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No. KK-2006-2120

Date: Oct. 23, 2006

Attention:

Your ref. No.:

Your Part No.: RK27112MC009A 194449

SPECIFICATIONS

ALPS' ;

MODEL: RK27112MC009
(10kAX2)

Spec. No.:

Sample No.: F 3 4 7 7 4 2 4 M

RECEIPT STATUS

RECEIVED

By Date

Signature

Name

Title

ALPS®
ALPS ELECTRIC CO., LTD.

DSG'D Y. Ohya

APP'D S. Ikenaga

ENG. DEPT. DIVISION

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Sales

B6523

01003#03A (EA)

No. KK-2006-2120

SPECIFICATIONS

1. THIS SPECIFICATIONS APPLY TO RK27112MC009 POTENTIOMETER.

2. CONTENTS OF THIS SPECIFICATIONS.

5K272AMS-4
K272AMC002
4K16M-1
4K-1

3. MARKING

• MARKING ON ALL UNITS
DATE CODE, RESIST. VALUE, TAPER

4. REMARKS

• FURNUSH PACKAGE
NUT:1 WASHER:1

• NOTES

·Silver printed patterns are coated with carbon as a protection against sulphuration.
·Marking ⇒ in specifications shows standard and condition for application.

• 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 protectve 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: SPECIFICATIONS

Feature

This is a potentiometer with D.C. magnet motor and it is adjustable by both manual shaft and motor.

Temperature for operating and storage

1. Dimensions : See attached drawing
2. Operating temperature : -10 ℃ ~ +70 ℃
3. Storage temperature : -20 ℃ ~ +80 ℃
4. Motor : D.C. magnet motor (With 6V Disk Varistor)

Mechanical specifications

1. Operation : manual operation and motor drive
2. Total rotational angle : 300° ± 5°
3. Rotational speed : 12 ± 3 sec/300° (at 4.5V D.C. applied to motor)
4. Direction of rotation : C.W. rotation at normal polarity. (When the potentiometer is looked at from the shaft side.)
5. Mechanical noise : Continuous, monotonous, not unpleasant sound to be heard. To be mutually discussed when questionable.
6. Rotational torque : 15~45 mN·m ~~150~450 g·f·cm~~ (Rotaional speed 60° /sec.)
7. Stopper strength of shaft
   with manual operation : No damage with an application of 0.9N·m ~~(9 kg·f·cm)~~.
   with motor drive : Shaft must be slipped at the both ends of manual rotation.
8. Bushing nut tightening strength: ⚠ Tightening torque to be no greater than 1.5 N·m ~~(15 kg·f·cm)~~.

(Pay attention otherwise the strength may not be assured.)

9. Push / pull strength : No damages with an application of push or pull force 100N ~~(10 kg·f)~~ for 10 sec.
10. Resistance to soldering heat : After soldering there shall be no evidence of poor contact between resistance element and terminals, or any physical damage as a result of the test.
    The terminal of the potentiometer less than 350 ℃ and within 5 sec.
    The terminal of the motor less than 350 ℃ and within 2 sec.

CLASS.NO. | TITLE: SPECIFICATIONS

Electrical specifications 10kΩ

1. Total resistance : Nominal total resistance ± 20% (10kΩ ≦ R ≦ 2MΩ)
2. Rated voltage : 30V A.C. This potentiometer is designed for A.C. voltage only.
3. Resistance taper : See (HSA02)
4. Maximum attenuation level at full C.C.W. position :

Total resistance	Attenuation level
R ≧ 100kΩ	100 dB min.
100kΩ > R ≧ 50kΩ	90 dB min.
50kΩ > R ≧ 10kΩ	80 dB min.

