# Service Manual for SPW Digital Weighing Indicator

Welcome to use our company's SPW digital weighing indicator!

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 (≥90%), dust, vibration or excessive air currents and so on.

② The indicator is supported by 220V AC power, which should be independent of other powerful electrical appliances.

## 2. Routine maintenance

① Please keep the circuit board clean and dust-free. If the circuit board 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 authority personnel.

② 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.

③ 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 block.

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 7805 parameters

Operation Temp.: 0℃---125℃

Max Input Voltage: 35V

Output Voltage: 4.75V-5.25V

Max. load current: 500mA

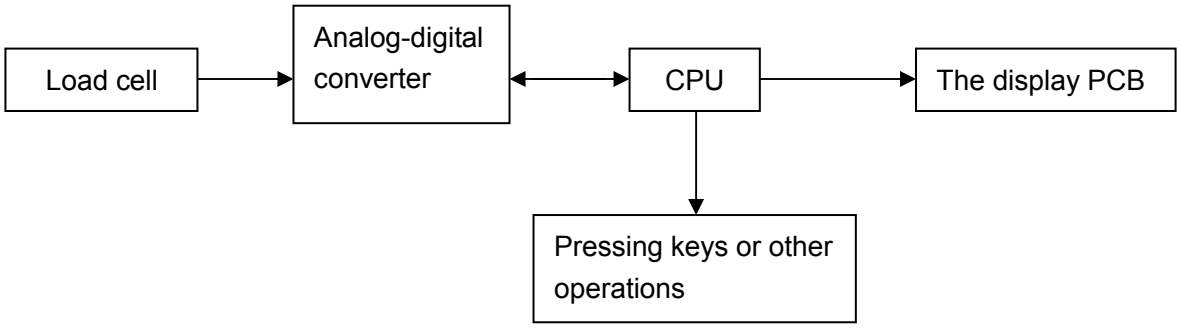
④ Protective tube parameter

Rated current: 1.1A

Rated voltage: ＞24v

## 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 troubles

**1) Trouble of components**

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.

**2) Trouble of power supply**

The scale can't switch on.

**3) Trouble of load cell**

The phenomena are as following:

a) The display can't perform self-checking.
b) The display data doesn't change when the scale is loaded.
c) Weighing results is inaccurate or the display reading is unstable.
d) The initial internal resolution value is out of its normal range.
e) The initial internal resolution value drifts.

**4) Trouble of PCBs**

The phenomena are as following:

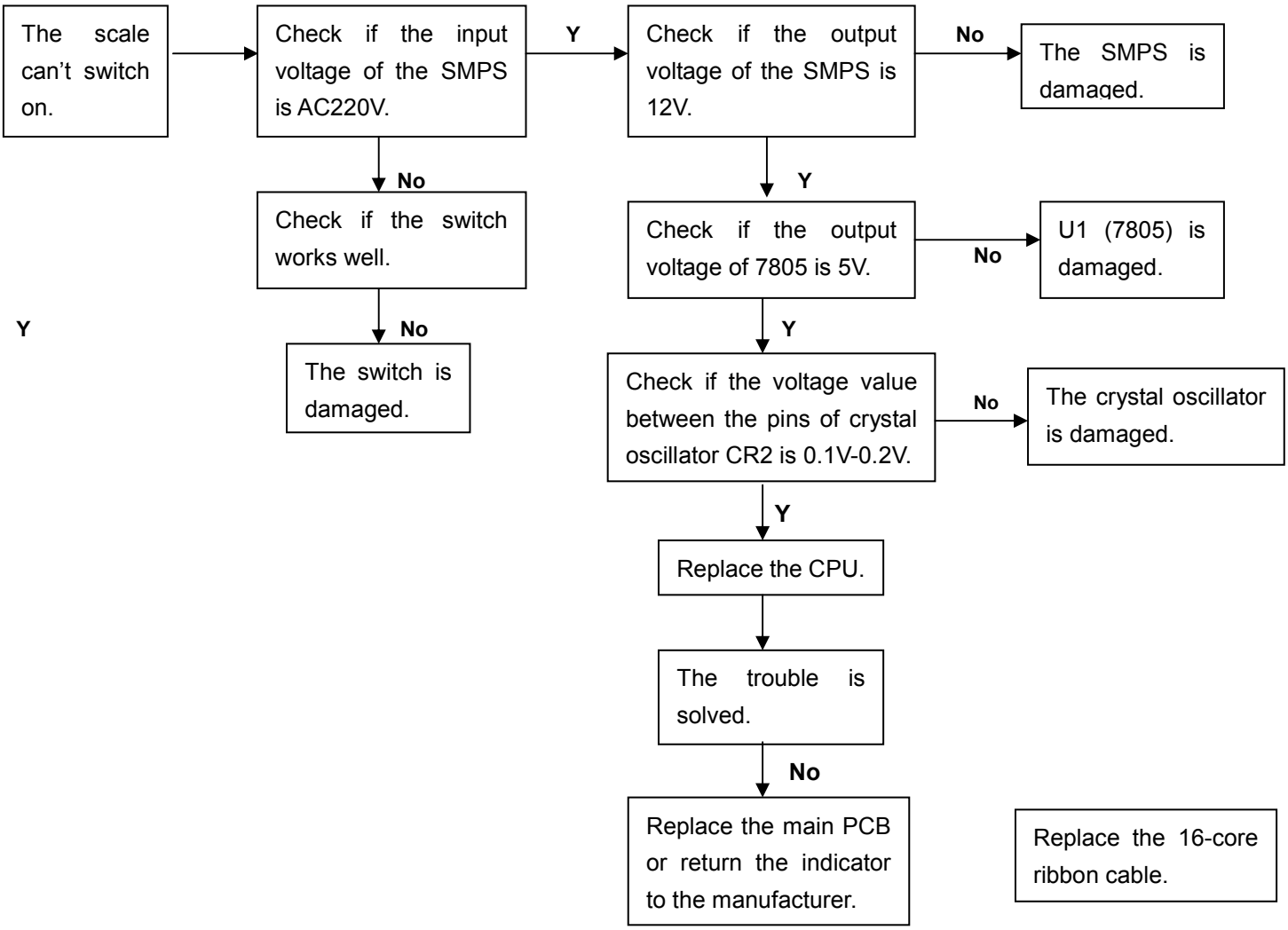
a) Display board----- The display is incomplete or exceptional.
b) Main board----- The display shows nothing when switch on.
   The indicator does not start self-checking after power on.
   The display reading drifts.
   The initial resolution value is out of its normal range.
c) Power supply board----- The scale can't switch on and the power indicator doesn't lighten.

**5)** Trouble of printers

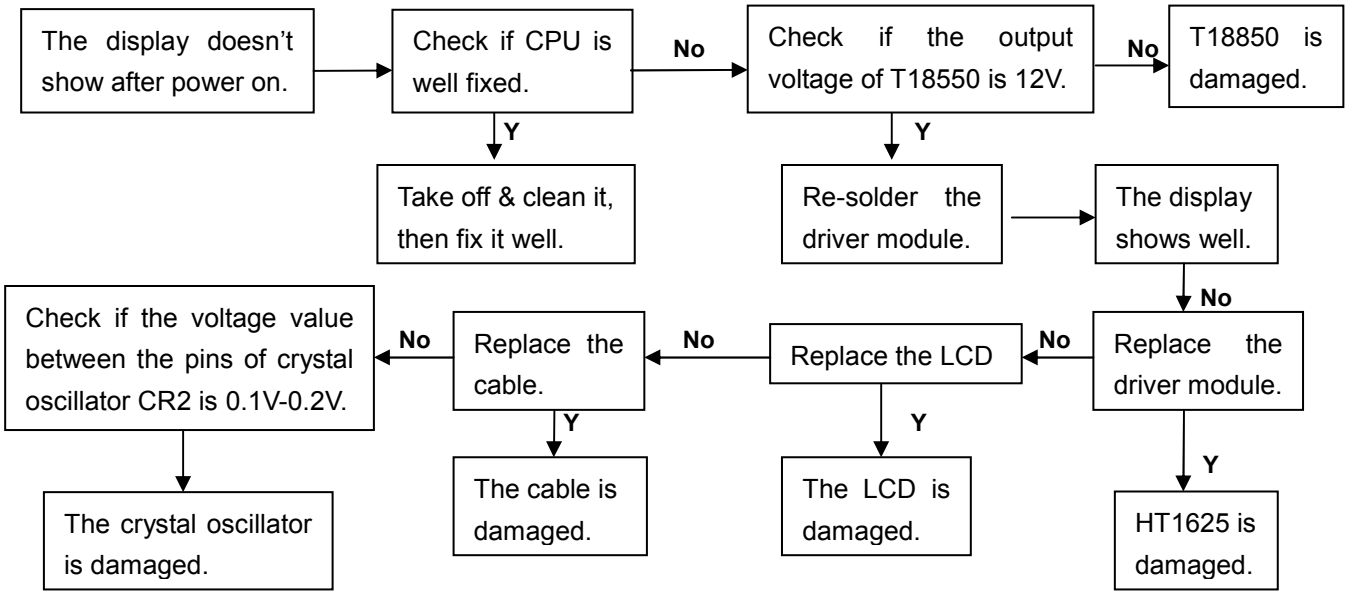
a) Main board----The printer does not work
b) Power supply board----To download the Label format is unavailable or the printer does not work.
c) Printer Head----The printed characters is blurry or it is difficult to feed paper when printing.

