

Insight 9



Insight 9 Tech Spec

Features	
Use environment:	Indoor/Outdoor
Stereo Image sensor technology:	Global Shutter
Ideal Range:	0.3m to 30m
Baseline:	100 mm Standard
Inertial measurement unit:	Bosch BMI088(6 Axis)/± 24 g
Onboard Visual SLAM solution	Visual Inertial Odometry(VIO)
Onboard AI Models	Object Detection / Human Pose Estimation / Gesture recognition, etc

Major Components

Computing Unit:	10 TOPS AI acceleration engine
RGB Color Sensor:	Sony Starvis™ IMX415
Stereo Imagers:	Dual SmartSens SC132GS(Mono)

Depth

Depth Technology:	Learning-based Stereo
Minimum Depth Distance (Min-Z) at Max Resolution:	~19cm
Depth Accuracy:	<2% at 3 m
Sensor Effective Pixels	1088 × 1280
Image Resolution & Frame Rate:	544 × 640 @20/30/60fps (mono8)
Sensor FOV (D x H x V):	157.2° × 96.8° × 115.6°
Depth Output Resolution:	Up to 544 × 640
Depth Frame Rate:	Up to 15 fps

RGB

RGB Frame Rate:	Up to 60fps
RGB Frame Resolution:	Up to 3840 × 2160
RGB Sensor Technology:	Rolling Shutter
RGB Resolution and Frame Rate:	1920 × 1080 at 30 fps
RGB Sensor FOV (D x H x V):	188° × 86° × 157°
RGB Sensor Resolution:	8.29 MP

Physical

Form Factor:	Camera Peripheral
Length x Depth x Height:	129mm x 33.9mm x 35 mm
Power Input:	Type C 5V/2A
Weight:	176g
Connectors:	USB-C* 3.1 Gen 1*
Mounting Mechanism:	- One 1/4-20 UNC thread mounting point - Two M4 thread mounting points - Tripod

From Depth Sensing to Spatial Intelligence

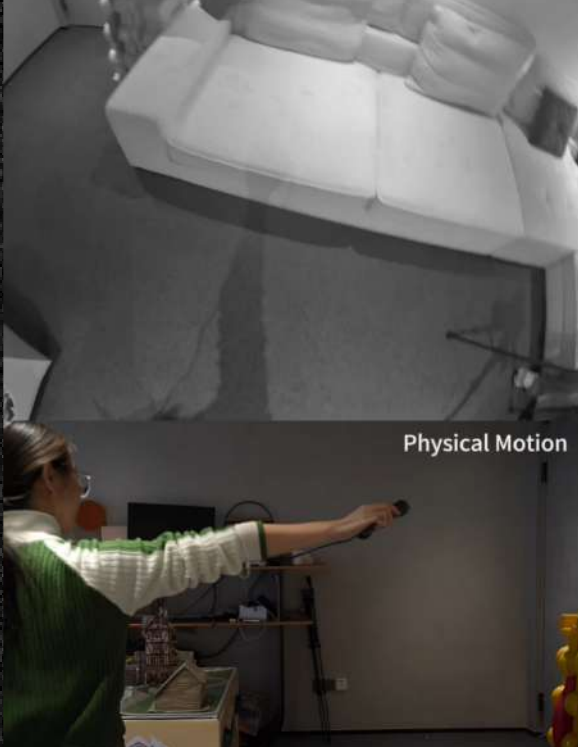
Traditional depth cameras output RGB-D and point clouds. Insight further delivers depth, pose, and AI perception results at the edge, providing usable spatial input for robotic systems.

	Traditional Depth Camera	Insight Spatial Intelligence Camera
Core Role	A vision sensor that provides depth data	An integrated robotic perception front end combining depth sensing, visual-inertial localization, and edge AI
Technical Architecture	Primarily based on dedicated depth sensors and fixed algorithms	Integrated stereo vision, IMU, 10 TOPS edge compute, and upgradeable visual algorithms
Main Outputs	RGB-D and point clouds	RGB-D, point clouds, IMU, VIO / pose, and edge AI results
Localization	Typically requires host-side VSLAM integration or development	Built-in Visual-Inertial SLAM / VIO with high-frequency, low-latency pose output
Calibration & Synchronization	Users handle camera calibration, time synchronization, and sensor fusion	Factory-calibrated and time-synchronized, requiring no additional camera calibration or low-level VSLAM algorithm development
Edge Intelligence	Primarily outputs raw sensor data	Integrates 10 TOPS AI compute for onboard visual models such as object detection, human pose estimation, and gesture recognition
Extensibility	Capabilities are largely fixed by hardware and embedded algorithms	Perception capabilities can evolve through firmware, visual algorithm, and AI model updates
System Integration	Users build and integrate the SLAM, AI, and robotics software stack	ROS-compatible with standardized data outputs and interfaces for navigation, obstacle avoidance, and scene understanding systems
Deployment Efficiency	Requires substantial low-level integration, tuning, and validation	Integration-ready, reducing low-level development work and shortening front-end perception integration time
Value to Robot Systems	Helps robots “see distance”	Provides usable perception and localization input for spatial understanding and downstream autonomy

Built-in VSLAM: From Integrated Capability to Measurable Performance

Insight does not merely “support” VSLAM. It tightly integrates stereo vision, IMU, edge compute, and Visual-Inertial SLAM inside the camera to deliver measurable real-time pose output.

Continuous Operation	>24h
Initialization Time	0.5s
Latency	<10ms
Tracking Drift	<0.5% trajectory length
Rotation Drift	<0.5°/100m
Pose Rate	Up to 100Hz
IMU Rate	400Hz
Camera Support	Stereo Mono GS
Low-light Tracking	Supported



Choose the Right Insight

Product	Positioning	Ideal Range	Baseline
Insight 9	Long-range spatial perception for robots, quadrupeds, drones, and large-scale outdoor platforms	0.3m–30m	100mm
Insight 7	Compact spatial perception for robotic platforms with tighter size, weight, and integration requirements	0.15m–15m	70mm
Insight 3	High-precision near-field perception for robotic manipulation and multimodal embodied AI data acquisition	0.06m–5m	35mm

To learn more about the Insight Series, please contact us for full product briefs and technical specifications.