sevensense

Sevensense Robotics AG

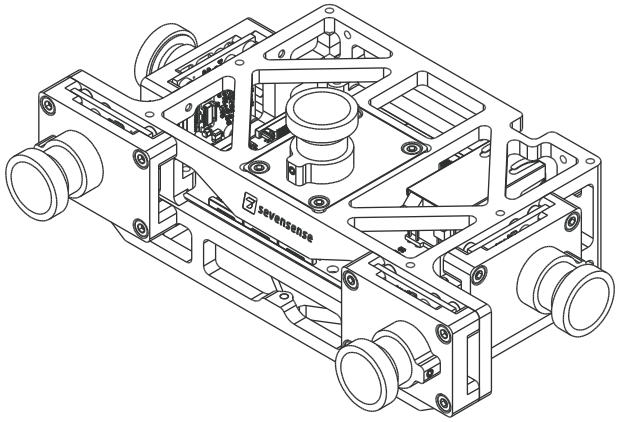
We build the eyes and brains for mobile robots to make them smarter than ever before.

Hardturmstrasse 123, 8005 Zurich, Switzerland

Core Research Datasheet

SUMMARY

Core Research is a state-of-the-art visual-inertial sensor that can be used to research Visual AI applications. It consists of 5 high-sensitivity cameras and a synchronized IMU. The cameras are mounted on a rigid frame and factory-calibrated to guarantee the highest quality of estimation, SLAM, local perception, semantic understanding or depth sensing.



DEVELOPMENT KIT AT A GLANCE

- A rigid frame with 5 global-shutter cameras equipped with state-of-the-art image sensors
- A high-performance IMU
- Precise timesync and timestamping camera and IMU data
- PTP time synchronization with a host PC to seamlessly work with additional sensor
- Gigabit Ethernet interface

Specifications

CAMERAS

5 cameras, global shutter, high dynamic range, high sensitivity	
Sony IMX-287 (monochrome)	Resolution: 0.4 MP Max frame rate: 152 fps (1 camera), 36 fps (5 cameras)
Sony IMX-273 (monochrome)	Resolution: 1.6 MP Max frame rate: 40 fps (1 camera), 9 fps (5 cameras)
Configurable automatic exposure control	
Camera cable length: up to 0.3 m	

LENS

Opening angle (DxHxV): 165.4° x 126° x 92.4°
Focal length 2.4 mm
Infrared filter

IMU

Bosch BMI085 (6-axis MEMS)
Rate: 100, 200 or 400 Hz

SIGNAL PROCESSING

Mid-frame, exposure-compensated synchronization between IMU and camera images with an accuracy of < 100 us
PTP time synchronization with a host computer

INTERFACE

1000BASE-T (Gigabit) Ethernet (RJ45 connector)
IPv4 only
Device driver supporting Ubuntu 18.04/20.04 (x86_64 and arm64), ROS driver provided

