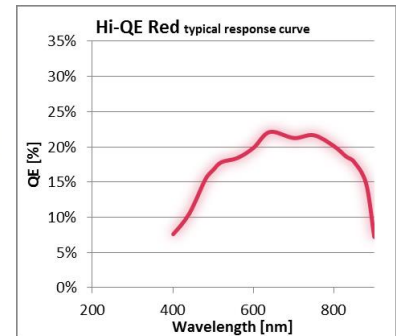


General Description

18 mm MCP based intensified camera with a Hi-QE Red photocathode on a Glass input window. Direct fiber bonded to a Photonis NOCTURN. HD-SDI interface through HD-BNC connector. The I-NOCTURN features single photon sensitivity. Compact, lightweight design with C-mount lens interface.



Supply Voltages

Input voltage USB powered or external +5 to +15 VDC
 Power (typical) 60/50 fps mode : < 1.8 W
 EGAC External gain control via 12-pin camera connector 0 to 50 kOhm

Image Intensifier section

Optical Specification at 20°C and nominal operating conditions and within effective aperture

Input window: Glass
 Photocathode type: Hi-QE Red
 MCP: High resolution
 Output window: Fiber-optic
 Phosphor type: P43

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I-NOCTURN specification
 Demonstrator
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Optical Specification *continued*

| | | <u>Minimal</u> | <u>Typical</u> | <u>Maximal</u> | <u>Unit</u> |
|--------------------------|-----------------------------------|----------------|----------------|----------------|-------------|
| Input useful diameter | | 17.5 | | | mm |
| Effective aperture | | | 9.9 x 12.4 | | mm |
| Photocathode sensitivity | | | | | |
| Quantum efficiency | Average over range 520nm-800nm | 15 | 17 | | % |
| Single photon response | % pixel well cap. | | 10 | | % |
| Max Output Brightness | % pixel well cap. | 100 | | | % |
| Resolution | | | 51 | | lp/mm |
| Dark rate | | | 50000 | | c/s |
| Non-uniformity | | | | 40 | % |

Image Quality

Dark spots

The number of spots, exceeding a contrast with their surrounding area of 20%, is less or equal to the number indicated in the table below. The size of non-circular spots is determined on the basis of equal area to circular spots. When the distance between two spots is less than the maximum dimension of either spot, the two spots are considered to be one spot.

Maximal number of spots allowed
 within effective aperture

| Size of spots | for reference | |
|------------------------|---------------|---------|
| > 150 μm | > 10 pixels | 0 |
| 80 - 150 μm | 8 - 15 pixels | 3 |
| 50 - 80 μm | 5 - 8 pixels | 3 |
| 30 - 50 μm | 3 - 5 pixels | 20 |
| < 30 μm | < 3 pixels | minimal |

Image Quality *continued*

Bright spots

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There shall be no bright spots in the active area.

External Gain Control (EGAC)

The gain of the image intensifier is adjustable by means of an external variable resistor from its factory pre-set maximum value ($R_c = 0 \text{ kOhm}$) down to a value which is at least a factor of 100 lower ($R_c = 50 \text{ kOhm}$). The variable resistor can be connected to the 12-pin camera connector.

I-NOCTURN camera section

Magnification

Magnification of coupling fiber typical 1.00

Image Sensor

| | |
|--------------|---|
| Type | LYNX |
| Image area | 12.4 mm (H) x 9.9 mm (V). Pixel pitch 9.7 μm (H) x 9.7 μm (V) |
| Resolution | 1280 x 1024 Pixels, 1.3 Mpx |
| Read Noise | < 4 e ⁻ median @ 60 fps |
| Frame Rate | 50 or 60 fps with full field resolution (set on user request) |
| Shutter mode | Rolling |

Camera electronics

| | |
|---------------|--------|
| Dynamic Range | 60 dB |
| Image Lag | < 0.1% |

| | | | |
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| | | |
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|--|--------------------------------------|---------------------------|

Features

| | |
|-----------------------|---|
| Imaging Start Up Time | < 5 s |
| Image Correction | Bad pixel replacement and 2 points non-uniformity correction (NUC) |
| Gain Control | Automatic gain and exposure control or manual |
| On-Screen Display | Full on-screen display capability with text, standard geometrical shapes and graphics |
| Digital Zoom | Up to 8x (0.0001 increment resolution) |
| Contrast Enhancement | Histogram stretching, equalization and adaptive equalization |

Housing

| | |
|----------------------|---|
| Dimensions W x H x L | 34/37 x 37 x 85 mm excluding connectors |
| Weight | < 170 g |

Environmental Conditions (*preliminary*)

| | <u>Minimum</u> | <u>Typical</u> | <u>Maximum</u> | <u>Unit</u> |
|---------------------------------|----------------|----------------|----------------|-------------|
| Operating temperature | -10 | 20 | 55 | °C |
| Storage temperature (4 h max) | -10 | 20 | 65 | °C |
| Storage temperature (long term) | -10 | 20 | 35 | °C |

| | | | |
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