Service Manual for HB(I) Platform Scale

Preface:

The product is designed, manufactured and sold independently by our company. We have utilized advanced micro-processing technology during the manufacturing process. The product has such specialties as reliable performance, high weighing accuracy, structure durability and versatile. To offer you better service, we have compiled this manual.

1. Precautions

Please read this manual carefully which will do help you when you have troubles in the process of installation, calibration and operation. You can also know some basic parameters and applications of the scale, and its operating condition from this manual.

① The scale cannot be installed and operated in such places as with extreme temperature (-10℃～40℃) and humidity (≥85%), dust, vibration or excessive air currents and so on.

② Before the initial use, the scale should be charged at least 12 hours for full capacity. If the scale would not be used for a long period of time, it also should be charged every three months to guarantee the battery's service life.

③ The power supply of the scale should be independent of other powerful electrical appliances.

2. Routine maintenance

① When the battery needs charging, be sure that the rated output voltage of the power adapter matches the scale; the electrode of the plug matches, and check the rated voltage of the adapter is 110v or 220v.

② Charge the battery only when it indeed needs to guarantee the battery's service life. (The lead-acid battery only enables be charged for an average 300 times.)

③ You should have regularly check if the load cell is dampened, oxidized or touched by some eyewinkers, and do maintenance work well.

④ Please keep the PCBs clean and dust-free. If the PCB is damped, dry it and also you can brush a layer of insulating varnish to protect it. Be sure all the circuits are intact without electric leakage. Repairing or changing any circuit components should be done by the authorized personnel.

⑤ The housing of the scale is plastic, which should be kept clean and away from corrosive solvent or gas, and also prevent from being bumped and squeezed by other objects.

⑥ The scale should not be used for long time in places with excessive temperatures. If it has to be used under severe condition, please warm-up the scale for 30m before using it; otherwise it may show inaccurate weighing results.

3. Pay attentions when repairing the scale

① Do not use a nipper to prod the components randomly.

② Pay attention not to make a short circuit when using a multimeter.

③ Be sure the soldering iron's temperature not too high and finishing welding in a short period of time when welding the integrated blocks.

④ Do not do a hot-line work.

4. Technical data of components

① 8550 parameters

Operation Temp.: -55℃---135℃

VCBO: 30v

VCEO: 20v

VEBO: 6v

IC: 1.5A

② LP2951 parameters

Operation Temp.: -40℃---150℃

Input voltage: 0.3v---30v

T pin Tem. (5s): 260℃

Pressure differential: 50mv—450mv （100 uA <I<100 mA）

Max. load current: 100mA

Accuracy of voltage: 1%

③ LM385-2.5 parameters

Operation Temp.: 0℃---70℃

Reverse current: 30mA

Forward current: 10mA

Reference current variation: 20mv (1 mA <IR<20 mA)

Min. operating current: 20uA

Max. operating current: 20mA

④ Paster fuse parameter

Rated current: 1.1A

Rated voltage: ＞24v

⑤ HT1621 parameters

Supply Voltage: -0.3V---0.5V

Storage Temp.: -50℃--125℃

Input Voltage: Vss -0.3V---- Vss +0.3V

Operating Temp.: -25℃--75℃

Operating Voltage: 2.4V-5.2V

⑥ SPX1117 parameters

Stabilized Output Current: 0.8A

Operating Node Temp.: -40℃->+125℃

Storage Temp.: -65℃->+150℃

Soldering Temp.: 260℃

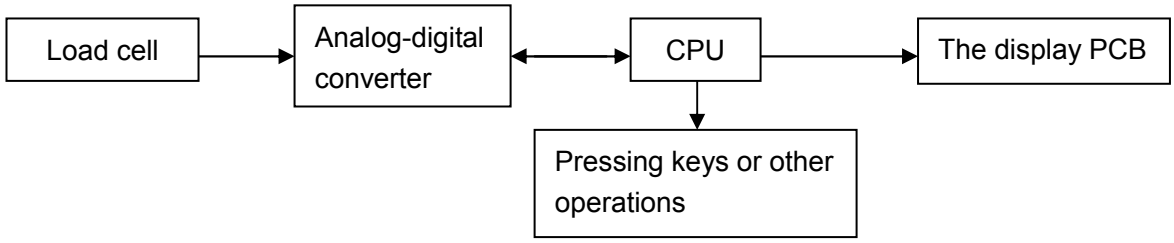
Input Voltage: +20V

Voltage Drop between Input Term. and Output Term.: 18.8V

Rated ESD Value: 2KV (Min.)

5. Operating principle

① **Flow chart**



② **Operating principle**

When the scale is loaded, the load cell would send a millivolt-sized analog voltage signal refer to the weight of the loading objects. The signal is sent to the A/D converter and converted to be digital signal; this signal together with some operational orders is received and processed by the CPU; at last the display will show corresponding data.

6. Phenomena of trouble

1) Trouble of parts

The phenomena are as following:

a) Buzzer -----The buzzer doesn't make sound, or sometimes make sound and sometimes doesn't make sound.
b) Keys -----The keys don't work.
c) LCD ----- The display shows incomplete or exceptional.
d) Zener Diode-----The scale can't switch on when connecting to the adapter and the AC power indicator doesn't lighten.

2) Trouble of power supply (Adapter)

The phenomena are as following:

a) The scale can't switch on, or when it switches on, the "Low battery" indication appears.
b) The display value is inaccurate or unstable.

3) Trouble of load cell

The phenomena are as following:

a) The display value doesn't change when the scale is loaded.
b) The initial internal resolution value is out of its normal range.
c) The initial internal resolution value drifts.
d) The display shows "E2/E3" when power on.
e) The display value is inaccurate or unstable.

