

**Magnesensor Technology**

# Magnesensor Technology Co.,Ltd.

MST PRODUCT ROAD MAP

**AMR Switch Module**

```
graph TD; A[AMR Switch Module] --> B[Hall All In One Module]; B --> C[Multi-Sensor I/O Switch Module]; C --> D[Magnetic Angular Sensor]; D --> E[Magnetic Encoder & Module];
```

**Hall All In One Module**

**Multi-Sensor I/O Switch Module**

**Magnetic Angular Sensor**

**Magnetic Encoder & Module**

**Product Line (module & PCBA)**

# AMR Switch Module (solid state)

MA93-2L/3L , MF8B-2L/3L

Mass  
Production

Version  
Updated for  
ASIC

New Version,  
sample out and  
qualified.



2020 Q2

2020 Q2

2020 Q3

2020 Q3



# Hall All In One Module (w/magnet)

MST MH287

Engineering  
sample

2<sup>nd</sup> Tape out  
Working sample

Sample  
qualification

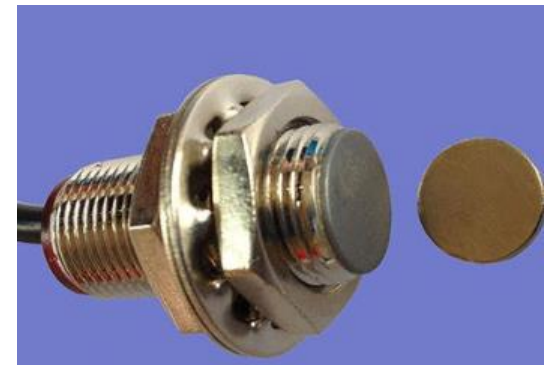
Mass  
Production

2020 Q2

2020 Q3

2020 Q4

2021 Q1



# Multi Sensor I/O Switch Module

MST XXXX

First engineering samples

Sample testing result, 2<sup>nd</sup> tape out

1<sup>st</sup> working sample

Sample qualification and start Production

2020 Q3

2020 Q4

2021 Q1

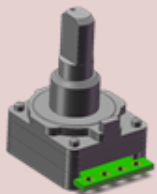
2021 Q2



# Magnetic Angular Sensor

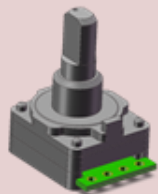
2020 Q1

NAT10-  
600RPM



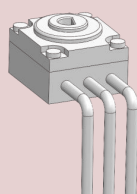
2020 Q2

KSA10-  
6000RPM



2020 Q3

KSA07-  
Female

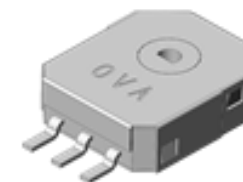


2020 Q4

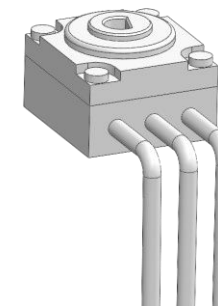
KSB07-  
Male



轴型系列



贯穿型

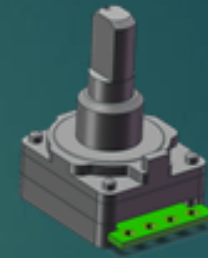


空心轴

# Angular Sensor Major Spec

## Features:

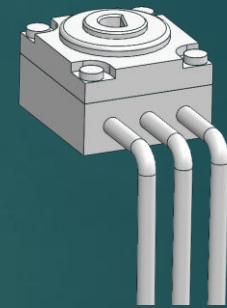
- 360 Programmable & Smart Detect
- Wiring Application Coverage
- Lower Operation Volt. (2.5V ~ 5V)
- Both of Digital & Analog Output
- Independent Linear Offset < 1%
- “Non-contact structure” without contact noise and longer product life cycle



