SPECIFICATION

MODEL: ST-0148		
Approval	Check	Prepared By
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Revision	V1.0	Page	14
Attachment			

Record for changing revision

Revision	Modified Date	ECN/ECR Code	Modified By	Content

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1. Product Overview

This specification defines the mechanical, electrical and functional specification of the MP0110 membrane KTV Key Module.

2. Configuration

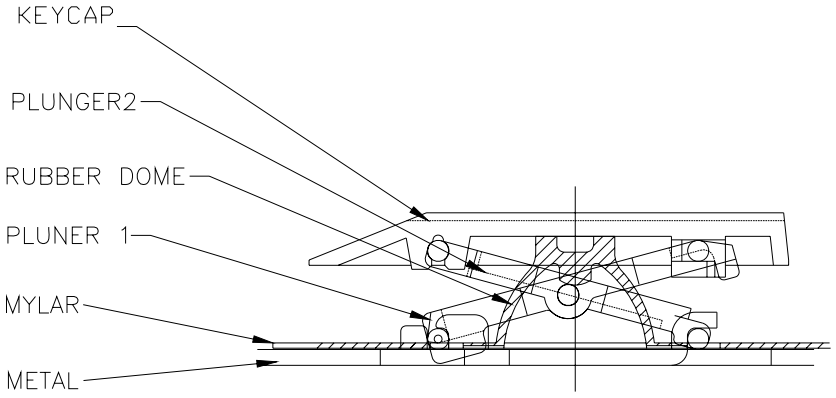
2.1 Appearance Drawing

According to the attached drawing ----(Page –11)

2.2 Keycap Printing Layout

According to the attached drawing ----(Page –12)

2.3 Key Switch Structure

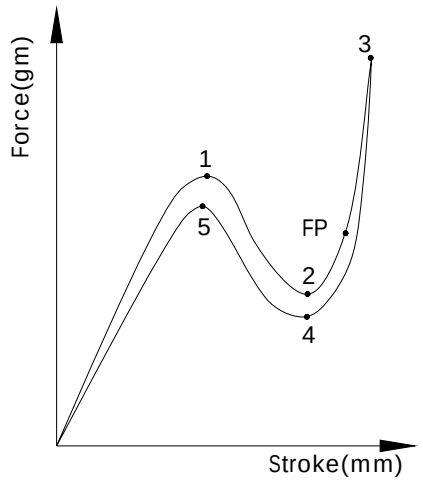


2.4 Material Specification

Parts name	Material	UL grade	UL file NO
Keycap	ABS	94HB	
Membrane	PET	94VTM-2	
Rubber Dome	Silicone	94HB	
Plunger	POM	94HB	
R/D Mylar	PET	94VTM-2	
Metal Plate	AL5052 t0.5mm		

3. Mechanical Specification

3.1 Tactile Curve Graph



Point	**Position (mm)** Initial	**Position (mm)** After 10 millions (normal) After 3 millions (fn)	**Force (Mark)**	**Force (g)** Initial	**Force (g)** After 10 millions (normal) After 3 millions (fn)
P1	S1 =0.9 ± 0.40	S1 =0.9 ± 0.60	PF	62±20g	(PF)62+20/-30g
P2	S2 =1.7 ± 0.40	S2 =1.7 ± 0.60	CL	P1(F)-P2(F)≧20g	N/A
P3	S6 =2.25± 0.30	S6=2.25+0.60	TM	Max 150g	N/A
P4	S3 =P2 ± 0.40	S3 =P2 ± 0.60	RF	Min 15g	(RF)Min 10g(normal Key) Min 5g(fn key)
P5	S=(N/A)	S4--(N/A)	RP	RP/PF≧0.75	N/A
Fire Point	S=P2+0.35/-0.00	S5—(N/A)	FP	F2～F2+15g	N/A

Mark statement:

PF=Peak force,CL=Click feeling,TM=Travel to make

RF=return force,RP=Return Point(hysteresis),FP=Fire Point

3.2 Travel

Operating Travel: 2.25±0.30mm

Full Travel: 2.5±0.30mm (force at 120g)

3.3 Keycap Pull Off Force

500gf minimums with equal load applied to all 4 corners of the keycap

150gf minimums at any one corner or side of a given keycap

3.4 Keyboard Height

4.90±0.20mm（normal key）

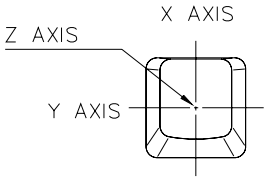
4.90±0.20mm（space bar）

3.5 Max Keycap Depressing Force

To act on the center of the keycap with stand 5Kgf force for 1 minute.

