TONELUCK
Appliance Switch

D5 Door Switch
Product Specifications

File/Edition: D52-2ABA-01-SPC.002

Description: Door Switch

Customer Name: Model No.: D5 (Series)

Customer P/N: Toneluck P/N: D52-2ABA-01

Representative: Project Code:

Specifications Receipt Confirmation

Received by: _____ Title: _____

Signature: _____ Date: _____

Remark:

1. This product specification is considered as the technical agreement between the receiving customer and Toneluck. Any information on the general product catalog which is in conflict with or different from the corresponding information of this document is considered as invalid.

2. If customer issue purchase orders without confirmation by signature of this specification after receipt, such confirmation will be considered as granted upon receipt of the first purchase order.

Prepared by: Genghong Guo 2021-11-15

Checked by: Shan Hong 2021-11-15

Approved by: Norris Xie 2021-11-15

1. General Characteristics

Application: This specification is applied to refrigerator or freezer door switch general applications.
Operating Temperature range: -25~85℃.
Operating Humidity: ≤95%RH at 40℃.
Mounting orientation: refer to the Drawing.
Test Conditions: Unless otherwise specified, the test atmospheric conditions are as follows:
Ambient temperature: 5~35℃
Relative Humidity: 45~85%
Atmospheric Pressure: 86~106kPa (860~1060mbar)

2. Appearance, Structure and Dimensions

Appearance: The Switch shall be of good finishing, no rust, crack or plating defects.
Structure and Dimensions: Refer to the Drawing.
Markings: Refer to the Drawing.
Approval: UL, ENEC.

3. Ratings and Endurance

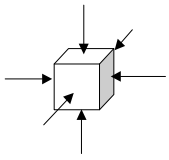
Electrical Ratings and Endurance Cycles:		**Endurance Without Electrical Load**
2.5A 250VAC, 50,000 cycles ENEC Approved	5A 125 VAC, 6,000 cycles UL Approved	200,000 cycles

4. Electrical Characteristics

No.	**Contents**	**Criteria**	**Test Method**
4.1	Insulation Resistance	100 MΩ min.	500VDC voltage is applied between any two terminals and between any terminal and dead parts for 60±5s.
4.2	Dielectric Voltage	No dielectric break down occurs.	1,000VAC, 50~60Hz (cut-off current 10mA) voltage is applied between two non-connected terminals and 1,500VAC, 50~60Hz (cut-off current 10mA) voltage is applied between any terminal and dead parts for 60 ±5s.

5. Mechanical Characteristics

No.	**Contents**	**Criteria**	**Test Method**
5.1	Operating Force	Refer to the Drawing.	Apply a force gauge on the top point of the plunger to actuate the switch vertically and slowly, the maximal reading while the plunger from free position to operating position.
5.2	Operating Position	Refer to the Drawing.	The distance from the top point of the plunger to the surface of the mounting plane, where the moving contact was on the open or close point.

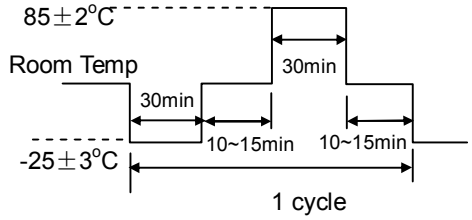
5.3	Terminal Strength	After test, -No terminal looseness, damage and insulator breakage. -The electrical performance shall be satisfied with the requirements specified in Section 4.	Apply axial force to each terminal without jerks Push:80N Pull: 98N
5.4	Vibration Proof	After test, - Insulation Res.: 50MΩ min. - Dielectric voltage shall be satisfied with the requirements specified in Section 4.2. - Operating force variation: Within ±20% from initial value. - No mechanical abnormality	Samples shall be fastened on a vibration test machine and tested under the conditions of the following: -Vibration frequency range: 10~55 Hz -Total amplitude: 1.5mm -Sweep ratio: 10~55~10Hz approx. 1 min. -Method of changing the sweep vibration frequency: logarithmic or linear -Direction of vibration: Three directions perpendicular with each other, including the operating direction. -Duration: 2 hours per direction, 6 hours totally.
5.5	Mechanical Shock Proof	After test, - Insulation Res.: 50MΩ min. - Dielectric voltage shall be satisfied with the requirements specified in Section 4.2. - Operating force variation: Within ±20% from initial value. - No mechanical abnormality	Samples shall be fastened on a shock test machine and tested under the conditions of the following: -Acceleration: 300m/s^2 (30G). -Duration: 11 ms. -Test Direction: 6 directions. -Number of shocks: 3 times per direction. 

6. Endurance Characteristics

No.	Contents	Criteria	Test Method
6.1	Endurance test without electrical	After test, - Insulation Res.: 50MΩ	The test samples mounted normally on endurance test, 200,000 cycles operation shall be performed

	load	min. - Dielectric voltage shall be satisfied with the requirements specified in Section 4.2. - Operating force variation: Within ±30% from initial value. - No mechanical abnormality	continuously at a rate of 30~60 cycles per minutes without electrical load.
6.2	Endurance test with electrical load(UL)		According to UL1054, samples are to be mounted normally on endurance tester, 6,000 cycles operation shall be performed continuously at a rate of 6~10 cycles per minute with electrical load as 5A 125VAC.
6.3	Endurance test with electrical load(ENEC)		According to IEC61058-1,Sample applied the following test －mounting：normally －ambient temp：half cycles at 85°C +5°C、half cycles at -25°C±3°C －Load ：2.5A 250VAC －Cycles rate：15 times/ min —Total cycles:50,000cycles