轴型系列

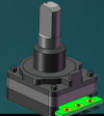


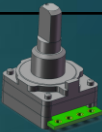

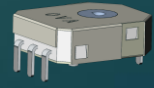


贯穿型



空心轴

# Angular Sensor Series Highlight

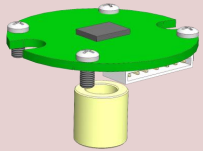
P/N	Desc.	Res.	SPEC	Output	Application	PIC
KSA10	磁角度感測器。 軸型10x11 mm	12 bit	$\pm 0.5^\circ$ , 3.3~5V	Analog (Volt) & Digital (I2C)	工業機器人, 數控設備, 伺服機。	
KSA07	磁角度感測器。 空心型 7x7.5 mm	12 bit	$\pm 0.5^\circ$ , 3.3~5V		伺服機, 工業機器人, 數控設備。	
GT10	磁角度感測器。 軸型低壓10x11 mm	12 bit	$\pm 1^\circ$ , 2.5~3.3V		伺服機, 工業機器人, 數控設備。	
HT10	磁角度感測器。 軸型低壓。	10 bit	$\pm 2^\circ$ , 2.5~5V		消費級玩具, 機器人。	
AG3H	磁角度感測器。 貫穿型低壓 厚度: 3.5mm	12 bit	$\pm 1^\circ$ , 2.5~3.3V		機器人, 數控設備, 伺服機。	
AG3V	磁角度感測器。 貫穿型低壓 厚度: 3.5mm	12 bit	$\pm 1^\circ$ , 2.5~3.3V		機器人, 數控設備, 伺服機。	
模組	磁角度感測器。 測感應型低壓。	12 bit	$\pm 1^\circ$ , 2.5~3.3V		機器人, 數控設備, 伺服機。	



# Magnetic Encoder

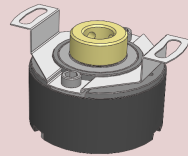
2020 Q1

KEM2500-  
8/14



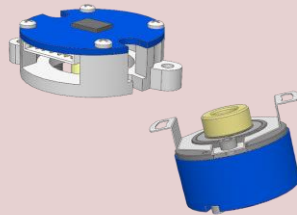
2020 Q2

KEM2500D-  
8/14



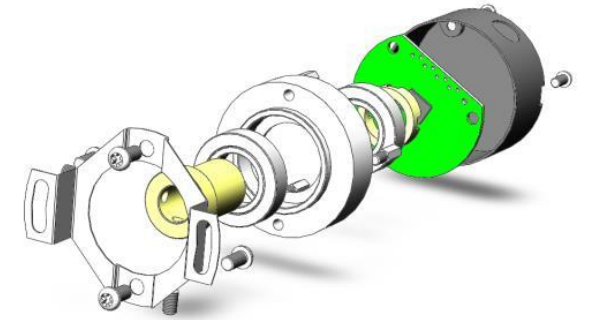
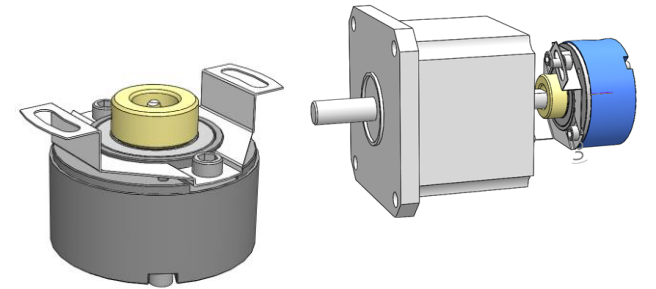
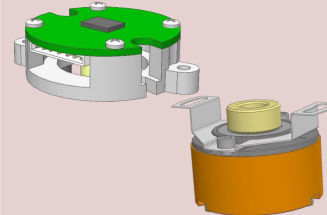
2020 Q3

KEM17A/B/M



2021 Q1

KEM23B



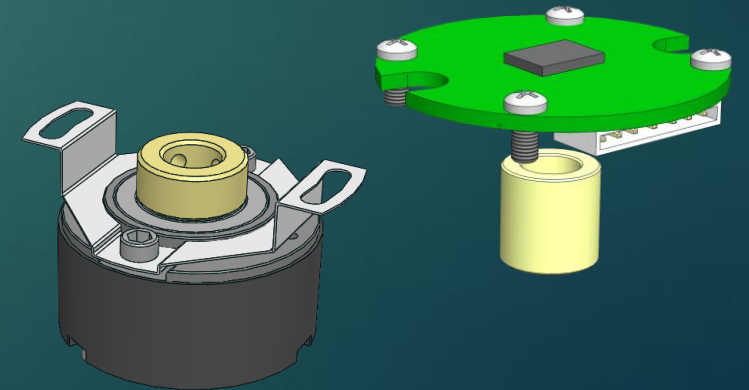
# KEM encoder series table

MODEL	KEM2500D-08-35	KEM2500D-08-OT	KEM2500D-14-35	KEM2500D-14-OT	KEM17S-35	KEM17S-OT	KEM17M-35	KEM17M-OT	MPCB-UVWX
<b>OUTSIDE DIAMETER</b>	ø35	ø35	ø35	ø35	ø35	ø35	ø35	ø35	CUSTOM DESIGN
<b>TYPE</b>	INCREMENTAL	INCREMENTAL	INCREMENTAL	INCREMENTAL	ABSOLUTE	ABSOLUTE	ABSOLUTE MULTI TURN	ABSOLUTE MULTI TURN	UVW ZERO POS. LATCHING
<b>OUTPUT SIGNALS</b>	ABZUVW	ABZUVW	ABZUVW	ABZUVW	PURE BINARY	PURE BINARY	PURE BINARY	PURE BINARY	UVW
<b>RESOLUTION</b>	32~4096 TURN 100~5000 PPR	32~4096 TURN 100~5000 PPR	32~4096 TURN 100~5000 PPR	32~4096 TURN 100~5000 PPR	17BIT ABS POS. SINGLE TURN	17BIT ABS POS. SINGLE TURN	17BIT ABS POS. 16BIT 65536 TURN	17BIT ABS POS. 16BIT 65536 TURN	1~16 POLE-PAIR
<b>FEATURES</b>	RIGID BODY	OPEN TYPE	RIGID BODY	OPEN TYPE	RIGID BODY	OPEN TYPE	RIGID BODY	OPEN TYPE	PCBA MODULE
<b>APPEARANCE</b>									

