

NEW

Lambert Instruments Cooled Intensifier



Cooled Hybrid Image Intensifier camera Attachment

The Lambert **Cooled Intensifier** has been developed as part of a photon counting imaging system. This system is used as a photon detector of a wavefront sensor in an astronomical adaptive optical telescope. A high frame rate CCD camera is coupled to the output of the intensifier via a fast relay lens. The incoming light signal is as low as a couple of hundred photons per sample. As a consequence a high quantum efficiency and low dark current of the image intensifier are required.

High quantum efficiency, very high gain and high output brightness are properties of the applied two-stage hybrid image intensifier. The extremely low photocathode dark current of 0,1 count/s/cm² has been achieved by cooling the image intensifier down to -25C°.

The gain and the temperature of the intensifier are manually adjusted by means of the separate power supply/control unit. Very short exposures and time resolved measurements are allowed by the intensifier gating feature. The intensifier is cooled by means of a thermo-electric cooler. The hot side of the Peltier element is water cooled. The intensifier is mounted in an insulated housing.

Applications of the **Cooled Intensifier** are:

- astronomy
- photon imaging

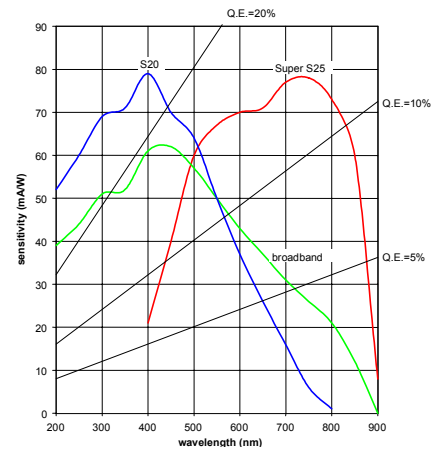
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Image Intensifier Tube

Type	: Hybrid tube (Gen 2 + Gen 1)
Input diameter	: 18 mm
Input window	: quartz/glass
Photocathode types	: Super S25/broadband/S20
Cathode sensitivity	: see curves
Dark count rates (@ -25°C)	: Super S25 : 500 cts/s/cm ² Broadband : 200 cts/s/cm ² S20 : 15 cts/s/cm ² Low noise S20 : 0,5 cts/s/cm ²
Gain	: 20.000-300.000 cd/m ² .lx
Gain adjustment range	: 1 – 0,01x
Output diameter	: 7 mm
Output window	: glass/fibre optics
Resolution	: 60 lp/mm on output
Magnification	: 0,38 x
Phosphor	: P20/P43/P46
Decay time (to 10 %)	: P20: 6,5 ms P43: 1,5 ms P46: 500 ns

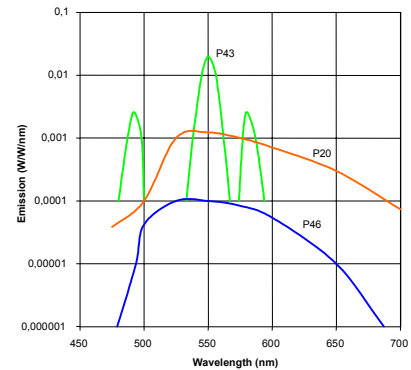
Photocathodes



Gating Properties

Gating modes (switch selectable)	: 1. follow TTL input 2. always on 3. always off
Gate range	: 100ns - ∞
Max. repetition rate	: 10kHz
Trigger input	: TTL
Propagation delay	: 100ns

Phosphors



Intensifier Housing

Input lens-mount	: C-mount, adjustable
Output lens-mount	: t.b.d., adjustable
Cooling	: -35°C below water temperature
Cooling method	: Thermo-electric
Heat drain	: Water flow
Min. water flow	: 2 ltr/min

Control unit

Input Voltage	: 230VAC
Cooling control	: Via controller with 1°C accuracy
Connection to Intensifier	: via 2 cables, 5 m long
Gain control	: via 10 turn potentiometer

Relay optics optional

Dimensions and weight

<i>Intensifier:</i>	
Size	: see outline
Weight	: +/- 3 kg

<i>Control unit:</i>	
Size	: 36 x 30 x 16
Weight	: +/- 7 kg