## 7. Solutions to the trouble

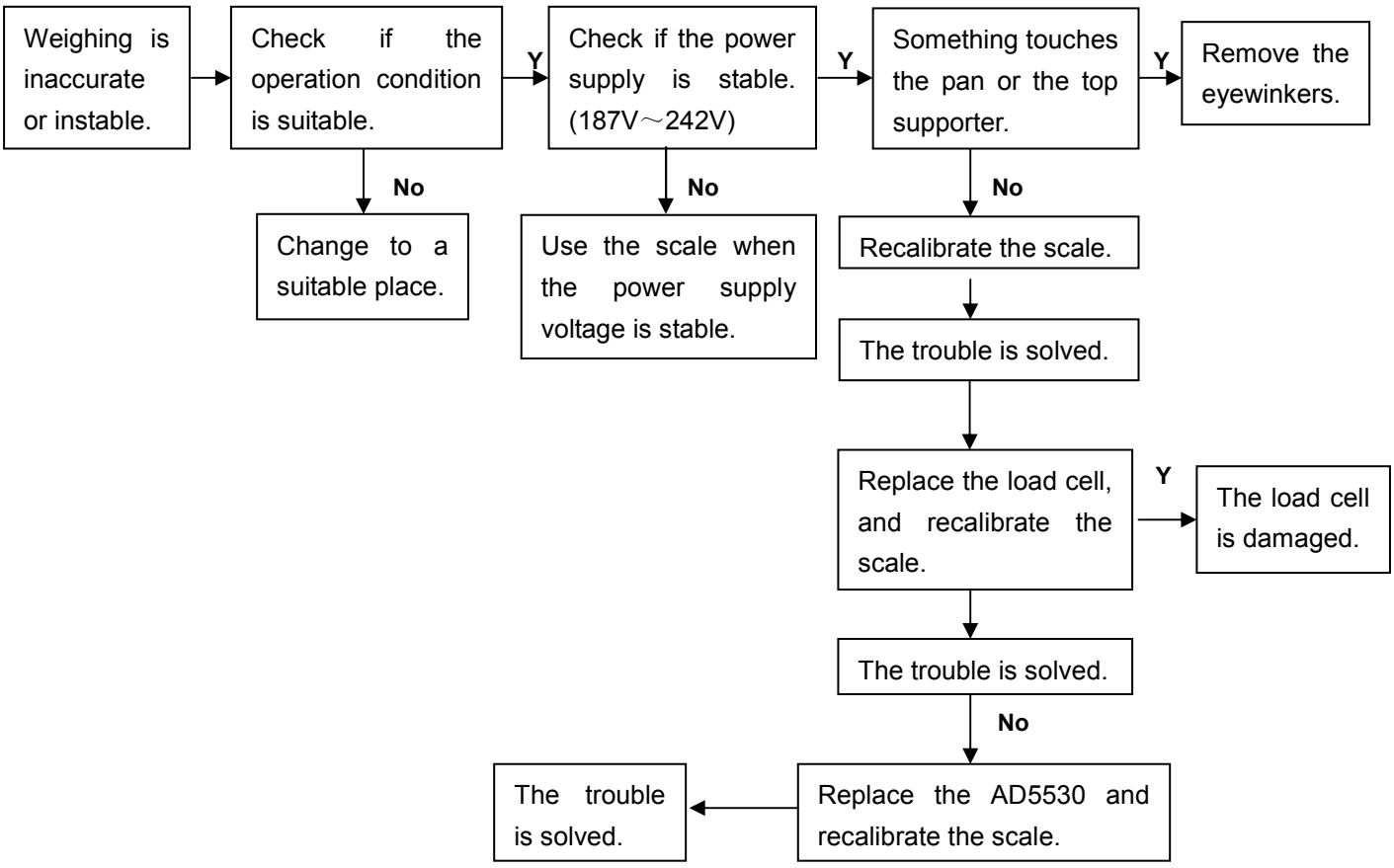
### 1) The scale can't switch on



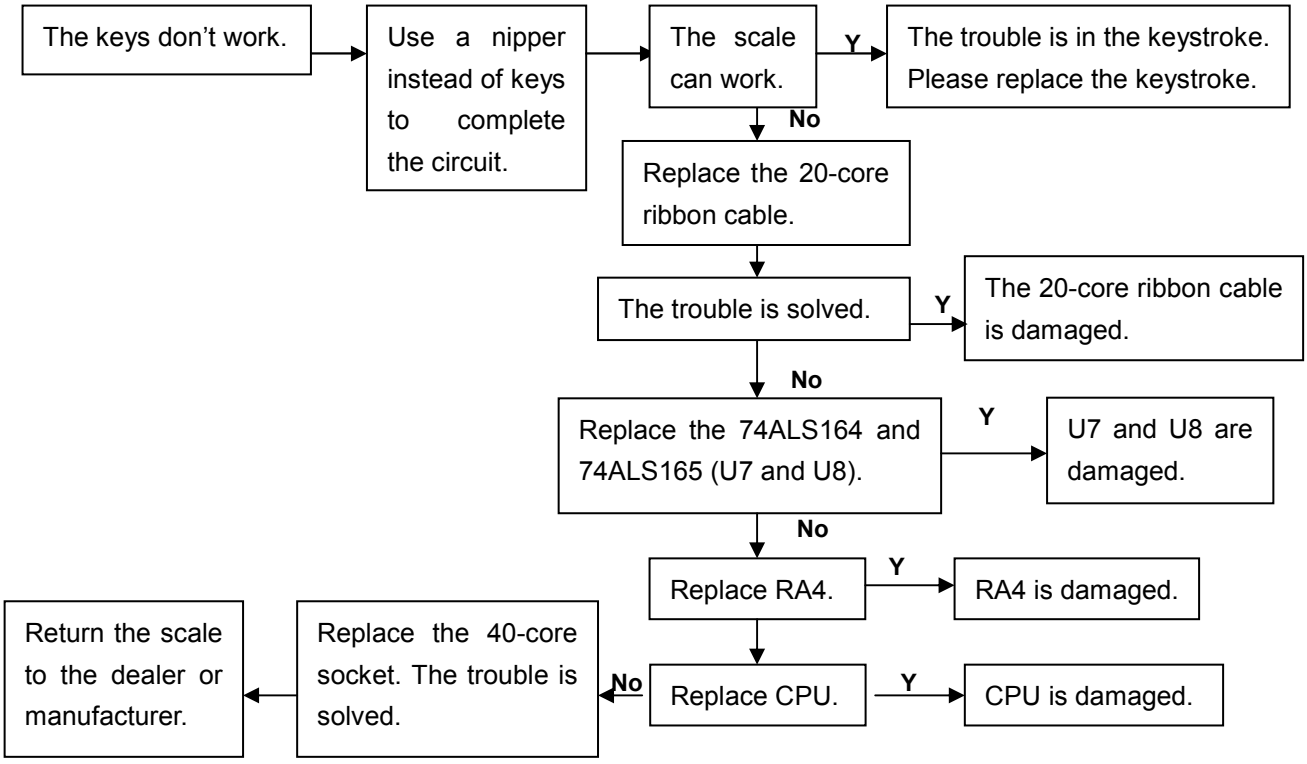

### 2) The display doesn't show after power on



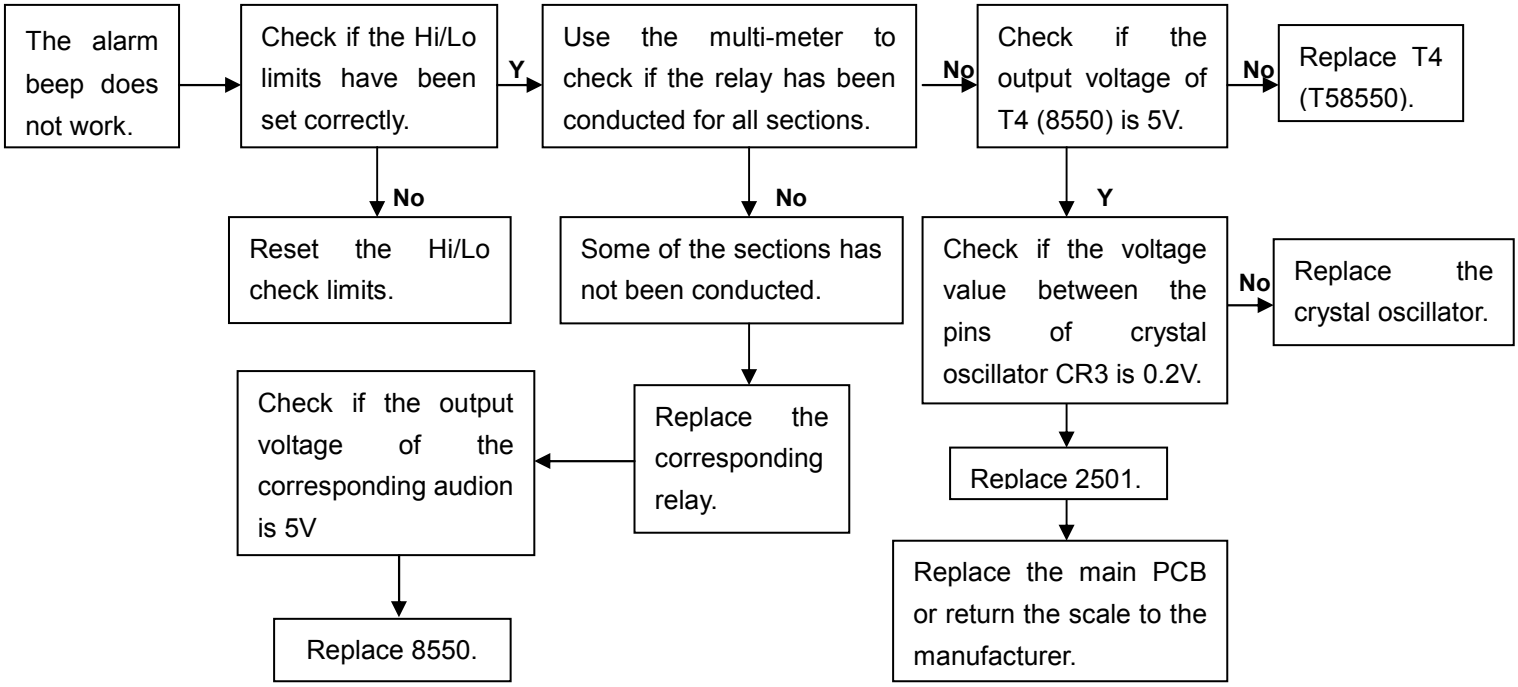
### 3) Weighing is inaccurate or instable



