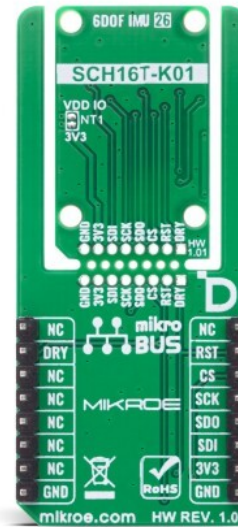
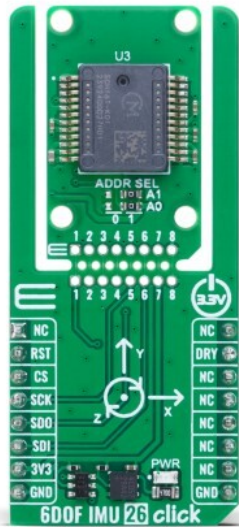


6DOF IMU 26 Click



PID: MIKROE-6572

6DOF IMU 26 Click is a compact add-on board designed to detect and measure angular rate and linear acceleration across three axes. This board features the [SCH16T-K01](#), a high-performance 6DOF sensor that integrates a 3-axis gyroscope and a 3-axis accelerometer from [muRata](#). The board features a selectable measurement range for both sensors, low-pass filtering from 13Hz to 370Hz, and a 4-wire SPI interface. It also includes the innovative Click Snap design, enabling sensor separation and autonomous operation, with configurable SPI address and data-ready interrupt output. This Click board™ is ideal for inertial navigation systems, robotic motion tracking, machine control, UAV stabilization, and other applications in demanding environments.

For more information about **6DOF IMU 26 Click** visit the official [product page](#).

How does it work?

6DOF IMU 26 Click is based on the SCH16T-K01, a high-performance six-degrees-of-freedom (6DOF) motion sensor from muRata. This device combines a 3-axis gyroscope and a 3-axis accelerometer into a single package, communicating via a digital SPI interface for efficient data transfer. Designed to deliver precision and stability even under demanding conditions, the SCH16T-K01 supports a wide range of configurable options that enhance its adaptability across various applications. The gyroscope offers an in-application selectable measurement range from 300 degrees per second down to 62.5 degrees per second, while the accelerometer supports a selectable range from $\pm 80 \text{ m/s}^2$ down to $\pm 15 \text{ m/s}^2$, with a typical default dynamic range of up to $\pm 260 \text{ m/s}^2$. The sensor also integrates output interpolation and decimation options, allowing flexible data handling and processing tailored to specific needs.

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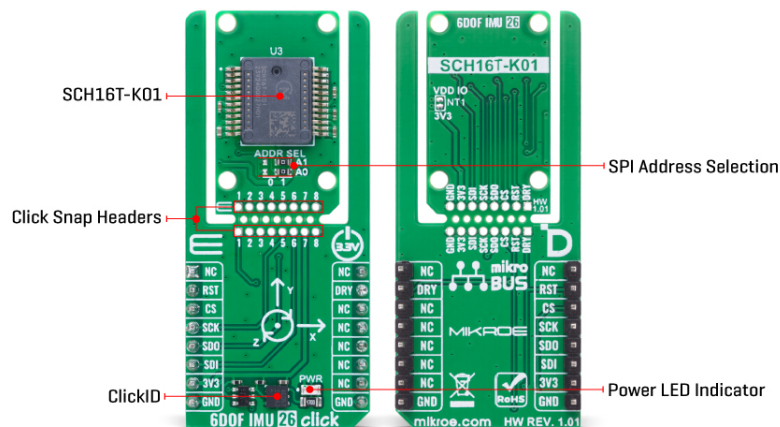
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ISO 27001: 2013 certification of informational security management system.
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The SCH16T-K01 also features adjustable low-pass filters for both angular rate and acceleration, with cut-off frequencies ranging from 13Hz to 370Hz, ensuring clean signal acquisition even in noisy environments. Built to meet the rigorous AEC-Q100 automotive qualification standard, the SCH16T-K01 is ideal for use in inertial measurement units (IMUs), inertial navigation and positioning systems, dynamic inclination detection, machine control and guidance, robotic platforms, and unmanned aerial vehicles (UAVs), making 6DOF IMU 26 Click a versatile solution for motion tracking in harsh or mission-critical environments.

