

Customer: ALPS EUROPE DISTRIBUTION

No. KK-2006-1722

Date: Aug. 04, 2006

Attention:

Your ref. No.:

Your Part No.: EC11E15204A3

## SPECIFICATIONS

ALPS';

MODEL: EC11E15204A3

Spec. No.:

Sample No.: F 3 3 0 1 5 6 3 M

### RECEIPT STATUS

RECEIVED

By Date

Signature

Name

Title

**ALPS**  
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*K. Abe*

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ENG. DEPT. DIVISION

Sales

B6523

01003#03A (EA)

# S P E C I F I C A T I O N S

1. THIS SPECIFICATIONS APPLY TO EC11E15204A3 ROTARY ENCODERS.

2. CONTENTS OF THIS SPECIFICATIONS.

F3301563M

LA2110E

3. MARKING

- MARKING ON ALL UNITS  
DATE CODE

• CAUTION

Regardless of the suggested applications of these products being introduced in the specifications, when using them for equipment and devices requiring a high degree of safety, respective manufacturers will please preserve safety of the planned equipment and devices by providing necessary protective circuits and redundancy circuits and reconfirm if safety is being duly preserved.

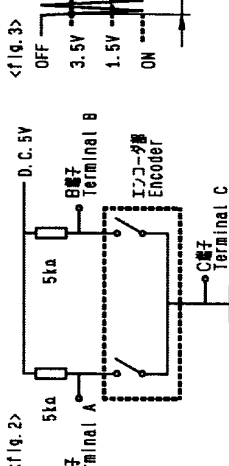
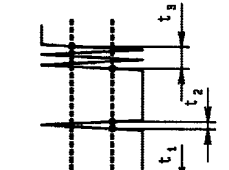
Products being introduced in the specifications have been designed and manufactured for applications to ordinary electronic equipment and devices such as the AV equipment, electric home appliances, office machines and communications equipment. Consequently, when employing these products for applications requiring a high degree of safety and reliability such as the medical equipment, aviation and aircraft equipment, space equipment and burglar alarm equipment, the using manufacturers will please thoroughly study the proprieties of these products for the planned applications.

Although we are exerting our best efforts to maintain the quality of these products, we cannot guarantee that they will never cause short circuiting and open circuitry. Therefore, when designing an equipment or device with which the priority is given to the safety, you will please carefully study the influences to the whole equipment of a single function failure of Potentiometers and Encoders in advance to make out a fail-safe design providing.

CLASS NO.	TITLE	1.1 形回転形インコーダ規格書 11mm Size Rotary Encoder Specification	
1-1 一般事項 1-1-1 適用範囲 Scope この仕様書は主として電子機器に用いる増小径型11形ロータリーインコーダに適用する。 This specification applies to 11mm size low-profile rotary encoder (incremental type) for microscopic current circuits, used in electronic equipment.	1-2 標準状態 Standard atmospheric conditions 標準状態は次のとおりである。 Unless otherwise specified, the standard range of atmospheric conditions for mating measurements and tests is as follows: 周囲温度 : 15°C to 35°C 相対湿度 : 25% to 85% 気圧 : 86kPa to 106kPa 圧力 : 1013hPa 注: 気圧は、この仕様書に示す値を基準とする。 If there is any doubt about the results, measurements shall be made within the following limits: 周囲温度 : 20 ± 1°C 相対湿度 : 63% to 67% 気圧 : 88kPa to 106kPa	1-3 動作温度範囲 Operating temperature range : -40°C to +85°C 1-4 保存温度範囲 Storage temperature range : -40°C to +85°C	
2. 構造 2-1 寸法 Dimensions 図面に示す寸法を参照する。 Refer to attached drawing.	3. 電圧 3-1 定格電圧 Rating D.C. 5V 10mA (10mA MIN)	4. 電気的特性 Electrical characteristics	
1-1 出力信号 Output signal format	条件 Conditions	仕様 Specifications	
<p>&lt;Fig. 1&gt;</p> <p>回転方向 Shaft rotational direction</p> <p>時計方向 C.V.</p> <p>反時計方向 C.C.V.</p>	Signal	出力信号 Output signal	
	A(A-C端子) A(Terminal A-C)	OFF ON	A. B2信号の伝達方向が、図1の仕様より異なる場合は、図1の仕様を参照する。 B. Phase-different signals (Signal A, signal B) Details shown in <Fig. 1>. The broken line shows detent position.
	B(B-C端子) B(Terminal B-C)	OFF ON	
	A(A-C端子) A(Terminal A-C)	OFF ON	
B(B-C端子) B(Terminal B-C)	OFF ON		

