

Customer: ALGE GERMAN DISTRIBUTER

No. GM-2003-1024

Date: Oct. 15, 2003

Attention:

Your ref. No:

Your Part. No: ALBS PROMOTION

SPECIFICATIONS

ALPS';

MODEL RK16812MG
(10k D X2)

Spec. No. :

Sample No. : F1021814M

RECEIPT STATUS

RECEIVED

By Date

Signature

Name

Title

ALPS ELECTRIC CO., LTD.

HEAD OFFICE
1-7, YUKIGAYA-OHTSUKA-CHO,
OHTA-KU, TOKYO 145-8501 JAPAN

DSG'D

M. Sato

APP'D

S. Sato

Sales

24678

SPECIFICATIONS

1. THIS SPECIFICATIONS APPLY TO RK16812MG POTENTIOMETER.

2. CONTENTS OF THIS SPECIFICATIONS.

F1021814M
K162FMG00V

3. MARKING

· MARKING ON ALL UNITS
EIA DATE CODE, RESIST. VALUE, TAPER

4. REMARKS

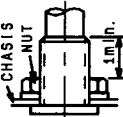
· FURNISH PACKAGE
NUT: 1, WASHER: 1

· 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.

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°C ~ +70°C 3. Storage temperature : -20°C ~ +80°C 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 heard. To be mutually discussed when questionable. (at 4.5V D.C. applied to motor) 6. Rotational torque : 10~40mN·m (Rotational speed 60°/sec.) 7. Stopper strength of shaft With manual operation : No damage with an application of 0.9N·m. 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 1.2N·m. (Pay attention otherwise the strength may not be assured.)  9. Push / pull strength : No damages with an application of push or pull force 100N 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 damages as a result of the test. The terminal of the potentiometer less than 300°C and within 3 sec. The terminal of the motor less than 350°C and within 2 sec.																			
ALPS ELECTRIC CO., LTD. <table><tr><td>APPD.</td><td>CHKD.</td><td>DSGD.</td><td>TITLE</td></tr><tr><td>Nov. 08. '93</td><td>Nov. 08. '93</td><td>Nov. 08. '93</td><td>F1021814M</td></tr><tr><td>S. Aizawa</td><td>M. Satoh</td><td>Y. Saitoh</td><td>DOCUMENT NO.</td></tr><tr><td></td><td></td><td></td><td>RK168</td></tr></table>				APPD.	CHKD.	DSGD.	TITLE	Nov. 08. '93	Nov. 08. '93	Nov. 08. '93	F1021814M	S. Aizawa	M. Satoh	Y. Saitoh	DOCUMENT NO.				RK168
APPD.	CHKD.	DSGD.	TITLE																
Nov. 08. '93	Nov. 08. '93	Nov. 08. '93	F1021814M																
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			RK168																

SPECIFICATIONS

Electrical specifications

- 1.Total resistance : 10k ±20%
- 2.Rated power : 0.05 W
- 3.Rated voltage :

The rated voltage shall be the voltage of D.C. or A.C. (commercial frequency, effective value) corresponding to the rated power (dissipation), and be obtained from the following formula. When the obtained rated voltage exceeds the maximum working voltage given in the following, however, the maximum working voltage of the following shall be the rated voltage.

$$E = \sqrt{P \cdot R} \text{ (V)}$$

Where E : Rated voltage (V)

P : Rated power(dissipation) (W)

R : Nominal total resistance (Ω)

Maximum working voltage : 50V A.C.

(This potentiometer is designed for A.C.voltage only).

4. Resistance taper : D

- 5.Maximum attenuation level at full C.C.W. position : 80 dB min.

- 6.Insertion loss at full .C.W.position : 0.1dB max.

- 7.Sliding noise : Less than 100mV. (Measured by JIS C 6443)

8. Gang error : 5 dB max. between -50dB less than -40dB
3 dB max. between -40dB ~ 0dB

9. Insulation resistance

Potentiometer section

Motor section

: More than 100 MΩ at 250V D.C.

: More than 1 MΩ at 100V D.C.

10. Withstand voltage

Potentiometer section : 300V A.C. for 1 minute.

11. Supply voltage for motor : 4~6V D.C.

12. Rated voltage for motor : 4.5V D.C.

13. Motor current (at 4.5V D.C.applied to motor)

Normal operation : 100mA max.

Slipping operation

at both ends : 150mA max.