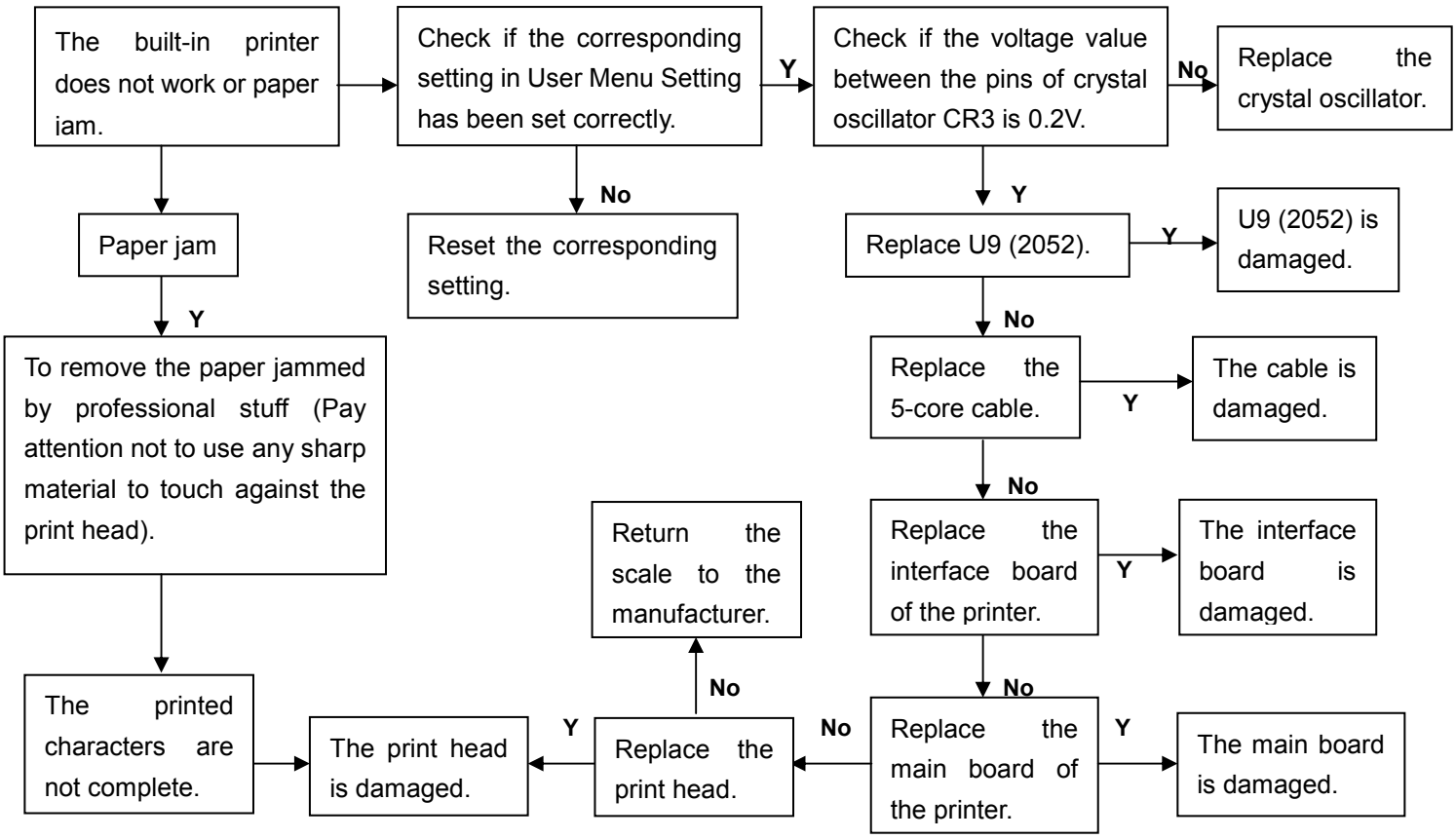

### 4) The keys don't work



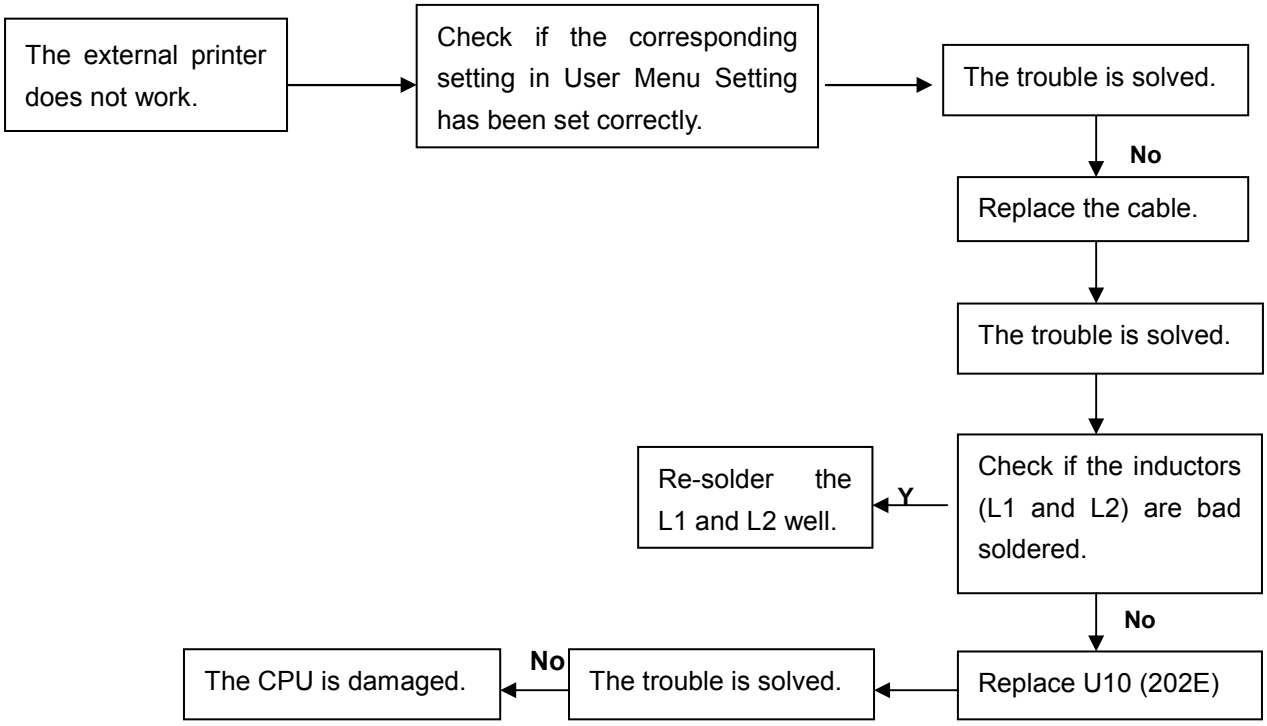
### 5) The alarm beep cannot work



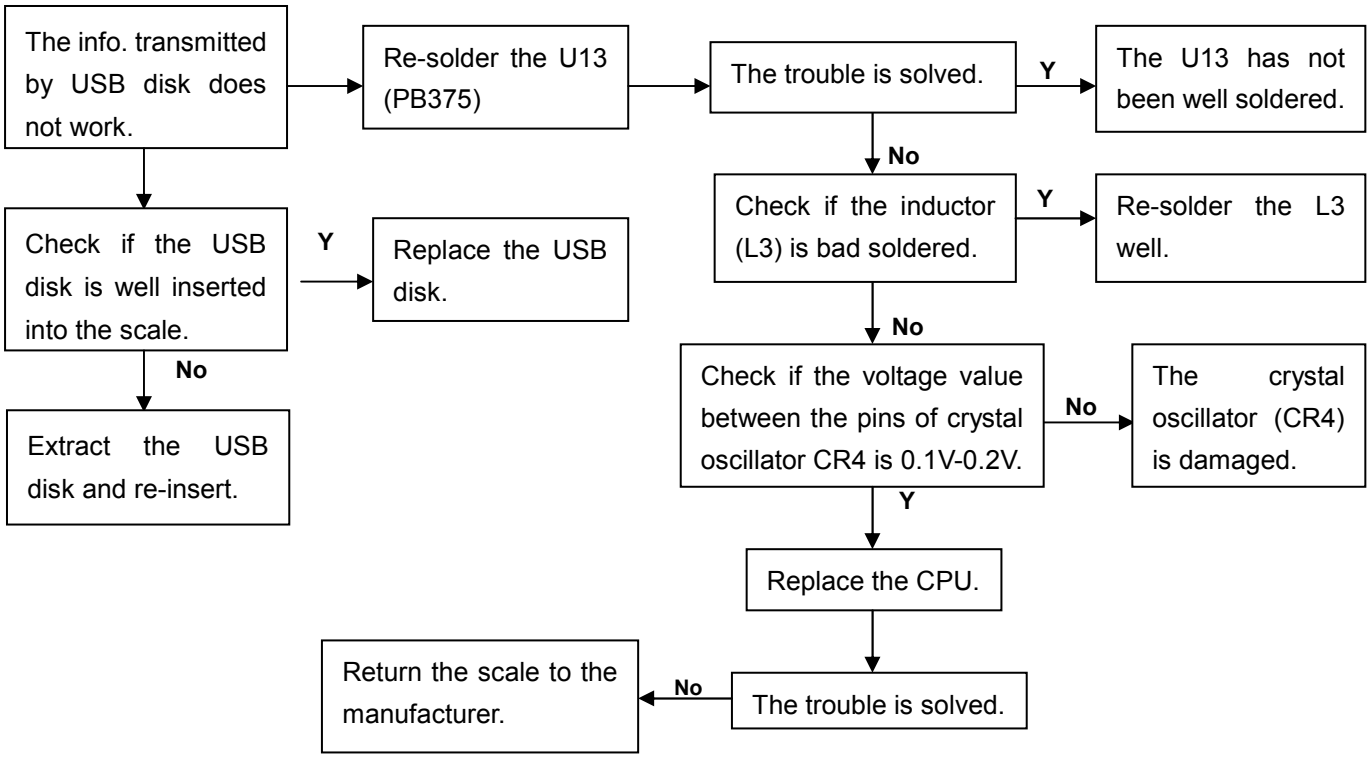

### 6) The built-in printer does not work or paper jam



## 7) The external printer does not work




## 8) The information transmitted by USB disk does not work



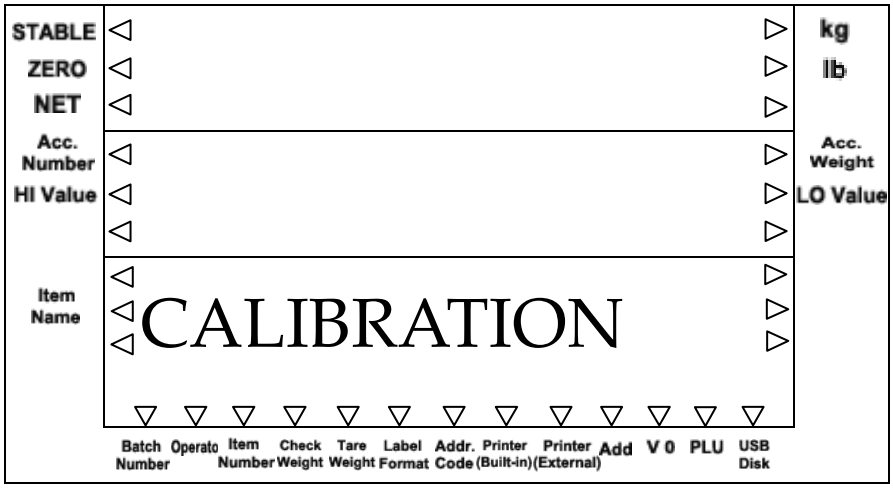
**Note:** Sometimes the scale is affected by its operating condition such as the clime or temperature; it may show error messages during the operating process.

| Error Codes | Possible Causes | Handling |
|---|---|---|
| **E1** | EPROM data lose | Recalibrate |
| **E2** | The initial Zero is out of range | Recalibrate |
| **OL** | Overload | Remove the overload object |
| **------** | The system is busy | Wait a moment |
| **WR-ERROR** | RAM is damaged （24C512） | Replace it |
| **OVER RANGE** | Some of the Material information has been set out of range | Reset the information |
