Allied Vision

Alecs

G1-1242 NA8

NVIDIA

- Alvium feature set
- NVIDIA Jetson Orin Nano8
- IMX545 CMOS sensor
- 1000BASE-T interface
- IP67
- Comprehensive accessories

Reliability designed for the future

Alecs - The all-in-one machine vision solution

Alecs G1-1242 NA8 with Sony IMX545 runs 40 frames per second at 12.4 MP resolution.

Alecs integrates Alvium CSI-2 technology with NVIDIA® Jetson Orin™ System on Modules (SoM) in a robust IP67 housing. Leveraging NVIDIA's computing capabilities and Alvium's comprehensive feature set, this new machine vision system supports a wide range of applications, including complex AI algorithms.

NVIDIA® Jetson Orin™ Nano8 – **8 GByte RAM**, with power modes up to **25 W**

- Without DLA and PVA, so all AI processing uses CPU and GPU
- Designed for moderate AI applications and externally pre-trained models

Alecs G1-1242 NA8 includes an IP67 lens tube to suit recommended 12 MP lenses.

Alecs G1 comes with **128 GByte NVMe storage**, providing sufficient space for AI models, datasets, and application software. For seamless software integration, the Board Support Package (BSP) is built on Vimba X and NVIDIA JetPack SDKs, offering compatibility with a wide range of popular third-party image processing libraries. Alecs features a recovery mode, ensuring the camera remains in a defined state even in case of errors.

Choose from two access modes:

- **GenICam for CSI-2 Access** directly uses the Alvium CSI-2 driver and CSI-2 transport layer (TL) to control the camera by GenICam features.
- **Video4Linux2 Access** utilizes the established V4L2 API for applications like GStreamer or OpenCV.

Specifications

SoM (system on module)	NVIDIA® Jetson Orin™ Nano8
Extended memory (non-volatile)	128 GByte (NVME SSD)
Interface	IEEE 802.3 1000BASE-T
Resolution	4128 (H) × 3008 (V)
Spectral range	300 to 1100 nm
Sensor	Sony IMX545
Sensor type	CMOS
Shutter mode	GS (Global shutter)
Sensor size	Type 1/1.1
Pixel size	2.74 µm × 2.74 µm
Lens mount (default)	C-Mount
Max. frame rate at full resolution	40 fps (internal speed)
ADC	12 Bit
Image buffer (RAM)	256 KByte
Non-volatile memory (Flash)	1024 KByte (camera module)

Imaging performance

Imaging performance data is based on the evaluation methods in the EMVA 1288 Release 3.1 standard for characterization of image sensors and cameras. Measurements are typical values for monochrome models measured without optical filter.

Quantum efficiency at 529 nm	68 %
Temporal dark noise	2.3 e^-
Saturation capacity	9400 e^-
Dynamic range	70 dB
Absolute sensitivity threshold	2.9 e^-

