

SPECIFICATION MMP 221 – B

1. General:

1. Operation temperature range:	-10°C to + 60°C
2. Standard test conditions shall be:	5 to 35°C in temperature and 45 to 85 % in humidity

2. Rating: DC 6V 0,3A

3. Change over timing: non-shorting

4. Electrical performance:

	Conditions	Specifications	
1) Contact resistance	a) 1 KHz +/- 200 Hz (20mA) b) DC 5V 1A by voltage drop method		70 mohm or less
2) Insulation resistance	DC 500 V 1 minute	between terminals terminal&frame	100 Mohm or more 100 Mohm or more
3) Withstand voltage	AC 500 V 1 minute (50/60Hz 2mA)	between terminals terminal&frame	no dielectric breakdown

5. Mechanical performance:

	Conditions	Specifications	
1) Terminal strength:	A static load of 500 gf shall be applied to the tip of the terminals for 15 seconds in any direction. 1 cycle shall be made per 1 terminal.	Electrical performance shall be satisfied. Without damage of excessive looseness of terminals	
2) Actuator strength:	A static load of 1.5 kgf shall be applied for 15 seconds in a direction reverse to cause actuation of the switch	Clause 5.4 and electrical performance shall be satisfied. Without excessive looseness of bending of the actuator or stopper.	
3) Displacement of actuator	A static load of 100 gf shall be applied at the point 1 mm from the tip of the actuator and than displacement shall be measured.	1.00 mm p-p or less	
4) Operation force	Measure at the tip of actuator	200 gf +/- 100 gf	

Maßstab				Datum	Name
Oberfläche				02/05	dr
Zust	Änderung	Datum	Name		

MMP 221 - B Spec.

30 05 62

Blatt

1/3

6. Endurance performance

	Conditions	Specifications
1) Solderability	Solder temperature 230 +/- 5°C Dipping time 3 +/- 0,5 seconds	More than 75 % of the dipping covered by solder
2) Soldering heat resistance	Solder bath method Solder temperature: 260 +/- 5°C Dipping time: 5 +/- 1,0 second Thickness of PCB: 1,6 mm Immersion depth: up to the surface of the board Solder iron method Bit temperature: 350 +/- 10 °C Application time: 3 +/- 1.0 second	Without deformation of frame or excessive looseness of terminals Electrical performance shall be satisfied
3) Heat test	The switch shall be stored at a temperature of 70 +/- 2°C for 48 hours Then the switch shall be maintained at standard atmospheric condition for 1h, after which measurement shall be made within 1h	Contact resistance Insulation resist. Operating force Terminal strength Appearance less than 150 mohm 4.2 shall be satisfied 5.4 shall be satisfied 5.1 shall be satisfied no deformation or crack in molded part
4) Cold test	The switch shall be stored at a temperature of -25 +/- 3°C for 48 hours. Then the switch shall be maintained at standard atmospheric condition for 1h, after which measurement shall be made within 1h	Contact resistance Insulation resist. Operating force Appearance less than 150 mohm 4.2 shall be satisfied 5.4 shall be satisfied no deformation or crack in molded part
5) Humidity test	The switch shall be stored at a temperature of 40 +/- 2°C and a humidity of 90 to 95 % for 96 hours Then the switch shall be maintained at standard atmospheric condition for 1h, after which measurement shall be made within 1h	Contact resistance Insulation resist. Withstand voltage Appearance less than 150 mohm more than 10Mohm after 500V DC is applied for 1 minute withstand AC 250V for 1 min. no deformation or crack in molded part or excessive rust or discoloration

Maßstab		Datum	Name
Oberfläche		02/05	dr
Zust	Änderung	Datum	Name

MMP 221 - B Spec.

30 05 62

Blatt

2/3

knitter-switch

5) Change of temperature	The switch shall be subjected to 5 successive change of temperature cycles, each as shown in table below.	Contact resistance Insulation resist. Withstand voltage Operating force Appearance	less than 150 mohm 4.2 shall be satisfied 4.3 shall be satisfied 5.4 shall be satisfied no deformation or crack in molded part															
	<table border="1"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-10 +/-3°C</td> <td>30 min.</td> </tr> <tr> <td>2</td> <td>standard atmospheric condition</td> <td>10-15 min</td> </tr> <tr> <td>3</td> <td>70 +/-2°C</td> <td>30 min.</td> </tr> <tr> <td>4</td> <td>standard atmospheric condition</td> <td>10-15 min</td> </tr> </tbody> </table>		Temperature	Duration	1	-10 +/-3°C	30 min.	2	standard atmospheric condition	10-15 min	3	70 +/-2°C	30 min.	4	standard atmospheric condition	10-15 min		
	Temperature	Duration																
1	-10 +/-3°C	30 min.																
2	standard atmospheric condition	10-15 min																
3	70 +/-2°C	30 min.																
4	standard atmospheric condition	10-15 min																
6) Vibration	Only endurance conditioning by a frequency sweep shall be made. The entire frequency range, from 10 to 55Hz and return to 10Hz be transversed in 1 minute. Amplitude (total excursion): 1.5mm This motion shall be applied for a period of 2 hours in each of 3 mutually perpendicular axes (a total of 6 hours)	Terminal strength Actuator strength Operating force	5.1 shall be satisfied 5.2 shall be satisfied 5.4 shall be satisfied Electrical performance shall be satisfied.															
7) Shock	Peak acceleration: 735 m/s ² Duration of pulse: 6msec. Three successive shocks shall be applied in both directions of mutually perpendicular axes (a total of 18 shocks)	Terminal strength Actuator strength Operating force	5.1 shall be satisfied 5.2 shall be satisfied 5.4 shall be satisfied Electrical performance shall be satisfied.															
8) Life test	(Endurance without load) A switch shall be subject to 5,000 cycles at a speed of 15 to 20 cycles per min. without load	Contact resistance Insulation resistance Withstand voltage Operating force	less than 150 mohm more than 10 Mohm after 500V DC is applied for 1 min. withstand AC 250V for 1 min. relative to the previously specified value. +10/-30%															

7. Contacts: 0,3 µm gold layer thickness

Maßstab		Datum	Name	MMP 221 - B Spec.
Oberfläche		02/05	dr	
Zust	Änderung	Datum	Name	

knitter-switch

30 05 62

Blatt

3/3