TONELUCK
Appliance Switch

D6 Door Switch
Product Specifications

File/Edition: D611M-AA1-01-SPC.002

Description: Door Switch

Customer Name: Model No.: D6 (Series)

Customer P/N: Toneluck P/N: D611M-AA1-01

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: LiShuang 2011-01-10

Checked by: HeShiying 2011-01-10

Approved by: RayXu 2011-01-10

1. General Characteristics

1.1 Application: This specification is applied to the Door Switch for general applications.

1.2 Operating Temperature Range : -40°C to +85°C

1.3 Operating Relative Humidity : ≤95%RH at +40°C

1.4 Test Conditions : Unless otherwise specified, the atmospheric conditions are as following

Ambient Temperature : 5~35°C

Relative Humidity: 45~85%

Atmospheric Pressure : 86~106kPa (860~1060mbar)

2. Appearance, Structure & Dimensions

2.1 Appearance: The switch shall have good finishing, and no rust, crack or plating defects.

2.2 Structure & Dimensions : Refer to individual product drawing

2.3 Markings : Refer to individual product drawing

2.4 Approved by Standards: 16A 125/250VAC

1/3HP 125/250VAC (UL1054)

10(4)A 125/250VAC (ENEC)

3. Rating & Life

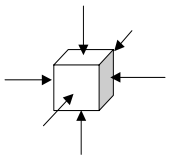
Rating	Endurance with electrical load	Endurance without electrical load
16A 125/250VAC	6,000 cycles	200,000 cycles
1/3HP 125/250VAC		
10(4)A 125/250VAC	50,000 cycles	

4. Electrical Characteristics

No.	Contents	Criteria	Test Method
4.1	Insulation Resistive	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 voltage is applied between two non-connected terminals and 1,500VAC, 50~60Hz voltage is applied between any terminal and dead parts for 60±5s.

5. Mechanical Characteristics

No.	Contents	Criteria	Test Method
5.1	Operating Force	See outline 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	Releasing Force	See outline drawing	Apply a force gauge on the top point of the plunger to actuate the switch vertically and slowly, the minimal reading while the plunger from operating position to releasing position.
5.3	Operating Position	See outline drawing	Operating the switch slowly till the COM-NO contacts close, in this moment, measure the distance from the plunger top point to the surface of mounting plane as the operating position.
5.4	Pre Travel	See outline drawing	The vertical distance through the top point of the plunger from its free position to operating position
5.5	Movement Differential Travel	See outline drawing	The vertical distance through the top point of the plunger from its operating position to releasing position
5.6	Terminal Strength	After test, —no terminal looseness, damage and insulation breakage —the electrical performance shall be satisfied with the requirements specified in section 4	Apply axial force to each terminal without jerks Push:96 N Pull:88 N
5.7	Abnormally Push	After test, —the switch shall be free from damage in construction	Install the switch into fixture and push the plunger inward with a force of 200N, and hold for 30 seconds. Repeat this action three times on each sample

5.8	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 and within spec. —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.
5.9	Mechanical Shock	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 and within spec. —No mechanical abnormality	Samples shall be fastened on a shock test machine and tested under the condition of the following: -Acceleration: 300m/s^2(30G) -Duration: 11ms -Test Direction: 6 directions  -Number of shocks: 3 times per direction

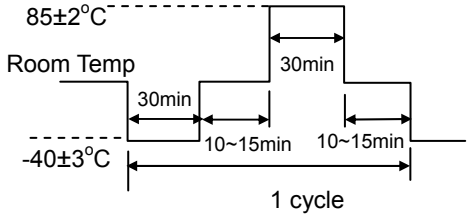
6. Endurance Characteristics

No.	Contents	Criteria	Test Method
6.1	Endurance test without electrical load	After test, —Insulation Res.: 50MΩ 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	The test samples mounted normally on endurance test, 200,000 cycles operation shall be performed continuously at a rate of 30~60 cycles per minutes without electrical load.

6.2	Endurance test with electrical load(UL)	After test, —No construction defect —No dielectric breakdown as 1000 VAC between no-connected terminal and 1500 VAC between terminal and ground for 60±5 s	1) 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 16A 125/250VAC
			2) 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 1/3HP 125/250VAC
6.3	Endurance test with electrical load(ENEC)	—No construction defect —No dielectric breakdown as 1125 VAC between terminal and ground for 60±5 s — Insulation resistance more than 2 MΩ	According to IEC61058-1 ,Sample applied the following test —mounting：normally —ambient temp：half cycles at 85℃+5℃、half cycles at -40℃±3℃ —Load ：10(4)A 250VAC —Cycles rate：15 times/ sec,2S OFF、2S ON， —Total cycles:50000cycles

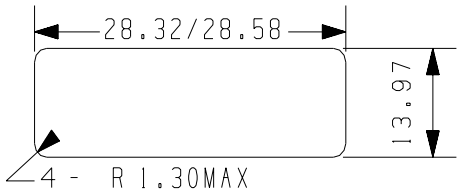
7. Weather Proof Characteristics

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. —No mechanical abnormality	After testing at –40±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,90~95%RH 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 Cycles		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
   - Mounting Holes graphics, Show as below

The graphics to mounting holes (suggested) The material thickness include 1.14～2.54 mm	Notes of switch operation
	✓ Operation parts shall keep away from switch button, and enough spacing for motion is required. ✓ Please negotiate with us in advance if inertial lash company with operation. ✓ Please take into account the operating force when you specified the location of operating parts.