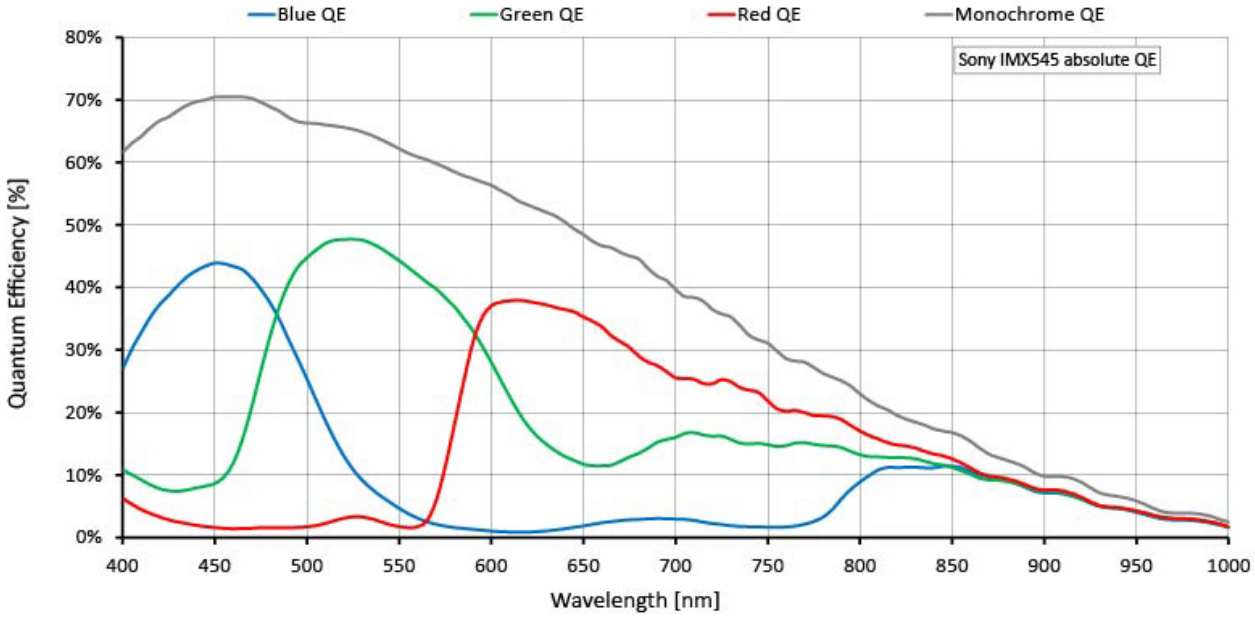
Output	
Bit depth	12-bit
Monochrome pixel formats	PFNC: Mono8, Mono10, Mono10p, Mono12, Mono12p | CSI-2: RAW8 , RAW10, RAW12 | FOURCC: GREY, Y10, Y12

YUV color pixel formats	PFNC: YCbCr411_8_CbYYCrYY, YCbCr422_8_CbYCrY, YCbCr8_CbYCr | CSI-2: YUV422 8-bit | FOURCC: UYVY
RGB color pixel formats	PFNC: RGB8 (default), BGR8 | CSI-2: RGB888 (default) | FOURCC: RGB3
Raw color pixel formats (Bayer)	PFNC: BayerRG8, BayerRG10, BayerRG10p, BayerRG12, BayerRG12p

General purpose inputs/outputs (GPIOs)	
TTL I/Os	2 inputs, 2 outputs, 1 trigger input, 1 strobe output

Operating conditions/dimensions	
Operating temperature	-20 °C to +65 °C (housing)
Power requirements (DC)	24 VDC
Power consumption	SoM: Max. 10 W to 25 W | Carrier board: Max. 2.0 W | Camera: Max. 3.2 W || Idle state: 8.5 W
Mass	Without lens (with lens tube): 810 g (LT4649) | 820 g (LT4670)
Body dimensions (L × W × H in mm)	102 × 72 × 111.75 (LT4649) | 122.4 × 72 × 111.75 (LT4670)

Quantum efficiency


Blue QE
Green QE
Red QE
Monochrome QE
Sony IMX545 absolute QE
Quantum Efficiency [%]
80%
70%
60%
50%
40%
30%
20%
10%
0%
400
450
500
550
600
650
700
750
800
850
900
950
1000
Wavelength [nm]

Features

Image control: Auto

- Auto exposure
- Auto gain
- Auto white balance (color models)

Image control: Other

- Adaptive noise correction*
- Binning (digital)
- Binning (digital, sensor)*
- Black level
- Color transformation (incl. hue, saturation; color models)
- Contrast*
- Custom convolution*
- De-Bayering up to 5×5 (color models)
- DPC (defect pixel correction)
- FPNC (fixed pattern noise correction)
- Gamma
- Lens shading correction*
- LUT (look-up table)*
- Reverse X/Y
- ROI (region of interest)
- Sharpness/Blur*