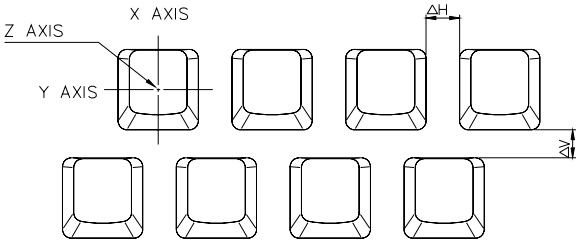
3.6 Keycap Strength

To act at “X” and “Y” axis with stand 1Kgf force for 5 sec.



3.7 Keycap Spacing And Alignment

Clearance between keycaps(standard keycaps):ΔH (ΔV) -- ± 0.30 mm



Alignment (keycap to keycap): Neighbor 0.4 mm max

In a row 0.8 mm max

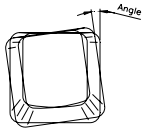
Height alignment (keycap to keycap): Neighbor 0.4 mm max

In a row 0.8 mm max

Key slant (keycap to keycap): 0.6 mm max

Key X,Y Movement : Shall be ≦0.5mm for full amplitude on both X and y directions.

Key twisting: Normal key ±2.0 °



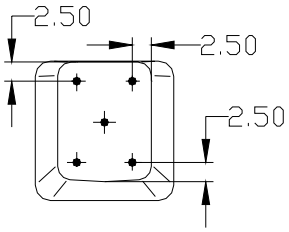
Fn Key ±1.5 °

Space key ±1.0 °

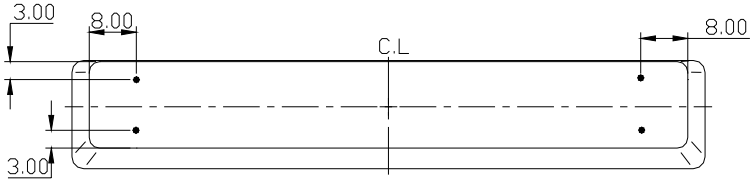
3.8 Key In Test Spec On The 4 Corners Of The Key Cap

Unit: mm (All Types)

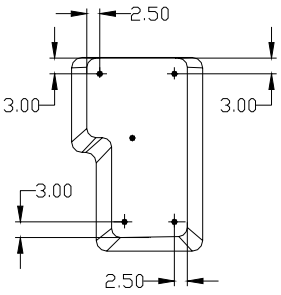
A: Standard Key



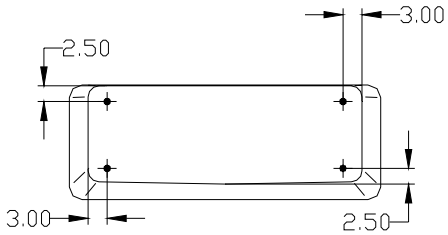
B: Space Bar



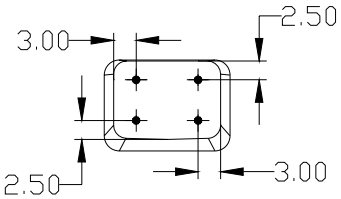
C. ENTER KEY



D: Long Types Key



E: Small Key



Key in Force (Center) ≤ 80g

4. Electrical Specification

4.1 Key Matrix

According to the attached drawing ----(Page –13、14)

4.2 Power Requirement

The key switch shall require DC 5V at 0.3mA maximum.

4.3 Contact Resistance

The contact resistance is 500 OHM maximum at 200g force.

