

HiPERCAM I

Industrial Camera Platform

Intelligent Camera for Industrial Applications

- 5 Megapixel CMOS sensor
- Configurable frame rates and resolutions
- Video transmission over Gigabit Ethernet
- Video recording capabilities



III Main Features

- 5 Megapixel CMOS sensor, 1.3 MP selectable
- Configurable frame rates and resolutions
- Video transmission over Gigabit Ethernet
- Video recording capabilities
- Designed for harsh industrial and mobile applications
- 0 to +55 °C operating temperature
- Integrated firmware for management and configuration

III Description

The HiPerCam I is a digital camera module that can be combined with different CMOS sensor modules for different applications. It is designed to meet requirements of industrial applications, for example process surveillance in large industrial machines. A single Ethernet cable is required to connect the HiPerCam I to a computer or display and to power the module via PoE. The Ethernet connection allows for cable runs up to 100m, providing full flexibility when architecting and cabling the surveillance infrastructure even in larger systems.

The HiPerCam I 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 frames rates can be adjusted as required. Sensor pixel binning (2x2, 4x4) is supported for better sensitivity at reduced resolutions.

The HiPerCam I is equipped with a Freescale i.MX6DL SoC, featuring an embedded ARM CPU with 1000 MHz clock and useful co-processors such as GPU, IPU, VPU, and video codecs for H.264 video data encoding. The on-board DDR3 memory can be extended in size up to 2GB, opening the door to 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 TCP/IP or UDP. 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

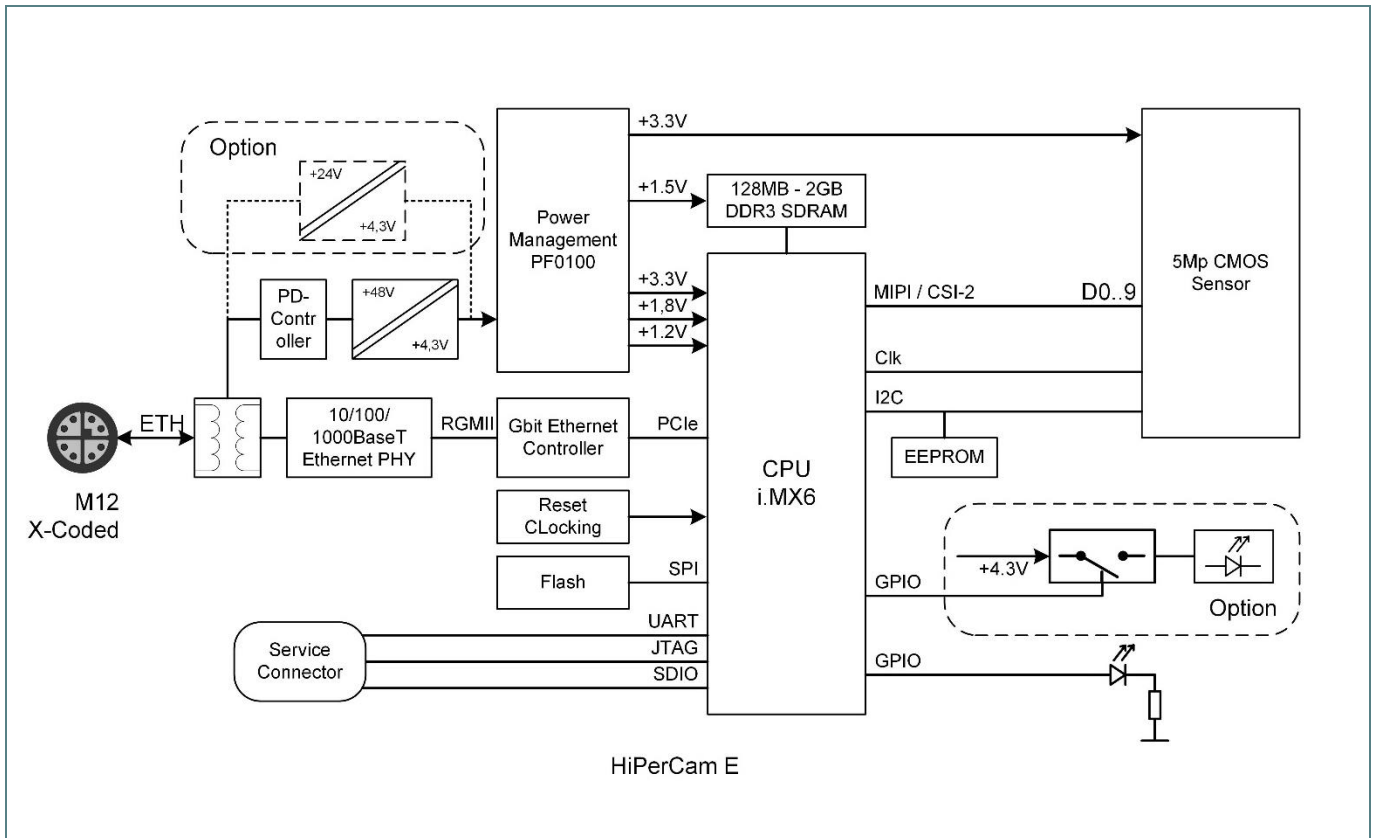
Intel's state of the art I210 which provides hardware enhancements for the implementation of real-time Ethernet (AVB and IEEE 1588) and is thus a key building block for future technology developments.

The HiPerCam I is powered via Ethernet (PoE) and normally acts as IEEE802.3af-compliant class 2 powered device. Optionally, the HiPerCam I may also be powered by 24 VDC over Ethernet without IEEE802.3af-type negotiation allowing for much simpler power injectors.

The hardware is designed to be deployed in industrial and mobile environments in temperature ranges between 0 and +55 °C and has no maintainable parts inside such as fans or batteries. The HiPerCam I is especially suited for use in harsh environments with regard to shock and vibration according to applicable DIN, EN or IEC industry standards.

The HiPerCam I 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 MJPEG for image transmission and HTTP for configuration. A host PC test application to display GigE images is also provided. Optionally, the camera can use H.264 compression and GigE-Vision protocol.

III Block Diagram



III Technical Data

CMOS Sensor

Optical format	1/2.5-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

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
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III Specification

Mechanical Specifications

HiPerCam I dimensions: 63 mm x 43 mm x 132 mm

Weight: 350 g, depends on lens

Electrical Specifications

PoE Class 2 powered device according to IEEE 802.3af

Environmental Conditions

Temperature range (operation): 0...+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

Options

- Protocols: RAW frames via GigE Vision (on request), or H.264 encoded via TCP/IP
- 2 GB DDR3 Memory for video recording
- Conformal coating

Accessories

- Lenses are an integral part of the HiPerCam I and should be ordered with factory configuration. A wide selection of M-12/S-mount lenses is available. Standard focal length is 6 mm.



Standard Configurations

Article No.	CPU	Memory	Lens	Case	Sensor
HIPCA-1011Vo	iMX6-Dual	256 MB	6 mm	IP54	MT9P031

Related Products

- HiPerCam V – Intelligent camera with video output
- HiPerCam A – Intelligent outdoor camera

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