KEM2500D-8-OT

INCREMENTAL ENCODER

SPECIFICATION

FILE NO	1-KEM2500D-8-OT Ver. V1.00
VER DATE	2020-10-12
FIRST RELEASE	2020-10-12

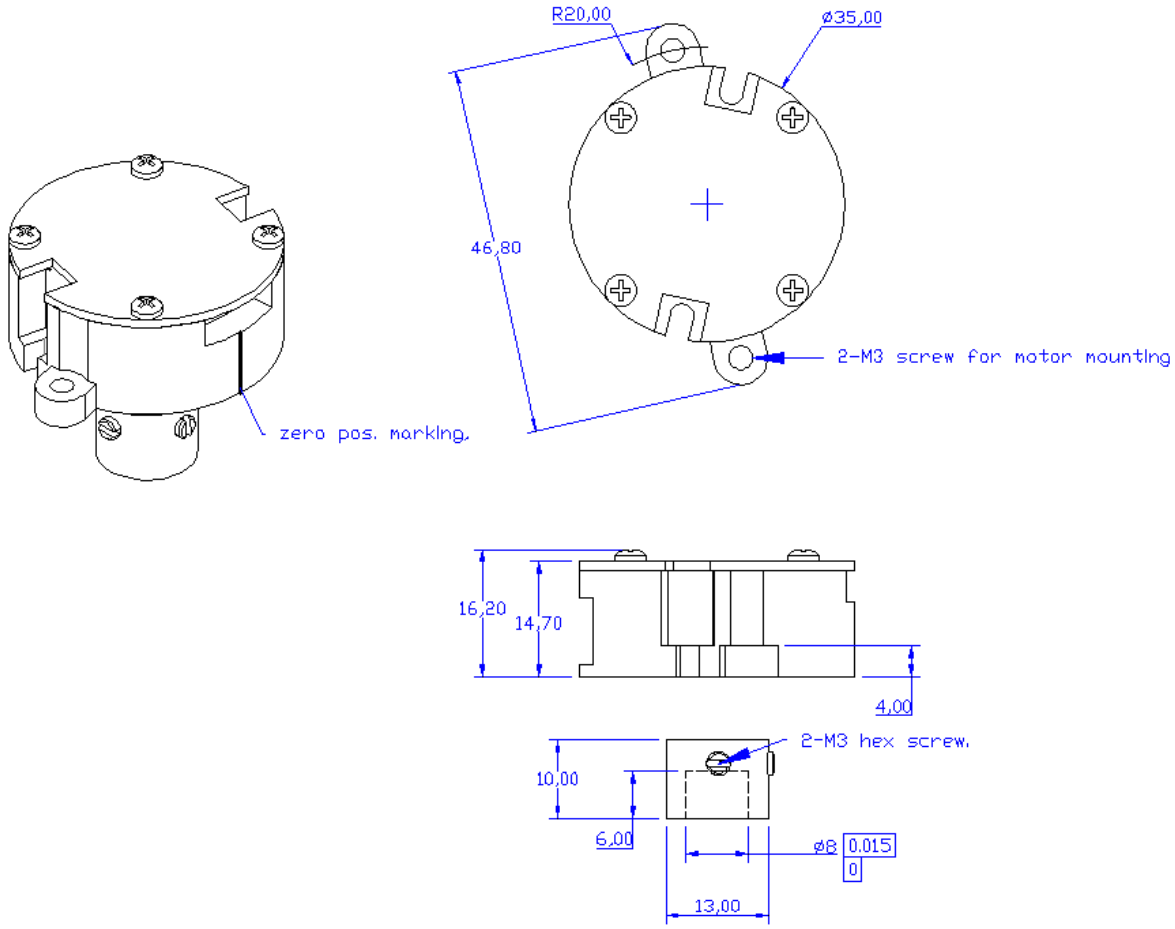
ITEM NO	MODEL	CUSTOMER P/N
1	KEM2500D-8-OT	

MANAGER	MARKETING	ENG	QA

CUSTOMER APPROVAL		

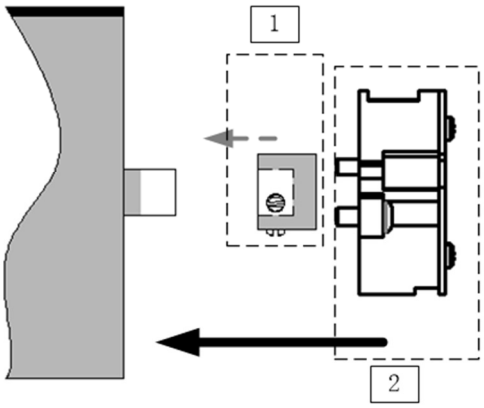
MODEL	PRODUCT DESCRIPTION	
KEM2500D-8-OT	ABZ+UVW DIFFERENTIAL INCREMENTAL ENCODER, 2500 PPR	Encoder Assembly with 500mm length ø5.4 with 8-AWG#28 wire Shielded Cable

