



Ax3 系列 角度传感器通用规格书

AX3 SERIES ANGLE SENSOR COMMON SPEC.

檔案號 FILE NO	Ax3 V1.1b
日期 DATE	2019/6/6

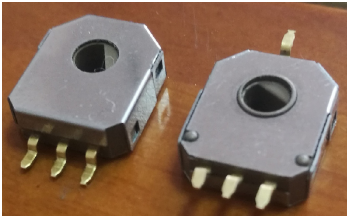
項次 ITEM NO	機型 MODEL	客戶料號 CUSTOMER P/N
1	AG3 SERIES	
2	AN3 SERIES	

經理 MANAGER	業務 MARKETING	工程 ENG	品保 QA

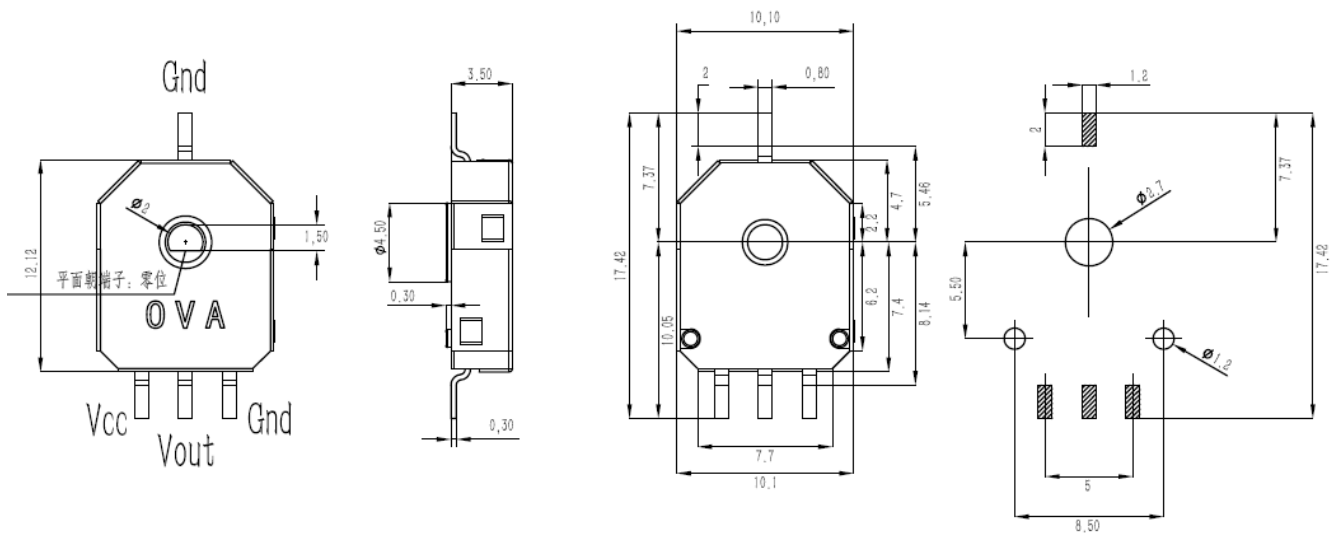
客戶承認 CUSTOMER APPROVAL		

Revision Record


Date	Revised Section	Description	Remark	Version
2018.6.19	All	MS236, New Release	Engineering Draft	0.0
2018.7.12	New Model	A3	Engineering Draft	0.1a
2018.7.12	Add Part number	AN3: 10 bit version	Sample date:2019Q1	0.2a
2018.9.29	Drawing Modify	See drawing	"	0.2b
2019.1.18	8.8, 8.15, 8.16, 8.19	Add-up AG3 Spec	Sample date:2019Q1	0.3a
2019.1.19	Drawing Modify	See drawing	"	0.3b
2019.3.26	Drawing Modify	See drawing	Sample date:2019Q2	1.0a
2019.5.20	Drawing Modify & add up 8.20 for center position	Add-up Ax3 Spec.	Sample date:2019.5.16	1.1a
2019.6.6	1) Modify 8.4.1 2) 8.5 3) 8.21	1) Add-up: @ $\theta=50\%$; 2) $\leq 0.05W$ 3) User's filter circuit		1.1b

機型 MODEL	名稱 PRODUCT	
Ax3 SERIES	360° 霍尔角度傳感器 Contactless Angle Sensor	

1. 外型尺寸 OUTLINE DIMENSIONS



PIN ID	PCB MARKING	DESCRIPTION
LEFT	+	Power Supply
MIDDLE	Vout	Voltage output
RIGHT	-	Ground
TOP	-	Ground

 Magnesensor Technology	圖號 DRAWING NO	日期 DATE
	0- Ax3-1.1A	2019.5.20

接線說明 WIRING DESCRIPTION

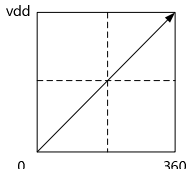
參照第 1 項 外型尺寸

Refer to Clause (1) Outlined Dimension Drawing for Wiring Description.