7. Weather Proof Characteristics

No.	Contents	Criteria	Test Method
7.1	Cold Proof	After test, - Insulation Res.: 50MΩ min. - Dielectric voltage shall be satisfied with the requirements specified in Section 4.2. - Operating force variation: Within ±20% from initial value. - No mechanical abnormality	After testing at –25±3°C for 96 hours, the samples are to recover under room circumstance for 1 hour, and measurement shall be made within 1 hour after recovery, water drops shall be eliminated.
7.2	Hot Proof		After testing at 85±2°C for 96 hours, the samples are to recover under room circumstance for 1 hour, and measurement shall be made within 1 hour after recovery, water drops shall be eliminated.
7.3	Moisture Resistance		After testing at 40±2°C for 96 hours, the samples are to recover under room circumstance for 1 hour, and measurement shall be made within 1 hour after recovery, water drops shall be eliminated.
7.4	Temperature Shock		After 5 cycles testing under the following conditions, the samples are to recover under room circumstance for 1 hour, and measurement shall be made within 1 hour after recovery, water drops shall be eliminated. 

Special Notes:

1. Switch Mounting

(1) Switch Mounting

- Please insert the switch into the mounting hole ,the switch will be automatic tighten by retaining clip

(2) Insulated wire used in switches mounting
Please pay attention to the spacing and border after matching wire, special insulation plate is available, that's recommended.

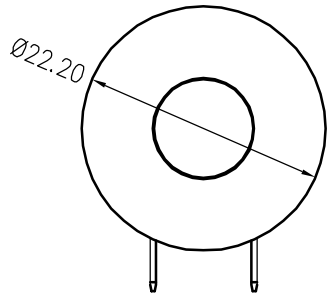
(3) Connecting wire to switch
Select suitable socket and wire to connect to switch, confirm it is tightened totally. (Refer to the spec. of the drawing)

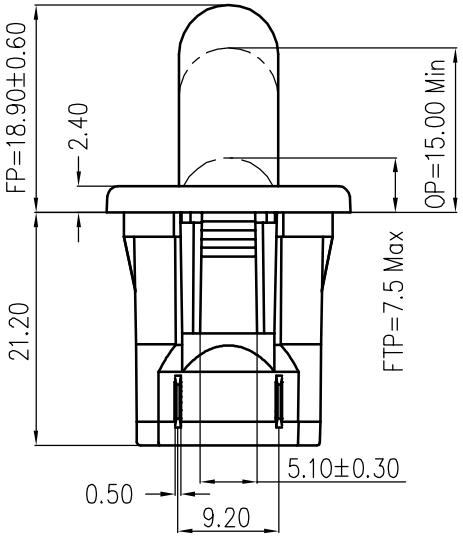
2. Deposition of switch

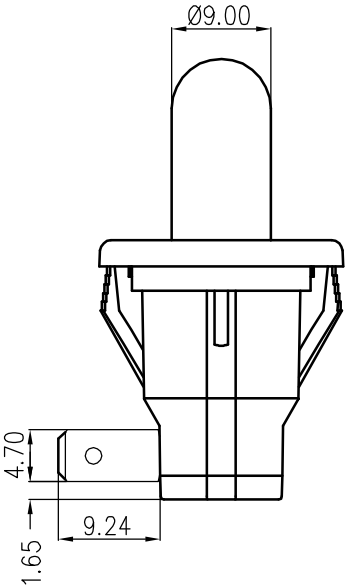
- Please keep away from polluted gas, organic gas (e.g. oil stave), dust and humidity.
- Storage temperature: 5～35℃; Humidity: ≤80%RH.

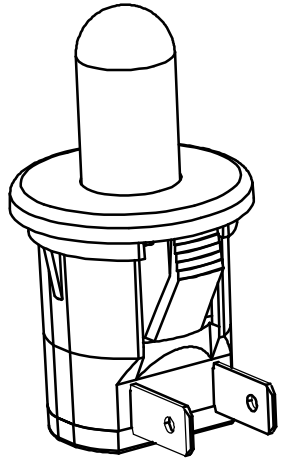
OUTLINE	File/Edition:	D52-2ABA-01.003

XX.XX	CONTROL DIMENSION
△	CRITICAL CHARACTERISTIC









Mechanical Characteristics :	
Item	Criteria
Free Position	18.90±0.60mm
Operating Position	15.0mm Min
Pre Travel	7.5mm Max.
Operating Force	350gf Max

Electrical Characteristics :	
Ratings	Operating Life
5A/125VAC	6,000 cycles with load(cULus)
2.5A/250VAC	50,000 cycles with load @
Insulation Resistance:	100MΩMin Initial.
Dielectric:	1000VAC(50~60HZ) – between non-connected terminals
	1500VAC(50~60HZ) – between terminals and ground – between terminals and non-live-metal parts

Other Spec. :	
Operating Life Without Load:	200,000 cycles.
Operating Temperature Range:	-25℃~+85℃
Colour of The Switch:	White

Material List	
Switch Base	Thermoplastics UL94 V-2
Actuator	Thermoplastics UL94 V-2
Terminals	Copper Alloy
Contacts	Silver Alloy

MASS PRODUCTION RELEASE

@	2021-07-12	ENEC certification cancelled	ECN-21093	002
REV.	DATE	MODIFICATION	ECN NO.	PRIOR VERSION

					Tolerance Unless Otherwise Specified					
Project Ref:	D5 Door Switch				~3	>3~10	>10~30	>30~80	>80~180	Angle
Part No:	D52-2ABA-01									
Drawing No:	- - -	Eng Ver	A1		±0.20	±0.30	±0.40	±0.60	±0.80	±3°
Drafted by:	Shan Hong	Date:	2021-07-12	Unit: mm	Size: A4		Scale:			
Checked by:	Bink Wan	Date:	2021-07-12	THIRD ANGLE	TONELUCK Switches & Control Solutions					
Approved by:	Norris Xie	Date:	2021-07-12							