| | | | (Rotar: | | | | |
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| s | RRM-S-501 | SRRM PRODUCT SPECIFICATIONS | § | | | | |
| 1. 1. 1. 1. 2 2 2 2 3. 1 | 2.Noperating temperat 3 Test conditions Appearance, construc 1 Appearance Switc 2 Construction and d 3 Markings Per ind | h shall have good finishing, and shall have no rust, crack or plating fa imensions Per individual product drawing ividual product drawing C 0.25 A (Resistive load) | 20°C ~ 85°C and 86~106kPa {860~1060mbar} Ain e conducted at 20±2°C, 65±5% RH and | | | | |
| | Items | Test conditions | Criterion | | | | |
| 4.1 | Contact resistance | Shall be measured at 1kHz±200Hz (20mV MAX , 50mA MAX) or 1A, 5V DC by voltage drop method. | 20 m Q MAX | | | | |
| 4.2 | Insulation resistance | 100 HΩ MIN. | | | | | |
| 4.3 | Voltage proof | Test voltage: <u>500</u> V AC (50~60Hz, cut-off current 2 mA) Applied position: Between all terminals Between terminals and ground (frame) | No dielectric breakdown shall occur. | | | | |
| 4.4 | Capacitance | Shall be measured at 1MHz ± 10kHz Between all terminals Between terminals and ground (frame) Between all circuits | | | | | |
| 4.5 | Changeover timing | | As per individual product drawing. | | | | |
| 5.) | dechanical performand | Test conditions | | | | | |
| 5.1 | Operating torque | lest conditions | Criterion As per individual product drawing. | | | | |
| 5.2 | Changeover angle | | As per individual product drawing. | | | | |
| 5.3 | Terminal strength | A static load of 10 N 1020 at Ashall be applied to the tip of terminal in a desired direction for one minute. The number of tests shall be once per terminal. | Shall be free from terminal loosenes and damage and breakage of terminal holding portion. Terminals may be be after test, electrical performance requirement specified in item 4 shall be satisfied. | | | | |
| 5.4 | Mounting strength (Applied to center nut mounting type) | Switch shall be mounted at : 2 N·m (20.4 kef-cm/2) normal mounting method. | Shall be free from damage of bushing thread portion. There shall be no abnormalities in exis rotation and caulking portion. | | | | |
| 5.5 | Control strength [Item (1) shall be applied to the switch construction with stopper.] | A rotational torque of 1 N·m +10.2 kaf-cm shall be applied to both end stops for 15 seconds. A static load of 100N+10.2 kaf-2 shall be applied in the push and pull directions of the shaft for 15 seconds. A bending moment of 1 N·m +10.2 kaf-cm shall be applied to the shaft for 15 seconds. | Shall be free from pronounced wobble, bending and mechanical abnormalities. | | | | |
| 5.6 | Wobble of actuator | Run-out (P-P) shall be measured by applying a static load of | | | | | |
| | | 5N (-510sf-) to the shaft. | Measuring Position at Run-out Mounting dimension surface 10 0.17 MAX 15 15 0.25 20 20 0.35 25 25 0.42 30 30 0.50 35 MIN | | | | |
| 5.7 | Vibration | Switch shall be secured to a testing machine by a regular mounting device and method. (1) Vibration frequency range: 10~55Hz (2) Total amplitude: 1.5mm (3) Sweep ratio: 10-55-10(Hz) Approx. 1 minute (4) Method of changing the sweep vibration frequency: Logarithmic or linear (5) Direction of vibration: Three vertical directions including actuator. (6) Time: 2 hours each (6 hours in total) | Contact resistance (Item 4.1): $\frac{40}{40} \text{ m}\Omega \text{ MAX}$ Insulation resistance (Item 4.2): $\frac{100}{100} \text{ M}\Omega \text{ MIN}$ Voltage proof (Item 4.3): $\text{Apply } \underline{500} \text{ V AC for 1 minute.}$ No dielectric breakdown shall occur. Operating torque (Item 5.1): Within specified value. No abnormalities shall be recognized in appearance and construction. | | | | |
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| S | RRM-S-501 | SRRM PRODUCT SPECIFICATIONS | <u>\$</u> | | | |
| | 7' | | | | | |
| <u> </u> | Items | Test conditions | Criterion | | | |
| 5.8 | Mechanical shock | Switch shall be measured after following test. | Contact resistance (Item 4.1) : | | | |
| 1 | | (1) Mounting method: Normal mounting method | 40 mg HAX | | | |
| | | (2) Acceleration: 490m/s ² (500)A | Operating torque (Item 5.1) : | | | |
| 1 | | (3) Duration: 11ms | Within specified value. | | | |
| ļ | | (4) Test direction : 6 directions | Shall be free from mechanical | | | |
| | İ | | abnormalities. | | | |
| | | (5) Number of shock : 3 times per direction | abitot ad 11 c165. | | | |
| | | (18 times in total) | | | | |
| 5.9 | Solderability | Switch shall be checked after following test. | More than 75% of immersed part shall | | | |
