



## KMA36R PERIPHERAL MODULE

### Digital Magnetic Encoder Sensor

#### General Description

The KMA36(A) peripheral module provides the necessary hardware to interface the KMA36, A universal magnetic encoder for precise rotational measurement. To any system that utilizes Pmod compatible expansion ports configurable for I<sup>2</sup>C communication. The KMA36 sensor feature a system-on chip technology that combines a magnetoresistive element along with analog to digital converter and signal processing in a standard small package. This model can operate from 3.0V to 3.6V, by using Anisotropic Magneto Resistive (AMR) technology, the KMA36 can determine contactlessly the magnetic angle of an external magnet over 360°.

#### Specifications

- Contactless angle measurement from 0° to 360°
- Programmable resolution up to 13 bits
- I<sup>2</sup>C communication
- Very low hysteresis
- Incremental model
- Programmable zero position
- low power consumption

#### Features

- 12-pin Pmod compatible connector
- I<sup>2</sup>C interface
- Secondary 12-pin connector allows daisy chain
- FPGA fabric available for download
- µC C code available for download
- Programmable resolution up to 13 bits
- Very low hysteresis
- High accuracy mode

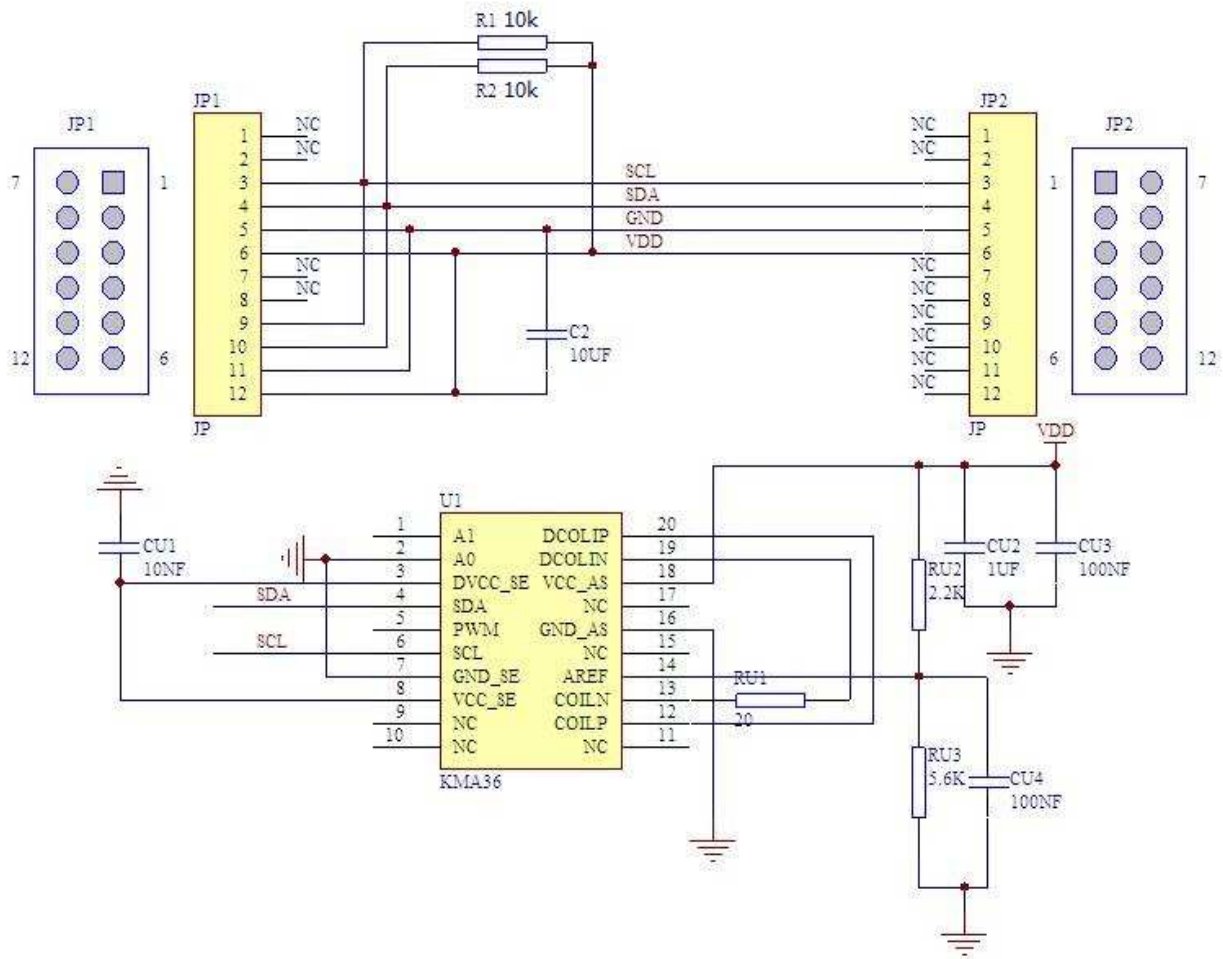
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## Performance

- User programmable parameters
- Low power mode
- -40°C to 125°C accuracy:1°C
- Sleep and automatic wake-up through I<sup>2</sup>C
- Programmable zero position
- Device address hardware configurable
- Operates from 3.0V to 3.6V

## Schematic



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### Connector Pin Assignments (I<sup>2</sup>C Communications)

