# Mechanical Plan

**RS PRO 19mm Metal Pushbutton Switches 24V, White LED**

Stock No: **111-3780**

| | Document No | QW-1002 | REV：B |
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## 1. Style：

This specification describes “Metal Pushbutton Switch”, mainly used as signal or double switch of electric devices, with the general requirements of mechanical and electrical characteristic.

①Switch combination : 1NO1NC/2NO2NC.

②Enclosure material : Stainless steel / Nickel plated brass/ Aluminum alloy.

③Operating Type : Resettable or Self-locking.

④Operating Temperature Range：-20 ℃~+55 ℃.

Storage Temperature Range : -40℃~+85 ℃.

⑤Degrees of protection provided by enclosures

IP code: IP67.

IK code: IK08 .(For case :Nickel plated brass / Aluminum alloy)

IK10 .(for case :stainless steel)

**2. Electrical Rating**：Ith :5A / Ui :250VAC.

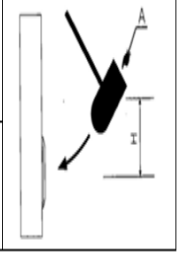
Ie: 3A / Ue :250VAC (resistive load).

Ie: 3A / Ue :28VDC (resistive load).

**3. Type of Actuation**： Pushbutton Switch.

## 4. Test Sequence：

| | ITEM | DESCRIPTION | TEST CONDITIONS | REQUIREMENTS |
|---|---|---|---|---|
| APPEARANCE | 1 | Visual Examination | By Visual Examination check without and out pressure & testing. | There shall be no defects that affect the serviceability of the product. |
| ELECTRIC PERFORMANCE | 2 | Contact Resistance | To be measured between the two terminals associated with each switch pole. | 50mΩ Max. |
| | 3 | Insulation Resistance | Measurements shall be made following application of 500 VDC / 100mA potential across terminals and cover for 1 minute. | 1000MΩ min. |
| | 4 | Dielectric Withstanding Voltage | ①2000VAC(50Hz or 60Hz) / between terminals /1minute.<br>②2000 VAC(50Hz or 60Hz) /between terminals and frame/ 1minute. | There shall be no breakdown or flashover. |

<table>
<tr><td rowspan="6">MECHANICAL PERFRMANCE</td><td>ITEM</td><td>DESCRIPTION</td><td>TEST CONDITIONS</td><td>REQUIREMENTS</td></tr>
<tr><td>5</td><td>Operation pressure</td><td>MODEL-1305N MECHANICAL TEST<br>500gram 、1000gram、 2000gram.</td><td>1Pole about 2.5 ±1N.<br>2Pole about 3.5 ±1N.</td></tr>
<tr><td>6</td><td>Operation Travel</td><td>Full Travel.</td><td>3.2 ±0.3mm.</td></tr>
<tr><td>7</td><td>Torque</td><td>Applied to nut.</td><td>About 5~14Nm.</td></tr>
<tr><td>8</td><td>Panel Thickness</td><td>Applied to nut.</td><td>About 1~10mm.</td></tr>
<tr><td>9</td><td>IK Code</td><td><table><tr><th>IK Degree</th><th>Weight (A)</th><th>Original Height (H)</th><th>Impact Energy</th><th>Impact Diagram</th></tr><tr><td>08</td><td>1.25 kg</td><td>40cm</td><td>5J</td><td rowspan="2">  </td></tr><tr><td>10</td><td>5.0kg</td><td>40cm</td><td>20J</td></tr></table></td><td>After three mechanical impact with corresponding grade energy at the same position of the crust , the switch has no harmful effect.</td></tr>
<tr><td>OPERATING LIFE</td><td>10</td><td>Operating Life</td><td>Measurements shall be made following the test forth below：<br><br>①Ie:3A /Ue:250VAC .( resistive load)<br>②Rate of Operation: 6-8operation cycles per minute.<br>③Electronics Life Test：50,000 cycles.(for 3A/250VAC)<br>④Electronics Life Test：6,000 cycles.(for 3A/28VDC)<br><br>④Mechanical Life Test：Resettable : 1,000,000 cycles.<br>Self-locking: 500,000 cycles.</td><td>①Dielectric Strength：<br>between terminals :1000VAC.<br>between terminals of opposite polarity :2000VAC.<br>②Insulation Resistance： 1000MΩ (at 500VDC)min.<br>③Contact Resistance：100mΩ Max.</td></tr>
</table>

| | ITEM | DESCRIPTION | TEST CONDITIONS | REQUIREMENTS |
|---|---|---|---|---|
| HUMIDITY RESISTANCE | 11 | Resistance Low Temperature | Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made:<br>① Temperature：-20±3℃.<br>② Time：96 hours. | As shown in item 2~4. |
| | 12 | Resistance High Temperature | Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made:<br>① Temperature：55±3℃.<br>② Time：96 hours. | As shown in item 2~4. |
| | 13 | Resistance Humidity | Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made:<br>①Temperature:40±2℃<br>②Relative Humidity:90~95%<br>③Time:96 hours. | ①Contact Resistance: 100 mΩ Max.<br>②Insulation Resistance: 1000MΩ min. |

| | ITEM | DESCRIPTION | TEST CONDITIONS | REQUIREMENTS |
|---|---|---|---|---|
| HUMIDITY RESISTANCE | 14 | Salt spray Testing | Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made:<br>①Temperature:35±2℃.<br>②The ratio of salt-water：5%.<br>③The spray amount of salt- water：1~2 ml/h.<br>④Time:48 hours. | The testing standard based on bubble, crack, And magnifying glass with gauge. |
| | 15 | Test of IP 67 | Protected against the effects of Temporary immersion in water. (1m below the surface of the water for a duration of 30 min). | IP67 According to EN 60529：1991＋A1：2000 IEC 60529：2001 |
| RoHs | 16 | HSF | Refer RoHS Standard：The electronic electrical machinery product limits with six big chemical materials. | Cd：100ppm<br>Pb：1000ppm<br>Hg：1000ppm<br>Cr6+：1000ppm<br>PBB、PBDE：1000ppm |
| SOLDER HEAT RESISTANCE | 17 | Manual Soldering | ■ hand Soldering：<br>①Soldering Temperature：290℃.(Max)<br>②Duration of Solder Heated：3 seconds (Max).<br><br>■ Precautions in Handling:<br>①Please make sure that there is no flux rose over the surface of the PCB. | ①Shall be free from pronounced backlash and falling-off or breakage terminals.<br><br>②As shown in item 2~4. |

Wiring:

1. Solder the terminals using a 60W soldering iron at 290°C within 3 seconds. (Sn-Ag-Cu type solder is recommended.)
2. When soldering, be sure to keep the soldering iron as far away from the housing as possible.
3. Also ensure that no tensile force is applied to the terminal. Do not bend the terminal or apply excessive force to the terminal.

## 5. LED Specifications： (LED Without resistor)

| Color | VF(v) Min. | VF(v) TYP. | VF(v) MAX. | IF(MAX) |
|---|---|---|---|---|
| White | 2.8 | 3.3 | 3.8 | 20mA |
| Red | 1.8 | 2.1 | 2.5 | 20mA |
| yellow | 1.8 | 2.1 | 2.5 | 20mA |
| Blue | 2.8 | 3.2 | 3.8 | 20mA |
| Green | 2.8 | 3.2 | 3.6 | 20mA |