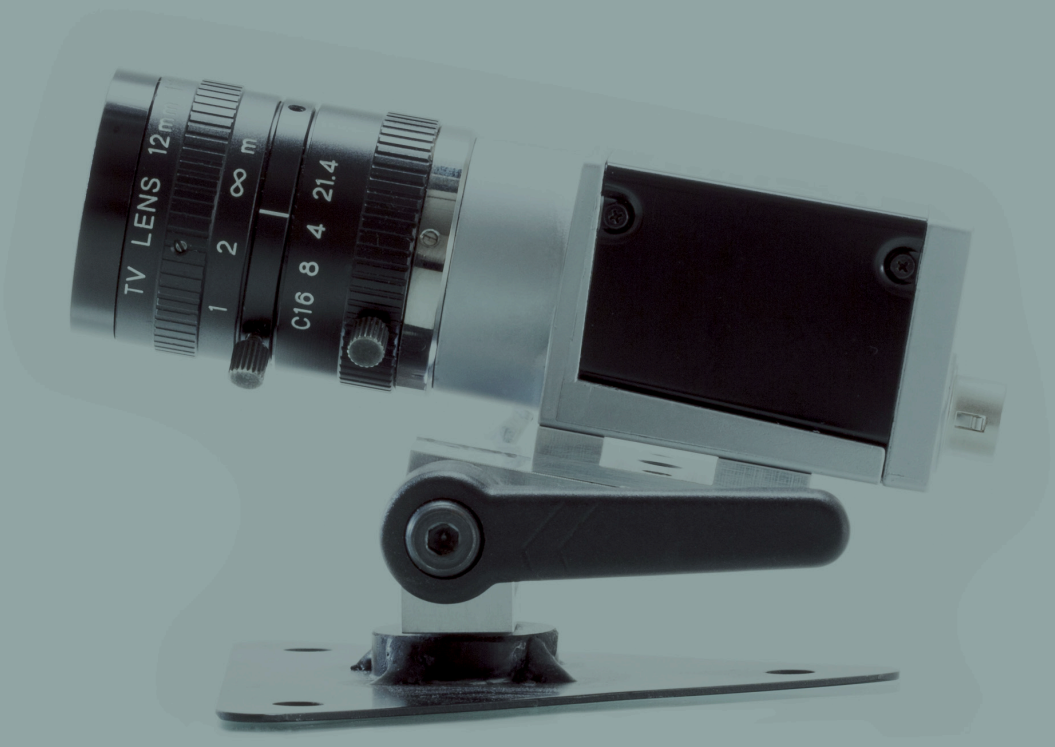
ANTISLEEP



SMART EYE®

SMART EYE IS A SWEDISH COMPANY COMMITTED TO PROVIDING THE MOST ADVANCED NON-INTRUSIVE EYE TRACKING EQUIPMENT, PRODUCING MEASUREMENTS WHERE NOBODY ELSE CAN. WE ARE EQUALLY COMMITTED TO MEASURING WITH THE GREATEST ACCURACY OVER THE BIGGEST VISUAL FIELD.

Superior stability and precision!

ANTISLEEP

Smart Eye launches new and improved AntiSleep.

AntiSleep is Smart Eye's solution specially designed for automotive in-cabin real-time measurements of driver head pose, gaze direction and eyelid closure. The system has proven itself for the automotive application and for our customers throughout the years and now it is time to push it to a higher level. The new and revised software and algorithm give you an increased head rotation, though the system is still a mono-camera system. Also the stability and precision are improved significantly.

Smart Eye Blackbird AntiSleep is designed and developed to meet the requirements of the automotive industry for cost and size of each unit. The system uses a single standard camera of VGA resolution together with IR flash illuminators. The camera and the IR flashes are mounted in a compact unit, but can be placed separately if required. The IR illuminators and filters are tuned to frequencies with minimum interference of outdoor light. This means that the system uses its own light, making it highly robust to all natural illumination conditions in automotive applications.

FEATURES OF BLACKBIRD ANTI SLEEP

- Handles large head rotation
- Robust tracking
- Automatic driver initialization
- Handles all natural illumination conditions
- Handles all large variety of eyeglasses
- Monitoring driver fatigue and attention
- Precision gaze accuracy
- Accurate eyelid-opening measurement
- Delivers output data at 60 Hz

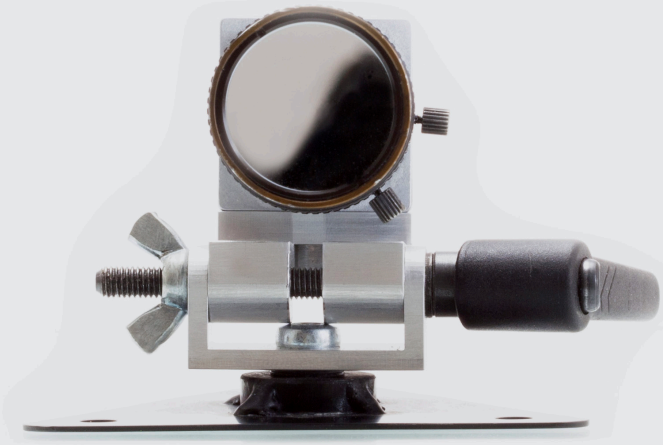
TECHNOLOGY

- One standard CMOS camera, VGA resolution
- IR flashes for illumination, in compliance with the limits for light-emitting diodes Class 1, IEC/EN 60825-1:2001
- Size of Camera-IR unit (w*h,intersection): 44*29 mm (varies with different configurations)
- Platform PC-laptop, but also prepared for implementation on DSP

OUTPUT DATA

- **Head Position**
  Measurement range relative to normal driving position: X ± 200 mm, Y ± 150 mm, Z ± 200 mm
  Accuracy: 10 mm for x,y; 10 % for z
- **Head Orientation**
  Measurement range relative to normal driving position: Heading ± 75 degrees, Pitch ± 35 degrees, Roll ± 30 degrees
  Accuracy: 3 degrees
- **Gaze Direction**
  Accuracy: < 1.5°
- **Eyelid Opening**
  Accuracy: 1 mm (distance between eyelids)

ANTISLEEP



The extremely compact Anti Sleep

TECHNICAL SPECIFICATIONS

Sampling rate	60 Hz
Field of View	90°
Head Box	20 x 15 x 20 cm (freedom of head movement)
Tracking Accuracy	Head: Rotation 0.5 degrees (under ideal conditions) Gaze: 0.5 degrees (under ideal conditions)
Output	TCP/UDP/CAN (optional)
Delivery Data	Head tracking (6DOF), eye position, eye gaze, pupil diameter, blinks, eyelid opening and more.
Recovery Time (Blink/Tracking Lost)	Typ. $\frac{1}{\text{frame rate}}$
Optimal Camera - Eye Distance	30-50 cm
Eyewear compability	Glasses, contact lenses, and sunglasses of non IR-type.
Eye Tracking Principle	Pupil and Iris/ Corneal Reflection and Head Model
Size	100 x 15 x 38 mm

SMART EYE®

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