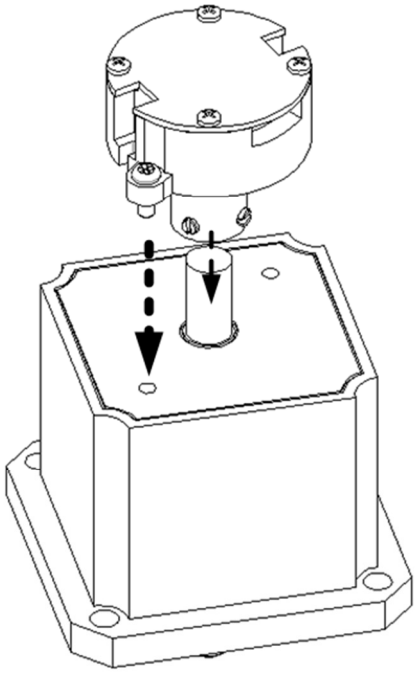
1. OUTLINE DIMENSION (mm)



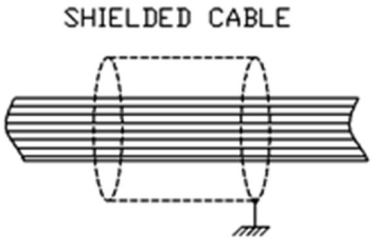
	DRAWING NO	DATE
MST Magnesensor Technology	KEM2500D-8-OT-301	2020.10.12