4.4 Membrane Switch Dimension

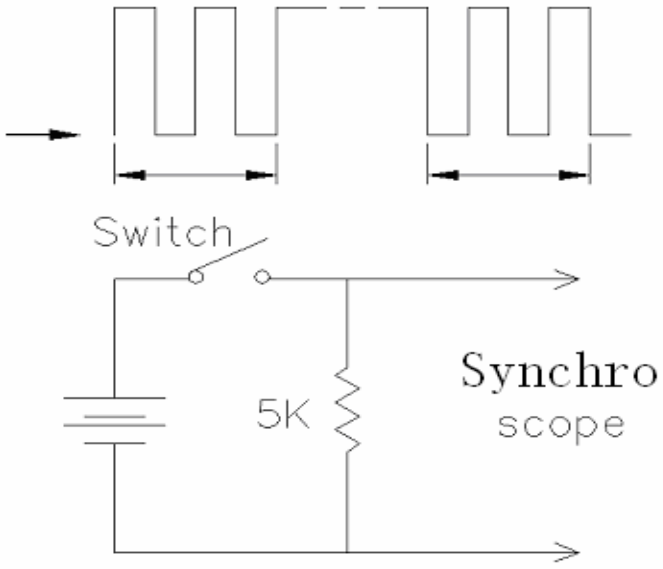
According to the attached drawing ----(Page –11)

4.5 Insulation Resistance

Between terminals: 50M OHM Min. (at 250V DC)

4.6 Key Switch Bounce

Shall be 15 ms or less at " ON " and " OFF " when measured at a rate encountered in normal use. (3 to 4 operations per sec)



5. Environmental Test

5.1 High Temperature For Storage

65±2℃ / (96 hours at 95% RH)

5.2 Low Temperature For Storage

-25° ±3° C / (96 hours at 0% RH)

5.3 High And Low Temperature For Storage

+25℃→-20℃→+65℃→+25℃

50%RH→0%RH→95%RH→50%RH

***Temperature Cycling:**

Conduct ten (10) 7.5-hour cycles consisting of a 2-hour soak at the High and low temperatures with 1-hour ramps between.

5.4 Consistent Temperature And Humidity When Operating

40±2℃; 90% ~95% RH (96 hours)

6. Drop Test

This test is executed for one corner and three edges and all six sides from the height specification after the drop test with standard packing there shall be no physical or functional damage.

Weigh (KG)	Drop Height (CM)
≤15kg	100
15~30kg	80
30~40kg	60

7. Vibration Test

(K/B Weight:,each single carton contains 100 pcs of K/B)

Testing conditions:

1.Frequency: 10 - 50 - 10 Hz

2.Cycle time: 0.20 octave/min

3.Amplitude: 0.2～2. 0 mm

4.One10-50-10 Cycle per axis

5.Random vibration, 0.002G2/Hz, 10-50Hz,nominal 1.0 grams.

6. Sweep: Sinusoidal vibration

7. Vibration direction: XYZ Axis，X(right-left) 15min，Y (front-back) 15min，Z(up-down) 60min，1 hours in total.

No any Abnormal operation, performance, structure and appearance .

8. Switch Life

The operation life cycle is 10 million cycles for normal key. (3 to 5 operations per sec at force150g)

9. Shock Test

Operation:

Half sine, 10g peak acceleration, 11 ms duration, three shocks per direction for a total of 18 shocks.

Storage:

Half sine, 240g, 2 ms duration, three shocks per direction, for a total of 18 shocks. Square wave, 100g, 180 in./sec velocity change, one shock per direction, for a total of 6 shocks.

10. Keycap Print Wear Proof

The purpose of the test is to assure that how durable the keytops are on there character' s printing.

Testing equipment : ABRASION TESTER.(MP)

Testing condition :