This Click board™ is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the SCH16T-K01 can operate autonomously by accessing its signals directly on the pins marked 1-8. Additionally, the Snap part includes a specified and fixed screw hole position, enabling users to secure the Snap board in their desired location.

This Click board™ establishes communication with the host MCU using a 4-wire SPI interface with maximum clock frequency of 10MHz, ensuring reliable and high-speed data transfer. The SPI address of the SCH16T-K01 can be easily configured via onboard jumpers marked ADDR SEL in the Snap area, allowing multiple devices to coexist on the same bus. In addition to the interface pins, the 6DOF IMU 26 Click also uses the RST pin for resetting the SCH16T-K01, and DRY pin as data ready signal that outputs an interrupt signal for host MCU when the internal output registers (gyroscope + accelerometer) have been updated.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. It also comes equipped with a library containing functions and example code that can be used as a reference for further development.

Click Snap

Click Snap is an innovative feature of our standardized Click add-on boards, designed to bring greater flexibility and optimize your prototypes. By simply snapping the PCB along predefined lines, you can easily detach the main sensor/IC/module area, reducing the overall size, weight, and power consumption - ideal for the final phase of prototyping. For more details about Click Snap, visit the [official page](#) dedicated to this feature.

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Specifications

Type	Motion
Applications	Ideal for inertial navigation systems, robotic motion tracking, machine control, UAV stabilization, and other applications in demanding environments
On-board modules	SCH16T-K01 - 6-DOF XYZ-axis gyroscope and accelerometer from muRata
Key Features	6DOF motion sensing, 3-axis gyroscope and accelerometer integration, digital SPI interface, in-application selectable measurement ranges, angular rate and acceleration low-pass filters, output interpolation and decimation options, Data Ready interrupt output, Click Snap support with detachable sensor section, and more
Interface	SPI
Feature	Click Snap, ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on 6DOF IMU 26 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	NC	
Reset / ID SEL	RST	2	RST	INT	15	DRY	Data-Ready Output
SPI Select / ID COMM	CS	3	CS	RX	14	NC	
SPI Clock	SCK	4	SCK	TX	13	NC	
SPI Data OUT	SDO	5	MISO	SCL	12	NC	
SPI Data IN	SDI	6	MOSI	SDA	11	NC	
Power Supply	3.3V	7	3.3V	5V	10	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1-JP2	ADDR SEL	Right	SPI Address Selection 0/1: Left position 0, Right position 1

6DOF IMU 26 Click electrical specifications

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Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Gyroscope Measurement Range	±300	-	±62.5	°/s
Gyroscope Sensitivity	-	0.0003	0.006	(°/s)/(m/s ²)
Accelerometer Measurement Range	±80	-	±15	m/s ²
Accelerometer Sensitivity	-	3200	-	LSB/(m/s ²)

Software Support

[6DOF IMU 26 Click](#) demo application is developed using the [NECTO Studio](#), ensuring compatibility with [mikroSDK](#)'s open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a [mikroBUS™](#) socket.

Example Description

This example demonstrates the use of the 6DOF IMU 26 Click board, which provides 3-axis accelerometer and 3-axis gyroscope measurements, as well as temperature data. The example initializes the device and continuously logs sensor readings.

Key Functions

- `c6dofimu26_cfg_setup` This function initializes Click configuration structure to initial values.
- `c6dofimu26_init` This function initializes all necessary pins and peripherals used for this Click board.
- `c6dofimu26_default_cfg` This function executes a default configuration of 6DOF IMU 26 Click board.
- `c6dofimu26_get_data` This function reads the accelerometer, gyroscope, and temperature data.

Application Init

Initializes the logger and configures the 6DOF IMU 26 Click board. Sets up SPI communication and applies the default configuration.

Application Task

Continuously reads and logs acceleration (g), gyroscope (dps), and temperature (degC) values from the sensor.

Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following [this tutorial](#).
- UART Terminal - Monitor data via the UART Terminal using a [USB to UART converter](#). For detailed instructions, check out [this tutorial](#).

Additional Notes and Information

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The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the [NECTO Studio](#). The application code can also be found on the MIKROE [GitHub](#) account.

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

Downloads

[6DOF IMU 26 click example package](#)

[6DOF IMU 26 click 2D and 3D files v101](#)

[6DOF IMU 26 click schematic v101](#)

[SCH16T-K01 datasheet](#)

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