| **CAL ERROR** | The CAL weight is incorrect | Recalibrate |
| **RATIO ERROR** | The ratio for Ratio Calibration is out of range | Re-input the correct ratio |

## 8. Calibration procedure

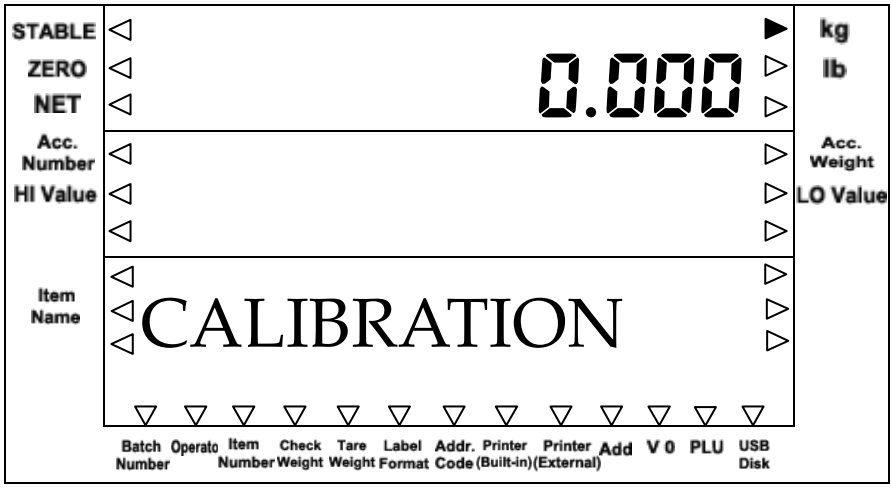
Connect a load cell with the indicator, and then short the calibration pins or input “113388” with numeric keys during self-checking. It will enter into Calibration mode and the Initial Calibration Interface shows as below:

**Never Calibrated：**




Press **Set** key to set the units, resolution, division, capacity, etc.

**Calibrated yet：**




Press **Enter** key to confirm the Current Zero Point and start to calibrate directly without modifying the parameters (units, resolution, division, capacity, etc);

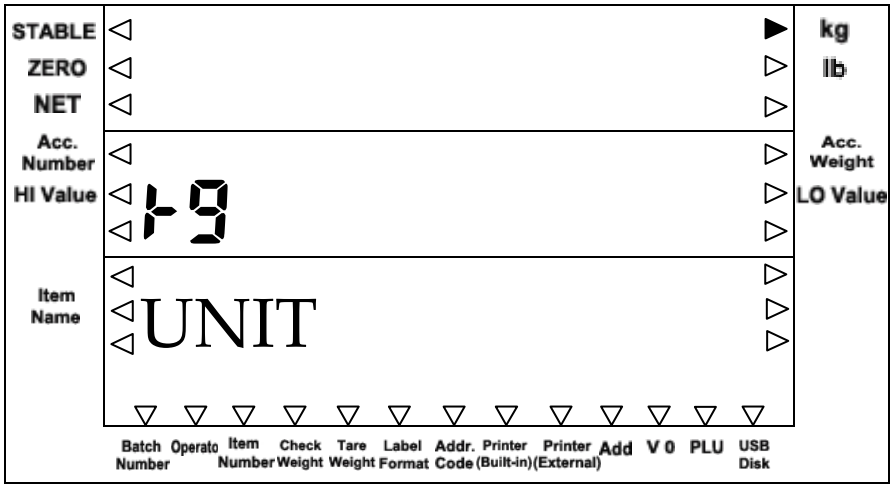
Press **Set** key to set the parameters;

Press **ESC** key to return the weighing mode directly.

