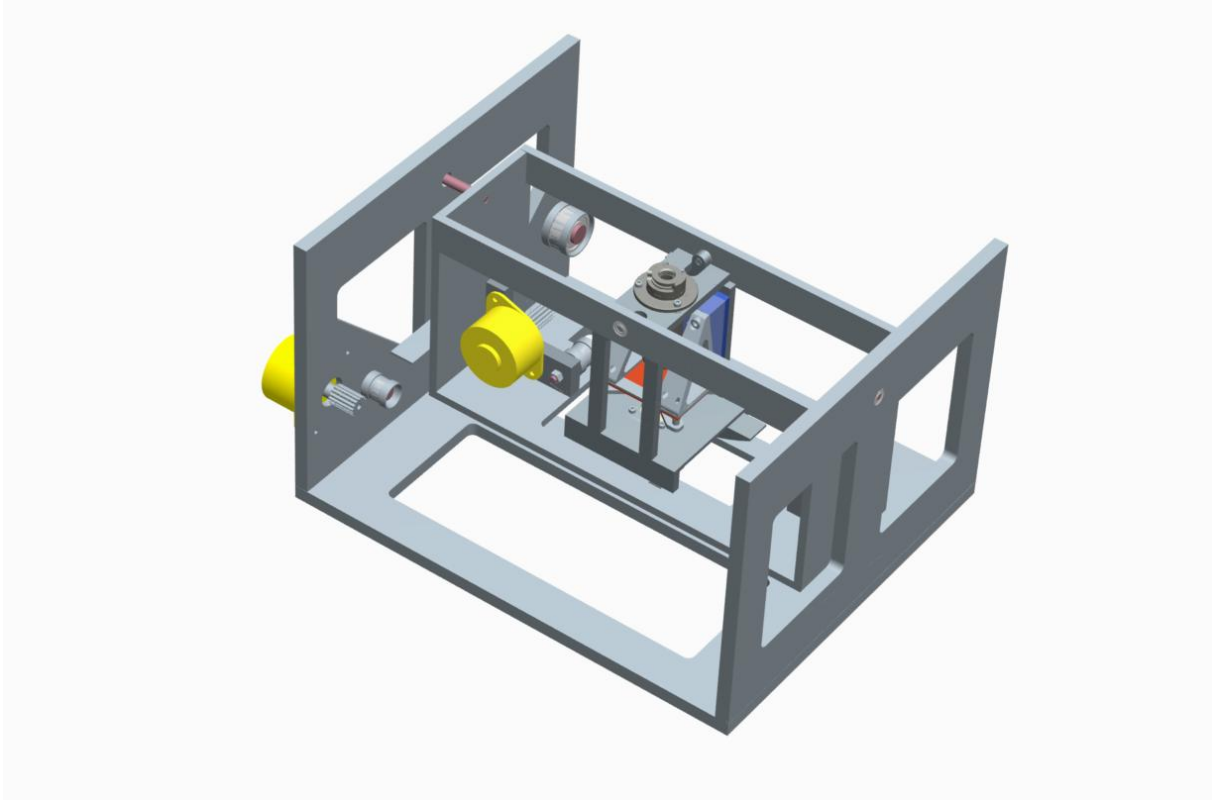


## Measurement system for visual instruments



### Introduction

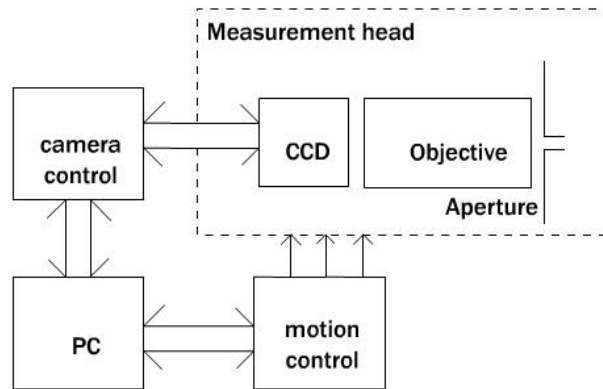
The instrument is designed to perform reliable, repeatable image quality analysis on visual instruments and devices. The measurement system's principle is based on the operation of the human eye. Thus this system can imitate its motion and it has the same optical performance as the fovea. Because of the concept it can be used under different measurement conditions.

### Areas of application

Trough the design principle the measurement system can provide useful data from any kind of optical systems designed for visual use. As a lone standing system it is best for eyepiece equipped instruments such as telescopes, microscopes and wearable video screens. When it is integrated into an outer positioning system it can be used for analysis of 3D displays and cinema systems.

### Operation

The imaging system's performance is designed to exceed the properties of an average human eye's fovea. A two axis positioning system is responsible to sweep the optical axis of the objective through the analyzed instrument's field of view, in small steps. The raw measured data consists of the relative direction of the optical axis, the position of the detector along the optical axis and the recorded black and white image. This data is then evaluated by a PC.



**Figure 1. Block diagram of the measurement system**

## Main features

- PC controlled autonomous operation and measurement evaluation
- Automatic calibration
- Graphical user interface
- C/C++ software development kit
- Small, portable size
- Orientation independent operation
- USB and FireWire interface

## Specification

<b>Imaging system</b>	
Effective focal length	52.3 mm
Focal range	
<i>Object side</i>	0.5 m to Infinity
<i>Image side</i>	5,7 mm
Depth of focus	0,02 mm
Pupil range	1 mm to 12 mm
Field of view	3 deg
Detector	Sony ICX204AL
<i>Chip size</i>	5.8x4.92 mm
<i>Cell size</i>	4.65x4.65 Mm
<b>Measurement control</b>	
Range of motion	30 x 30 deg
Resolution of motion	0.2 deg
Average duration of measurement cycle	5 min
<b>Hardware interfaces</b>	
Camera interface	FireWire
Motion control interface	USB 2.0
<b>Dimensions</b>	
Outer dimensions (WxDxH)	340x280x210 mm