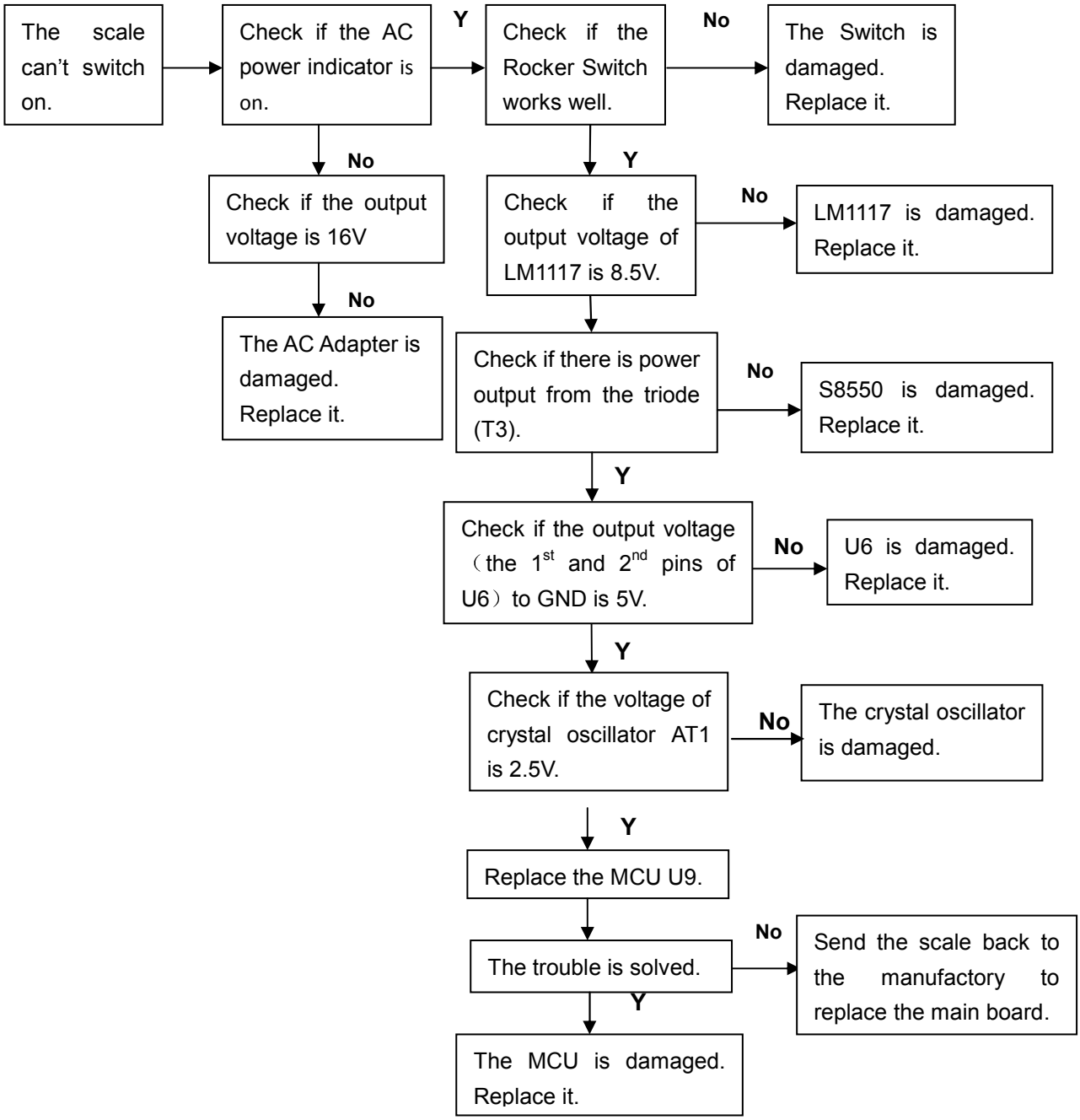
4) Trouble of Main PCB

The phenomena are as following:

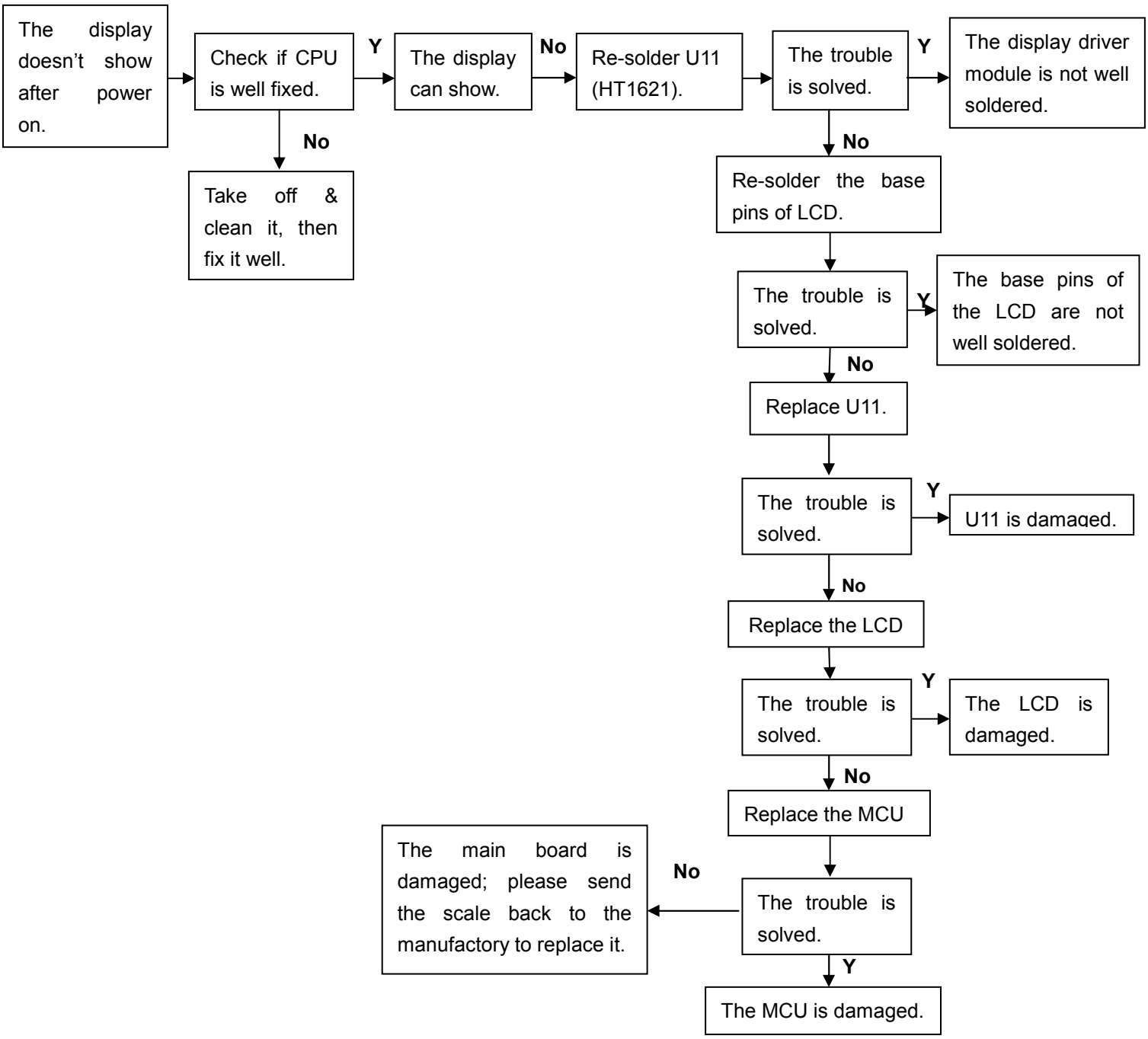
a) The scale can't switch on.
b) The display shows nothing when switch it on.
c) The scale turns off automatically.
d) The display reading drifts.
e) The internal resolution is out of its normal range.
f) Date transmission or printing is unavailable.

