MikroElektronika
DEVELOPMENT TOOLS | COMPILERS | BOOKS

Magneto 2 click

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.

Applications

Absolute Rotary Position Sensor, Pedal Position Sensor, Float-Level sensor, and Throttle Position Sensor.

Key features

- Triaxis® Hall Technology
- Programmable Angular Range up to 360 Degrees
- 12 bit Angular Resolution
- SPI interface
- 5V power supply

Key Benefits

- CRC checks for even higher accuracy
- Multiple filter settings for higher accuracy
- Ready-to-use examples save development time
- Supported in mikroC compiler

mikroBUS™ is specially designed pinout standard with SPI, I2C, Analog, UART, Interrupt, PWM, Reset and Power supply pins. See Standard Specification.

Features and usage notes
Programmable Linear Transfer Characteristic
SPI interface
5V Power Supply
Tria⊗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

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

```
1 void main() {
2    char txt[20];
3    uint8_t check = 0;
4    float angle = 0.0;
5    UART1_Init_Advanced( 9600,  _UART_8_BIT_DATA,
6                         _UART_NOPARITY,
7                         _UART_ONE_STOPBIT,
8                         &_GPIO_MODULE_USART1_PA9_10 );
9    Delay_ms(300);
10
11    UART1_Write_Text("Uart initialized\r\n");
12    GPIO_Digital_Output( &GPIOD_BASE, _GPIO_PINMASK_13 ); // set CS pin as output
13
14    // Initialize SPI
15
16    SPI3_Init_Advanced(_SPI_FPCLK_DIV64, _SPI_MASTER   | \
17                       _SPI_8_BIT | _SPI_CLK_IDLE_LOW  | \
18                       _SPI_SECOND_CLK_EDGE_TRANSITION | \
19                       _SPI_MSB_FIRST                  | \
20                       _SPI_SS_DISABLE                 | \
21                       _SPI_SSM_ENABLE                 | \
22                       _SPI_SSI_1, &_GPIO_MODULE_SPI3_PC10_11_12);
23    SPI_Set_Active(&SPI3_Read, &SPI3_Write);      // Sets the SPI1 module active
```

```
24
25
26    while (1)
27    {
28        check = read_mlx();
29        if ( check == 0)                    // if read was successful, print success and angle
30        {
31            Uart1_Write_Text("Success \r\n");
32            angle = (float) mlx.angle;
33            angle /= 45.5;
34            floattostr(angle,txt);
35            Uart1_Write_Text(txt);
36            Uart1_Write_Text("\r\n");
37        }
38        else                                // else print fail
39            Uart1_Write_Text("Fail \r\n");
40
41        Delay_ms(400);              // Wait 400ms
42    }
43 }
```

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

MIKROE-1938
Magneto 2 click