Malin Space Science Systems

Exploration Through Imaging

ECAM-P50/N50

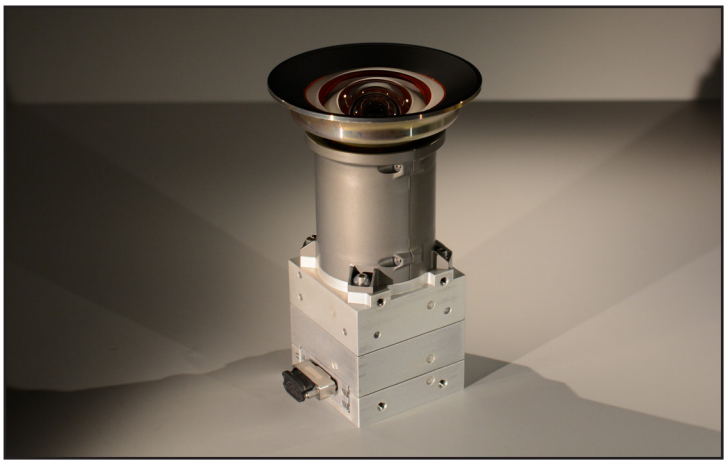
Color/Monochrome CMOS Camera, Global Shutter, 2592x2048, 4.8µm pitch

Electro-Optical	
Band	Visible
Color Band	N50: Monochrome P50: RGB Bayer Color Filter
Wavelength Range	350-850 nm (mono) 400-515 nm (blue) 485-595 nm (green) 575-550 nm (red)
Peak QE	>57% at 550nm (mono)
Electronic Shutter Modes	Global
Pixels	5.3 Mpixel
Horizontal Resolution	2592 pixels
Vertical Resolution	2048 pixels
Pixel Pitch	4.8 µm
Array Diagonal	15.9 mm
Conversion Bit Depth	10 bit (sensor) 8 bit (camera output)
Temporal Noise	20 e-
Full Well	10,000 e-
Dynamic Range	54.0 dB
Frame Rate, Native Format	2.5 fps (200 Mbit/s SpW)

Power	
Supply Voltage	5V (4.5 to 5.25V)
Power, Idle	1.25 W
Power, Imaging	3.25 W

Thermal	
Operating Temperature	-30 to +40 °C
Protoflight Qualification	-40 to +55 °C
Non-Operating Temp.	-50 to +70 °C
Temperature Sensing	Internal ISL71590 available for readout on J1, On-Sensor Temperature Register

Survivability	
Radiation Design Environment	15 years GEO
Predicted MTTF	2.7 million hours
NASA TRL	8



ECAM-P50

Features

- Global shutter
- Extreme dynamics environments
- Standardized ECAM interface

Applications

- On-orbit robotic servicing
- Rendezvous and Proximity Operations (RPO)
- Docking operations
- Mission extension and inspection services

Programmability

- SpaceWire Rate
- Sensor Clock Rate
- Companding Parameters
- Gain
- Integration
- Automatic Exposure Control
- Region of Interest
- Frame Rate
- Test Patterns

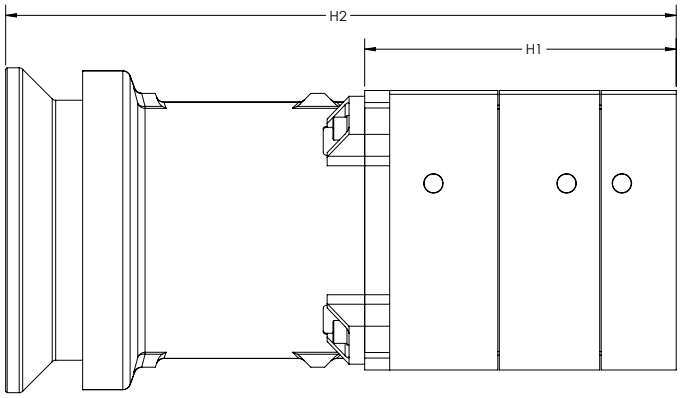
Optics			
Effective Focal Length	**F/#**	**FOV (V° x H°)**	**Bandpass**
5.8 mm	F/2.7	90 x 109	425-675 nm
7 mm	F/5.6	78 x 96	425-675 nm
9 mm	F/5.6	60 x 74	425-675 nm
12.6 mm	F/5.6	44 x 56	425-675 nm
22 mm	F/5.6 or F/3.5	26 x 32	425-675 nm