5. Insertion loss at full C.W. position : 0.1 dB max. (Measure between (R1, R2) term 1-2 output V, term 1-3 input V)
6. Gang error :

Total resistance	Gang error
R ≧ 50kΩ	3 dB max. between -70 dB less than -60 dB
	2 dB max. between -60 dB ~ 0 dB
50kΩ > R ≧ 20kΩ	3 dB max. between -60 dB less than -40 dB
	2 dB max. between -40 dB ~ 0 dB
20kΩ > R ≧ 10kΩ	3 dB max. between -60 dB ~ 0 dB

7. Sliding noise : Less than 47mV measured by JIS C 6443. (Neglected a impulsive noise at the C.W. and C.C.W. ends of position.)
8. Insulation resistance
   Potentiometer section : More than 100MΩ at 500V D.C.
   Motor section : More than 1MΩ at 100V D.C.
9. Withstand voltage
   Potentiometer section : 500V A.C. for 1 minute.
10. Supply voltage of motor : 4~6V D.C.
11. Motor current (at 4.5V D.C. applied to motor)
    Normal operation : 100mA max.
    Slipping operation at both ends : 150mA max.
    4.5V D.C.

Endurance specifications

1. Rotational life : 15,000 cycles min.

SYMB.	DATE	APPD.	CHKD.	DSGD.
4	Mar 11 '99	M.S		Y.S

ALPS ELECTRIC CO., LTD.

APPD.	CHKD.	DSGD.	TITLE
Aug. 10, 99		Aug. 6, '99	-

DOCUMENT NO. 5K272AMS-4

CLASS NO.	TITLE SPECIFICATIONS	

Note

1. The standard test shall be subject to a temperature from 5 ℃ to 35 ℃ and relative humidity from 45% to 85%. Test shall be done under environmental requirements of a temperature of 20° ± 2 ℃ and relative humidity of 65 ± 5% if a decision is in question.

2. Notice on motor

   1) Motor terminals shall not be bent more than twice.

   2) Soldering to the motor terminals shall be within a few second, not to cause the transformation of terminal base plastics. And, avoid that the flux flows into the motor. Pay special attention to the terminals when they are wave soldered.

      If the flux flows into the motor, it may cause a poor contact.

   3) Motor terminal should not be pressed inside the motor. It may cause a poor contact in the motor.

   4) Pay attention that a piece of iron and an alien substance are not crepted into the motor.

   5) In operation, temperature arround the motor produce an effect on the performance and life. Pay special attention in high temperature and humidity. Storage in high temperature and humidity, and in corrosive gas, shall be avoided.

   6) In case, using the adhesive agent and the seal agent etc. for fit up, make sure that there is no generation of the harmful gas for motor. (including all chemicals arround the motor.) Pay special attention to cyanogen system adhesive agent and organically system silicone.

CLASS NO.	TITLE SPECIFICATIONS	

3. Power supply

   Regulated D.C. power supply shall be used.

   (ripple to be 1% max.) Motor terminal shall not be conected with fixed resistors in series.

   And supply current is to be 350mA min.

4. Knob

   The material of the knob shall be insulation material.

