HiPerCam A

Industrial and Mobile Camera Platform

Intelligent Outdoor Camera

- 5 or 1.3 Megapixel CMOS Sensor
- Configurable fame rates and resolutions
- Video transmission over Gigabit Ethernet
- Video recording capabilities
- Robust IP69K enclosure

Main Features

- 5 or 1.3 Megapixel CMOS sensor
- Configurable frame rates and resolutions
- Video transmission over Gigabit Ethernet
- Video preprocessing capabilities
- Designed for harsh industrial and mobile applications
- Robust IP69K enclosure
- -40 to +55 °C operating temperature (+85°C opt.)
- Integrated firmware for management and configuration

Description

The HiPerCam A is a digital camera module enclosed in a sealed IP69K housing. It is particularly designed to meet requirements of industrial mobile applications, for example door surveillance in trains or rear view for large agricultural machines. A single Ethernet cable is required to connect the HiPerCam A to a computer or display and in the same time to power the camera via PoE. The Ethernet connection allows for cable runs up to 100 m, providing full flexibility when architecting and cabling the surveillance infrastructure even in larger systems.

The HiPerCam A is by default equipped with a 5 Megapixel CMOS sensor which can deliver 14 frames per second at maximum resolution of 2592 x 1944 pixels or 31 frames per second at full HDTV resolution. Other resolutions and frame rates can be adjusted as required. Sensor pixel binning (up to 4 linearly) is supported for better sensitivity at reduced resolutions. The sensor can be exchanged for a 1.3 Megapixel option that can operate up to 85°C.

The HiPerCam A is equipped with a Freescale i.MX6Dual SoC, featuring an embedded ARM CPU with 1000 MHz clock and useful co-processors such as GPU, IPU, VPU, and video codecs for MJPEG or H.264 video data encoding. The on-board DDR3 memory can be extended in size up to 2 GB for embedded video recording and playback.

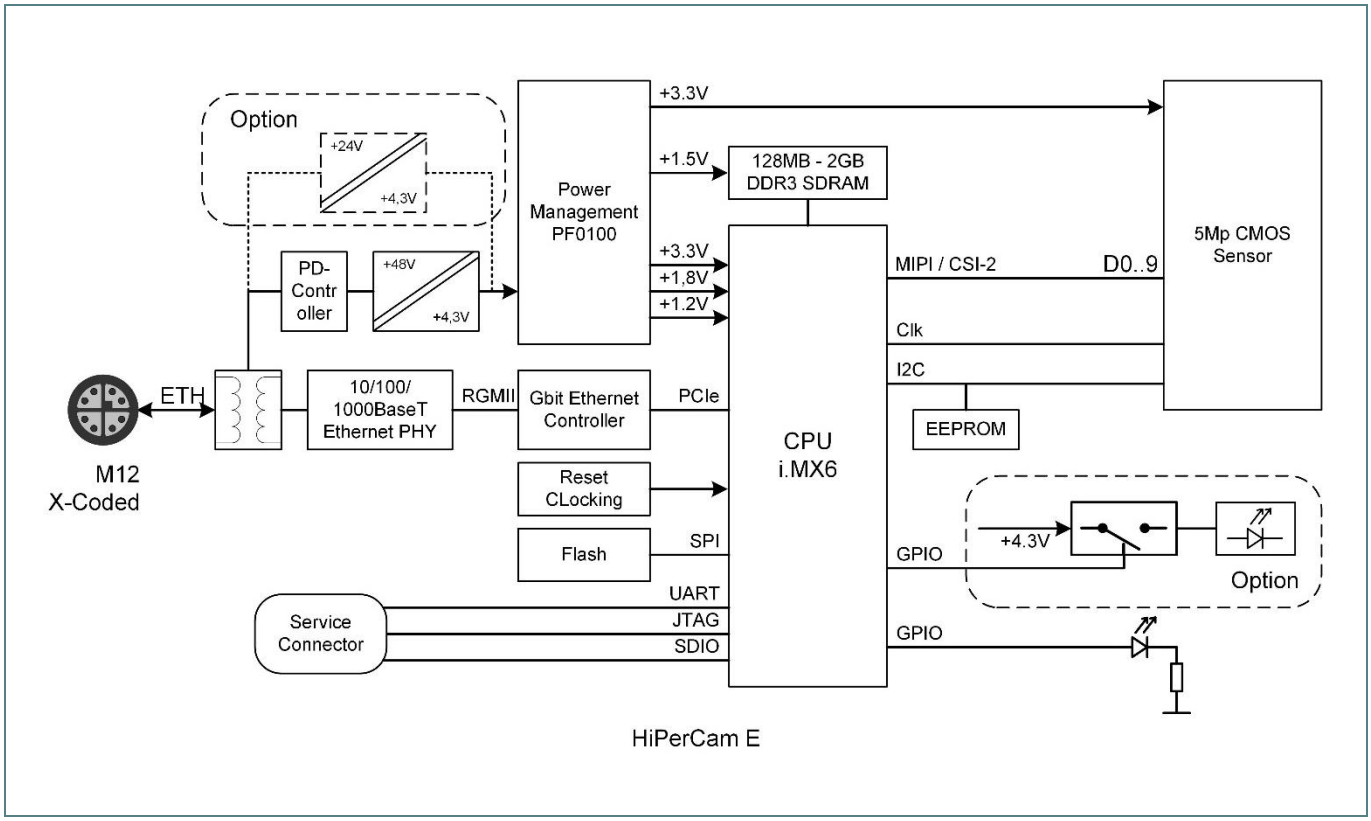
The CPU executes a tailored Linux operating system which builds the foundation for different image processing applications and network protocols such as GigE Vision and TCP/IP. As an OEM option the CPU is available in dual and quad core versions with faster cores and enhanced GPUs allowing for more sophisticated image processing algorithms inside the camera.