7. Solutions to the troubles

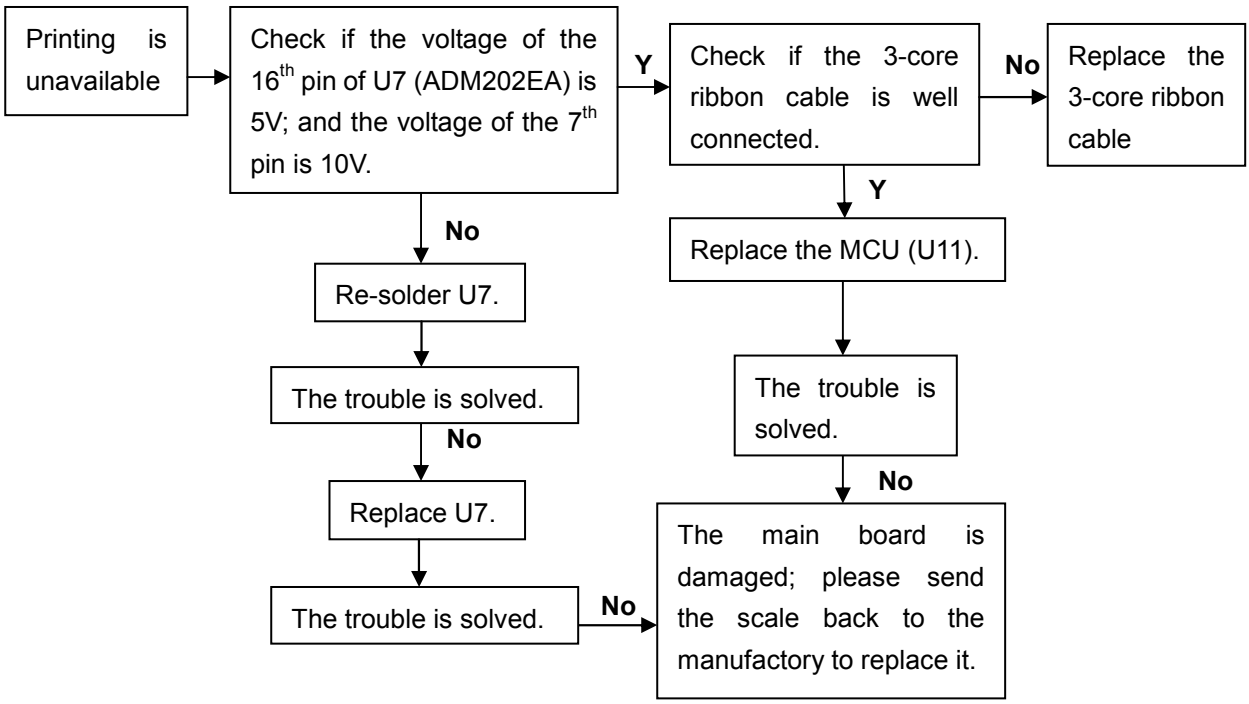
1) The scale can't switch on



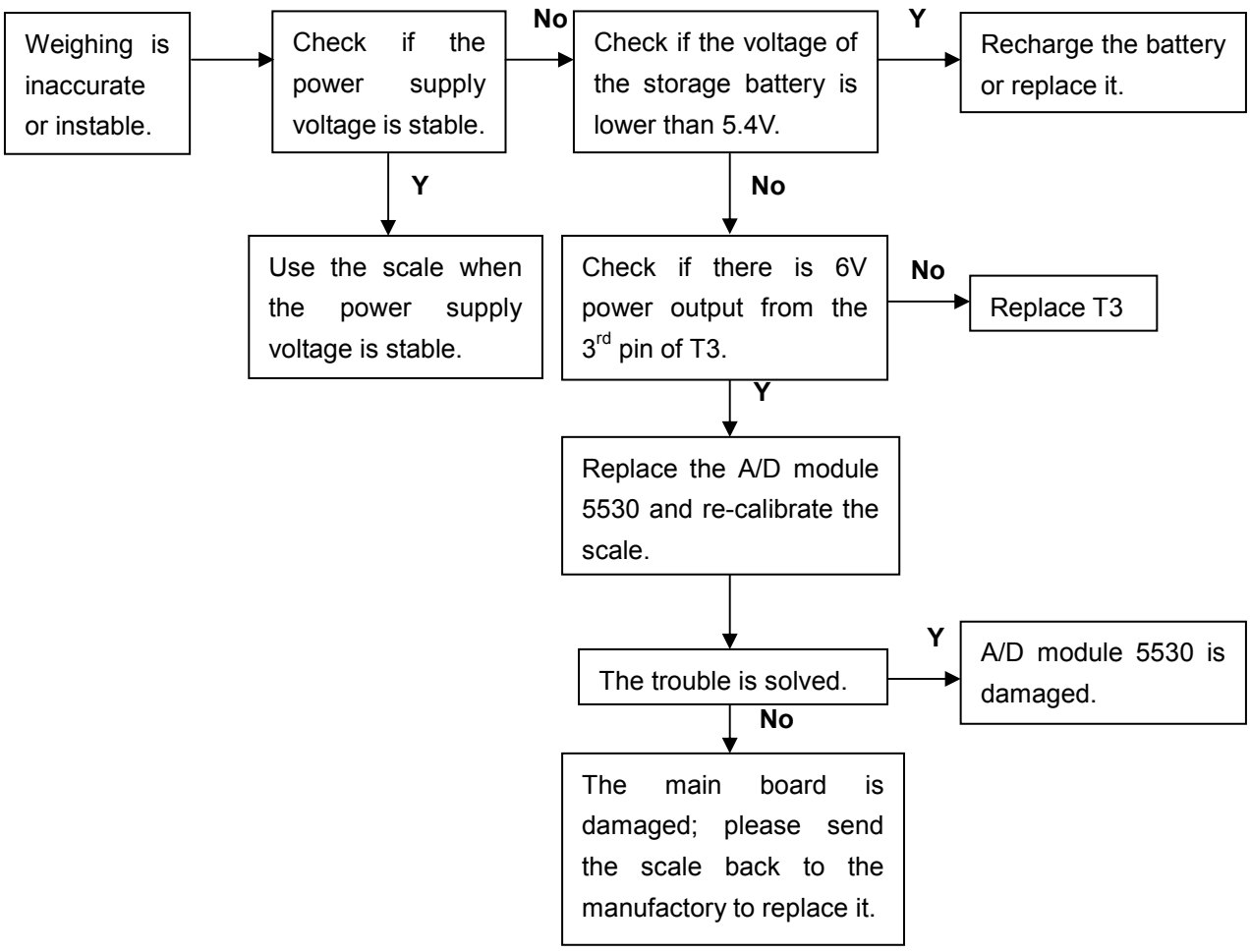
2) The display doesn't show after power on



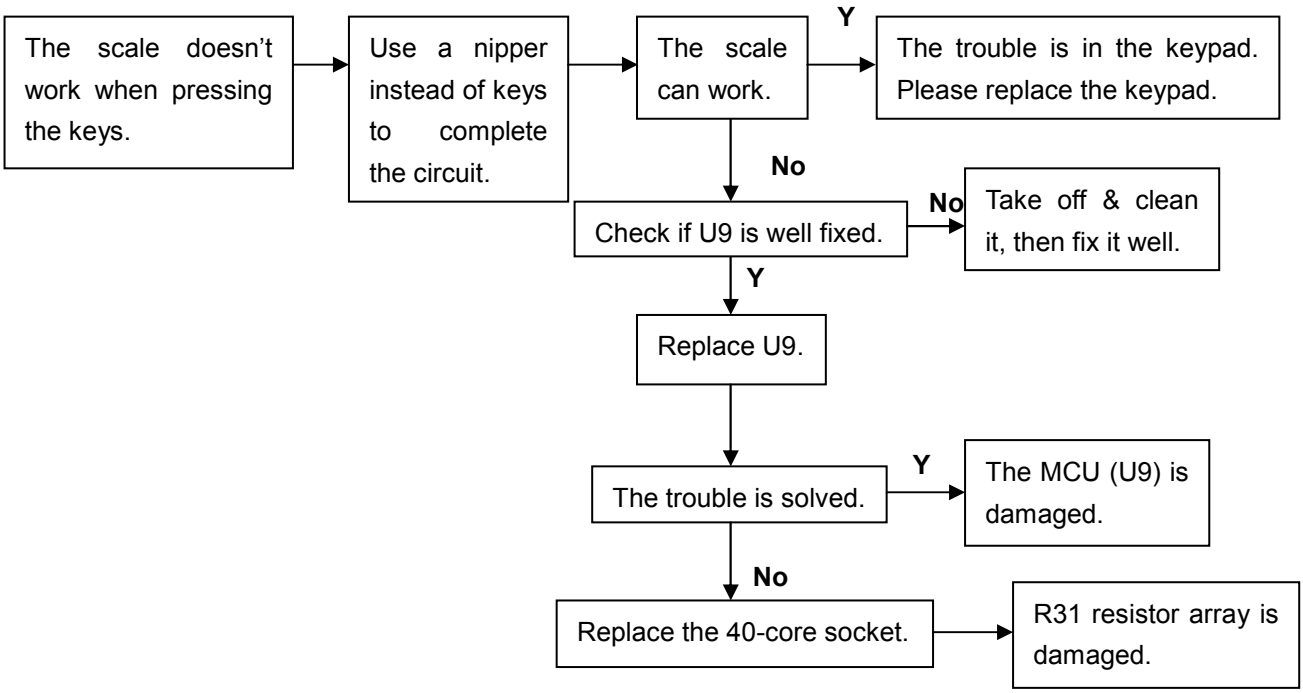
3) Printing is unavailable



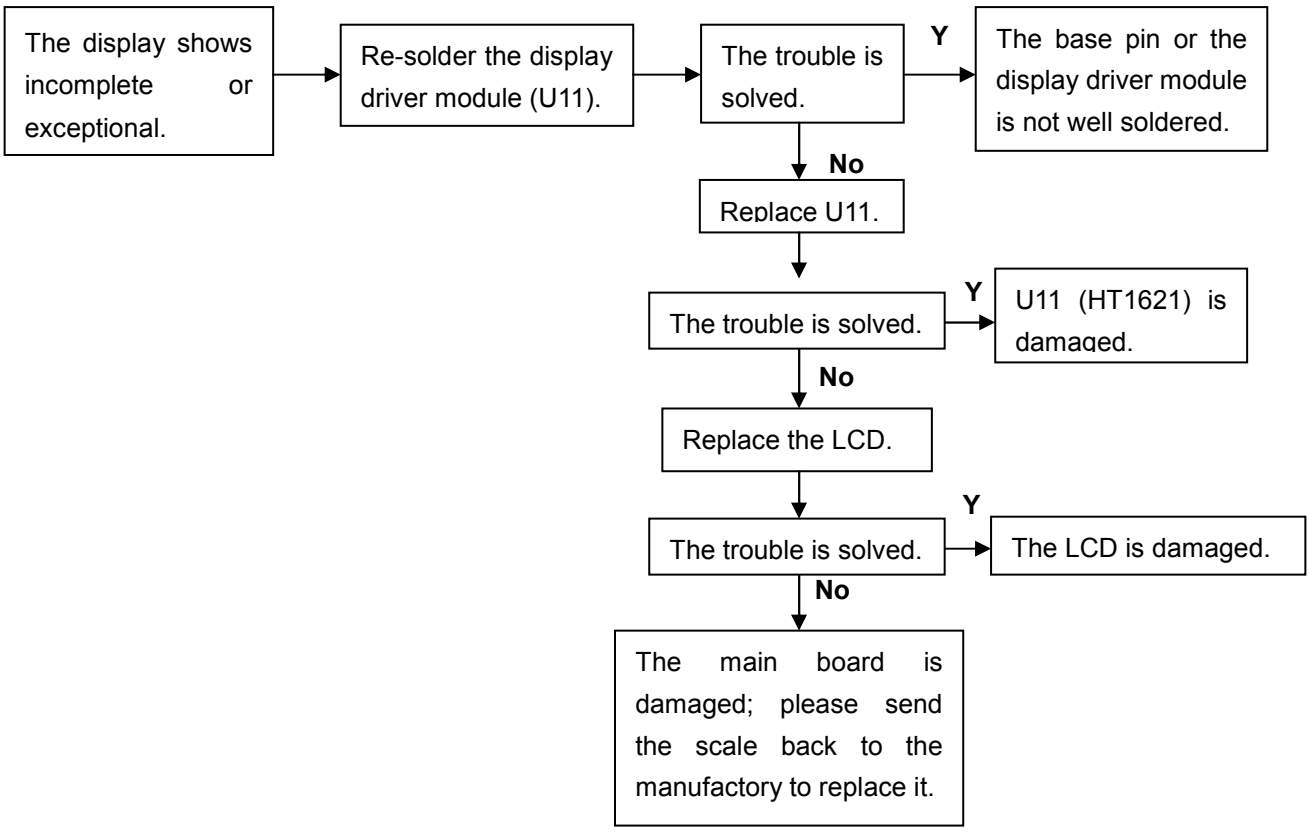
4) Weighing is inaccurate or instable



5) The keys don't work



6) The display shows incomplete or exceptional



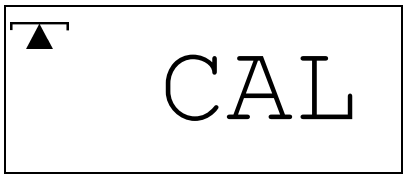
Note: Sometimes the scale is affected by its operating condition such as the clime or temperature; it may show error messages during the operating process.

Error Codes	Causes	Handling
E1	The main board is changed.	Recalibrate the scale.
E2	The initial zero is outside the range of the factory setting for zero; or the load cell is not well connected.	1. Remove the load on the platform and re-start the scale. 2. Recalibrate the scale. 3. Replace the load cell or A/D 5530, and then recalibrate the scale.
E3	The calibration data loses.	Recalibrate the scale.
E4	The preset low limit value is set higher than the higher one	Reset the values
-OL-	Overload	Remove some loads
	The digits exceed the display range.	Cancel or quit the operation
	Low battery	Recharge the battery of replace it
-------	The system is busy.	Just wait for a moment.

8. Calibration procedure

Calibration Procedure for HB（I）

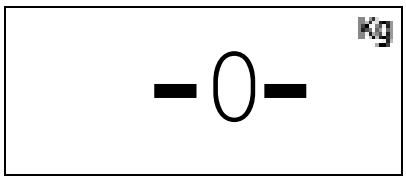
Switch on the scale & the display will show "**CAS**" and the **Version No**.; press the Calibration key or press **TARE**, **ZERO**, **TARE**, **ZERO**, **TARE**, **TARE**, **ZERO**, **ZERO** key in order to enter into calibration mode. The display shows as below:



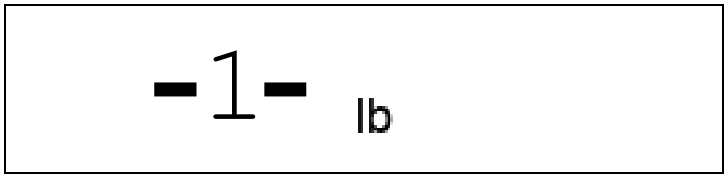
Give a long press of **ZERO** key to enter into choosing the unit.

