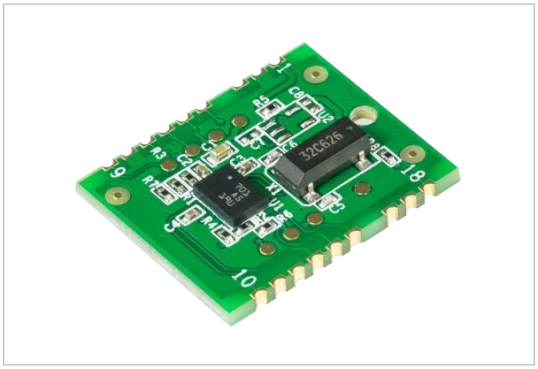
Product Brief

FSM30X

9-AXIS IMU / AHRS MODULE

The FSM30X is a self-contained AHRS/IMU module integrating a 3-axis accelerometer, 3-axis gyroscope, and 3-axis magnetometer, along with a low-power 32-bit ARM Cortex M0+ MCU running CEVA's Hillcrest Labs business unit high-performance sensor hub software stack.

The FSM30X provides superior AHRS and IMU performance for all human and machine motions in many consumer and IoT applications. This small, turn-key component benefits developers and integrators through faster time-to-market, reduced BOM cost, and the highest precision and quality.



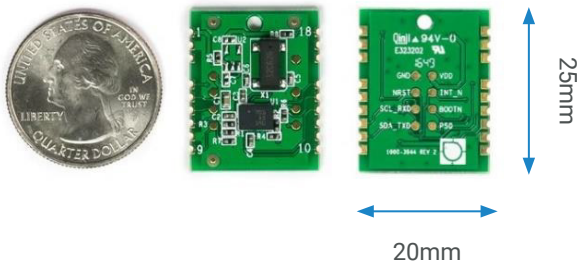
FEATURE HIGHLIGHTS

- **MotionEngine™ 9-Axis and 6-Axis Sensor Fusion** – Provides raw, calibrated and fused sensor orientation data with best-in-class accuracy and stability
- **Configurable Sampling Rate** – Sampling rates up to 1 kHz to create seamless experiences
- **Calibration** – Both dynamic and factory-based calibration to deliver the highest performance
- **Intelligent Power Management** – Manages sensor states to conserve power without sacrificing quality of motion data
- **Simplified UART Interface** – Requires no configuration and simply outputs data
- **Magnetic Interference Rejection** – Algorithms detect and remove effects of hard and soft iron interference
- **Always-on Capabilities** – Low power, high accuracy algorithms like step counter, tap, and shake detectors
- **Activity Tracking** – Walking, Running, On Bike, and In Vehicle state detection for context-aware applications
- **Suitable for Android, Linux, and Embedded Designs** – Driver example code available for ease of integration
- **Firmware Upgradeable** – Embedded bootloader enables factory and in-field firmware updates

PHYSICAL ATTRIBUTES

SOFTWARE	motion engine	Hillcrest Labs' proprietary sensor processing software	
SENSORS	accel	gyro	mag
PROCESSOR	mcu	ARM Cortex-MO+	
INTERFACES	I2C	SPI	UART

Dimensions



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TYPICAL CONSUMER AND IOT APPLICATIONS

ROBOTS / AUTONOMOUS VEHICLES

Navigation

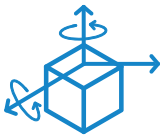
Flight Control

AR/VR
Motion Tracking

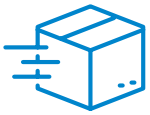
3D Audio

Fitness & Health Monitoring

INDUSTRIAL MONITORING



Attitude Monitoring



Asset Tracking

Body Motion
Capture

Sports Analysis

PERFORMANCE METRICS AND CALIBRATION

LONG-TERM HEADING DRIFT	
SAMPLING RATE	Up to 1 KHz
LATENCY	2.0 msec
ROTATION VECTOR ACCURACY	3.0° - Dynamic* 1.0° - Static*
LONG-TERM HEADING DRIFT	0.5 °/min
MAX RATE ANGLE	± 2000 °/s

Calibration Options

The FSM300 is calibrated about the z-axis, providing increased precision and consistency across devices for applications involving planar motion. Proprietary dynamic calibration algorithms improve performance over time.

The FSM305 features full 3D factory calibration for applications demanding high-accuracy orientation measurements beyond what dynamic calibration provides.

ABOUT CEVA

CEVA is the leading licensor of wireless connectivity and smart sensing technologies. We offer Digital Signal Processors, AI processors, wireless platforms and complementary software for sensor fusion, image enhancement, computer vision, voice input and artificial intelligence, all of which are key enabling technologies for a smarter, connected world. We partner with semiconductor companies and OEMs worldwide to create power-efficient, intelligent and connected devices for a range of end markets, including mobile, consumer, automotive, robotics, industrial and IoT. Our ultra-low-power IPs include comprehensive DSP-based platforms for 5G baseband processing in mobile and infrastructure, advanced imaging and computer vision for any camera-enabled device and audio/voice/speech and ultra-low power always-on/sensing applications for multiple IoT markets. For sensor fusion, our Hillcrest Labs sensor processing technologies provide a broad range of sensor fusion software and IMU solutions for AR/VR, robotics, remote controls, and IoT. For artificial intelligence, we offer a family of AI processors capable of handling the complete gamut of neural network workloads, on-device. For wireless IoT, we offer the industry's most widely adopted IPs for Bluetooth (low energy and dual mode), Wi-Fi 4/5/6 (802.11n/ac/ax) and NB-IoT.

1000-4097 v2.1

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FOR MORE INFORMATION: