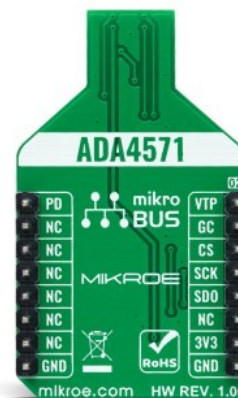
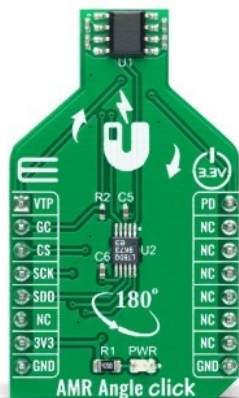


AMR Angle Click



PID: MIKROE-4561

AMR Angle Click is a compact add-on board containing an anisotropic magnetoresistive measurement solution ideal for either angle or linear position measurements. This board features the ADA4571, an AMR sensor with clean and amplified cosine and sine output signals related to a rotating magnetic field angle from Analog Devices. It can provide better than 0.2° angular accuracy over 180°, and linear accuracy of 2mil (0.002 inches) over a 0.5-inch range, depending on the size of the used magnet. This Click board™ is suitable for absolute position measurement (linear and angle), contactless angular measurement and detection, magnetic angular position sensing, actuator control and positioning, and more.

AMR Angle Click supports the mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a thoroughly tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

AMR Angle Click, as its foundation, uses the ADA4571, an anisotropic magnetoresistive (AMR) sensor with integrated signal conditioning amplifiers and ADC drivers, as well as a temperature sensor for temperature compensation from Analog Devices. It produces two analog outputs that indicate the surrounding magnetic field's angular position and consists of two die within one package, an AMR sensor, and a fixed gain instrumentation amplifier, with G=40 nominally. It provides better than 0.2° angular accuracy over 180°, and linear accuracy of 2mil (0.002 inches) over a 0.5-inch range, depending on the used magnet's size.

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	amplified cosine and sine output signals related to a rotating magnetic field angle from Analog Devices LTC1407 - 12-bit 3MSPS ADC with two 1.5MSPS simultaneously sampled differential inputs from Analog Devices
Key Features	High precision 180° angle sensor, maximum angular error of 0.5°, magnetoresistive (MR) bridge temperature compensation mode, fault diagnostic, and more.
Interface	SPI
Feature	No ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on AMR Angle Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Temperature Monitoring	VTP	1	AN	PWM	16	PD	Power-Down Mode
Gain Control	GC	2	RST	INT	15	NC	
SPI Chip Select	CS	3	CS	RX	14	NC	
SPI Clock	SCK	4	SCK	TX	13	NC	
SPI Data OUT	SDO	5	MISO	SCL	12	NC	
	NC	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

AMR Angle Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Rotation Angle	0	-	180	degrees
Angular Error	-	-	0.5	degrees
Resolution	12	-	-	bits
Operating Temperature Range	0	+25	+70	°C

Software Support

We provide a library for the AMR Angle Click as well as a demo application (example), developed using MIKROE [compilers](#). The demo can run on all the main MIKROE [development](#)

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[boards.](#)

Package can be downloaded/installed directly from NECTO Studio Package Manager (recommended), downloaded from our [LibStock™](#) or found on [MIKROE github account](#).

Library Description

This library contains API for AMR Angle Click driver.

Key functions

- `amrangle_angle_read` This function reads an angle in degrees.
- `amrangle_read_vtp_temp` This function returns calculated temperature using vtp pin voltage.
- `amrangle_gain_control_mode` This function sets the gain control mode pin which is used to compensate the sensor amplitude output for reduction of temperature variation.

Example Description

This demo application shows the performance of AMR Angle Click by reading and presenting the temperature and angle results on the UART log.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager (recommended), downloaded from our [LibStock™](#) or found on [MIKROE github account](#).

Other MIKROE Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.AMRAngle

Additional notes and informations

Depending on the development board you are using, you may need [USB UART click](#), [USB UART 2 Click](#) or [RS232 Click](#) to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MIKROE [compilers](#).

mikroSDK

This Click board™ is supported with [mikroSDK](#) - MIKROE Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the [LibStock](#) and installed for the compiler you are using.

For more information about mikroSDK, visit the [official page](#).

Resources

[mikroBUS™](#)

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[mikroSDK](#)

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Downloads

[AMR Angle click 2D and 3D files](#)

[AMR Angle click schematic](#)

[ADA4571 datasheet](#)

[LTC1407 datasheet](#)

[AMR Angle click example on Libstock](#)

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