1) To choose the unit (0-kg, 1-lb) （For US Version only）

The display shows as below:



Press "**COUNT/▲**" key to change the unit to lb, and the display shows as below:

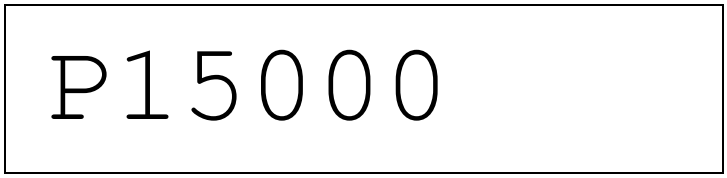


Press **M+/EXIT** key to exit the Calibration mode.

Press **TARE/ENTER** key to confirm and move to next step (Choose the prevision value).

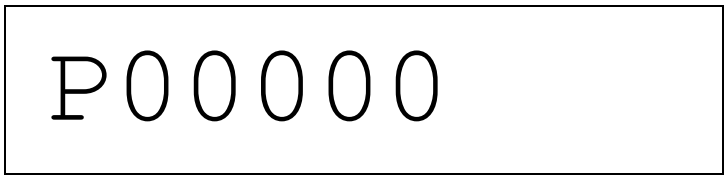
2) To choose the precision value

The display shows as below:



Press the "**COUNT/▲**" key to choose the precision value, which can be chosen from 3000, 6000, 7500, 12000, 15000, 30000 and 60000.

To key in other desired precision values, please press **CLEAR** key to clear the displayed value. The display shows "P00000"

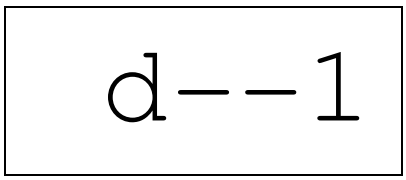


Press "**CHECK /◀**" or "**%/▶**" key to move the active digit to left or right & press "**COUNT/▲**" key to change the value.

Then press **TARE/ENTER** key to confirm the value and move to next step; press **M+/EXIT** key to exit the Calibration mode. (Choose division value)

3) To choose the division value

The display shows as below:

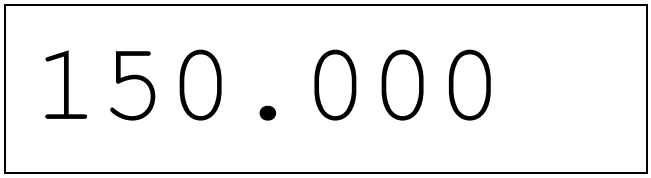


Press "**COUNT/▲**" key to change the value from 1, 2 or 5.

Then press **TARE/ENTER** key to confirm and move to next step; press **M+/EXIT** key to exit the Calibration mode. (To choose the Capacity)

4) To choose the Capacity

The display shows as below:

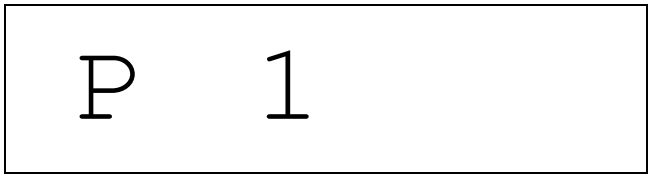


Press "**COUNT/▲**" key to move the dot position to change the Capacity value.

Then press **TARE/ENTER** key to confirm and move to next step; press **M+/EXIT** key to exit the Calibration mode.

5) Weight loading times

Then the display shows as below:



Press "**COUNT/▲**" key to choose the weight loading times from 1, 2 or 3.

P1: Calibrate the scale by putting on the weight only one time.

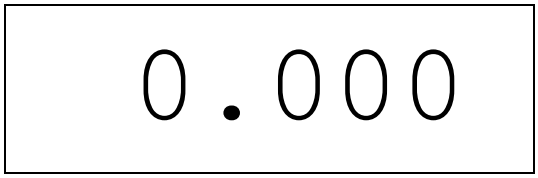
P2: Calibrate the scale by putting on the weight twice.

P3: Calibrate the scale by putting on the weight for three times.

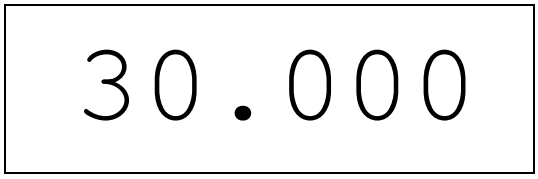
Then press **TARE/ENTER** key to confirm and move to calibration mode; press **M+/EXIT** key to exit the Calibration mode.

In Calibration Mode (For P1)

The display shows 0.00 or 0.000.



- Touch the pan lightly by hand, several seconds later, the display shows the weight value (The value can be changed by pressing the "**CHECK /◀**", "**%/▶**" and "**COUNT/▲**" key) which should be put on. Put on the weights refer to the displayed weight value, and press the **TARE/ENTER** key to confirm.



