

In addition to traditional AOI requirements such as shape matching and pattern matching, the specifications sheets of many OEMs (not just in the automotive industry) call for a growing number of photometric analyses such as luminance, dominant wavelength and chromaticity coordinate.



*PANOVO tec optical measuring system OMS 4.0*

PANOVO tec has reacted by developing a universal camera system that can meet both requirements for a reasonable price. It has developed a system solution that sets new standards by combining specially developed algorithms, a chip-side telecentric lens with robotic aperture specially developed for PANOVO tec by Sill Optics, and unique prism-based JAI 3CCD camera technology.

The robotic aperture is equipped as standard with two different focal apertures and a fully closed aperture for automatic dark current calibration, and is therefore excellently suited for areas with high luminance (e.g. for function and location lighting or displays). With a service life of several million cycles (the aperture mechanism is actuated simply via 24V DIOs) it is predestined for use in end-of-belt testing systems.

By calibrating the camera with integrating spheres and spectral radiometers in our in-house lighting lab, we can guarantee luminance measurements with an excellent measurement uncertainty for the visible wavelength range.

The main advantages of the universal camera system from PANOVO tec when compared to specialist luminance measuring cameras are its high speed, significantly higher resolution, suitability for production and considerably lower price.

As images can be snapped within a few hundred milliseconds, derating the luminance of the test pieces has become almost irrelevant.



*Luminance distribution of a display element (false colour representation)*

In terms of  $V(\lambda)$  filtering and chromatic aberration, PANOVO tec relies on a pure software-based approach. As a result, customer-specific calibration and adjustment is highly precise and cost-effective at the same time.

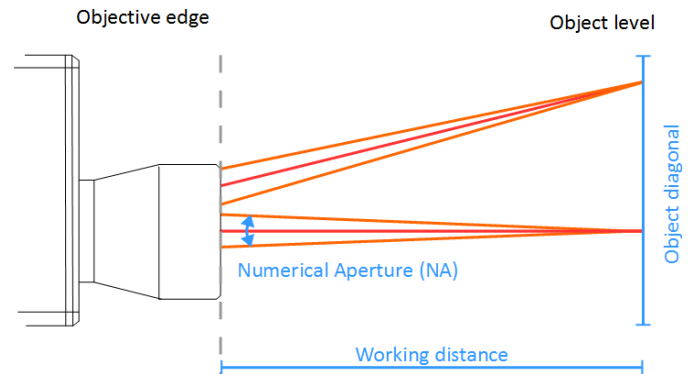
The measurement stability and the stability of the measurement camera in productive use are determined by means of a cyclical capability test with a luminance standard from PANOVO tec.

Intuitive software for use in factory automation and the corresponding whisper-quiet 19" industrial PC with the latest XEON architecture, DDR4 ECC memory, highly reliable solid state drives and professional Quadro graphics cards guarantee the shortest possible teaching and EOL cycle times in line with the latest specification sheet requirements and offer outstanding value for money.

## ■ Technical Data

Function	Range/ <u>availability</u>
Range	0,5 bis 4500 cd/m <sup>2</sup>
Aut. White balance	Software supported
Shadingkorrektur each canel	Software supported
Hotpixelausblendung	Software supported
Correction of chromatic Aberration	Software supported
Dark current measurement	Software supported
Shutter speed correction	Relative tolerance <1%
Range of Symbol recognition	e.g. 10% from Lv nom.value maximum Lv
Accuracy of Lv	± 8% based on Reference Konica Minolta CS 2000
<b>Data Camera</b>	
Type	3CCD
Resolution (h xv)	1624(h)x1236 (v)
Cell size	4.40(h)x4.40(v)µm
Working temperature range	-5°C bis 45°C
Voltage supply	12V bis 24V DC
Weightht	ca.340g
dimensions	
<b>Data robotic aperture</b>	
Type	S5LPJ0433
Colour matching	Ja
Control pulse	24V DC
Aperture Pos1	closed
Aperture Pos2	f/4 oder f/5.6
Aperture Pos3	f/16

## ■ Object diagonal /working distance



Object diagonal/ Object size[mm]	Length of object	Higth of Object	Working distance[mm]	Ratio	Focal length[mm]
75	60	45	206.9	0.119	22.2
80	64	48	228.7	0.111	23.1
85	68	51	247.3	0.105	23.6
90	72	54	268.1	0.099	24.4
95	76	57	287.6	0.094	24.9
100	80	60	309.2	0.089	25.5
105	84	63	328.4	0.085	25.9
110	88	66	349.4	0.081	26.4
115	92	69	372.7	0.077	27.1
120	96	72	391.8	0.074	27.3
125	100	75	412.5	0.071	27.7