only when using LDH-4350-S Auto Iris. Operation from nominal AC voltages of 110, 220, and 234 VAC can be achieved by changing transformer connections. The camera is protected against reverse DC polarity connection.

### Input Power

AC: 18 VA

DC: 8 W

### Vertical Sweep Rates

Line Locked Mode: 60 Hz with lock-in range of  $\pm 2$  Hz and hold in range of  $\pm 4$  Hz

Free Running Mode: 60 Hz  $\pm 2$  Hz

Operation at 50 Hz vertical sweep rate can be achieved by simple internal changes. Same tolerances apply.

### Horizontal Sweep Rates

15.75 kHz (525 lines/frame)

Operation at 15.625 kHz (625 lines/frame) can be achieved by simple internal modifications.

### Scanning

Internal: Positive 2:1 Interlace from internal sync generator (525 lines/frame @ 60 frames/30 fields/sec. or 625 lines/frame @ 50 frames/25 fields/sec.)

External: Optional unit (LDH-4310-S) permits external synchronization from negative horizontal and vertical drive pulses

### Sync & Blanking Waveform

In accordance with EIA Standard RS-330

### Camera Tube Type

Two-stage image intensifier coupled to 1-inch fiber optic faceplate separate mesh vidicon

### Horizontal Resolution

450 lines at  $10^{-5}$  fc photocathode illumination

### Resolution Stability

With Temperature: Meets resolution specifications over rated temperature range

With Input Voltage Variation: Meets resolution specifications over rated voltage range

### Sensitivity

1.0 V video with  $10^{-5}$  fc photocathode illumination

### Amplifier Signal-to-Noise Ratio

At Nominal Sensitivity (200 nApp): -39dB

At Maximum Sensitivity (150 nApp): -37dB

At Minimum Sensitivity (300 nApp): -43dB  
(measured with a 5 MHz low-pass filter)

### Automatic Light Control

Camera automatically maintains video signal level within  $\pm 1$  dB through the range of  $10^{-5}$  to  $10^{-1}$  fc faceplate illumination. (System range can be extended using automatic iris lens.)

### Black Level Stabilization

Keyed clamp accurately maintains black level

### Gray Scale Rendition

9 shades of gray down to  $10^{-5}$  fc photocathode illumination

## Output Signals

Video: 1.4 V peak-to-peak composite signal (black negative) or 1.0 V non-composite, into 75 ohms

RF Carrier: 8 to 15 mVrms across 75 ohms. Nominal carrier frequency channel 4. Tunable to channels 2 and 3

## White Peak Clipper

White limiting at 1.05 V p-p of the non-composite portion of the signal amplitude

## Geometric Distortion

Deviations not exceeding  $\pm 2\%$  of picture height measured within a circle having a diameter equal to the image height. Outside this circle, the deviations are within  $\pm 4\%$  of picture height.

## Aspect Ratio

4:3

## Sweep Failure Protection

Horizontal and vertical circuits independently protect against scan failure.

## Mechanical

### Size

4"W x 6"H x 14-1/2"D

### Weight

9 lb 6 oz

### Lens Mount

C-Mount (1" x 32), focusing

### Mounting

1/4" x 20 threaded hole in base

### Input Connectors

AC: 3-prong grounding plug, 5 meter lead

DC: ROKA connector (optional, LDH-8113/00)

SYNC: 2 x BNC (on optional LDH-4310-S)

### Output Connectors

Video: BNC

RF: BNC. Output transformer for 75-300 ohms supplied with 10 meter lead

## Environmental

### Temperature

-10°C to +45°C

### Humidity

To 95%

### Vibration and Shock

Normal commercial shipping

### Electrical Controls

Camera Rear Panel - AC On/DC Off, AC Off/DC On, Light Level Indicator

### Ordering Information:

PBEC No. 9801-0321



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