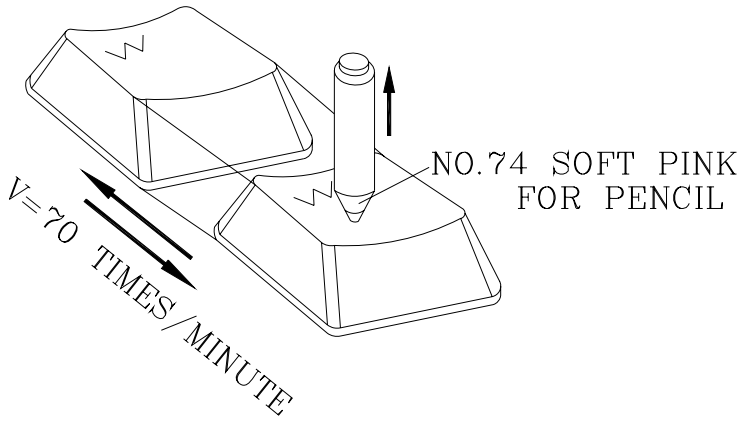
1. Sand eraser: Fabercastell (75215) No.74 eraser 6.60mm diameter.
2. Keys: Random
3. Friction Load: (28gf +0,-5gf)

A: No Uv Coating

-Friction frequency: 15000 times

B: With Uv Coating

-Friction frequency: 20000 times



11. Flexible Tail Durability

To perform on the flat cable or other portion need winding shall withstand winding test on a mandrel 1 m/m diameter of 180 angle ending 5 cycles with tension to get adhesion between the surfaces, after the test the resistance shall be within 150% of initial value.

12. Precaution For Handling

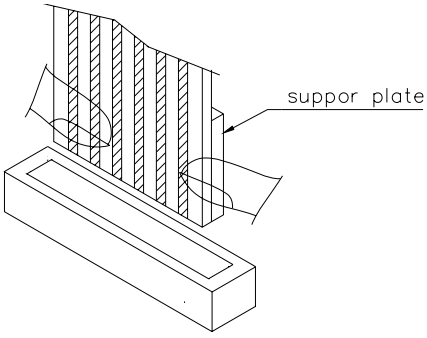
12.1 Connection To The Connector.

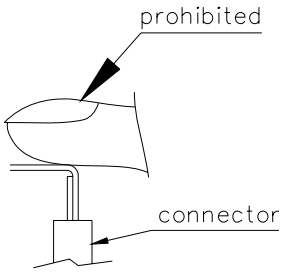
12.1.1 Recommended Connector Is " ZERO FORCE TYPE "

Please be sure to avoid the connectors that scratch on the surface of flexible pattern.

12.1.2 Excess Force To The Flexible Pattern Shall Be Prohibited At The Time Of Insertion.

(O) (X)



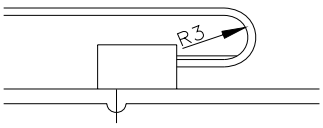


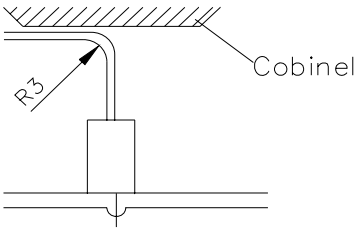
12.1.3 Allocation Of Connector Is Recommended To

Be as close to the edge as possible. If impossible, Please be sure to keep it apart from hot components.

12.1.4 Please Consider The Allocation Of Connector

Not to be as below if unavoidable, Please be sure to keep R3 Min.