1-1. ENCODER HOLLOW SHAFT & MOTOR SHAFT INSTALLATION

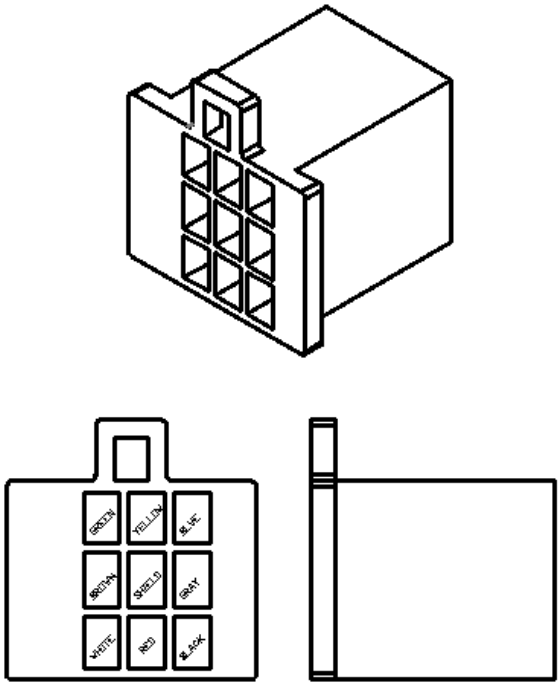




1-2. SHIELDING WIRE CONNECTION

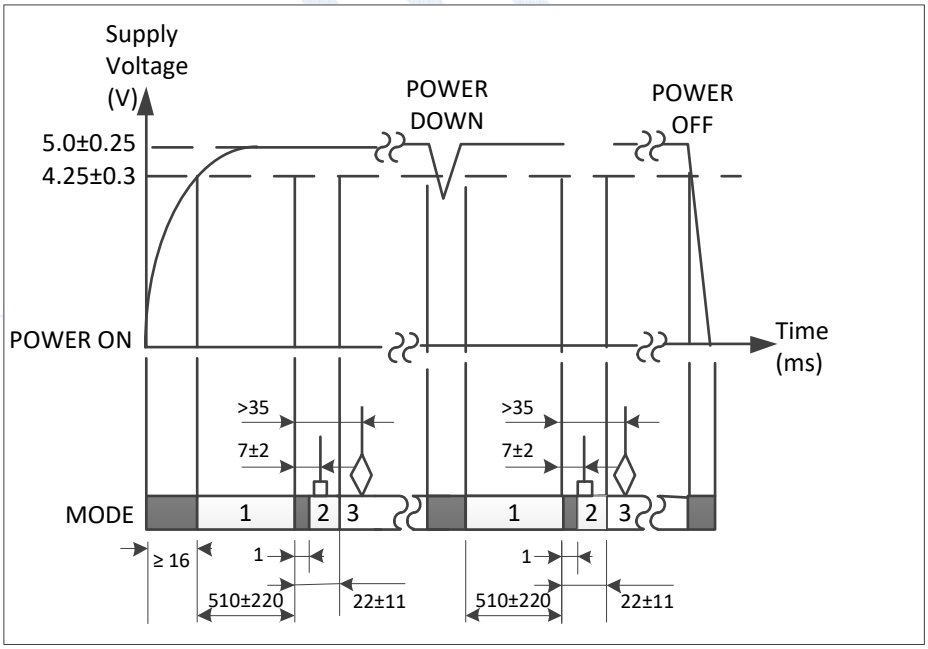


1-3. ENCODER 9-PIN FEMALE CONNECTOR (OPTIONAL)
(Refer to Section 3 for wire definition and connection.)



9-PIN FEMALE CONNECTOR AT ENCODER END

2. TIMING CHART



Timing Chart for KEM2500-8
■: Not used
□: U,V,W start
◇: A,B,Z start

3. WIRING DESCRIPTION

Cable Specification: ø5.4 shielded, 500mm length, shielded 8-AWG#28 wire.

Connection	Wire No.	Color	Function			Note
			MODE 1	MODE 2	MODE 3	
	1	GREEN	HZ	U	A	AWG28
	2	YELLOW	HZ	U-	A-	“
	3	BLUE	HZ	V	B	“
	4	BROWN	HZ	V-	B-	“
	5	SHIELD	See section 1-2 drawing for wiring.			
	6	GRAY	HZ	W	Z	“
	7	WHITE	HZ	W-	Z-	“
	8	RED	>(DC5V-0.1V)			VDD
	9	BLACK	<0.1V			GND

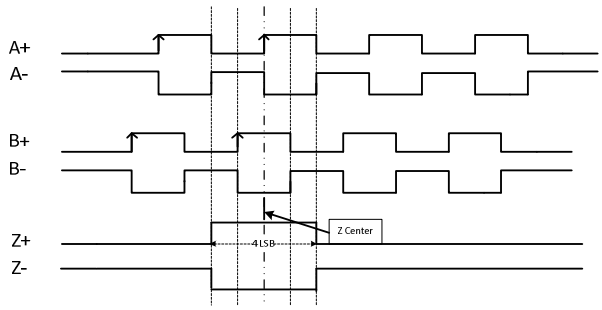
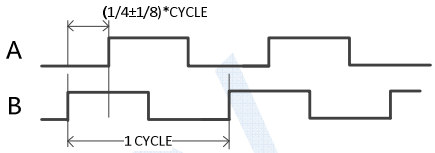
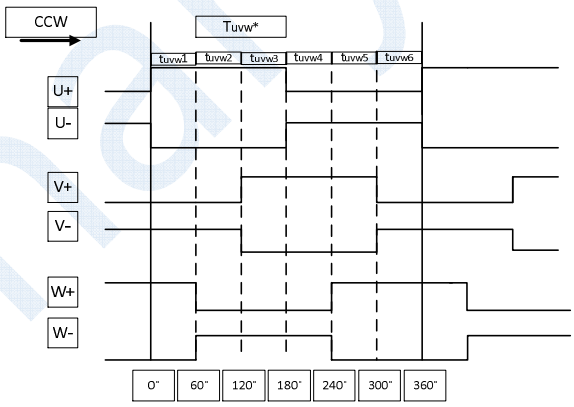
4. APPLICATION SCOPE	This encoder is suitable for industrial electronic products such as security monitoring equipment and BLDC motors.
5. MODEL & DESCRIPTION	KEM2500D-8 2500 PPR differential Incremental Encoder + 4 pole-pair UVW
6. APPEARANCE	There shall be no remarkable damage in visual inspection. Products shall be judged by boundary samples if there are any doubts.
7. DIMENSIONS	REFER TO CLAUSE 1 OUTLINE DIMENSIONS

8. RATINGS

NO.	ITEM	TESTING METHOD AND CONDITION	SPECIFICATION
8.1	Operating Temp		-40 ~ +85°C
8.2	Storage Temp		-40 ~ +105°C
8.3	Operating Voltage		5.0 VDC

9. SPECIFICATION

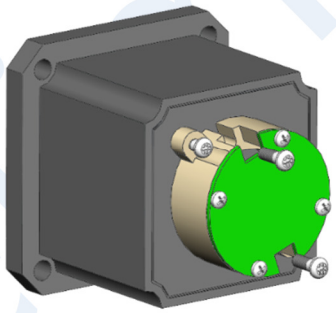
9.1	Operating Type	Motor Shaft Operating	MMI
9.2	Resolution		2500 PPR
9.3	Output Signals	After 510±220 ms waiting status;	