**ALPS ELECTRIC CO., LTD.**

APPD.	CHKD.	DSGD.	TITLE	1.1 形回転形インコーダ
Mar. 22, '96	Mar. 22, '96	Mar. 22, '96	DOCUMENT NO.	F 3301563M
			Y. YOSHIOKA, M. SATOH	(1/5)

CLASS NO.	TITLE	1.1 形回転形インコーダ規格書 11mm Size Rotary Encoder Specification
4-2 分解能 Resolution	1. 回転1周あたりのパルス数 Number of pulses in 360° rotation.	仕様 Specifications 15パルス/360° 15 pulses/360° for each phase 20パルス/パルス 20 pulses/pulse
4-3 スイッチング特性 Switching Characteristics	下図の回路図<Fig. 2>を用い、回転速度360°・S <sup>1</sup> の条件下に測定する。 Measurement shall be made under the condition as follows. 1) Shaft rotational speed : 360°・s <sup>1</sup> 2) Test circuit : <fig. 2>	 <p>&lt;Fig. 2&gt;</p> <p>5kΩ A端子 Terminal A B端子 Terminal B C端子 Terminal C インコーダ Encoder</p> <p>&lt;Fig. 3&gt;</p> 
1) チャタリング Chattering	(注) コードOFF状態 : 出力電圧が3.5V以上の状態を言う。 コードON状態 : 出力電圧が1.5V以下の状態を言う。 (note) Code-OFF area : The area which the voltage is 3.5V or more. Code-ON area : The area which the voltage is 1.5V or less.	1) コードOFF-ONとON-OFFの通過時間、並びに、5Vに達するまでの時間、並びに、5Vを通過するまでの時間、並びに、5Vを通過するまでの時間、並びに、5Vを通過するまでの時間。 Specified by the signal's passage time from 3.5V to 1.5V or from 1.5V to 3.5V of each switching position (code OFF-ON or ON-OFF). $t_1, t_3 \leq 3ms$
2) 滑動ノイズ Sliding noise (Bounce)	コードON時の1.5V以上の状態を超過する時間とし、チャタリング(1.5V以上の状態を超過する時間)と見做す。 1ms以上の1.5V以下の状態を超過する場合は、滑動ノイズと見做す。 Specified by the time of voltage change exceed 1.5V in code-ON area. When the bounce has code-ON time less than 1ms between chattering ( $t_1$ or $t_2$ ), the voltage change shall be regarded as a part of chattering. When the code-ON time between 2 bounces is less than 1ms, they are regarded as 1 limited bounce.	2) 滑動ノイズの発生時間、並びに、チャタリング(1.5V以上の状態を超過する時間)と見做す。 1ms以上の1.5V以下の状態を超過する場合は、滑動ノイズと見做す。 Specified by the time of voltage change exceed 1.5V in code-ON area. When the bounce has code-ON time less than 1ms between chattering ( $t_1$ or $t_2$ ), the voltage change shall be regarded as a part of chattering. When the code-ON time between 2 bounces is less than 1ms, they are regarded as 1 limited bounce. $t_2 \leq 2ms$
3) 滑動ノイズ Sliding noise	コードOFF時の電圧変動 The voltage change in code-OFF area.	3) 滑動ノイズの発生時間、並びに、チャタリング(1.5V以上の状態を超過する時間)と見做す。 1ms以上の1.5V以下の状態を超過する場合は、滑動ノイズと見做す。 Specified by the time of voltage change exceed 1.5V in code-OFF area. When the bounce has code-OFF time less than 1ms between chattering ( $t_1$ or $t_2$ ), the voltage change shall be regarded as a part of chattering. When the code-OFF time between 2 bounces is less than 1ms, they are regarded as 1 limited bounce. $t_3 \leq 2ms$