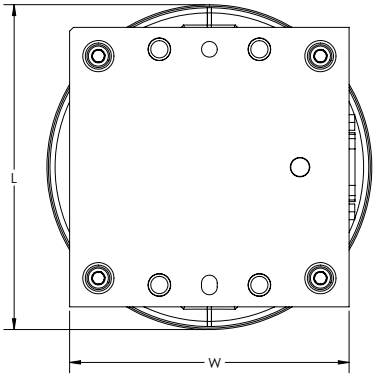
Digital	
Internal Memory	64 byte SpW Rx FIFO 512 byte SpW Tx FIFO No Frame Buffer
Digital Processing	10 to 8 bpp Companding (Piecewise Linear)
Data Interface	SpaceWire (Single Port) 100 or 200 MBit/s

PO Box 910148 - San Diego CA, 92191-0148 - (858) 552-2650 x200 - cameras@msss.com

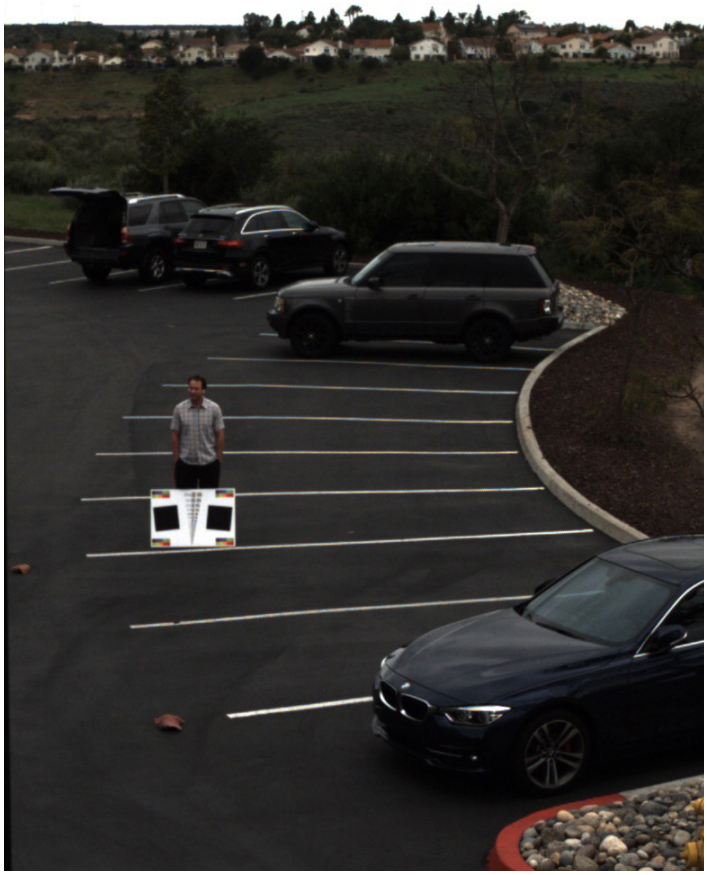
ECAM-P50/N50

Dimensional Envelope, Typical Optics





Mechanical/Interfaces	
Mass w/typical optics, no baffle	700-950 g
Dimensional Envelope w/typical optics, no baffle	L: 67 mm W: 57 mm H1: 64 mm H2: 137 mm



Test target imaged from Canyon View Cleanroom at MSSS.
Image Credit: MSSS

Quality: AS9100D:2016 Compliant
DUNS Number: 62-680-9032
CAGE Code: 0R9V5
NAICS Codes: 333314, 333316, 334511, 336419, 541690, 541715

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