Endurance specifications

1. Rotational life : 15,000 cycles min.

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SYMB	DATE	APPD	CHKD	DSGD	APPD.	CHKD.	DSGD.	TITLE
					Nov. 08. '93	Nov. 08. '93	Nov. 08. '93	F1021814M
					S. Aizawa	M. Satoh	Y. Saitoh	DOCUMENT NO.
								RK168

SPECIFICATIONS

Note

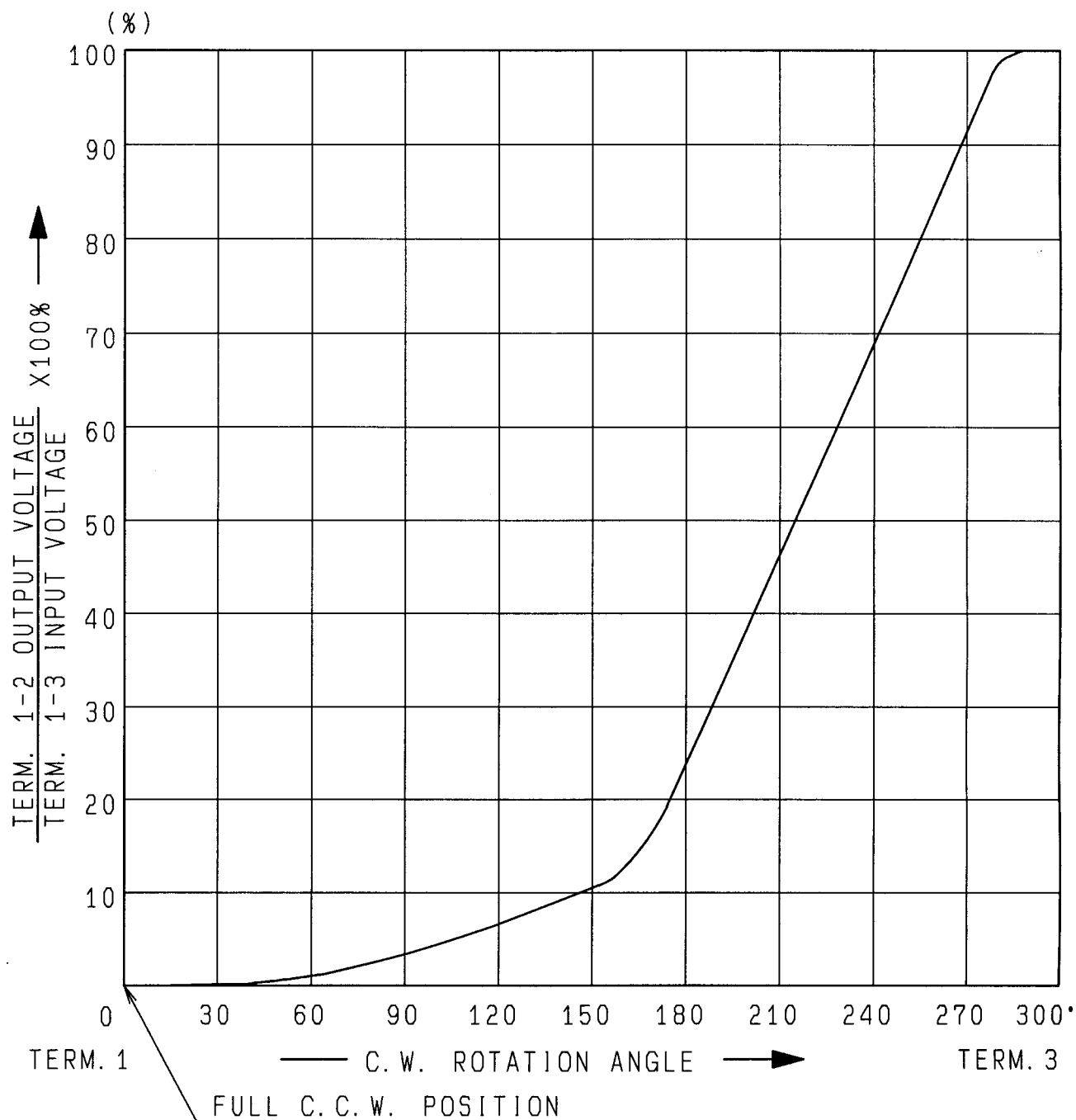
1. The standard test shall be subject to temperature from 5°C to 35°C and relative humidity from 45% to 85%. Test shall be done under environmental requirements of a temperature of $20 \pm 2^\circ\text{C}$ and relative humidity of $65 \pm 5\%$ if a decision is in question.
2. Notice on motor
 - 1). Motor 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 crept 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.
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. The items except above mentioned items shall meet or exceed JIS C 6443.