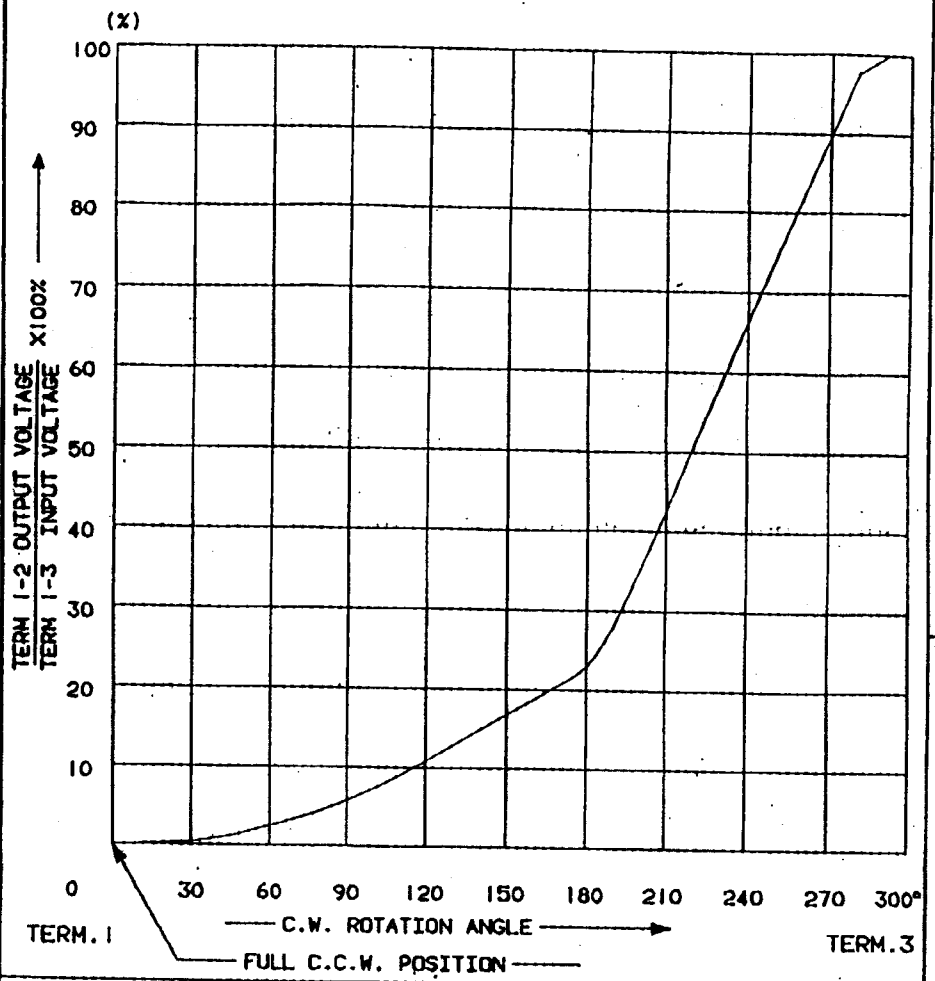
   As potentiometer is not grounded, conductive material of the knob may cause a earth noise.

5. The items except above mentioned items shall meet or exceed JIS C 6443.

SYMB	DATE	APPD.	CHKD.	DSGD.	ALPS ELECTRIC CO., LTD.			
					APPD. Apr.19'90	CHKD. Apr.19'90	DSGD. Apr.19'90	TITLE
								DOCUMENT NO. 4K16M-1

ALPS ELECTRIC CO..LTD

1-7 YUKIGAYA OTSUKA-CHO OTA-KU TOKYO JAPAN



AT 180° C.W. SHAFT ROTATION FROM FULL C.C.W. POSITION, VOLTAGE PERCENT SHALL FALL WITHIN THE LIMITS OF 15 - 30PERCENT.

SYMB	DATE	APPD	CHKD	DSGD
Original	95-05-31	M.I	T.K	S.S

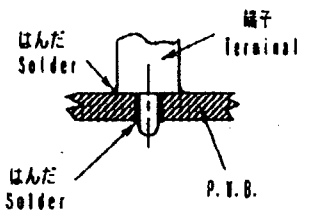
DSGD K. Chonan Jan.22'96
CHKD. S. Sasaki Jan.22'96
APPD. Y. Ohno Jan. 22 96
SCALE
UNIT mm
TITLE RESISTANCE TAPER
DOCUMENT NO. HSA02