| | į | (1) Solder : H63A (JIS Z 3282) | be covered with solder. | | | |
|] | | (2) Flux : Rosin flux (JIS K 5902) having a nominal composition of 25% | 55.001 | | | |
| | , | solids by weight of water white rosin in methyl alcohol | | | | |
| l | | (JIS K 1501) solution. | | | | |
| | , | (3) Soldering temperature : 230±5℃ | | | | |
| ł | | Immersing time: 3±0.5 s | | | | |
| 1 | | Flux immersing time shall be 5~10 seconds in normal temperature. | | | | |
| l | | (4) Immersion depth: Immersion depth shall be at copper plating | | | | |
| | | portion for P.C.B. terminal after mounting. | | | | |
| | | Thickness of P.C. board : 1.6 mm | | | | |
| | | Immersion depth shall be at wiring portion of | | | | |
| E 12 | C. 1.1 | lead wire for lead wire terminal | | | | |
| 5.10 | Soldering heat | Switch shall be measured after following test. | No abnormalities shall be recognized | | | |
| | resistance | (1) Solder: H63A (JIS Z 3282) | in appearance. The electrical perform- | | | |
| | | (2) Flux : Rosin flux (JIS K 5902) having a nominal composition of 10% | ance requirements specified in item 4 | | | |
| | | solids by weight of water white rosin in methyl alcohol | shall be satisfied. | | | |
| | | (JIS K 1501) solution. | | | | |
| | | (3) Temperature and immersing time | | | | |
| | | Temperature (C) Time (s) | | | | |
| | | Dip soldering 280 ± 5 10 ± 1 | | | | |
| | | Manual soldering 350 ± 10 3^{+1} | | | | |
| | | 3 | • | | | |
| | | (4) Immersion depth : Immersion depth shall be at copper plating | | | | |
| | | portion for P.C.B. terminal after mounting. | | | | |
| | | Thickness of P.C. board (Single sided copper clad P.C.B.): 1.6mm | | | | |
| | | | | | | |
| | | Immersion depth shall be 3 mm from the tip of terminal for lead wire terminal. | • | | | |
| A D | ırability | of cerminal for lend wire cerminal. | | | | |
| <u> </u> | Items | The state of the s | · | | | |
| 8.1 | Operating life | Test conditions | Criterion | | | |
| | without load | 10,000 cycles of operation shall be performed continuously at a rate of $1\sim1.2\pi\mathrm{rad/s}$ without load. | Contact resistance (Item 4.1) : | | | |
| - 1 | -100000 1000 | of 1 -1.2% Pady's without load. | <u>40</u> =Ω MAX | | | |
| ŀ | | | Insulation resistance (Item 4.2) : | | | |
| i | | | <u>100</u> μΩ hin | | | |
| - 1 | | | Voltage proof (Item 4.3): | | | |
| | | • | Apply 500 V AC for 1 minute. | | | |
| - 1 | | _ | No dielectric breakdown shall occur. | | | |
| | | - | Operating torque (Item 5.1): | | | |
| - 1 | | | Within ±30 % of specified value. | | | |
| | | | No abnormalities shall be recognized | | | |
| 6.2 | Operating life | 10,000 cycles of operation shall be performed continuously at a rate | in appearance and construction. | | | |
| | with load | of 1~1.2 m rad/s with load of 0.25 A, 30 V DC. | Contact resistance (Item 4.1) : | | | |
| | | ! | <u>60</u> ∎Ω MAX | | | |
| | • | | Insulation resistance (Item 4.2): | | | |
| ı | | • | 100 HQ HIN | | | |
| - 1 | | | oltage proof (Item 4.3): | | | |
| | | NAs | Apply 500 V AC for 1 minute. | | | |
| | | | No dielectric breakdown shall occur. | | | |
| | | | perating torque (Item 5.1): | | | |
| | | | Within ±30 % of specified value. | | | |
| | | | o abnormalities shall be recognized | | | |
| | | | n appearance and construction. | | | |
| | | | 1 | | | |
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(Rotary) SRRM-S-501 SRRM PRODUCT SPECIFICATIONS 7. Weather proof Items Test conditions Criterion Cold proof After testing at -20±2°C for 98 hours, the switch shall be allowed to Contact resistance (Item 4.1) : stand under normal temperature and humidity conditions for 1 hour, and <u>40</u> ∎Ω HAX then measurement shall be made within 1 hour. Insulation resistance (Item 4.2) : Water drops shall be removed. 100 NO MIN Voltage proof (Item 4.3):
Apply 500 V AC for 1 minute. No dielectric breakdown shall occur. Operating torque (Item 5.1):
Within ______ % of specified value. No abnormalities shall be recognized in appearance and construction. Dry heat After testing at 85±2°C for 96 hours, the switch shall be allowed to Contact resistance (Item 4.1) : stand under normal temperature and humidity conditions for 1 hour, and <u>40</u> ∎Ω HAX measurement shall be made within 1 hour after that. Insulation resistance (Item 4.2) : <u>100</u> HΩ HIN Voltage proof (Item 4.3):
Apply 500 V AC for 1 minute. No dielectric breakdown shall occur. Operating torque (Item 5.1):