**Parameters Setting**

**1. Units**

The display shows as below:

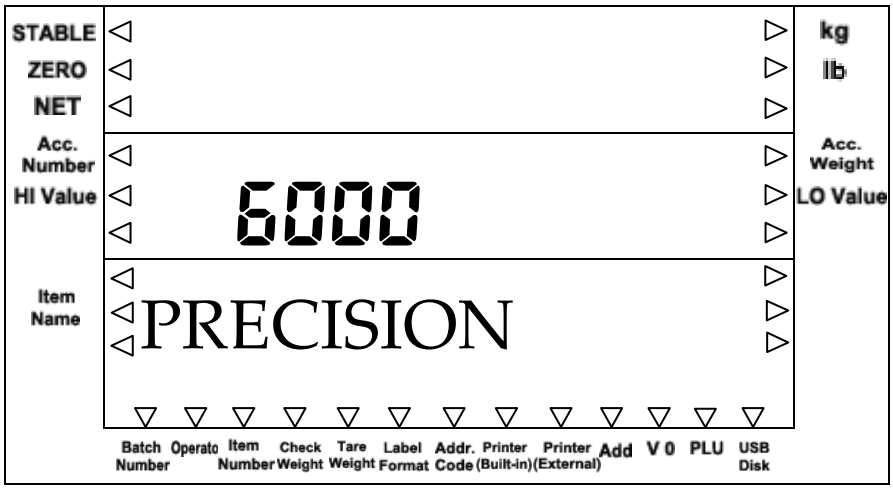



Press **Left** or **Right** key to choose the units: kg or lb.

Press **Enter** key to confirm the unit and move to next setting: Resolution; press **ESC** key to return to Initial Calibration Interface.

**2. Resolution**

The display shows as below:




Press **Left** or **Right** key to select the resolution values: 3000, 6000, 7500, 12000, 15000, 30000 or 60000.

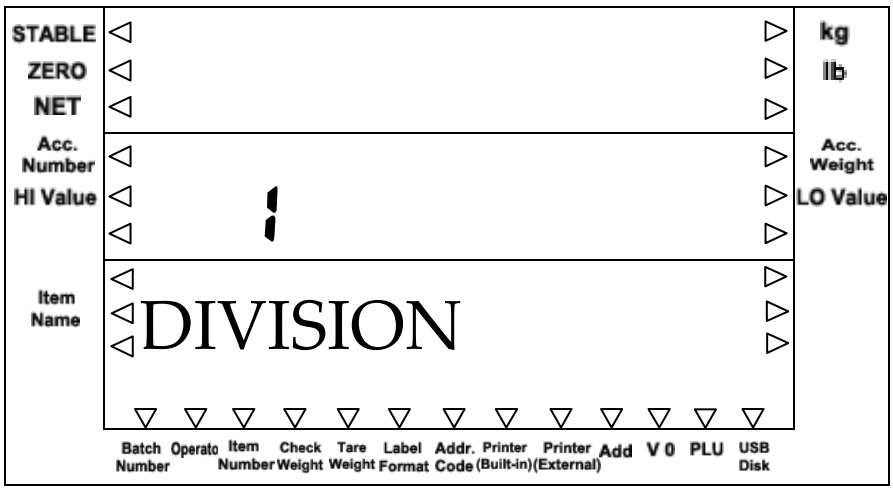
The resolution value can be erased by pressing **Clear** key, and use numeric keys to key in the desired value (not exceed 100000)

Press **Enter** key to confirm the selected resolution and move to next setting: Division; press **ESC**

key to return to Initial Calibration Interface.

### 3. Division

The display shows as below:

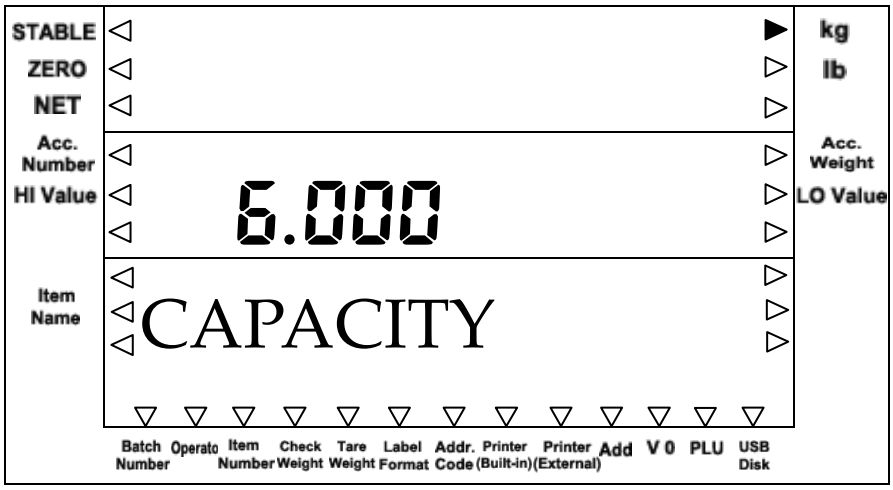



Press **Left** or **Right** key to select the division value: 1, 2 or 5.

Press **Enter** key to confirm the division value and move to next setting: Capacity; press **ESC** key to return to Initial Calibration Interface.

### 4. Capacity (move the “dot” position)

The display shows as below:

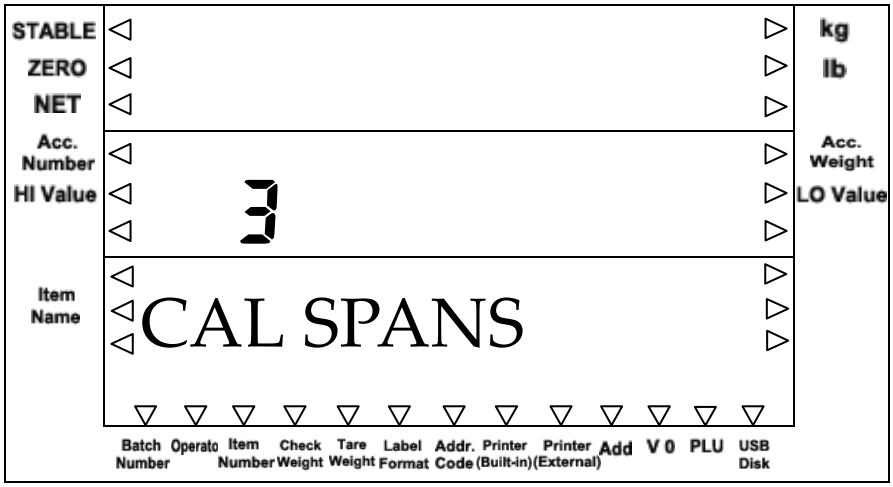



Press **Left** or **Right** key to move the “dot” position to select the capacity.

Press **Enter** key to confirm the capacity and move to next setting: Calibration Spans; press **ESC** key to return to Initial Calibration Interface.

**5. Calibration Spans**

The display shows as below:

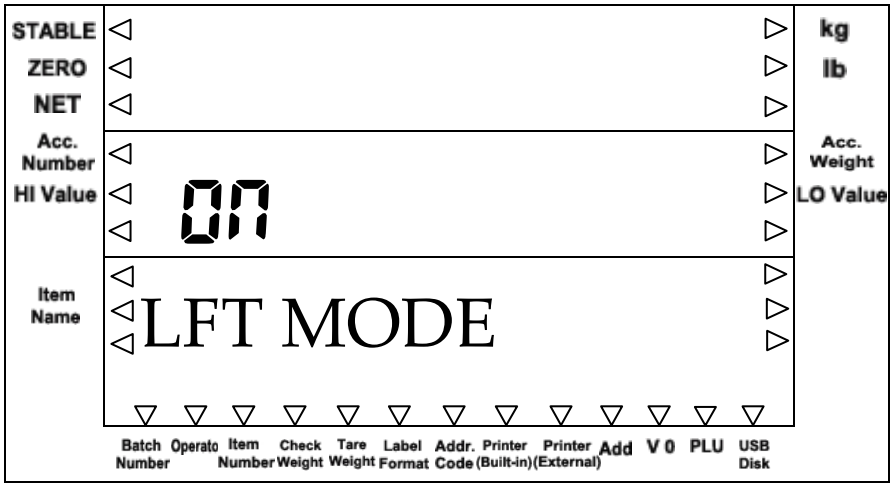



Press **Left** or **Right** key to select the calibration spans: 1, 2 or 3.

Press **Enter** key to confirm the selection and move to next setting: LFT mode; press **ESC** key to return to Initial Calibration Interface.

**6. LFT mode**

The display shows as below:




Press **Left** or **Right** key to select the LFT mode to be ON or OFF.

ON—Entering the Calibration mode by keying in “113388” will be unavailable; the Simple Calibration will also be unavailable.