# KEM2500(D)-8/14 ( $\varnothing$ 35mm Incremental 100~5000PPR)

## Features:

- A,B,Z,U,V,W Outputs
- Zero waiting & Zero latency
- Reduced 8-wires
- Small Power Servo Motor
- For Precise Equipment, Industrial Robot, Industrial Automation, CNC, SMD & Plastic Injection Machine
- Substitution for Optical Encoders such as (TAMAGAWA) TS5214Nxxx

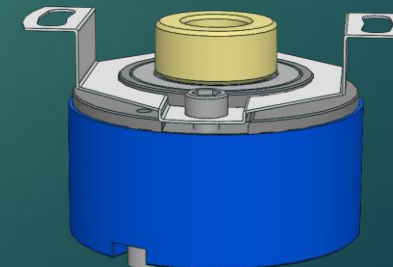
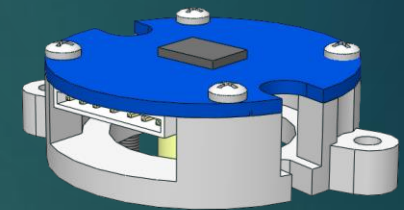


# KEM17S

## ( $\varnothing$ 35mm Absolute 17bit Single Turn)

### Features:

- 7P Safety Lock Connector
- High Precision, 0.01s Output After Power on
- Pure Binary NRZ coding, output 131072 Positions per Revolution
- RS485 Protocol
- 6000RPM Servo Motor
- In Application of Industrial Robot, SMD, CNC, Plastic Injection Machine & Etc.
- Substitution of (TAMAGAWA) TS5710Nxxx

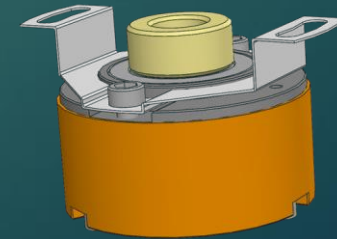
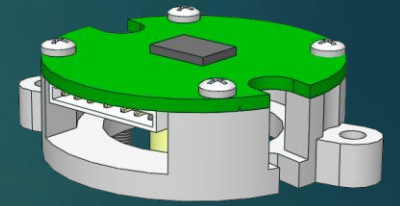


# KEM17M

( $\varnothing$ 35mm 17bit Absolute + 16bit Multi Turn)

## Features:

- DB9 Connector
- High Precision 0.01s Output After Power on
- Pure Binary NRZ coding, output 131072 Positions per Revolution
- 16-bit, total 65536-Turn Counting
- Built-in Capacitor/Standby power for power-off position memory
- In Application of Industrial Robot, SMD, CNC, Plastic Injection Machine & Etc.



# KEM23M

( $\varnothing$ 35mm 23bit Absolute + 16bit Multi Turn)

## Features:

- To be released Q2/2021
- 23bit pure Binary coding, output 8.38M absolute positions per revolution
- 16bit, total 65536-Turn counting
- Built-in Capacitor/Standby power for power-off position memory
- In Application of Industrial Robot, SMD, CNC, Plastic Injection Machine & Etc.