2.	適用範圍 APPLICATION SCOPE	本產品適用於机器人、无人机、遥控器的角度測量，例如同服機、致動器的信號反饋電位器等； This product is suitable for the measuring of rotational angle for servo and actuators on robots, UAV, Controllers.		
3.	機型 MODEL	AG3 AN3		
4.	外觀 APPEARANCE	外觀應無明顯損傷，如有疑義以限度樣品為準； There shall be no remarkable damage in the visual inspection. Products shall be judged by boundary samples if there are any doubts.		
5.	安裝尺寸 INSTALLATION DIMENSIONS	安裝尺寸參照第 1 項。 REFER TO CLAUSE 1 OUTLINE DIMENSIONS		
7.	最大額定 MAX RATINGS			
	項次 NO.	項目 ITEM	測試方法及條件 TESTING METHOD AND CONDITION	規格 SPECIFICATION
	7.1	工作溫度範圍 Operating Temp		-40° ~ +85°C
	7.2	儲存溫度範圍 Storage Temp		-10° ~ +60°C
	7.3	工作電壓 Operating Voltage		AG3--> 3.3VDC AN3--> 2.5/ 3.3/ 5.0 VDC
	7.4	工作電流 Operating Current	@Vdd=3.3V	Max: ≤10mA

8. 規格 SPECIFICATION

8.1	旋轉方式 Rotation type	旋轉軸操作 Shaft Rotating	Optional Hollow Shaft D Rotor 2.0x1.5 'D'字形通心转轴
8.2	軸旋轉角度 Shaft Rotating Angle		360° Mechanical 360° 机械旋转角度
8.3	連續電氣角度 Electrical Continuity Angle	軌跡測試儀	360°
8.4	有效電氣角度(輸出電壓變化範圍) Effective Electrical Angle	軌跡測試儀	360° Linear
8.4.1	輸出電氣角度误差 Output Electric Angle Error	24-bit 信号采集卡 24-bit acquisition sys.	AG3→±1° @θ=50% AN3→±3° @θ=50%;
8.5	功率 Power		≤0.05W
8.6	旋轉扭力 Rotational Torque	以輸出齒操作 Insert Output Shaft	20 ± 10 gf.cm;
8.7	輸出電壓范围 Output Voltage Offset	精密電錶 Precision Multi-meter	0V~Vdd
8.8	獨立線性 Independent Linearity	軌跡測試儀	AG3--> ≤ ±1% @θ=50% AN3--> ≤ ±3% @θ=50%
8.9	軸晃動間隙 Shaft Rotation Wobble	投影儀 Engineering Projector	Max:±2°
8.10	雜音 (mV) Noise	萬用表、示波器 Multimeter · Oscilloscope	AG3≤12mV AN3≤30mV
8.11	刷新頻率 Refresh Frequency	示波器 Oscilloscope	AG3≤8.3KHz AN3≤3.9KHz
8.12	最高轉速 Max Revolution	頻率計 Frequency Meter	AG3≥3600 RPM AN3≥600 RPM

8.13	上電輸出響應時間 Power On Output Response	精密電錶 Precision Multi-meter	≤1 ms
8.14	輸出訊號範圍 Output Voltage Range	@Vdd=2.5/3.3/5V	0~Vdd@360°
8.15	中立點輸出變化 Center Output Variation	輸出及軌跡測試系統 Output & Tracking Testing System	AG3--> ±10mV@(1/2)Vdd AN3--> ±30mV@(1/2)Vdd
8.16	輸出电压偏置 Output Voltage Offset	輸出及軌跡測試系統 Output & Tracking Testing System.	AG3--> ≅ 12mV AN3--> ≅ 30mV
8.17	輸出軌跡 Output Tracking (360° continuous)	輸出及軌跡測試系統 Output & Tracking Tester	线性 Linear 
8.18	輸出電壓解析度 (@360°) Output Resolution(@360°)	精密電錶 Precision Multimeter @Vdd=3.3V	AG3: 12 bit AN3: 9~10 bit
8.19	輸出信号及接口 Output Signal & I/F	标准 : Analog, Linear 选配 : I2C, PWM	Analog-->AG3,AN3 I2C: to be released 2019Q2 PWM: to be released 2019Q2
8.20	中立点 Center Position	以万用表量测 Vout 端子 及 Gnd: 输出电压 ~ = 1/2 Vdd	D 形贯穿轴平面朝 3x 排端子 参考 1 图纸 D rotor flat edge downward to 3x terminals side.
8.21	Recommended user's Filter Circuit		

9. 可靠性
RELIABILITY

9.1	旋轉壽命 Cycle Life	Cycle Life Tester	一百萬次以上 1-Million cycles min.
9.2	開關壽命 Switch Cycle Life	N/A	N/A
9.3	耐熱性 High Temp	96 hours@85±2°C	Output variation <2%;
9.4	耐寒性 Low Temp	96 hours@-40±2°C	Output variation <3%;
9.5	耐濕性 Humid	96 hours@60±2°C, 90~95% RH	Output variation <2%;
9.6	浸錫試驗 Dipping Test	10s@260°C	Output Variation <1%
9.7	焊錫條件 Soldering Condition		
9.7.1	迴流焊 Reflow soldering	Not Recommended	
9.7.2	波峰焊 Wave soldering	Yes. Manual soldering best recommended.	
10. 環境	ENVIRONMENTAL	ROHS	Compliant to
10.1	ESD; HUMAN	MIL-STD-883G Method 3015.7	(±)1000V ~ 4000V, Step : (±)500V
10.2	ESD; MACHINE	JEDEC EIA/JESD22-A115	(±)100V ~ 300V, Step : (±)50V