Press **Enter** key to confirm the selection and return to Initial Calibration Interface; press **ESC** key

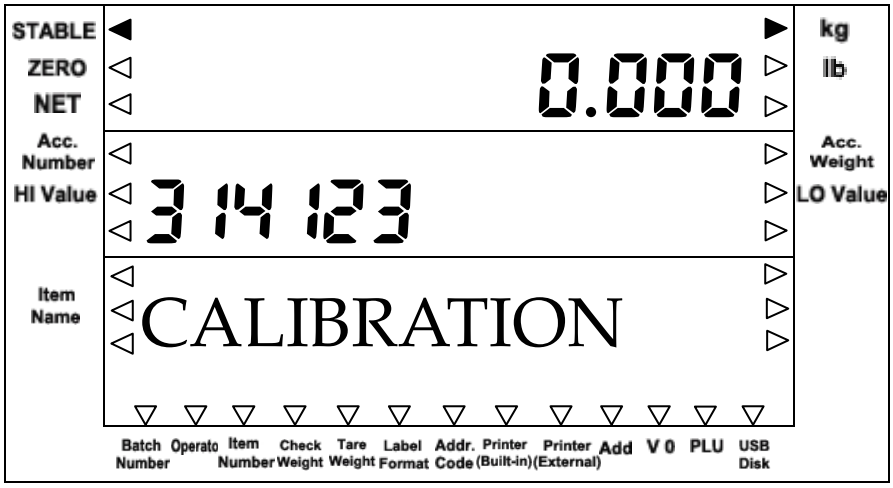
to return to Initial Calibration Interface.

**Note:**

Even though all the parameters have been modified, pressing **ESC** key without the Weight loading procedure will cause the parameters modification effective.

**Calibration (for 3 Calibration Spans)**

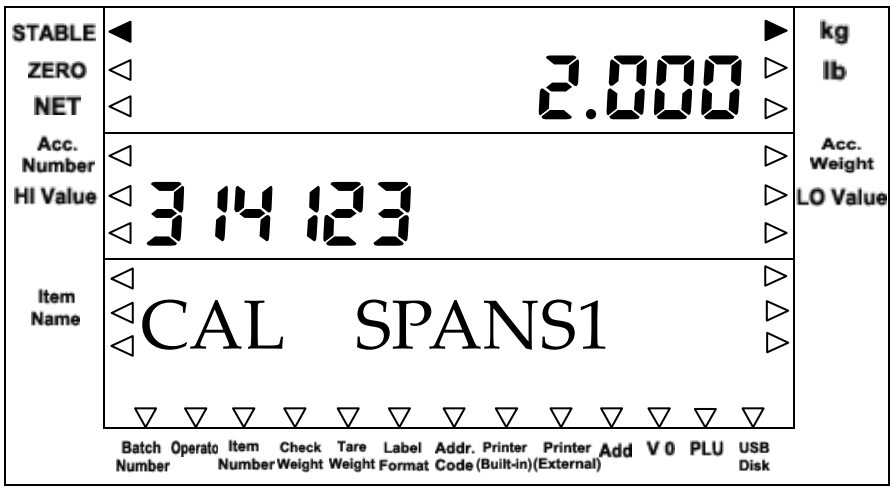
Press **Enter** key when the display is in the Initial Calibration Interface to establish a “Zero Point” (The current Internal Raw Count will be displayed).




Press **Enter** key again to confirm the current “Zero Point”. The value will flicker for 3 seconds and then the weight for the first Span will be displayed.

**The first Span**

The display shows as below:

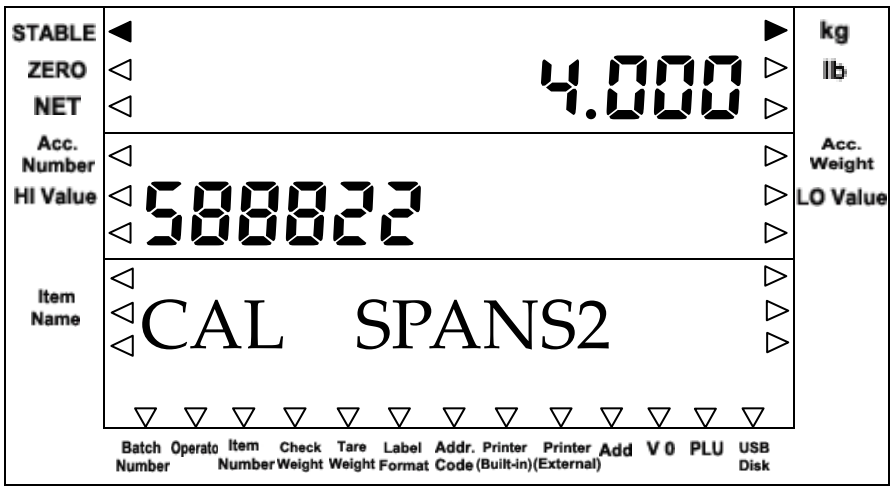



Put the weight exactly the same as the displayed weight value on the platform. Press **Enter** key once the display is stable to take sample for the current weight. The display will flicker and 2s later, the sampling procedure is finished. The second calibration weight will be displayed.

**Note:** The current displayed weight can be erased by press **Clear** key, and use numeric keys to input a new weight.

**The second Span**

The display shows as below:



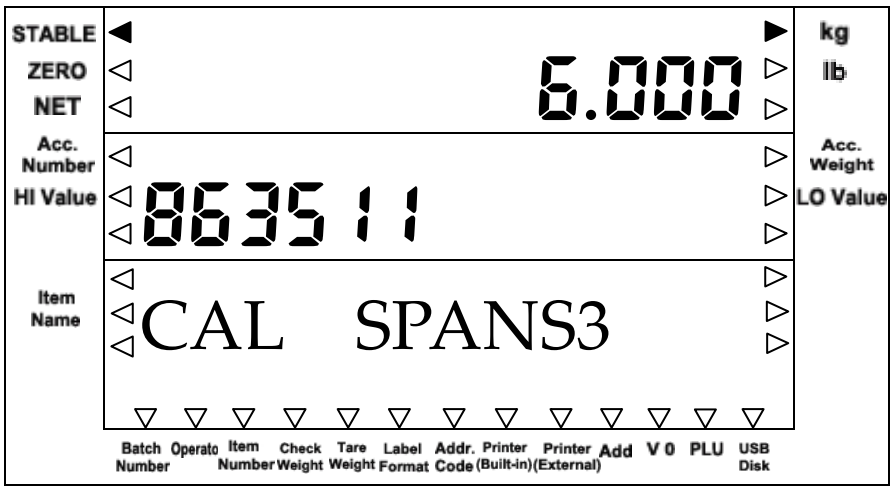

Put the weight exactly the same as the displayed weight value on the platform. Press **Enter** key once the display is stable to take sample for the current weight. The display will flicker and 2s later, the sampling procedure is finished. The third calibration weight will be displayed.

**Note:**

The current displayed weight can be erased by press **Clear** key, and use numeric keys to input a new weight.

**The third Span**

The display shows as below:




Put the weight exactly the

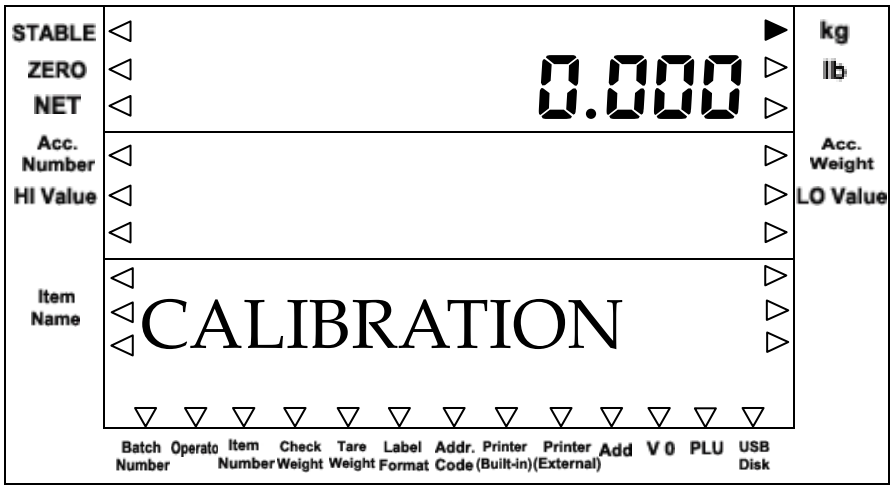
same as the displayed weight value on the platform. Press **Enter** key once the display is stable to take sample for the current weight. The display will flicker and 2s later, the sampling procedure is finished. Then the scale start self-testing procedure, and the calibration is finished.

**Note:**

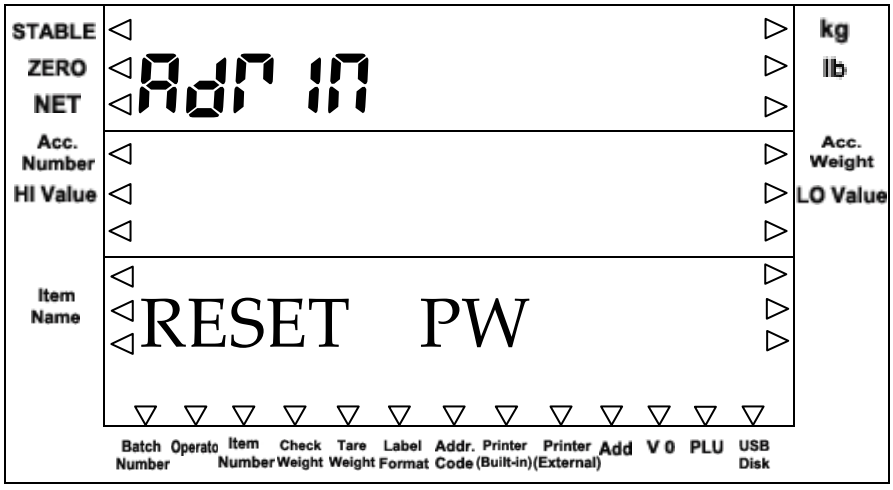
1. The current displayed weight can be erased by press **Clear** key, and use numeric keys to input a new weight.
2. During the parameters setting procedure, press **ESC** key to exit (without confirmation) to the initial calibration interface; press ESC key again to return to weighing mode.
3. At any span, if the calibration weight is changed to be the full capacity weight and when the sampling procedure is finished, the whole calibration procedure will also be finished.
4. The following calibration weight will always be larger than the before one.