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					S. Aizawa	M. Satoh	Y. Saitoh	DOCUMENT NO.
								RK168
SYMB	DATE	APPD	CHKD	DSGD				

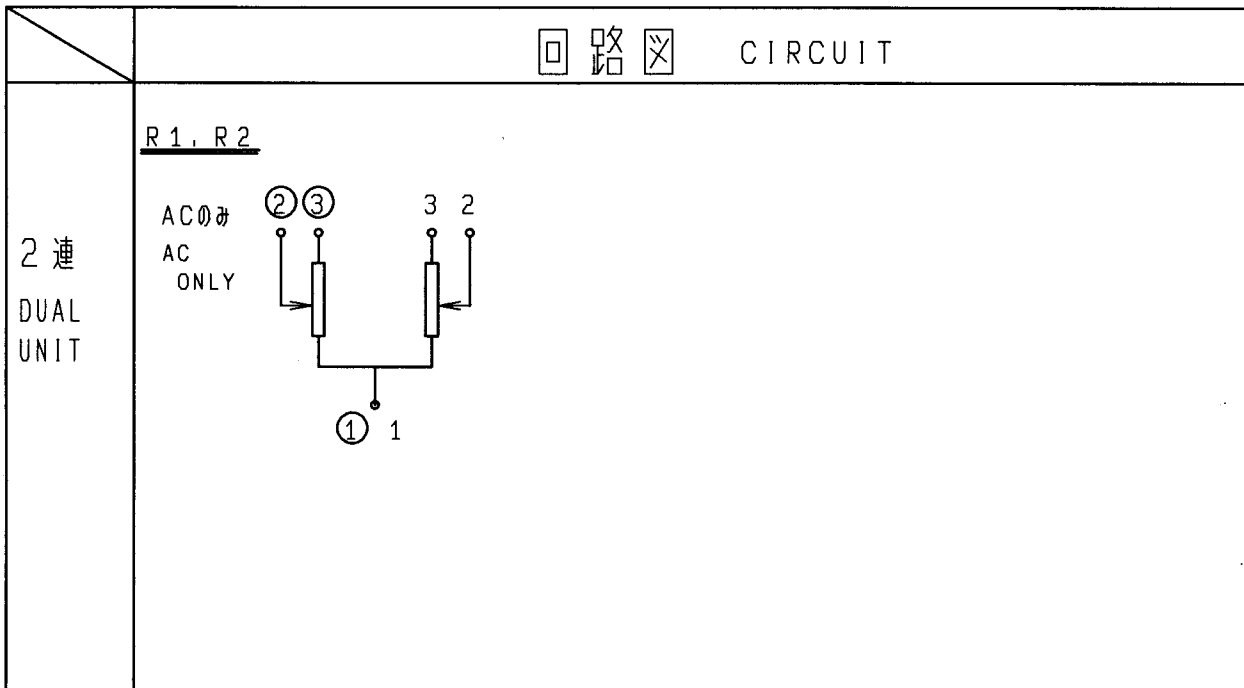


ALPS ELECTRIC CO., LTD
1-7 YUKIGAYA OTSUKA-CHO OTA-KU TOKYO JAPAN



AT 150° C.W. SHAFT ROTATION FROM FULL C.C.W. POSITION VOLTAGE PERCENT SHALL FALL WITHIN THE LIMITS OF 6-15 PERCENT.

					APPD.	CHKD.	DSGD.	NAME
					Nov. 05, '93	Nov. 05, '93	Nov. 05, '93	RESISTANCE TAPER (D)
					K. Magami	K. Sasaki	K. Suzuki	DOCUMENT NO.
SYMB	DATE	APPD	CHKD	DSGD				F1021814M



					ALPS ELECTRIC CO., LTD.		
					DSG1. セッケイ1-9066011	SCALE	NO.
					Y. SAITOH 96-03-29		F 1021814M
					CHKD.		TITLE
					Y. OHYA 96-03-29		_____
					APPD.	UNIT	DOCUMENT NO.
					Y. YOSHIOKA 96-03-29	m m	タップ無
SYMB	DATE	APPD	CHKD	DSGD			

					ANGULAR DIMENSION				
PART NO.		NAME		MATERIAL NAME / CODE			FINISH		シールドケース付
					ALPS ELECTRIC CO., LTD.				
					DSGN. 1-設番1置		SCALE	009	
					Y. Salton 93-11-08		1 : 1	F1021814M	
					CHKD.			TITLE 1軸2速 照光無し	
					M. Satoh 93-11-08			モーター駆動ボリューム組立図	
					APPD.		UNIT	DOCUMENT NO.	
SYMB		DATE		APPD	CHKD	DSGO	mm	K162FMG00V	
					S. Aizawa 93-11-08				