

Customer: ALPS(CHINA)CO.,LTD.SHANGHAI
BRANCH

No.: KK-2015-0877

Date: Jun. 26, 2015

Attention:

Your ref. No.:

Your Part No.: YATELIAN SD2-4G LIU

SPECIFICATIONS

ALPS Model ; RK16816MGA04

ALPS Spec. No. :

ALPS Sample No.: 0 0 2 1 7 3 2 1 2 6

RECEIPT STATUS

RECEIVED

By. Date

Signature

Name

Title

ALPS[®]
ALPS ELECTRIC CO., LTD.

DSG'D

APP'D

ENG. DEPT.

Sales

Head Office

1-7, Yukigaya-otsuka-machi, Ota-ku, Tokyo, 145-8501 Japan

Phone,+81(3)3726-1211

21148

ACY04-G03A (EA)

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

1. THIS SPECIFICATIONS APPLY TO RK16816MGA04 POTENTIOMETER.

2. CONTENTS OF THIS SPECIFICATIONS.

0021732126

K166FMGOOE

3. MARKING

• MARKING ON ALL UNITS

DATE CODE, RESIST. VALUE, TAPER

4. REMARKS

• FURNISH PACKAGE

NUT:1 WASHER:1

• CAUTION

There is a possibility that might be affected by contact resistance of resistive element and wiper in case of low impedance of output side in voltage regulation circuit.

For this reason, we require that you adjust to impedance of output side more than 100 times of total resistance.

1. For the export of products which are controlled items subject to foreign and domestic export laws and regulations, you must obtain approval and/or follow the formalities of such laws and regulations.

2. Products must not be used for military and/or antisocial purposes such as terrorism, and shall not be supplied to any party intending to use the products for such purposes.

3. Unless provided otherwise, the products have been designed and manufactured for application to equipment and devices which are sold to end-users in the market, such as AV (audio visual) equipment, home electric equipment, office and commercial electronic equipment, information and communication equipment or amusement equipment. The products are not intended for use in, and must not be used for, any application of nuclear equipment, driving control equipment for aerospace or any other unauthorized use.

With the exception of the above mentioned banned applications, for applications involving high levels of safety and liability such as medical equipment, burglar alarm equipment, disaster prevention equipment and undersea equipment, please contact an Alps sales representative and/or evaluate the total system on the applicability. Also, implement a fail-safe design, protection circuit, redundant circuit, malfunction protection and/or fire protection into the complete system for safety and reliability of the total system.

4. Before using products which were not specifically designed for use in automotive applications, please contact an Alps sales representative.

5. The products shall be stored in the original packaging and kept at room temperature and humidity, out of direct sunlight, and away from any and all corrosive gas. The products shall be completely used as soon as possible, but no later than 6 months from the date of delivery.

Once product packaging is opened, the complete quantity of such products shall be promptly used.

SPECIFICATIONS

Feature

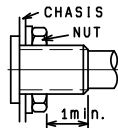
This is a potentiometer with D.C. magnet motor and it is adjustable by both manual shaft and motor.

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.

APPD.	CHKD.	DSGD.	TITLE
Nov. 08. '93	Nov. 08. '93	Nov. 08. '93	0021732126
S. Aizawa M. Satoh Y. Saitoh			DOCUMENT NO.
			RK168

SYMB DATE APPD CHKD DSGD

SPECIFICATIONS

Electrical specifications

(R1~R6)

1. Total resistance : 100kΩ ±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.

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

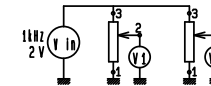
Where E : Rated voltage (V)
P : Rated power (dissipation) (W)
R : Nominal total resistance (Ω)

Maximum working voltage : 50V A.C.

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

4. Resistance taper : B

5. Maximum attenuation level at full C.C.W. position : 100 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 -60dB less than -40dB
(R1, R2)(R3, R4)(R5, R6) 3 dB max. between -40dB ~ 0dB



9. Insulation resistance

Potentiometer section : More than 100 MΩ at 250V D.C.
Motor section : 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.