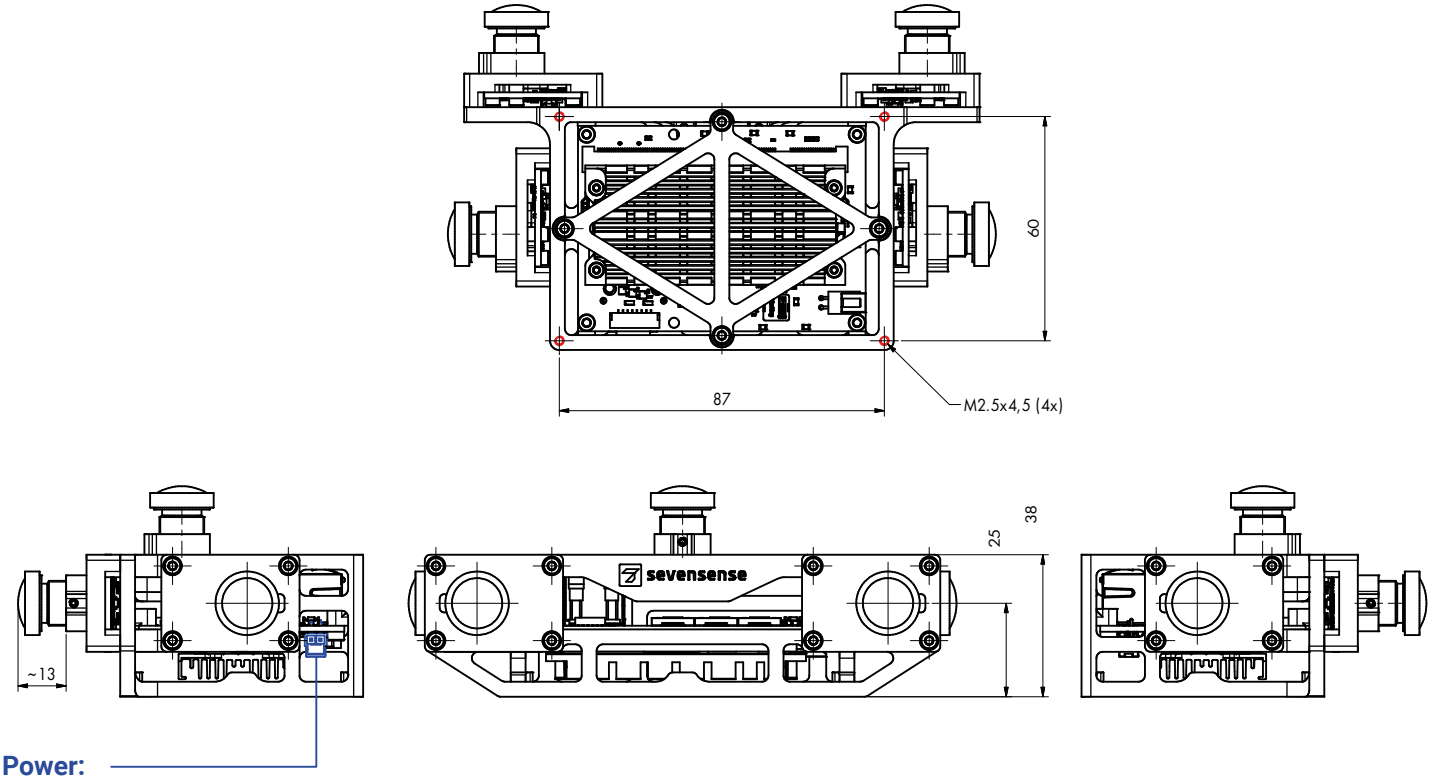
POWER

Input voltage: 6-15 V
Power consumption: max. 12 W
Connector: Molex Nano-Fit 451300203

5-CAMERA FRAME

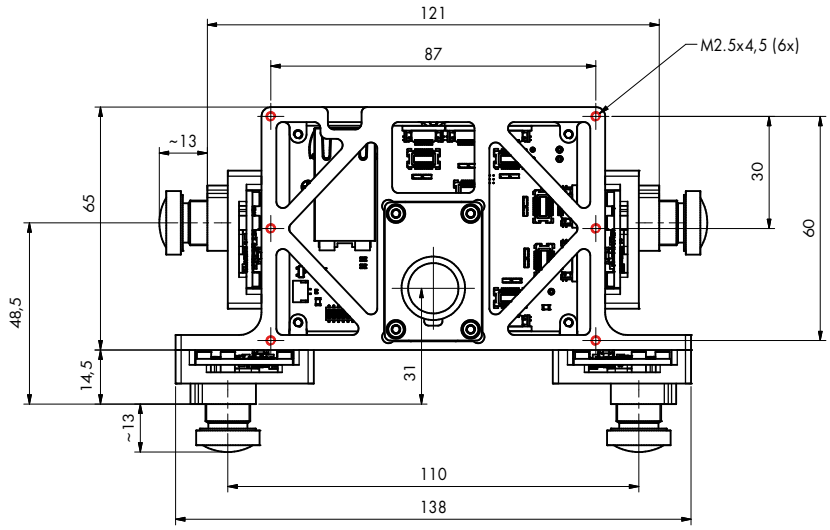
The sensor is assembled on an Aluminium frame with 5 pre-calibrated cameras (2 front stereo, 1 left, 1 right, 1 upwards-looking)
Mounting holes: M2.5 on top, back, bottom side
Material: Aluminium (G-Alu340)
Size (L x W x H): 13.8 cm x 7 cm x 4.4 cm
Weight (including sensor): 260 g (Aluminium)

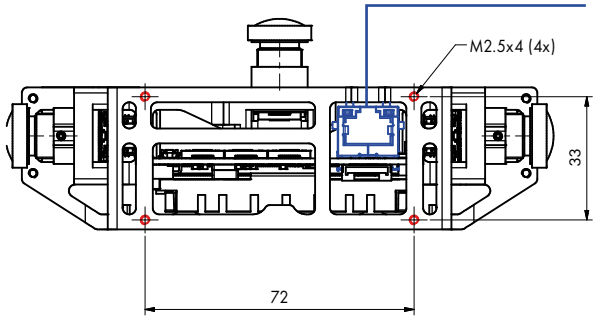
Drawing



Power:

Molex Nano-Fit 451300203 Connector





Ethernet:

RJ45 Connector

Important Notices

Personal Injury Warning

Do not use this product in safety-related applications or in any other application where failure of the product could result in personal injury. Do not use this product as safety or emergency stop devices; particularly, the positioning output is not suitable for performing tasks such as obstacle avoidance, safety stopping or emergency stopping. Do not use this product for applications other than its intended and authorized use. Before installing, handling, using or servicing this product, please consult the datasheet and manual. Failure to comply with these instructions could result in death or serious injury.

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Buyer acknowledges that the Products are not certified and can show unanticipated or erroneous behavior. Using the Products on a vehicle without any additional security system responsible for stopping the vehicle in case of an obstacle or drop-off is not permitted and can lead to crash, injury or death. The buyer is responsible for correct usage and for safe operations of the Product. If the Products are not used in a correct and safe way, in accordance with the instructions or manuals (including maintenance in the required service intervals and regular checks of the functionality of the Products by the Customer) of Sevensense, Sevensense shall not be liable.

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REVISION HISTORY

Date	Revision	Changes
February 2020	1.0	Initial release
February 2022	2.0	Added the following sections: - Ordering information - Important notices - Revision history
August 2022	2.1	Updates: - Interface section - Cameras section
May 2023	2.2	Updates: - Alphasense Core was rebranded to Core Research

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