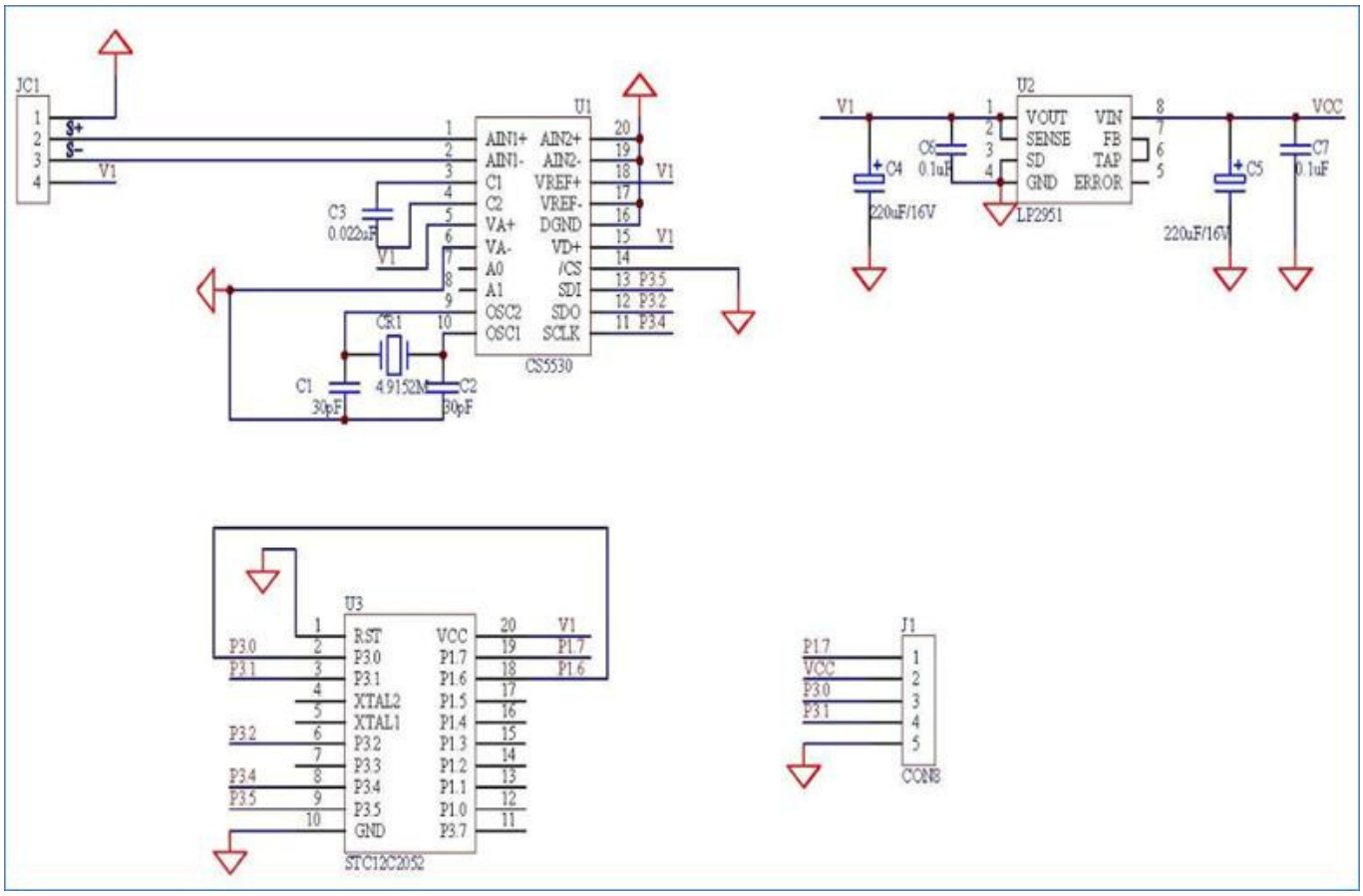
A few seconds later, the buzzer sounds, and the scale counts backwards to zero. The calibration procedure is finished. Then switch off and take away all the weights.

Note:

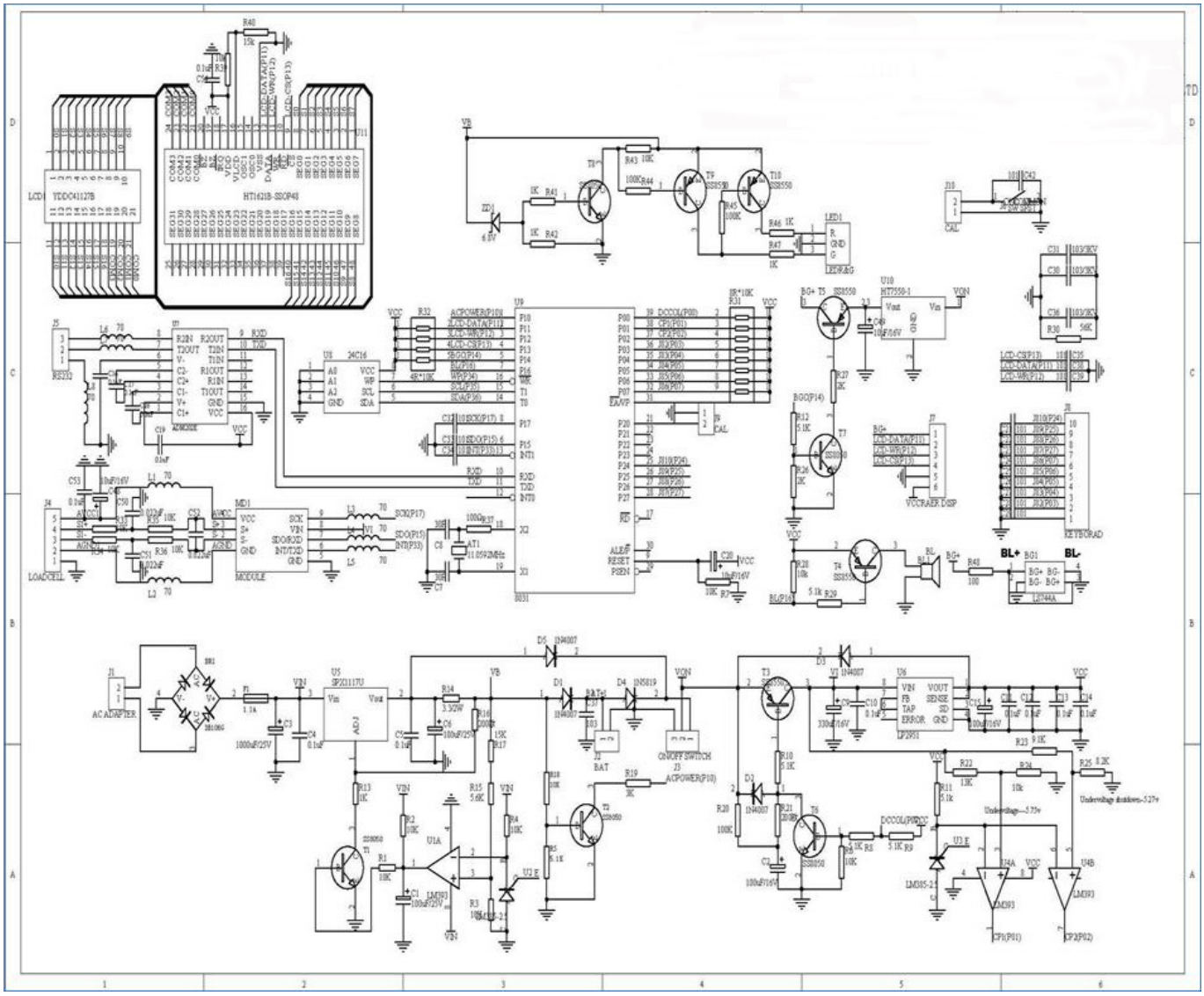
- When the display shows "0.00" or "0.0000", press the "**PRINT**" key to check the resolution; press the "**PRINT**" key again to return.
- If P2 or P3 is selected, the display will show the second and third weight value (the second and third value must be bigger than the last one).