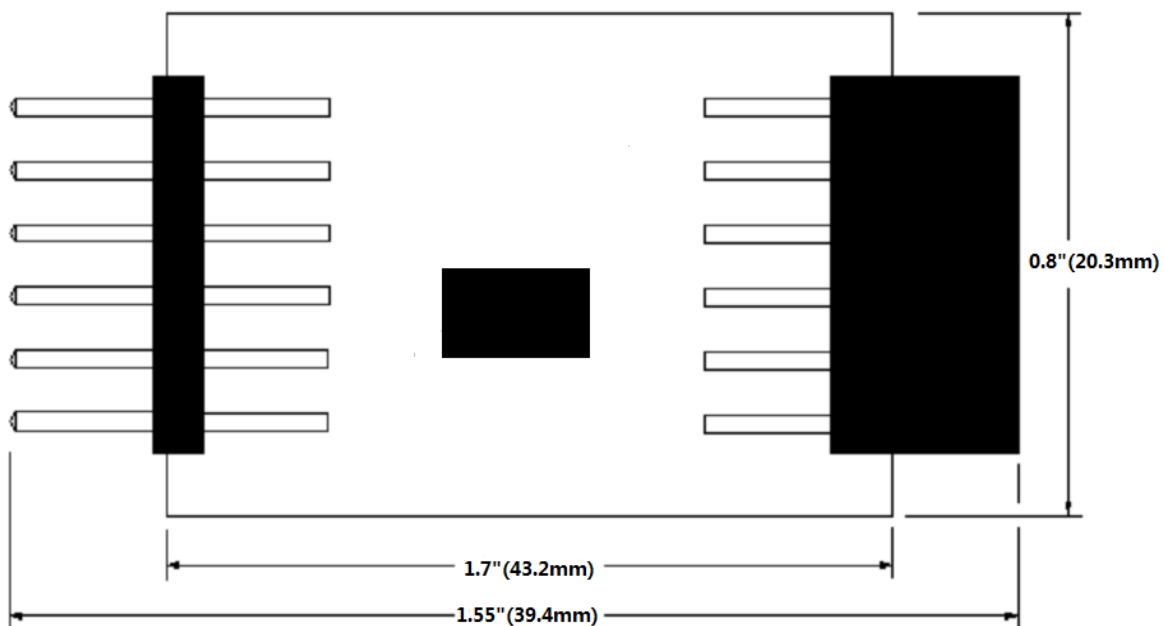
System Plug (Table 1)

Connector J1		
Pin No.	Signal	Description
1	N/C	Not Connected
2	N/C	Not Connected
3	SCL	I <sup>2</sup> C Serial Clock
4	SDA	I <sup>2</sup> C Serial Data
5	GND	Ground
6	Vdd	Power Supply
7	N/C	Not Connected
8	N/C	Not Connected
9	SCL	I <sup>2</sup> C Serial Clock
10	SDA	I <sup>2</sup> C Serial Data
11	GND	Ground
12	Vdd	Power Supply

Expansion Socket (Table 2)

Connector J2		
Pin No.	Signal	Description
1	N/C	Not Connected
2	N/C	Not Connected
3	SCL	I <sup>2</sup> C Serial Clock
4	SDA	I <sup>2</sup> C Serial Data
5	GND	Ground
6	Vdd	Power Supply
7	N/C	Not Connected
8	N/C	Not Connected
9	N/C	Not Connected
10	N/C	Not Connected
11	N/C	Not Connected
12	N/C	Not Connected

### Dimensions(mm)



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### Detailed Description

#### I<sup>2</sup>C Interface

The peripheral module can interface to the host in one of two ways. It can plug directly into a Pmod-compatible port (configured for I<sup>2</sup>C) through connector J1, or in this case, other I<sup>2</sup>C boards can attach to the same I<sup>2</sup>C bus through connector J2.

#### I<sup>2</sup>C Interface (Daisy Chaining Modules)

Alternatively, the peripheral module can connect to other I<sup>2</sup>C-based Pmod modules through the expansion J2 connector. Connector J1 provides connection of the module to the Pmod host. The pin assignments and functions adhere to the Pmod standard as shown in Table 1. The J2 connector allows the module to be connected through a daisy-chain from another I<sup>2</sup>C module and/or provide I<sup>2</sup>C and power connections to other I<sup>2</sup>C modules on the same bus. See Table 2.

#### External Control Signals

The IC operates as an I<sup>2</sup>C slave using the standard 2 wire I<sup>2</sup>C connection scheme. The IC is controlled either by the host (through the Pmod connector). In cases where one or more of the SCL and SDA signals are driven from an external source, resistors R1, R2 provide pull-up. However, this also increases the apparent load to the external driving source. If the external source is incapable of driving these loads, they should be removed.

### Reference Material

- Refer to the KMA36R data sheet for detailed information regarding operation of the IC: <http://www.meas-spec.com/downloads/xxxxxxxx.pdf>
- The complete software sensor evaluation kit for ZEDBOARD is available at <http://www.meas-spec.com/TBD/xxxxx.zip> (KMA36R ZedBoard Driver)
- The complete software sensor evaluation kit for MICROZED BOARD is available at <http://www.meas-spec.com/TBD/xxxxx.zip> (KMA36R MicroZed Board Driver)
- The Boot.bin file of MicroZed Touch Screen Demo Kit for Digital Component Sensors at <http://www.meas-spec.com/TBD/xxxxx.zip> (MicroZed Touch Screen Demo)

### Ordering Information

Description	Part Number
KMA36R PERIPHERAL MODULE	DPP401Z000

#### [te.com/en/products/sensors.html](http://te.com/en/products/sensors.html)

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