9.3.1	ABZ & Differentials	22±11 ms after UVW phase	
9.3.2	B channel leading A channel	CCW, Viewed to the encoder from its mounting side	
9.3.3	Z+& Z- channel	Pulse Width	(1±1/2) cycle period, i.e., nominally 4 LSB
9.3.4	UVW & Differentials Signals	Present time 22±11 ms	
9.3.5	U ch leading V ch; V ch leading W ch	CCW, Viewed to the encoder from its mounting side	120°electrical cycle, refer to above drawing
9.4	Rated Power		0.1W @ Vdd=5V
9.5	Noise		N/A
9.6	Operating Current	@Vdd=5.0V	Max: <20mA Typical: <10mA
9.7	Output Frequency	RPM	≤12K recommended
9.8	Output Delay	High Impedance Wait Time	510±220 ms
9.9	Output Digital Voltage	Push-pull (Iout=2mA)	HIGH: V_{OH}≥4.9V LOW: V_{LO}≤0.1V
9.10	Magnet	NdFeB, N35~N40 Recommended	Dimension Ø5x2 or Ø6x2; Radial magnetized.
10. RELIABILITY			

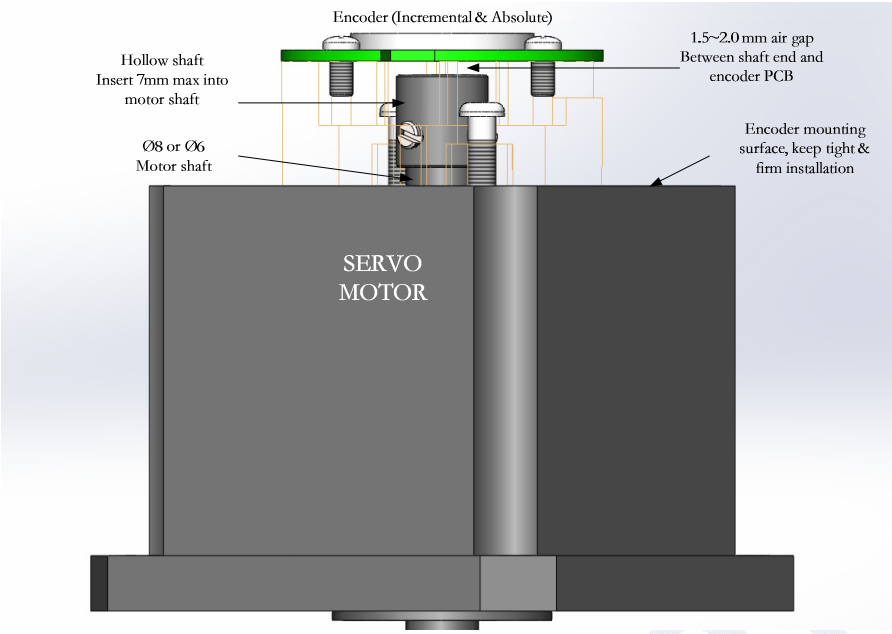
10.1	Cycle Life		Infinitive
10.2	Weight		150g±10g
10.3	High Temp	96 hours@80±2°C	Output variation <0.2%;
10.4	Low Temp	96 hours@-30±2°C	Output variation <0.2%;
10.5	Humid	96 hours@60±2°C, 90~95% RH	Output variation <0.1%;
11. ENVIRONMENTAL		ROHS	Compliant
11.1	ESD; HUMAN	MIL-STD-883G Method 3015.7	(±)1000V ~ 4000V, Step：(±)500V
11.2	ESD; MACHINE	JEDEC EIA/JESD22-A115	(±)100V ~ 300V, Step：(±)50V

12. Appendix

The Installation



KEM encoder is usually using hollow shaft to allow motor shaft directly inserting in, no flexible mounting plate is needed. Encoder is installed at the rear end of servo motor, shown as below pictures. The 8mm diameter. Motor shaft is standard and 6mm is optional. Insert the motor rear shaft into encoder's hollow shaft for 7mm depth, tighten the M3 hex screws into the hollow shaft after the neural position alignment, then firmly install the encoder mounting surface onto motor rear end by two M3 screws. An additional installation method is available for the 29mm mounting pitch, see above picture for reference.



After coupling the encoder hollow shaft with the rigid motor shaft, always fasten attached screws securely. Be sure to firmly tighten two hex-screws that located at encoder's hollow shaft, apply threads-lock glue and tightly screwed in for long-term use. Also follow above procedures for the encoder M3 screws when mounting the encoder onto servo motor.