9. Appendix

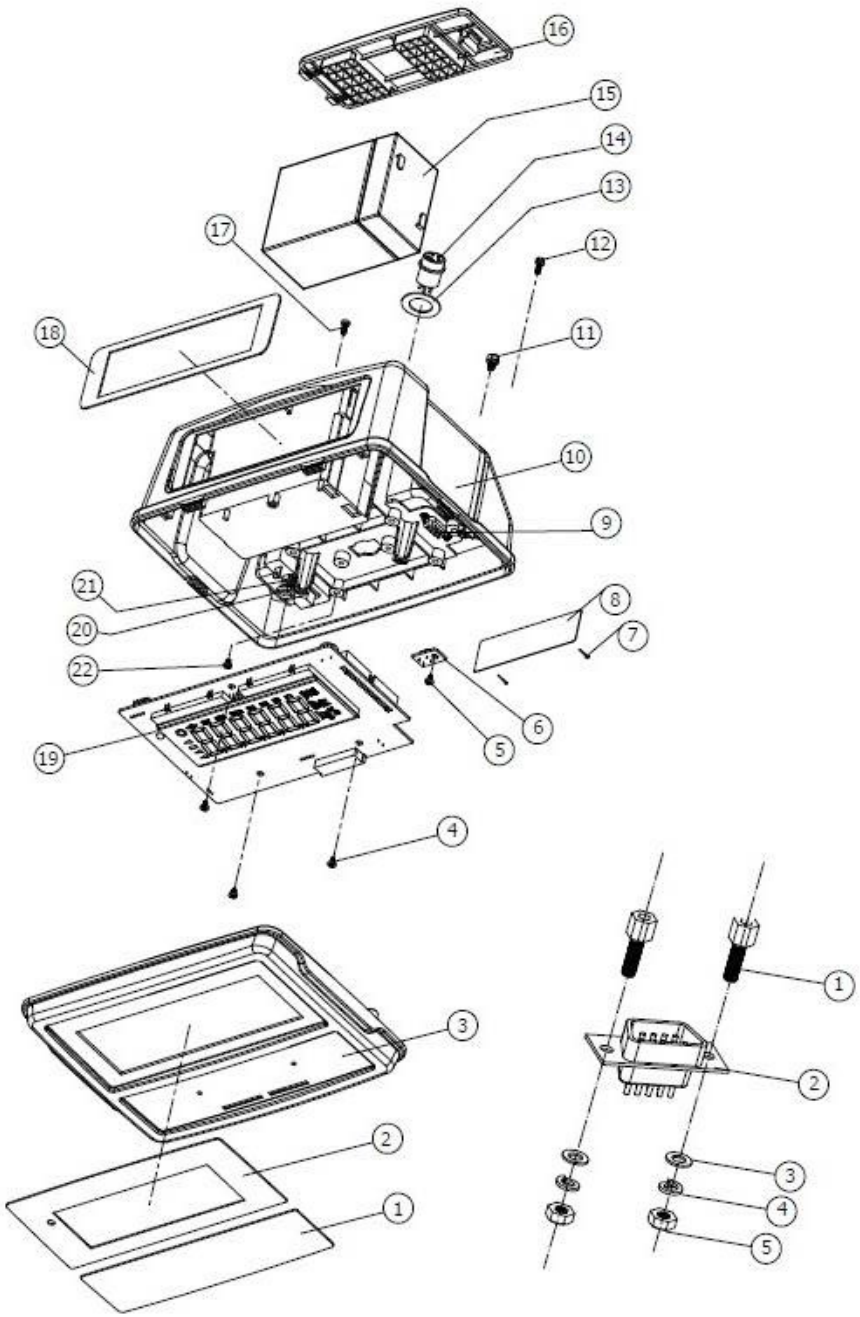
Circuit Diagram for A/D 5530 Module



Circuit Diagram for Main PCB



Assembly Drawing



No.	Parts Name	Qty.	Specification	Remarks
22	Cup Head Screw	1	M4×6mm	
21	Tapping Screw	1	M3×6mm	
20	Power Socket	1		
19	Front Display Board	1		
18	Rear Cover	1		
17	Cup Head Screw	1	M3×8mm	
16	Battery Cover	1		
15	Battery	1		
14	Aviation Socket	1		
13	Cover Plate	1		
12	Sealing Bolt	1	M3×8mm	
11	Sealing Bolt	1	M4×6mm	
10	Rear Case	1		
9	RS232	1		
8	Spec. Plate	1		
7	Rivet	2		
6	CAL. Key Cover	1		
5	Tapping Screw	1	M4×8mm	
4	Tapping Screw	3	M3×8mm	
3	Front Case	1		
2	Front Overlay	1		
1	Membrane Keyboard	1		

No.	Parts Name	Qty.	Specification	Remarks
5	Nuts B.S for RS232	2	M2.54mm	
4	Elastic Washer	2	Φ3	
3	Flat Washer	2	Φ3	
2	RS232 Interface			
1	Screw B.S for RS232	2	M2.54*10mm	