13. Precautions For Packing And Storage

13.1.1 Keycap Shall Not Be Weighted While Packaged.

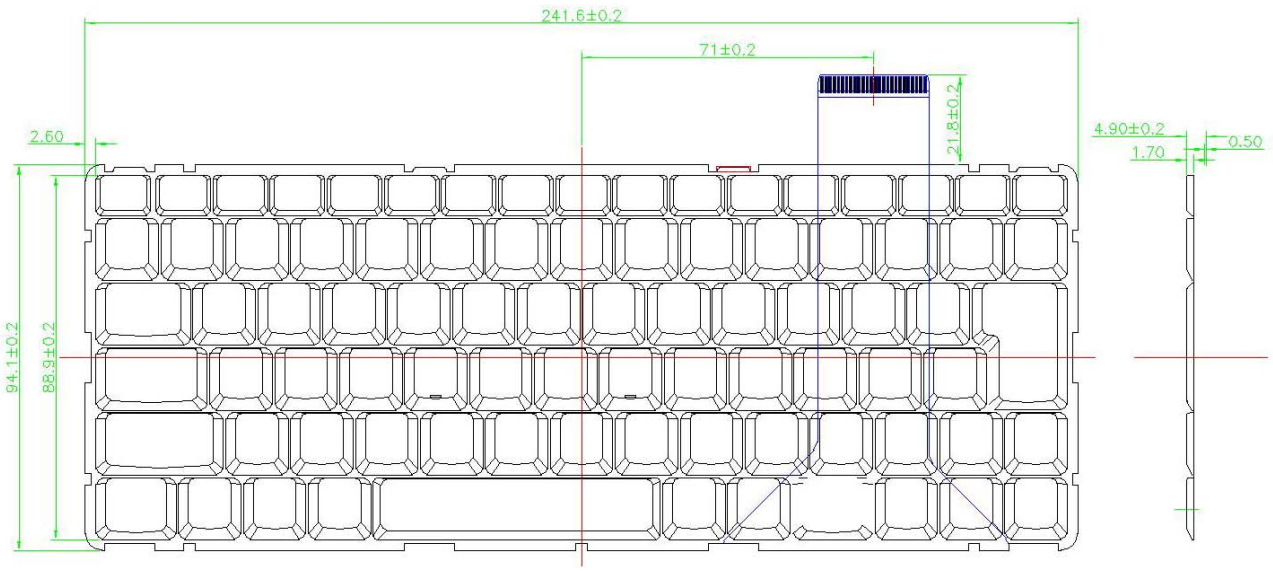
(Keycap Shall Be Released)