**Reset the Factory Password**

Press the Calibration Key under the bottom of the Indicator during the self-test procedure, and it will display the initial calibration interface.



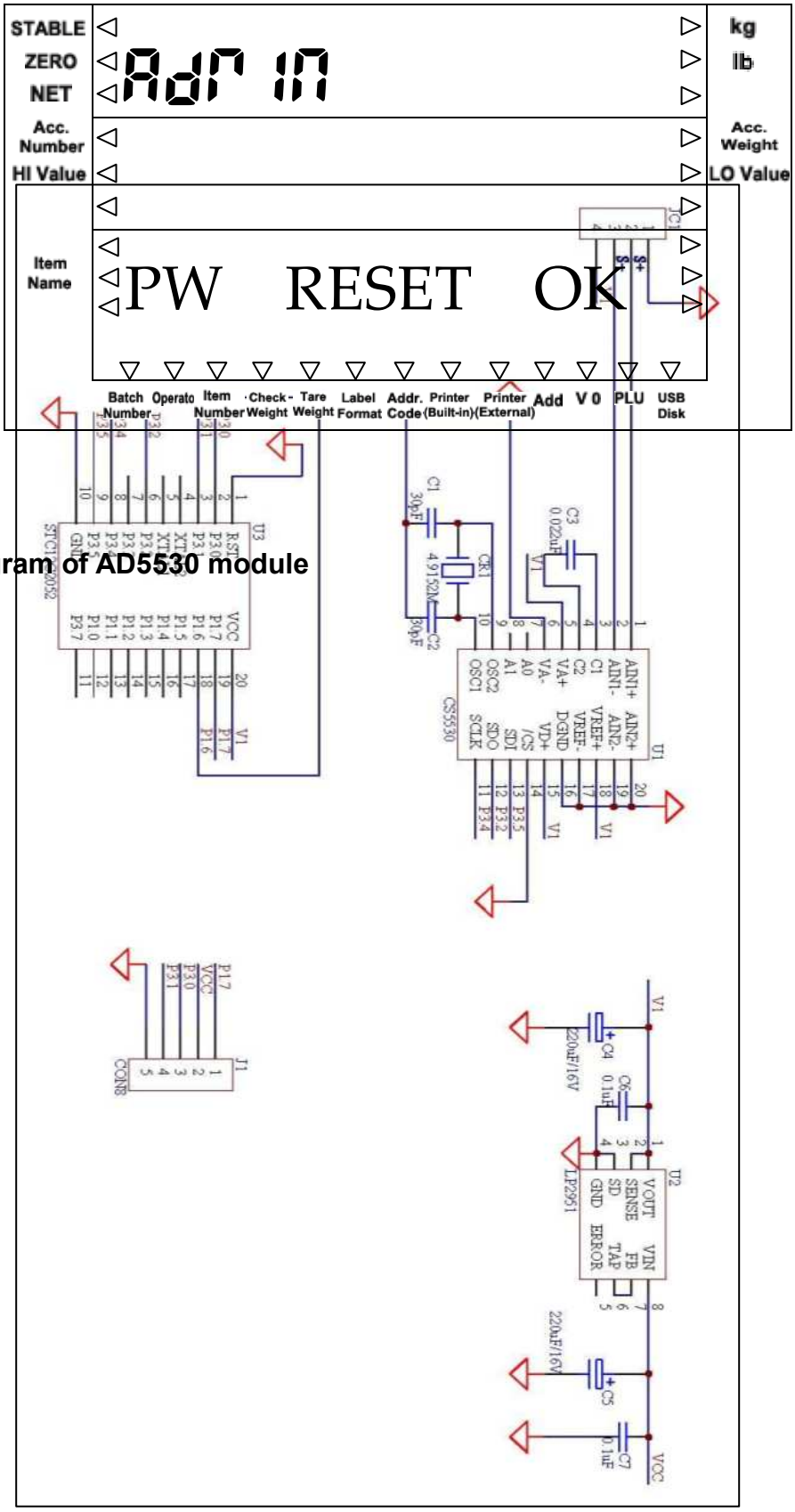

Give a long press of **Zero** key until the display shows as below:

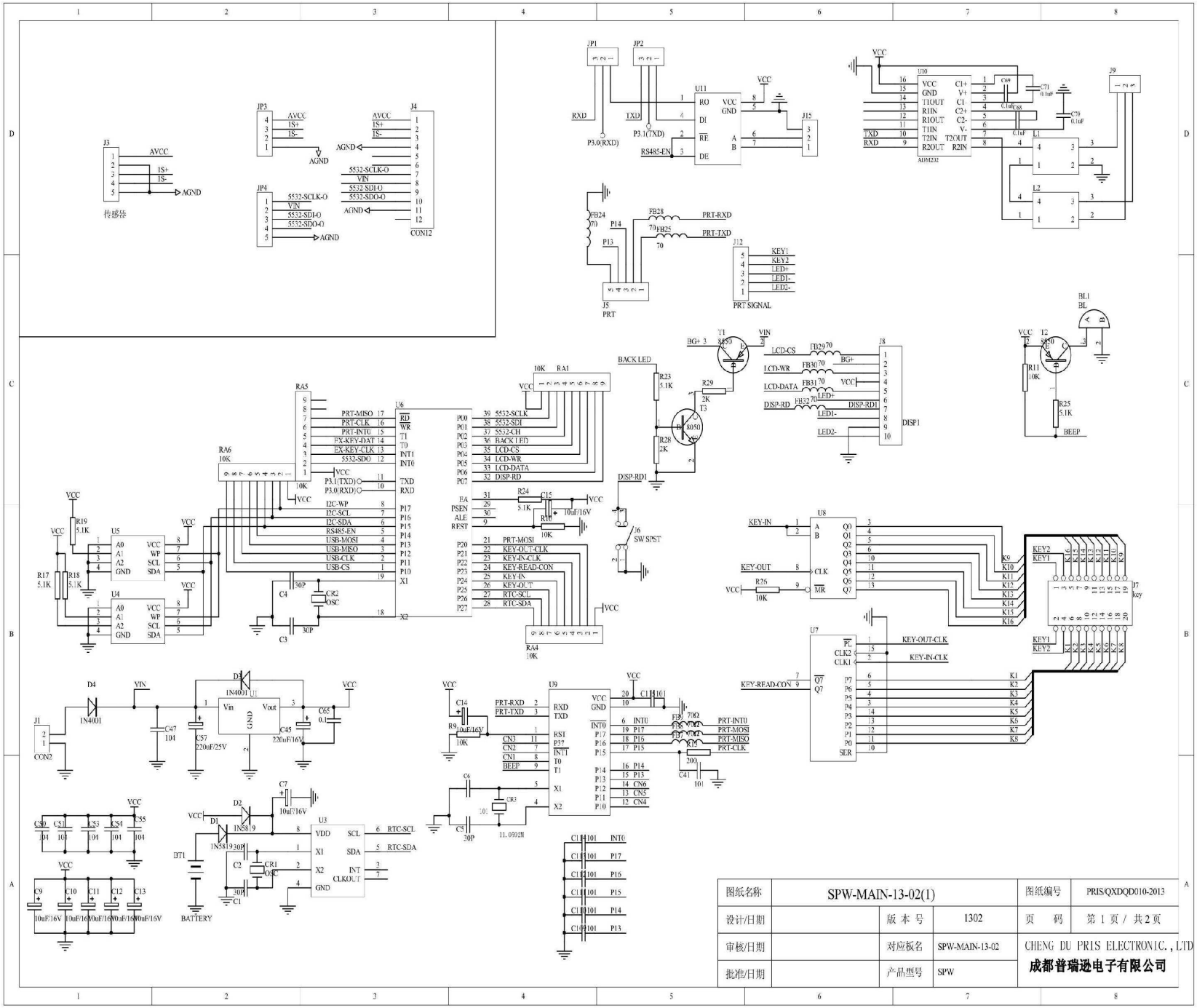



Press **Enter** key to reset the Factory Password “123456”, then the display shows as below and indicates the reset operation is ok; press **ESC** key to return to last interface without reset the password.