< はんだ付け時のご注意事項 >

図のようにP. W. Bの上面に はんだ付けをする配線は、
お避け下さい。

Caution for soldering

Please avoid soldering on upper surface of P.W.B. as shown



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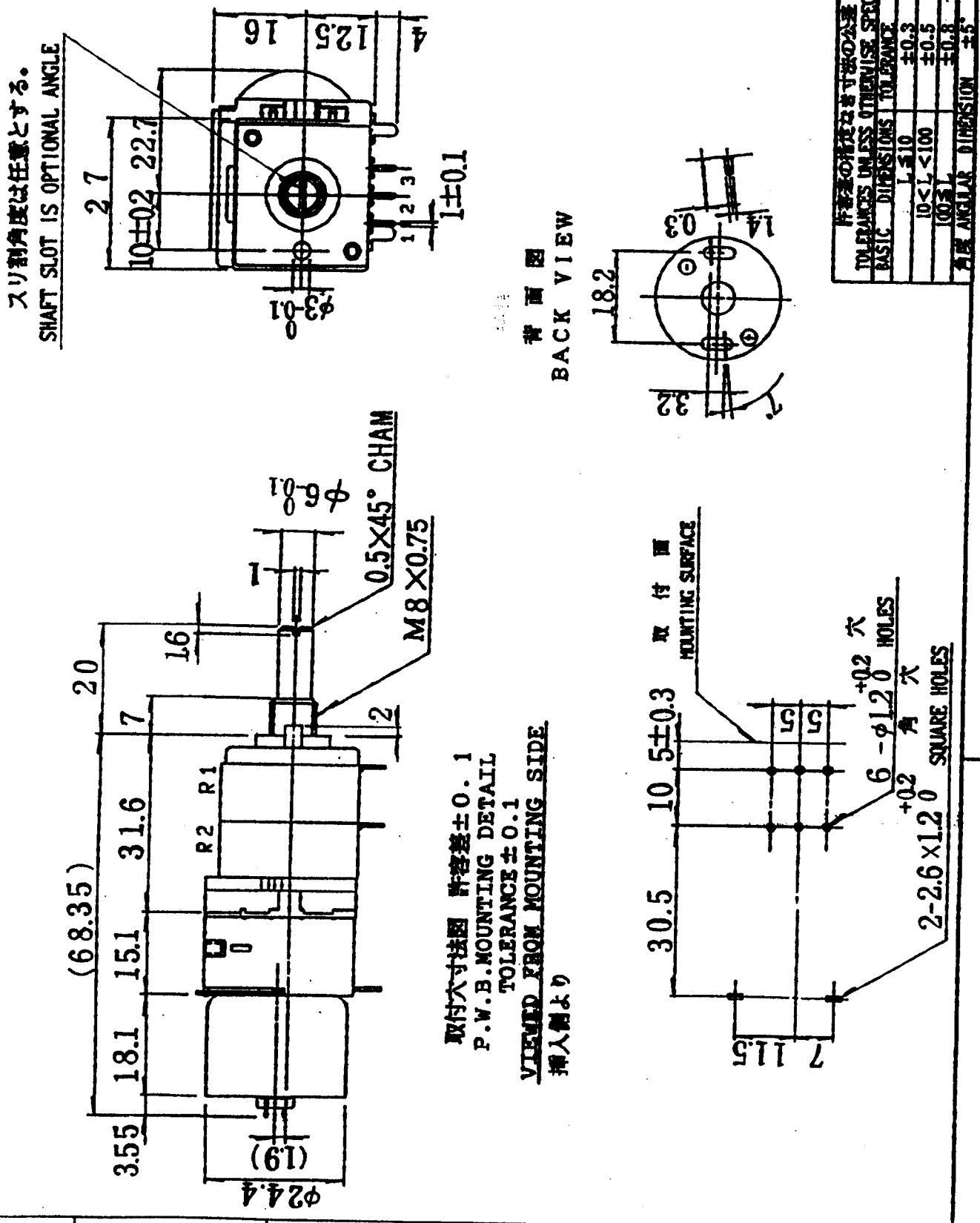
SYMB	DATE	APPD	CHKD	DSGD

APPD 1-RI 96.1.11 村岡
CHKD 1-RI 96.1.11 佐藤
DSGD 1-RI 96.1.11 大矢

TITLE —

DOCUMENT NO. 4K-1



PART NO.	NAME	MATERIAL NAME & CODE	FINISH

ALPS ELECTRIC CO., LTD.

UNIT	SCALE
mm	

APPD.	CHKD.	DSGD.
W渡 '90.5.19	佐藤 '90.5.18	佐藤 '90.5.18

TITLE 27形1軸2連
モータ駆動ボリューム組立図

DOCUMENT NO. K272AMC002

FORM REV.	SYMB.	DATE	APPD.	CHKD.	DSGD.
'91.2-4			相沢	佐藤	木矢