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			Y. YOSHIOKA, M. SATOH	(2/5)



CLASS NO. \_\_\_\_\_ TITLE \_\_\_\_\_

1. はんだ調整 Resistance to soldering heat

下記のはんだ付け条件にて組立条件の基準、基準のないと、組立工程のせいと、  
 At the specified by the soldering conditions below.  
 There shall be no deformation or cracks. In molded part.  
 No excessive abnormality in rotational feeling.

はんだ付け条件 Soldering conditions

手はんだの場合 Manual soldering

温度 350°C CNT, 時間 3秒以内  
 Bit temperature of soldering iron : 350°C or less.  
 Application time of soldering iron : within 3s.

アイソップはんだの場合 Dip soldering

印刷基板 : 1.6mm厚銅箔基板  
 Printed wiring board: Both-sided copper clad laminate board with thickness of 1.6mm.

フラックス : 比重 0.82以上のフラックスを用い、塗布式フラックスにて塗布面積は、基板厚の3分の2。  
 Flux: Specific gravity: 0.82 or more.  
 Flux shall be applied to the board using a bubble foaming type fluxer.  
 The board shall be soaked in the flux bubble only to the 2/3 of its thickness.

プレヒート : 基板表面温度 100°C CNT, 時間 2分以内  
 Preheating: Surface temperature of board: 100°C or less.  
 Preheating time: within 2 min.

はんだ : 温度 260±5°C, 時間 5±1秒  
 Soldering: Solder temperature: 260±5°C.  
 Immersion time: within 5±1s.

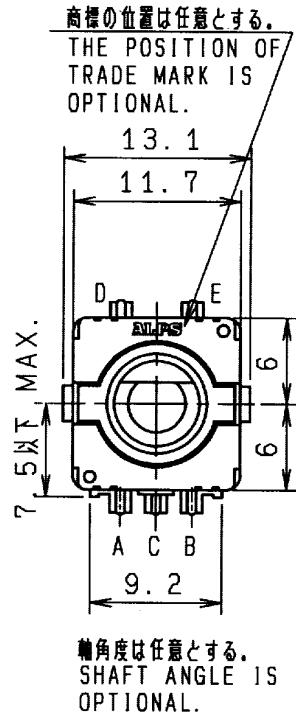
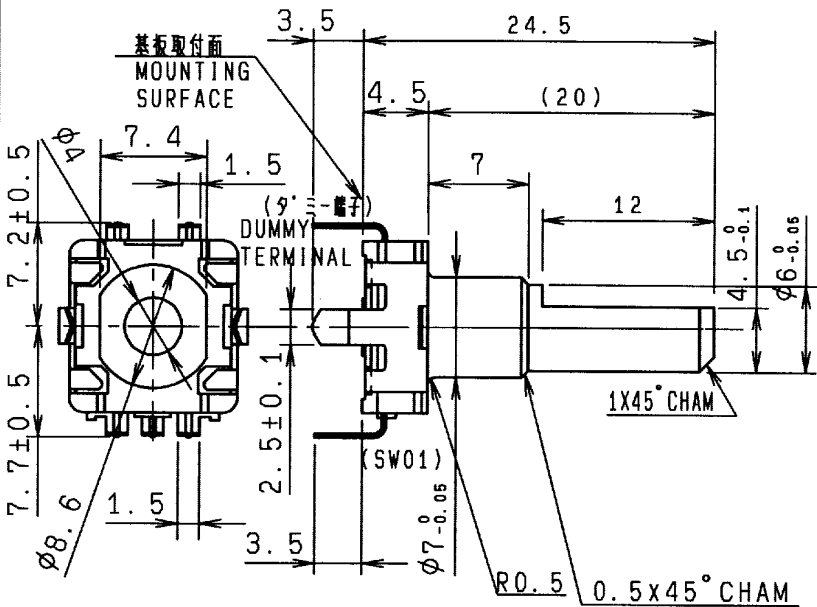
以上の工程を1回または2回繰り返す。  
 Apply the above soldering process for 1 or 2 times.