## 9. Appendix

**Schematic diagram of AD5530 module**



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| 设计/日期 | | 版 本 号 | 1302 | 页　码 | 第 1 页 / 共 2 页 |
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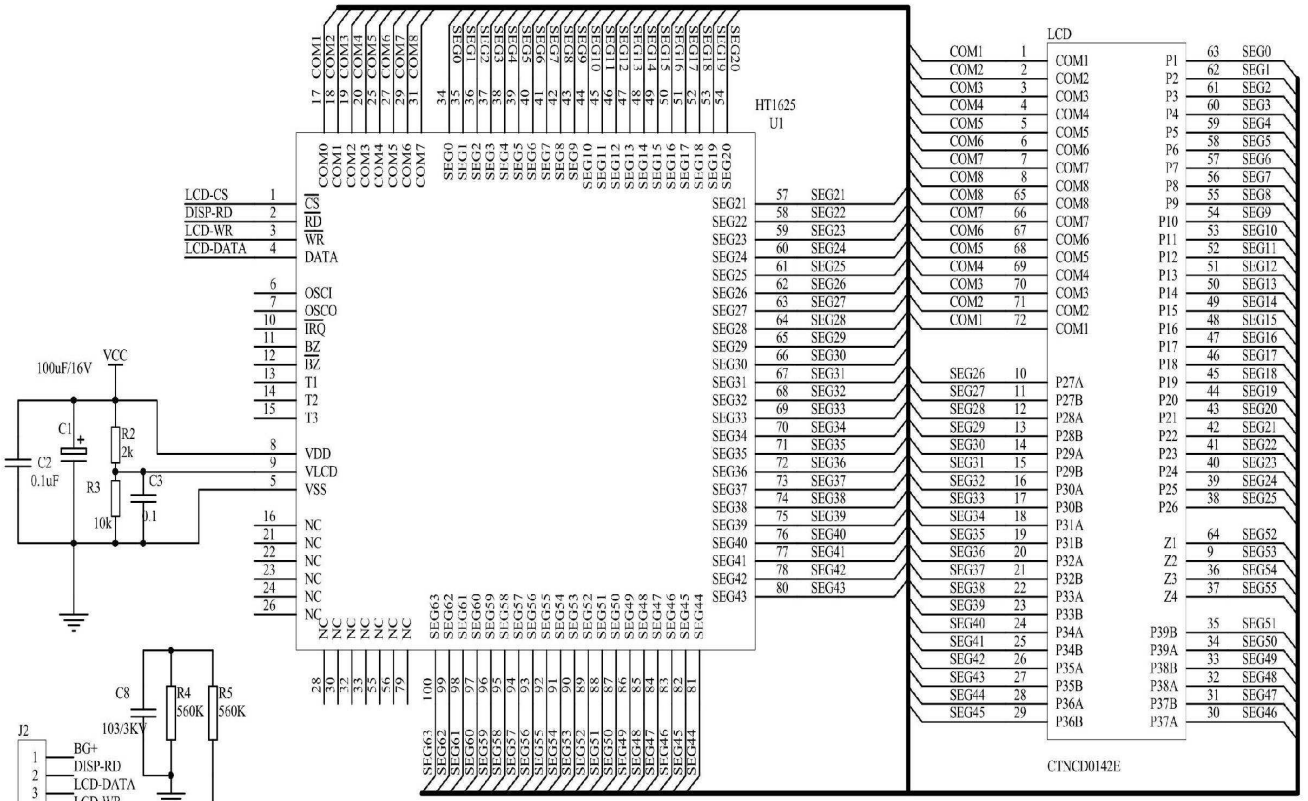
| 批准/日期 | | 产品型号 | SPW | 成都普瑞逊电子有限公司 | |

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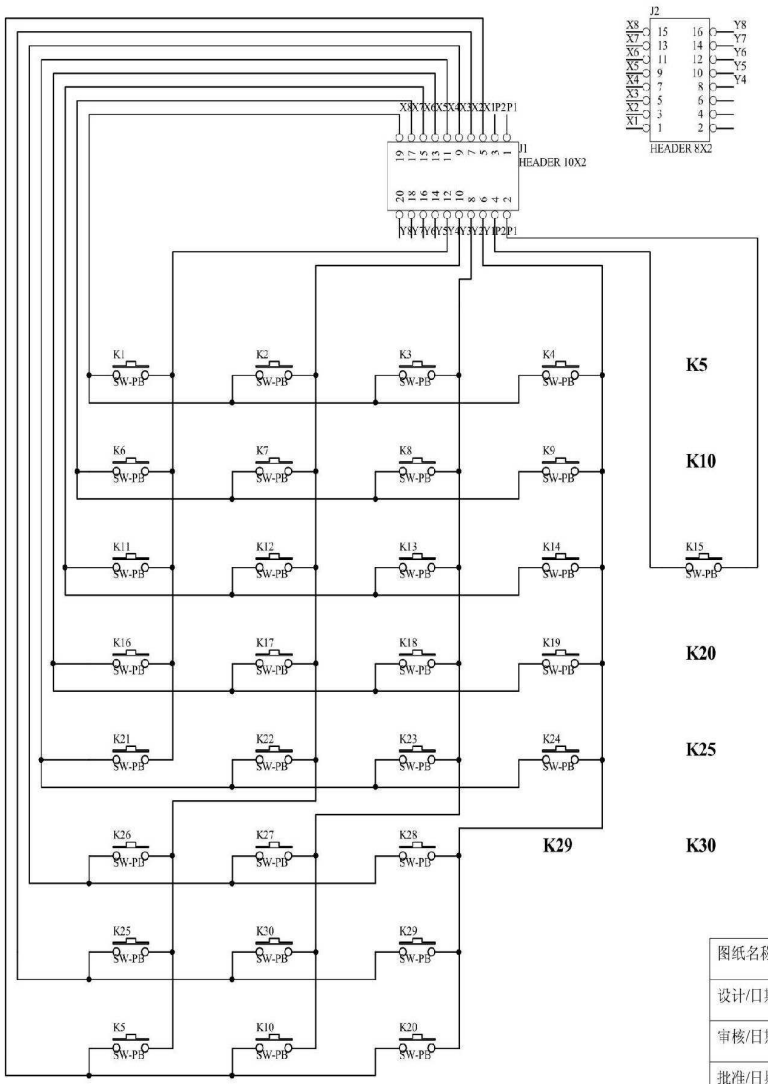


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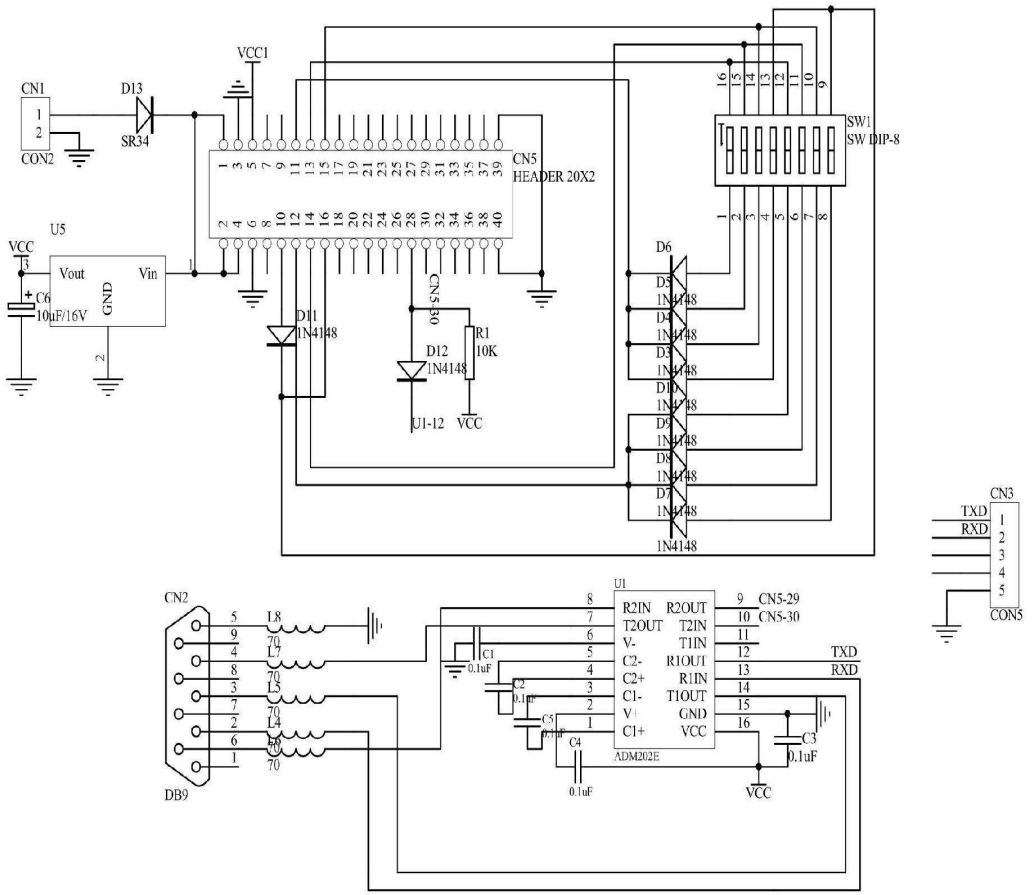


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| 批准/日期 | | 产品型号 | SPW | 成都普瑞逊电子有限公司 | |

## Assembly Drawing