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Color & NIR Spectral Imaging System 1.7

The Color & NIR- Spectral Imaging System is a high performance spectral imaging system designed for NIR applications that require high light throughput, high frame rates, fast data acquisition and good imaging performance. It is combined with a 5 MPx Color Camera, using a dichroitic beam splitter.



NIR Spectral Imaging System	
Spectrograph	
spectral range	typ. 900 – 1700 nm
dispersion	106 nm/mm
pixel resolution	3,2nm/pixel
image size	7,68 (spectral) x 9,6 (spatial) mm
spatial resolution*	rms spot radius < 35 µm
smile	< 60 µm
keystone	< 50 µm
numerical aperture	F/2,6
slit width, default	80µm (others on request)
efficiency	> 50% independent of polarization
Camera Electronics	
sensor	InGaAs
pixels in full frame	320 x 256
active pixels	318 x 254
pixel size	30 x 30 µm
bit depth	14 bit
frame rate	330 fps full resolution
data interface	Gigabit Ethernet
camera control	RS 485
internal data processing	Xilinx Spartan 3 FPGA
power consumption	< 9W
connector	3 x Harting
supply	24 V/10 A DC
cooling	thermoelectrical cooler

Like all inno-spec spectral imaging systems, the Spectral Imaging System NIR is based on a transmissive optical design with AR-coated lenses, a grating as dispersive element and without moving parts.

The Color Camera is a 5 Mpx RGB camera using a bayer pattern. A dichroitic beam splitter is used to direct light in the visible range to the RGB camera while radiation of 1000nm to 1700 nm is directed to the NIR-imaging systems.



* depending on the fore optics used



Optical Quality

Our engineers bestow great care on selecting all optical, mechanical and electronic parts. This means:

- High light throughput due to high diffraction efficiency of transmissive VPH grating, and AR-coated optics
- Polarization free optical design

Customized Solutions

The NIR Spectral Imaging Systems are available for two standard wavelength ranges in the NIR (950 – 1700 nm and 1200 – 2200 nm).

If the application requires dedicated optics, wavelength ranges or software tools, customization can be done without large NRE costs.

inno-spec also offers compatible line lighting and accessories.

RGB Camera	
Sensor	
sensor size	1 / 2.5 inches (4:3 format)
pixels in full frame	2592 x 1944
pixel size	2,2 x 2,2 μm
sensitivity	1,4 V/lux-sec (at 550nm)
colour filter matrix	Bayer
Electronics	
connector	3 x Harting
power supply	24 V
current consumption	< 500 mA
ADC resolution	12 bit
frame rate	<14 fps full resolution

Complete System	
Beam Splitter	
Transmission 1-1,7 μm	$\geq 80\%$
Reflektion 400-700 nm	$\geq 95\%$
Mechanics	
dimensions l x w x h	540 x 184 x 276
housing	anodised aluminium
weight	14,8 kg
lens mount	standard C-mount
Operating Conditions	
temperature (operating)	-5 $^{\circ}\text{C}$ - +40 $^{\circ}\text{C}$
temperature (transport)	-10 $^{\circ}\text{C}$ - +50 $^{\circ}\text{C}$