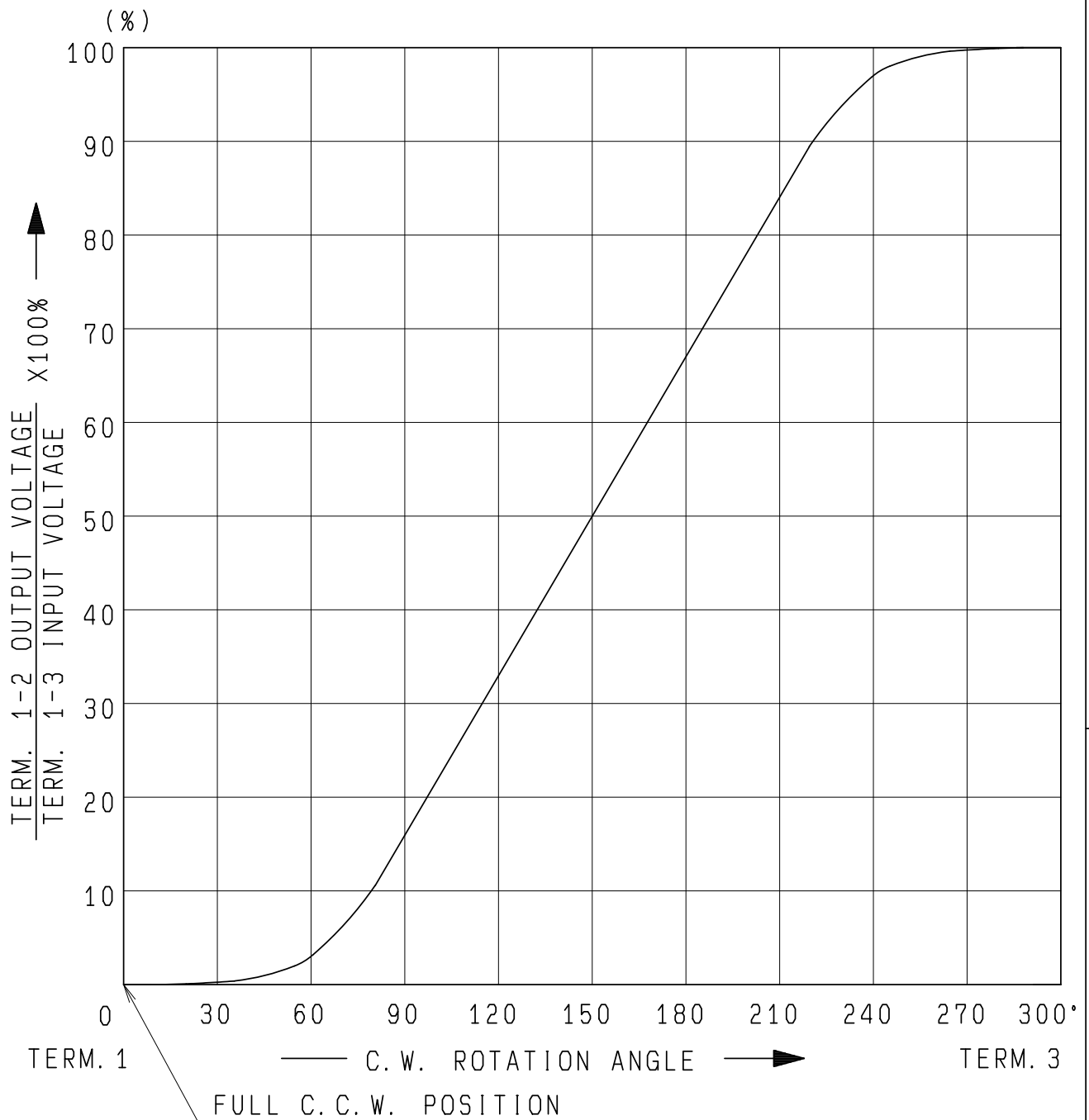
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APPD.	CHKD.	DSGD.	TITLE
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ALPS ELECTRIC CO., LTD
 1-7 YUKIGAYA OTSUKA-CHO OTA-KU TOKYO JAPAN



AT 150° C.W. SHAFT ROTATION FROM FULL C.C.W. POSITION VOLTAGE PERCENT SHALL FALL WITHIN THE LIMITS OF 40-60 PERCENT.

					APPD.	CHKD.	DSGD.	NAME
					Nov. 05. '93	Nov. 05. '93	Nov. 05. '93	RESISTANCE TAPER (B)
SYMB	DATE	APPD	CHKD	DSGD	K. Magami	K. Sasaki	K. Suzuki	DOCUMENT NO.
								0021732126

GMOTOR

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±2°C 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.

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.
SYMB	DATE	APPD	CHKD	DSGD				RK168



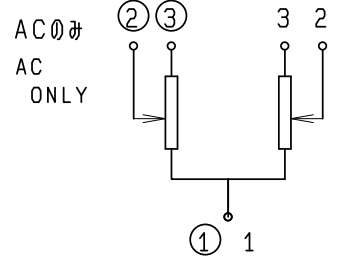
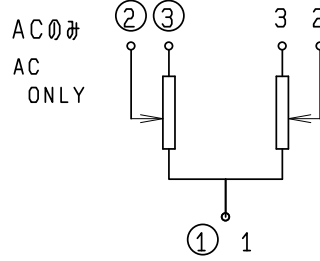
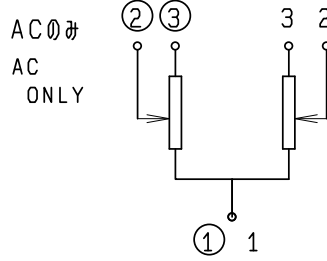
CIRCUIT

6 連
6-
GANGED
UNIT

R 1, R 2

R 3, R 4

R 5, R 6



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SCALE

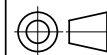
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Y. SAITOH 96-03-29

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Y. OHYA 96-03-29



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Y. YOSHIOKA 96-03-29

UNIT

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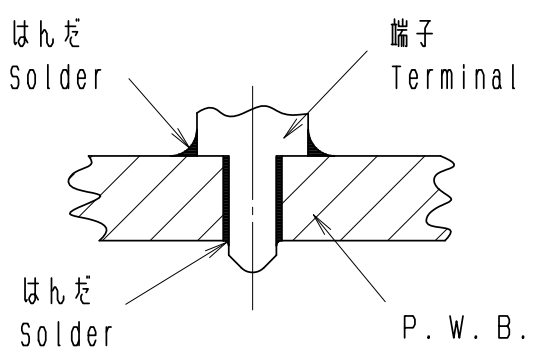
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CLASS No. _____

TITLE _____

<はんだ付け時の注意事項>
Caution for soldering

図のようにP. W. B.の上にはんだ付けをする配線は避け下さい。
Please avoid soldering on upper surface of P.W.B. as shown



基板に挿入される金属足ははんだ付けしてご使用願います。
Solder all metal inserted fixing including terminals & metal lugs into a substrate.

ALPS ELECTRIC CO., LTD.

					APPD. DSG1 Y. YOSHIOKA 1996/01/11	CHKD. DSG1 Y. SATO 1996/01/11	DSGD. DSG1 Y. OYA 1996/01/11	TITLE
SYMB	DATE	APPD	CHKD	DSGD	DOCUMENT NO.			0021732126 (1/1)