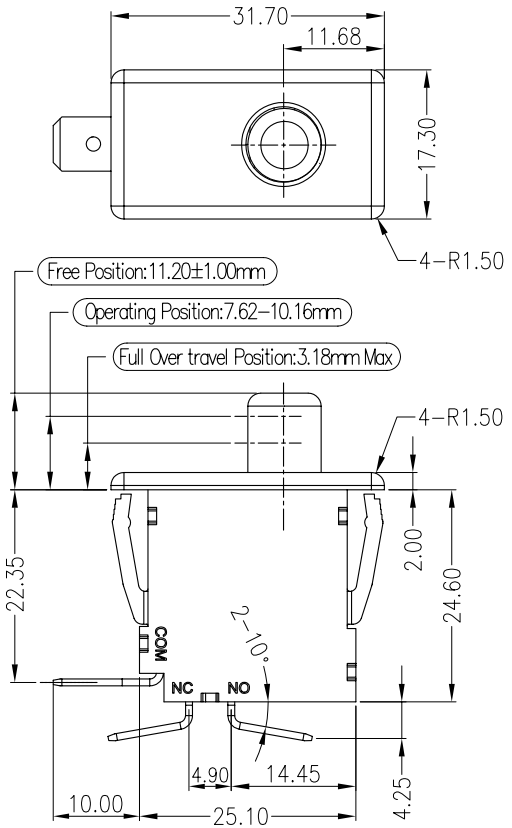
   (2) Insulated wire used in switches mounting
   Please pay attention to the spacing between the metal mounting plane and insulated wire which matching terminal

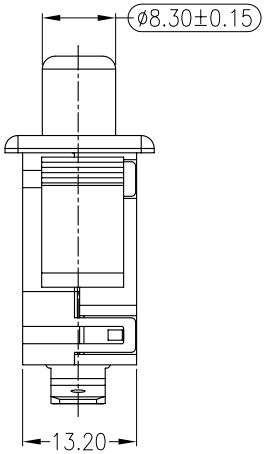
   (3) Connecting wire to switch
   Select suitable socket and wire to connect to switch, confirm it is tightened totally. (Refer to the spec. of the drawing)

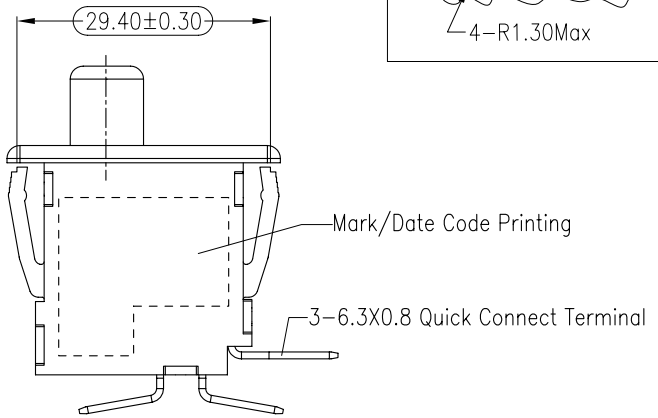
2. Deposition of switch
   - Please keep away from polluted gas, organic gas (e.g. oil stave), dust and humidity.
   - Storage temperature: 5~35°C, Humidity: ≤80%RH.

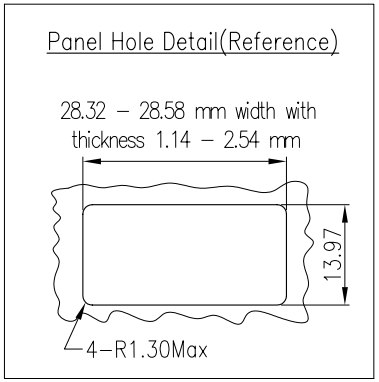
OUTLINE	File/Edition:	D611M-AA1-01.004

XX.XX	CONTROL DIMENSION
△	CRITICAL CHARACTERISTIC







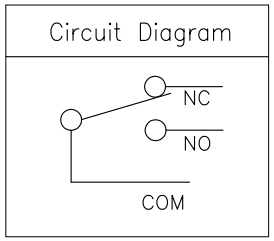


Mechanical Characteristics:	
Item	Criteria
Free Position	11.20±1.00mm
Operating Force	500gf Max
Releasing Force	100gf Min.
Operating Position	7.62-10.16mm
Movement Differential Travel	1.14mm Max.
Pre Travel	3.18mm Max.
Over Travel	4.45mm Min.
Full Overtravel Position	3.18mm Max.

Electrical Characteristics:	
Ratings	Operating Life
16A 125/250VAC;1/3HP 125/250VAC;	6,000 cycles with load(cULus)
10(4)A 125/250VAC	50,000 cycles with load(ENEC,CQC)
Insulation Resistance:	100MΩ Min 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:	-40℃~+85℃
Colour of The Switch:	White

Material List	
Switch Base	Thermoplastics UL94 V-0
Switch Cover	Thermoplastics UL94 V-0
Terminals	Copper Alloy, Silver plated
Actuator	Thermoplastics UL94 V-2
Contacts	Silver Alloy



MASS PRODUCTION RELEASE

Project Ref:	D6 Door Switch			Tolerance Unless Otherwise Specified						
Part No:	D611M-AA1-01			~3	>3~10	>10~30	>30~80	>80~180	Angle	
Drawing No:	- - -	Eng Ver	A1	±0.20	±0.30	±0.40	±0.60	±0.80	±3°	
Drafted by:	LiShuang	Date:	2010-12-23	Unit: mm		Size: A4		Scale:		
Checked by:	HeShiying	Date:	2010-12-23	THIRD ANGLE		TONELUCK Switches & Control Solutions				
Approved by:	RayXu	Date:	2010-12-23							