The Gigabit Ethernet interface allows transfer speeds that are adequate for real-time streaming of the video data. The Ethernet MAC is implemented using Intel's state of the art I210 which provides hardware enhancements for the implementation of real-time Ethernet (AVB and IEEE 1588) and is thus a key building block for future technology developments.
The HiPerCam A is powered via Ethernet (PoE) and normally acts as IEEE802.3af compliant class 2 powered device. Optionally, the HiPerCam A may also be powered by 24 VDC over Ethernet without IEEE 802.3af-type negotiation allowing for much simpler power injectors (automotive PoE).

The hardware is designed to be deployed in industrial and mobile environments in temperature ranges between -40 and +70 °C and has no maintainable parts inside such as fans or batteries. The HiPerCam A is especially suited for use in rugged environments with regard to shock and vibration according to applicable DIN, EN or IEC industry standards.

The HiPerCam A firmware provides a comfortable management interface through http service. Besides global setup parameters the software allows the configuration of camera parameters such as resolution, frame rate, area of interest definition, etc. The standard version uses GigE Vision for image transmission as well as for configuration. A host PC test application to display GigE images is also provided. Optionally, the camera can use H.264 or MJPEG compression and TCP/IP transmission.

Block Diagram



Technical Data

CMOS Sensor 5 MP

Optical format	½.5-inch (4:3)
Active image size	5.70 mm (H) x 4.28 (V), 7.13 mm diagonal
Active pixels	2592 H x 1944 V
Pixel size	2.2 x 2.2 µm
Frame rate	Up to 14 fps at full resolution
	Up to 53 fps at VGA (640 x 480)
Binning factors	1x1, 2x2, 4x4
ADC resolution	12-bit
Responsivity	1.4 V/lux-sec (550 nm)
Pixel dynamic range	70.1 dB
SNR_{MAX}	38.1 dB

CMOS Sensor 1.3 MP

Optical format	½.7-inch (16:10)
Active image size	5.5 mm (H) x 3.42 (V),
Active pixels	1280 H x 800 V
Pixel size	4.2 x 4.2 µm
Frame rate	Up to 30 fps at full resolution
Binning factors	1
ADC resolution	10-bit
Responsivity	3.65 V/lux-sec
Pixel dynamic range	115 dB
SNR_{MAX}	39 dB

Standards

- IEEE802.3u 100BaseTX
- IEEE 802.3ab for 1000BaseT
- IEEE 802.3af for Power-over-Ethernet
- GigE Vision Version 2.0 with 1 Gigabit

Physical Interfaces

LAN	10/100/1000BaseT(X) Port, M12 X-Coded via cable

III Specification

Mechanical Specifications

Product dimensions: 80 mm x 80 mm x 80 mm including mounting bracket and space needed for tilt and swivel
Weight: 63 g
IP69K ingress protection

Electrical Specifications

PoE Class 2 powered device according to IEEE 802.3af

Environmental Conditions

Temperature range (operation): -40...+55 °C
Temperature range (storage): -40...+85 C
Relative humidity (operation): max. 95 % non-condensing
Relative humidity (storage): max. 95 % non-condensing
Altitude: -300 m to + 2,000 m
Climatic tests according to EN 68068
Shock and vibration tested according to EN 61373
Conformal coating

Options

- Protocols: H.264 or MJPEC encoded vi a TCP/IP or UDP
- 2 GB DDR3 Memory for video recording
- 24 VDC supply over Ethernet (automotive PoE)

Accessories

- Lenses, to be selected to fit into housing

Standard Configurations

Article No.	CPU	Memory	Lens	Case	Sensor
HICAA-1000Vo	iMX6-Dual	5 MB	6 mm	IP69K	OV10635 MT9P031
HICAA-1001Vo	iMX6-Dual	1.3 MB	6 mm	IP69K	OV10635 MT9P031

Related Products

- HiPerCam I – Industrial digital camera
- HiPerCam V – Intelligent camera with video output

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