MAGNETO 2 click

PID: MIKROE-1938

RS Product Code: 136-0751

Magneto 2 click is a mikroBUS™ add-on board with Melexis's MLX90316 monolithic rotary position sensor. Sensing flux density with the IC surface of the MLX90316 allows the click to decode the absolute rotary (angular) position from 0 to 360 degrees.

In combination with the correct library, the magnetic flux density of a small magnet (diametral magnetisation) rotating above the IC can be measured in a non-contacting way.

The sensor enables the design of novel generation of non-contacting rotary position sensors that are frequently required for both automotive and industrial applications.

Magneto 2 click communicates with the target MCU through the mikroBUS™ SPI bus. The board is designed to use a 5V power supply only.

Specification

Product Type	Hall effect
Applications	Absolute Rotary Position Sensor, Pedal Position Sensor, Float-Level sensor, and Throttle Position Sensor
On-board modules	Melexis's MLX90316 monolithic rotary position sensor
Key Features	Triaxis® Hall Technology, Programmable Angular Range up to 360 Degrees
Key Benefits	CRC checks for even higher accuracy, Multiple filter settings for higher accuracy
Interface	SPI
Power Supply	5V
Compatibility	mikroBUS
Click board size	S (28.6 x 25.4 mm)
Weight	23g

Magneto 2 click is a mikroBUS™ add-on board with Melexis's MLX90316 monolithic rotary position sensor.

Sensing flux density with the IC surface of the MLX90316 allows the click to decode the absolute rotary (angular) position from 0 to 360 degrees.

In combination with the correct library, the magnetic flux density of a small magnet (diametral magnetisation) rotating above the IC can be measured in a non-contacting way.

Features and usage notes

- Tri⊗is® Hall Technology
- 40 bit ID number
- Single Die - SO8 or Dual Die (Full Redundant) - TSSOP16, RoHS Compliant
- Absolute Rotary Position Sensor IC
- Changeable main frequency for DSP chip (7MHz or 20 MHz master clock)
- Hysteresis Filter
- FIR and IIR filters for higher output accuracy
- Programmable Linear Transfer Characteristic
- SPI interface
- 5V Power Supply

Programming

This code initialises UART and SPI, reads data from the Magneto 2 click, and, if the readings are successful, prints it out on the UART

```
void main() {
    char txt[20];
    uint8_t check = 0;
    float angle = 0.0;
    UART1_Init_Advanced( 9600,  _UART_8_BIT_DATA,
                         _UART_NOPARITY,
                         _UART_ONE_STOPBIT,
                         &_GPIO_MODULE_USART1_PA9_10 );
    Delay_ms(300);

    UART1_Write_Text("Uart initializedrn");
    GPIO_Digital_Output( &GPIOD_BASE, _GPIO_PINMASK_13 ); // set CS pin as output

    // Initialize SPI

    SPI3_Init_Advanced(_SPI_FPCLK_DIV64, _SPI_MASTER    |
                       _SPI_8_BIT | _SPI_CLK_IDLE_LOW   |
                       _SPI_SECOND_CLK_EDGE_TRANSITION  |
                       _SPI_MSB_FIRST                   |
                       _SPI_SS_DISABLE                  |
                       _SPI_SSM_ENABLE                  |
                       _SPI_SSI_1, &_GPIO_MODULE_SPI3_PC10_11_12);
    SPI_Set_Active(&SPI3_Read, &SPI3_Write);      // Sets the SPI1 module active


    while (1)
    {
        check = read_mlx();
        if ( check == 0)                          // if read was successful, print success and angle
        {
            Uart1_Write_Text("Success rn");
            angle = (float) mlx.angle;
            angle /= 45.5;
            floattostr(angle,txt);
            Uart1_Write_Text(txt);
            Uart1_Write_Text("rn");
        }
        else                                      // else print fail
            Uart1_Write_Text("Fail rn");

        Delay_ms(400);                // Wait 400ms
    }
}
```

Code example that demonstrates the usage of Magneto 2 click with MikroElektronika hardware, written for mikroC for ARM is available on Libstock.

Downloads

Magneto 2 click Examples

Magneto 2 click Schematic