13.1.2 Storage In The Dusty Environment Shall Be Avoided.

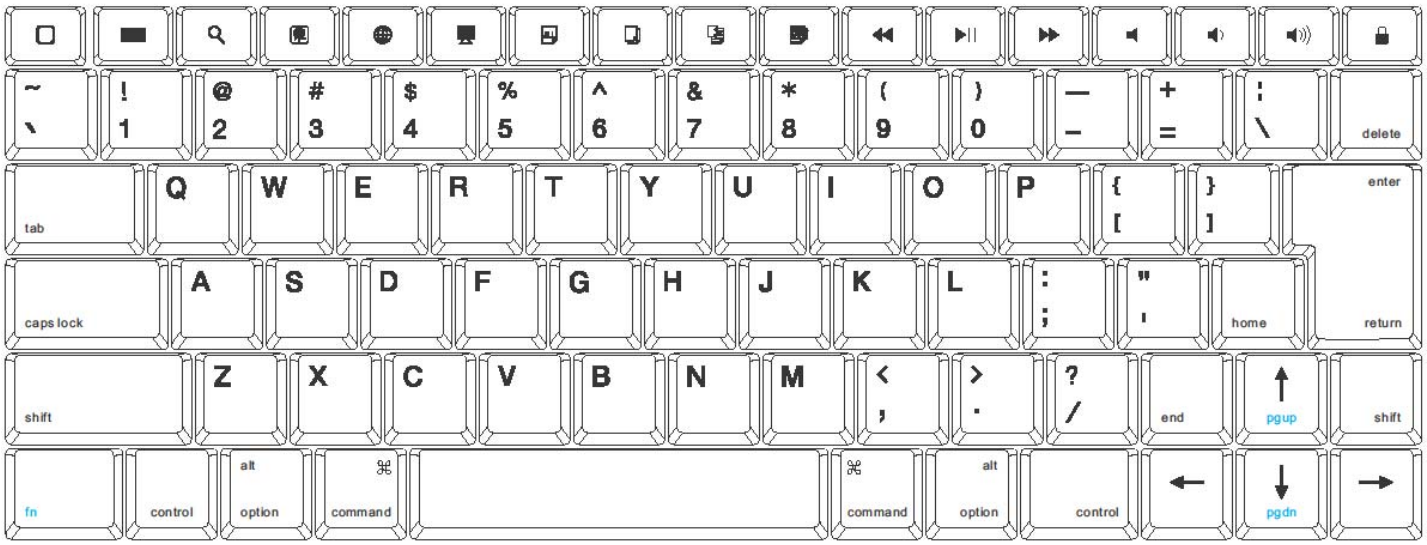
14. Spill Resistance

The keyboard is membrane water resisted only

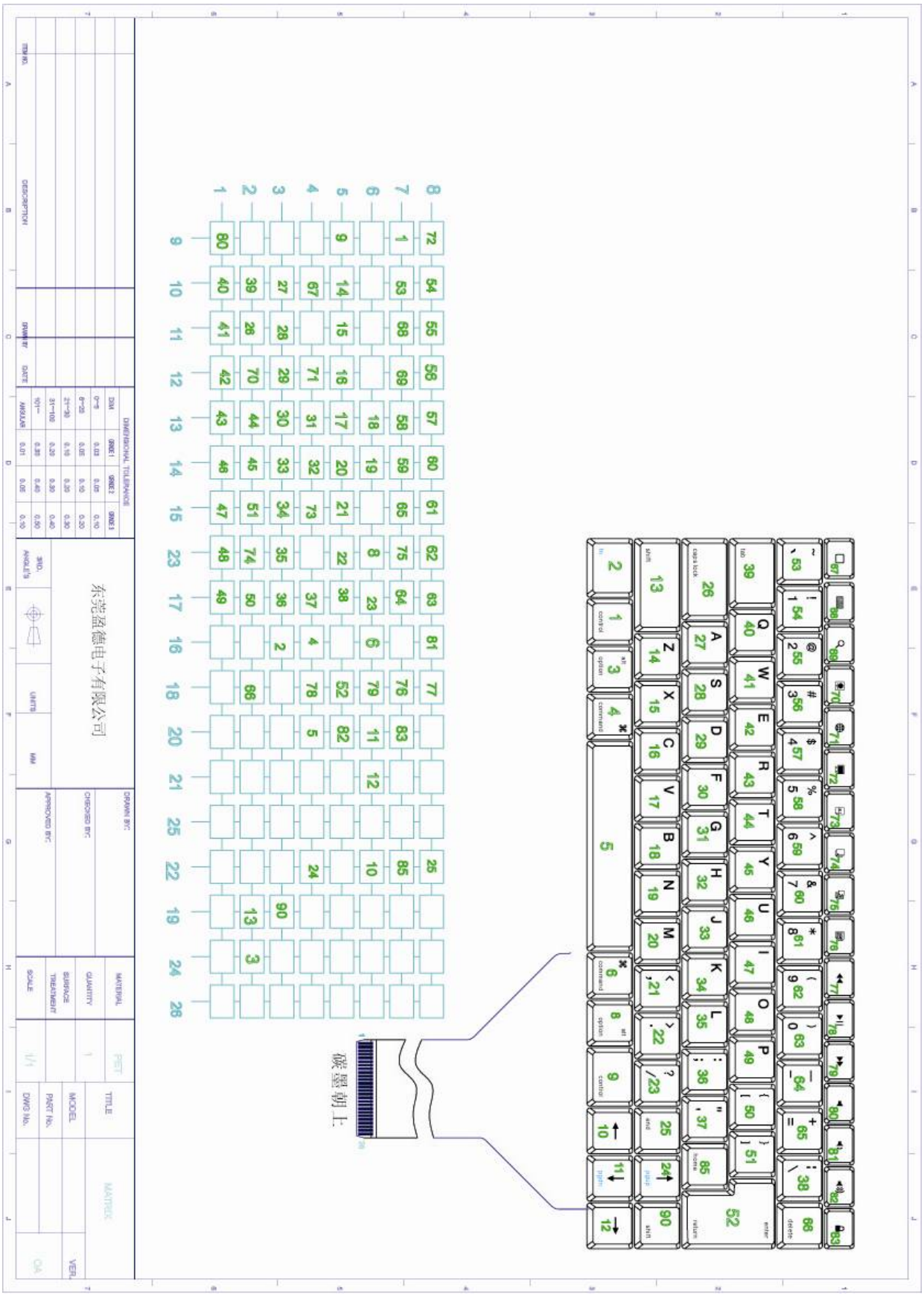
15. Appearance Drawing



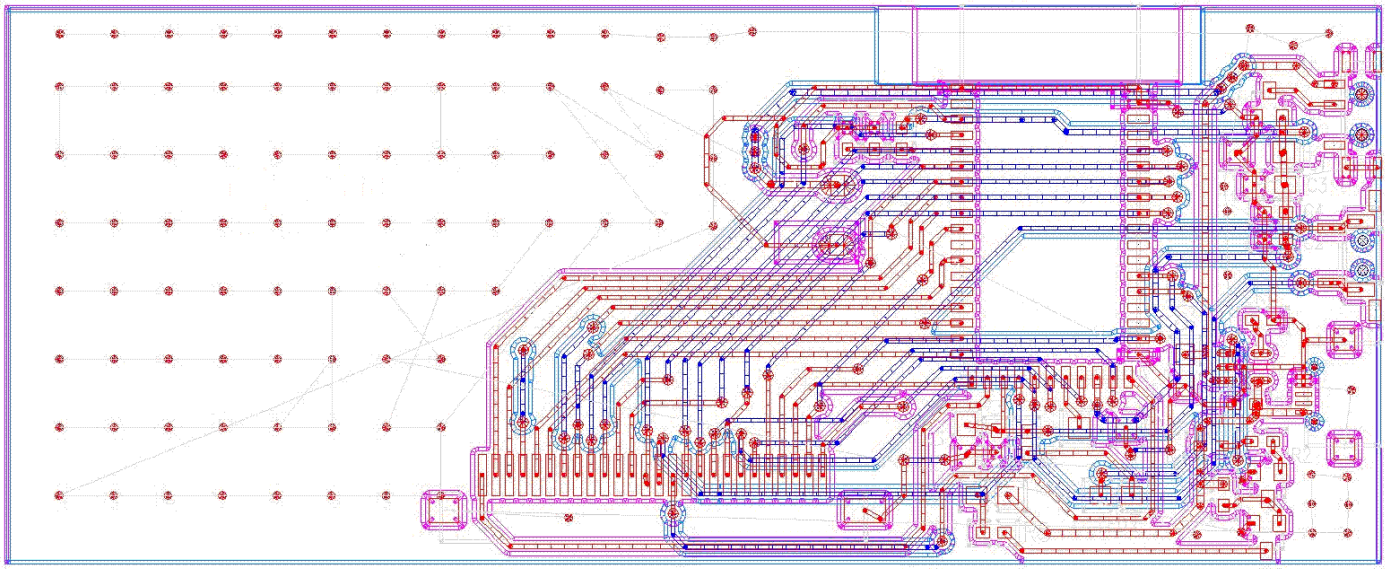
16. Keycap Printing Layout

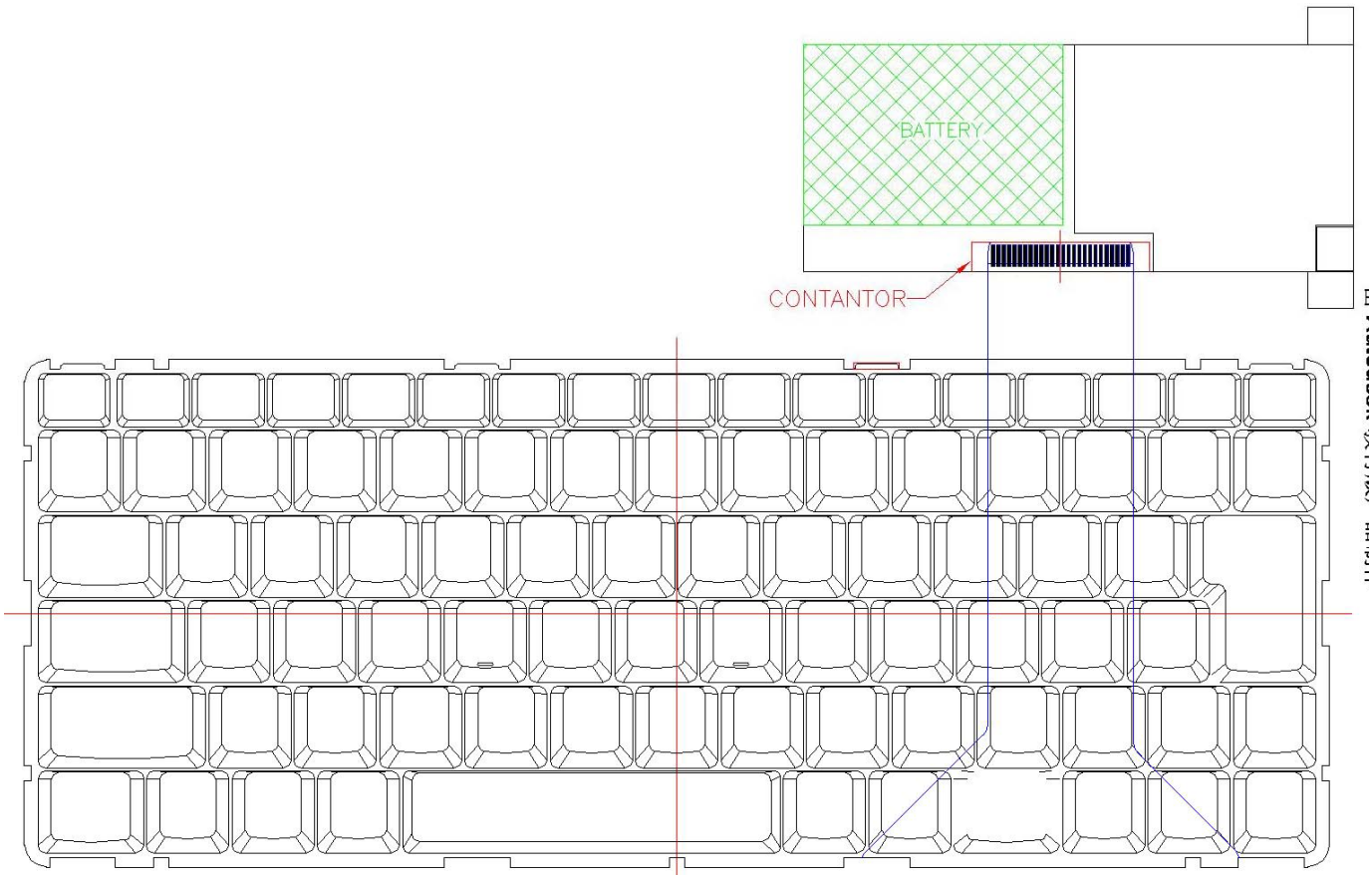


17. Key Matrix



18. Bluetooth Technology & Sketch Map





① Scope

BCM2042 Module is a multi-function Bluetooth module based on Broadcom BCM2042 chipset . This is a single chip radio and

baseband IC for Bluetooth 2.4GHz systems including Human Interface Device(HID) profile and full Bluetooth stack. BCM2042 module is be provides a fully compliant Bluetooth system to V2.0 of the specification for data.

②, FEATURE