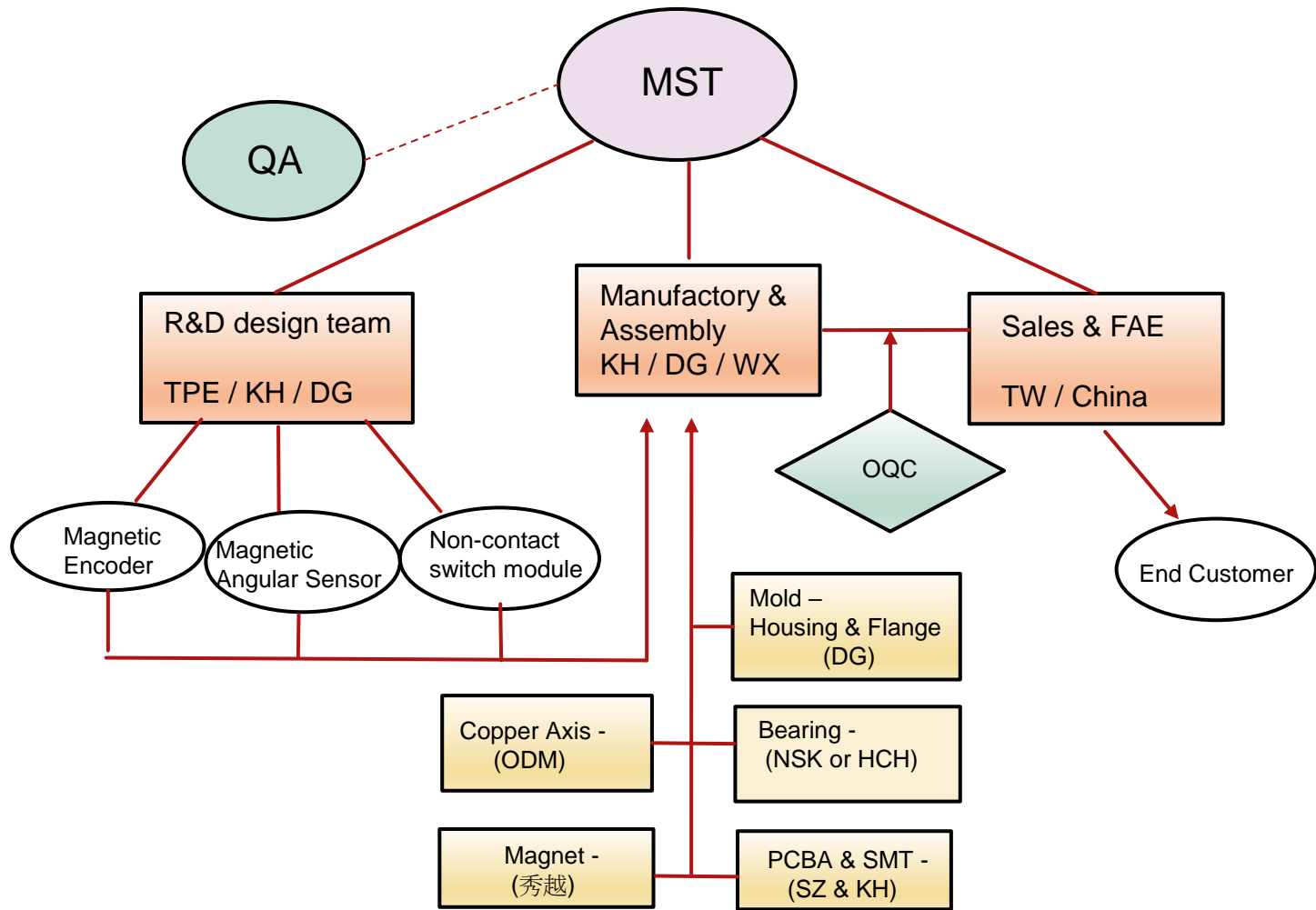
# Reliability test # 1

Test item	Test condition	Test method	Test result
ESD test	4KV / 8KV	Contact , EN61000-4-2	Pass
Magnetic field immunity test	Magnetic field strength : 1A/m Magnetic flux density : 1.26 $\mu$ T	Coil orientation : X Y Z Testing duration : 5 min EN61000-4-8	Pass
Volt. dips & Short interruption immunity test	Test level in % UT : 0% / 70% / 0% Volt. dips & Short interruptions in % UT : 100% / 30% / 100%	Duration in period : 0.5P / 25P / 250P EN61000-4-11	All Pass
Shock test	Acceleration : 490m/s <sup>2</sup> Duration time : 11ms No. of shock : 3 times /Axis Shock direction : $\pm$ X $\pm$ Y $\pm$ Z	According to Tamagawa specified	All Pass

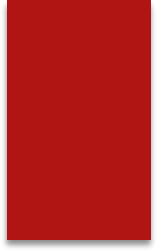
# Reliability test #2

Test item	Test condition	Test method	Test result
Vibration test	Wave form : sine vibration Test time : 2 hrs / Axis Direction : X Y Z Acceleration : 49m/s <sup>2</sup>	According to Tamagawa specified	All Pass
Thermal shock test	Condition #1 : -20°C ~ 85°C @ 30 min (duration) Test cycle : 16 cycle Condition #2 : -25°C ~ 85°C @ 30 min (duration) Test cycle : 16 cycle	According to Tamagawa specified	All Pass
Insulation test	Insulation Resistance : 0 ~ 1000Mohm @ 500Vdc , 90 sec	IEC 62368-1	Pass
High temp. & humidity test	Relative humidity : 93% Temp : 40°C @ 2 hours	IEC 62368-1	Pass
Electric strength test	0 ~ 5KVac/dc , 0 ~ 100mAac Stop watch : 48h	IEC 62368-1	Pass





# Module Manufacture Flow Chart



Thank you