INEMO-M1

iNEMO system-on-board

Data brief

Features

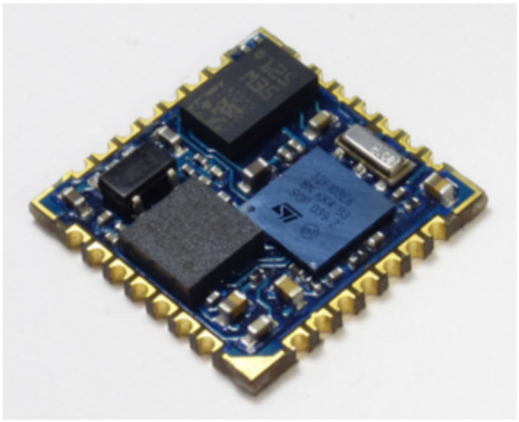
- Two power supply options: internal regulator (3.6 V to 6 V), external regulated voltage (2.4 V to 3.6 V)
- Compact design: 13 x 13 x 2 mm
- L3G4200D: 3-axis digital gyroscope (roll, pitch, yaw), 16-bit data output, ±250°/s, ±500°/s, ±2000°/s selectable full scale
- LSM303DLHC: 6-axis geomagnetic module, ±2 g, ±4 g, ±8 g, ±16 g linear acceleration programmable full scale, from ±1.3 Gauss to ±8.1 Gauss, I^2C digital output
- STM32F103REY: WLCSP package, high density performance line ARM®-based 32-bit MCU
- LDS3985M33R: ultra low drop-low noise BiCMOS 300 mA voltage regulator.
- Flexible interfaces: CAN, USART, SPI and I^2C serial interfaces; full-speed USB 2.0
- Free ADC channels for external inputs
- In-system ceramic resonator
- Application programming interfaces for firmware upgrading

Applications

- Gaming and virtual reality
- Robotics and inertial body tracking
- Personal navigation devices and location based services
- Fitness and healthcare

Description

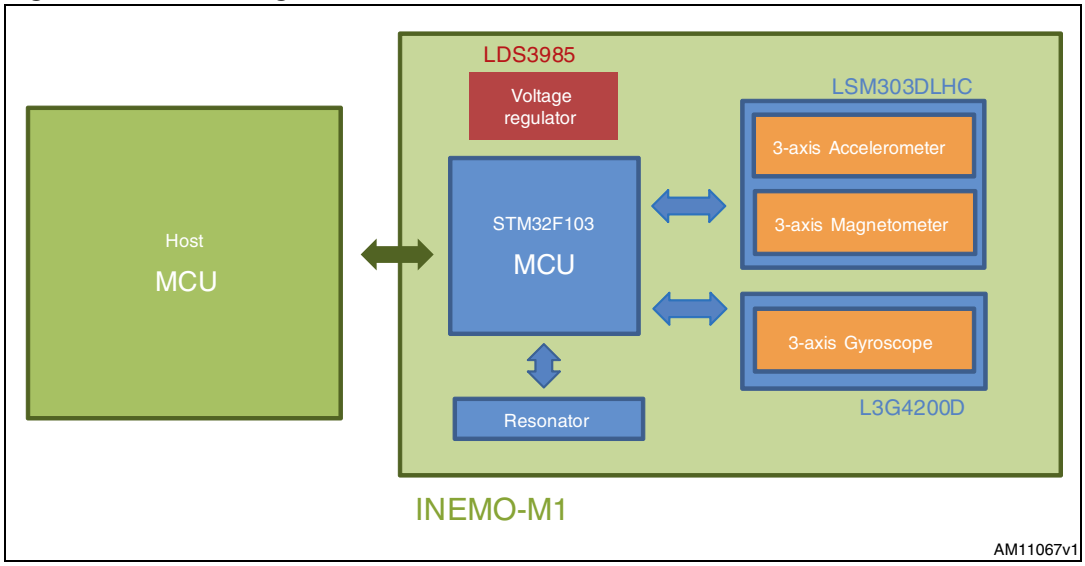
The INEMO-M1 is the smallest 9-axis system-on-board (SoB) of the iNEMO module family. It integrates multiple ST sensors with a powerful computational core: a 6-axis geomagnetic module, a 3-axis gyroscope and an ARM® Cortex™ M3 32-bit MCU. This 9-DoF inertial system represents a fully integrated solution that



can be used in numerous applications such as virtual reality, augmented reality, image stabilization, human machine interfaces, robotics and inertial body tracking. A complete set of communication interfaces in a very small size form factor (13x13x2 mm) make the INEMO-M1 system-on-board a flexible solution for effortless orientation estimation in embedded applications.