Within _______ % of specified value. No abnormalities shall be recognized in appearance and construction. 7.3 Damp heat After testing at $40\pm2\%$ and $90{\sim}95$ XRH for 96 hours, the switch shall Contact resistance (Item 4.1) : be allowed to stand under normal temperature and humidity conditions 40 mΩ HAX for 1 hour, and measurement shall be made within 1 hour after that. Insulation resistance (Item 4.2) : Water drops shall be removed. <u>10</u> μΩ μιμ Voltage proof (Item 4.3):
Apply 500 V AC for 1 minute. No dielectric breakdown shall occur. Operating torque (Item 5.1):

Within 160 % of specified value. No abnormalities shall be recognized in appearance and construction. 7 4 Salt mist Switch shall be checked after following test. No remarkable corrosion shall be (1) Temperature : 35±2℃ recognized in metal part. (2) Salt solution: 5±1% (Solids by weight) (3) Duration : 24±1 h After the test, salt deposit shall be removed in running water. 7.5 Temperature After 5 cycles of following conditions, the switch shall be allowed to Contact resistance (Item 4.1) : cycling stand under normal temperature and humidity conditions for 1 hour, and 40 mΩ MAX measurement shall be made within 1 hour after that. Insulation resistance (Item 4.2) : Water drops shall be removed. <u>100</u> μΩ μιμ Voltage proof (Item 4.3) :
Apply 500 V AC for 1 minute. 70±2℃ -----No dielectric breakdown shall occur. Operating torque (Item 5.1):
Within $\frac{\pm \frac{10}{50}}{2}$ % of specified value. No abnormalities shall be recognized Normal in appearance and construction. temperature -25±3℃ ---30 30 -15min 1 cycle

Precaution in use

- 1. Note that if the load is applied to the terminals during soldering they might suffer deformation and defects in electrical performance.
- 2. Use of water-soluble soldering flux shall be avoided because it may cause corrosion of the switch.
- 3. In case that DC voltage is constantly applied on the switch:
 In that condition the switch may be damaged and degenerated on account of irregular migration of silver portion.

| <u> </u> | | | | | | | | | | | |
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