SYMB		DATE	APPD	CHKD	DSGD	ALPS ELECTRIC CO., LTD.	
APPD		DATE	CHKD	DSGD	TITLE		
APPD		DATE	CHKD	DSGD	F. YOSHIOKA, M. SATOH Y. ISAWA		
APPD		DATE	CHKD	DSGD	DOCUMENT NO.		
APPD		DATE	CHKD	DSGD	F 3301563M (5/5)		
APPD		DATE	CHKD	DSGD	ECLIE		

注記 軸受材質:亜鉛タ<sup>イ</sup>キャスト  
軸材質:アルミニウム

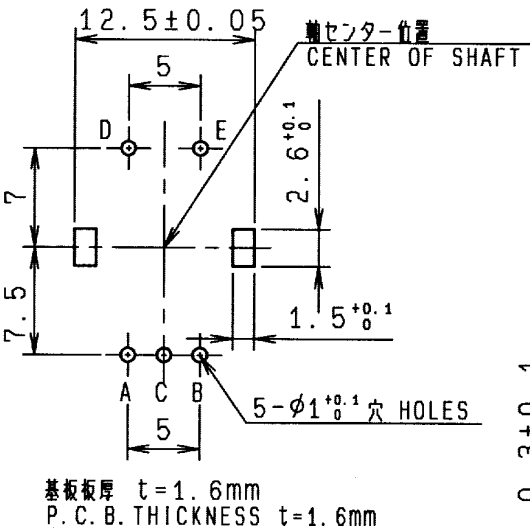
(SW01) ENCODER

NOTES BUSHING MATERIAL: ZINC ALLOY DIE CASTING  
SHAFT MATERIAL: ALUMINUM

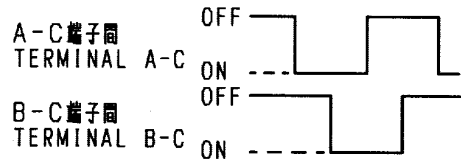


取付寸法図 許容差±0.1  
(部品挿入側)  
P. W. B. MOUNTING DETAIL  
TOLERANCE±0.1  
VIEWED FROM MOUNTING SIDE

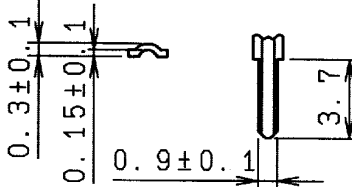
(SW01) 出力信号  
ENCODER OUTPUT SIGNAL



時計方向回転  
CW ROTATION



基板挿入部端子形状詳細(3:1)  
TERMINAL DETAIL



指定なき部分の許容差 TOLERANCES UNLESS OTHERWISE SPEC	
L ≤ 10	±0.3
10 < L < 100	±0.5
100 ≤ L	±0.8
角度 ANGULAR DIMENSION	±5°

				30クリック15パルス	
PART NO.	NAME	MATERIAL NAME / CODE	FINISH		
<b>ALPS ELECTRIC CO., LTD.</b>					
		DSGD. セツケイ2 H. MIURA 2000-05-31	SCALE 2:1		
		CHKD. M. SATOH 2000-05-31		TITLE 11形1軸 薄形エンコーダ	
		APPD. S. MIZOBUTI 2000-05-31	UNIT mm	DOCUMENT NO. LA2110E	
SYMB	DATE	APPD	CHKD	DSGD	

F3301563M