1 Functional block diagram

Figure 1. Block diagram



2 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

Figure 2. Mechanical dimensions - top view

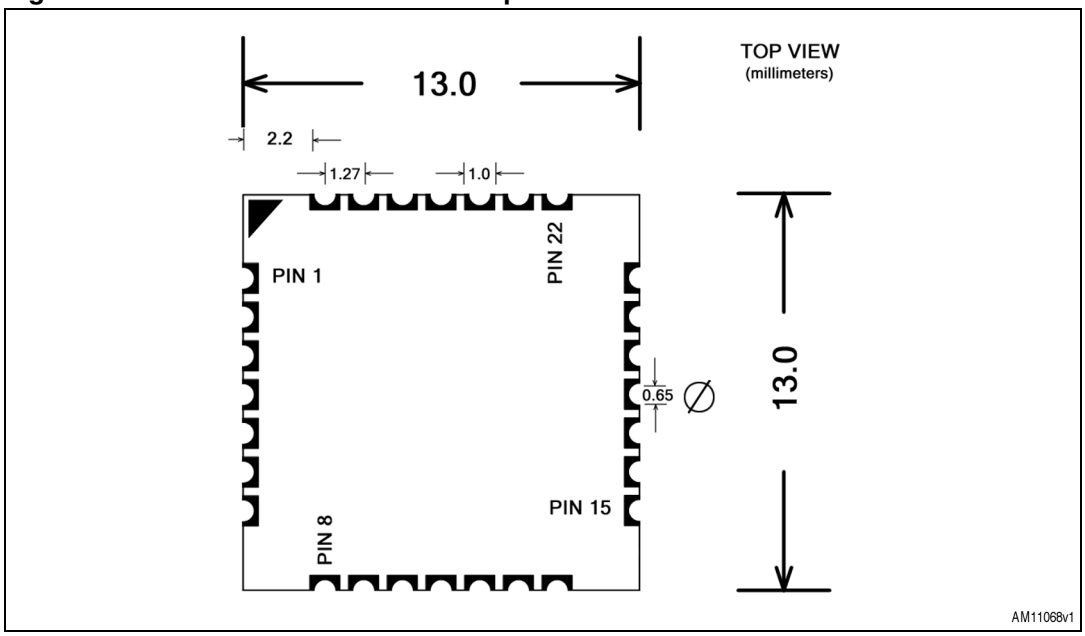
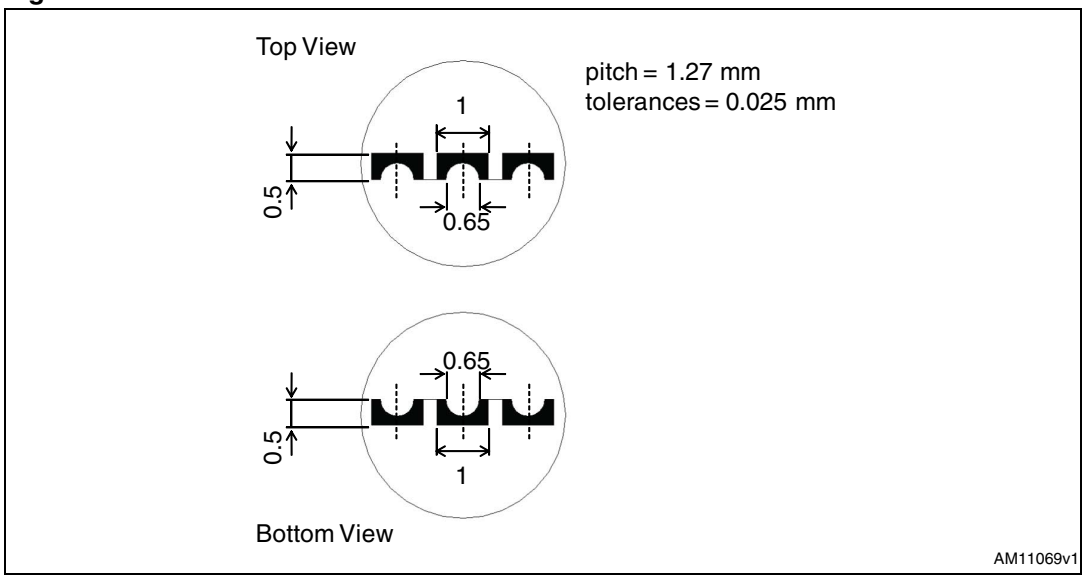


Figure 3. Pin mechanical dimensions detail



3 Pin description

Table 1. INEMO-M1 pin description

Pin number	Function	Alternate function
1	VDD	(2.4 – 3.6 V)
2	BOOT0	
3	nRESET	
4	USART2_RX	ADC_IN3
5	USART2_TX	ADC_IN2
6	GND	
7	USART2_CTS	WKUP – ADC_IN0
8	USART1_CTS	USB_DM
9	USART1_RTS	USB_DP
10	USART1_TX	I2C1_SCL – TIM4_CH1
11	USART1_RX	I2C1_SDA – TIM4_CH2
12	CAN_TX	I2C1_SDA
13	CAN_RX	I2C1_SCL
14	GND	
15	GND	
16	USART1_RX (IAP)	
17	SWO	
18	USART1_TX(IAP)	
19	SWDIO	
20	SWCLK	
21	VEXT	(3.6 – 6 V)
22	SPI1_CS	ADC_IN4
23	SPI1_SCK	ADC_IN5
24	SPI1_MISO	TIM3_CH1
25	SPI1_MOSI	TIM3_CH2
26	USART2_RTS	ADC_IN1
27	VDD	(2.4 – 3.6 V)
28	GND	

4 Revision history

Table 2. Document revision history

Date	Revision	Changes
19-Jan-2012	1	Initial release.

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