Main Chipset: Broadcom BCM2042 Bluetooth Specification: V2.0
Bluetooth Profiles: HID Output Power: Class 2
Interfaces: PIO, AIO. Supply Voltage: 3.0V/1.8V
ROHS Compliant

③ Applications:

Bluetooth Mouse
Bluetooth keyboard
Remote Control HID

④.General Specification

Recommended Operation Conditions

No. Item	Specification
1 3.7V Power Supply Voltage	3.3~5V
2 Working Current	2.5~3.5mA
3 Carrier Frequency	2400MHz~2483.5MHz
4 Modulation Method	GFSK, 1Mbps, 0.5BT Gaussian
5 Transmission Power	4dBm Max. (Class 2)
6 Hopping	1600hops/sec, 1MHz Channel space
7 Receiving Signal Range	-80 to –20dBm Typ
8 Receiver IF Frequency	1.5MHz center frequency
9 Communication rang	10 meters Typ.
10 Operating Temperature	0 to _50 degree C
11 Storage Temperature	-10~+70 degree C
12 Compliant	Bluetooth Specification Ver 1.1,1.2&2.0

19. **FCC&CE Statement**

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasona protection against harmful interference in a residential installation. This equipment gener uses and can radiate radio frequency energy and, if not installed and used in accordance v the instructions, may cause harmful interference to radio communications. However, ther no guarantee that interference will not occur in a particular installation. If this equipment cause harmful interference

to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

RF warning statement:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

Declaration of Conformity

Hereby, Dongguan Xuguan Leather Products Co., Ltd. declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.