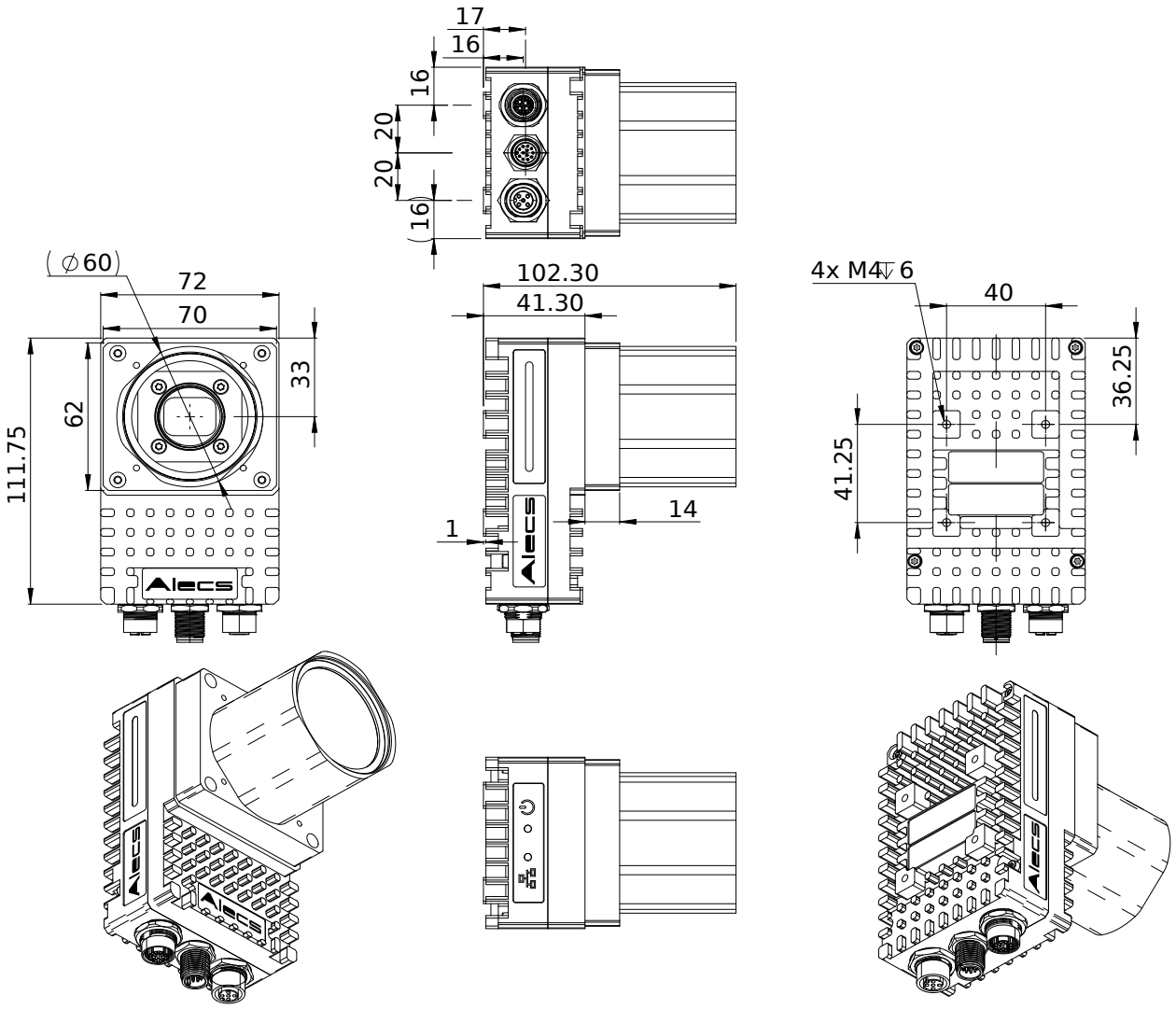
Camera control

- Acquisition frame rate
- Counters and timers*
- Firmware update in the field
- I/O and trigger control
- Image chunk data*
- Temperature monitoring
- User sets*

*GenICam for CSI-2 Access

Technical drawing

Alecs Main Housing with Lens Tube LT4649



Applications

Alecs can be used to replace any PC-based machine vision setup, reducing power consumption and costs.

To support your individual setup, various **accessories** are offered by Allied Vision:

- IP67 Lens Tubes 49 mm or 70 mm for different lens sizes (part of the delivery)
- Lenses optimized for 5 MP and 12 MP resolution
- Network cables M12 X-coded to RJ45
- Power and I/O cables M12 12-pin to open ends
- Lighting cables M12 5-pin to open ends
- Camera ring light RMX140

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