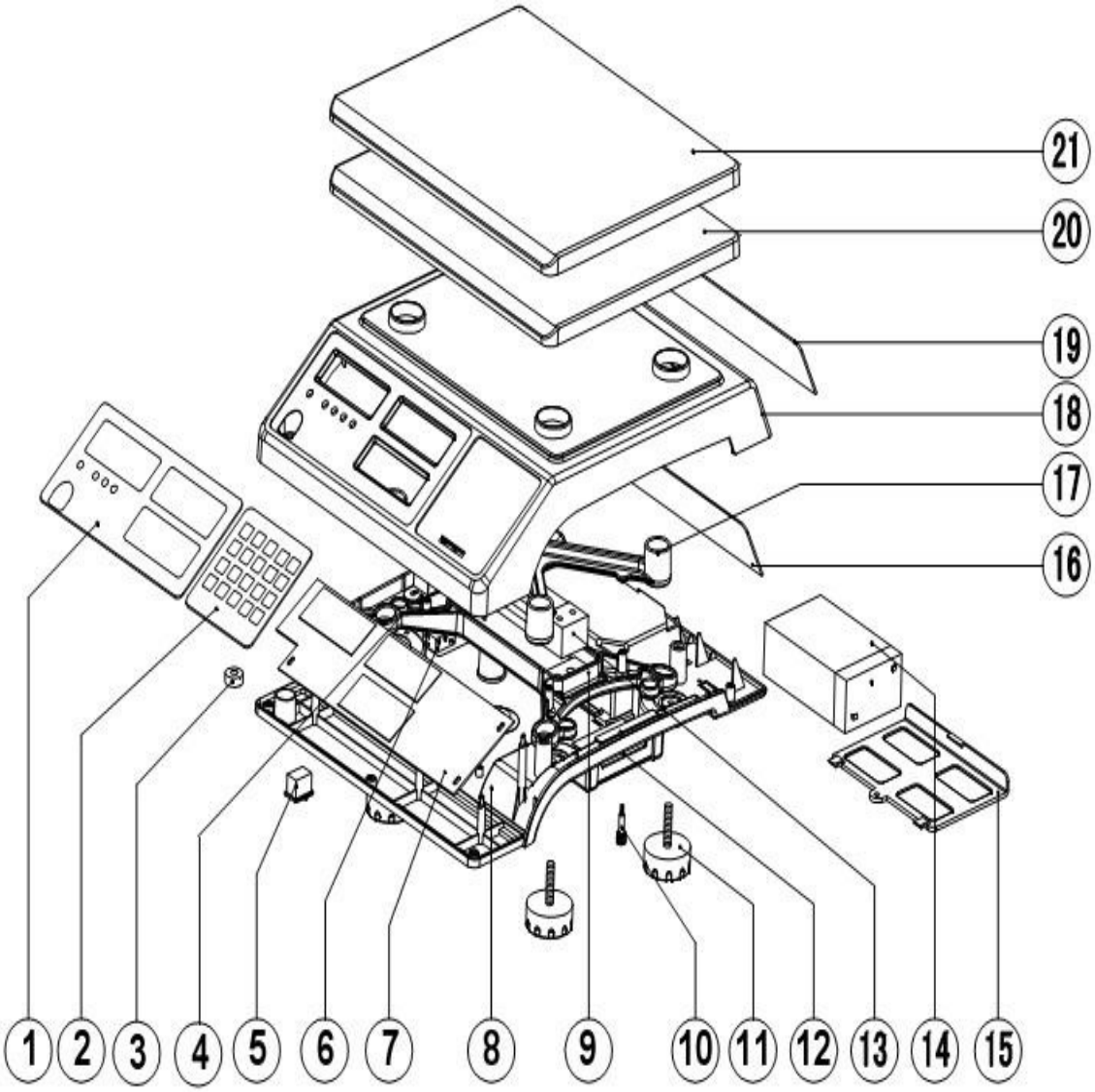
Contents

1.Assembly Drawing

1.1 Explosive view



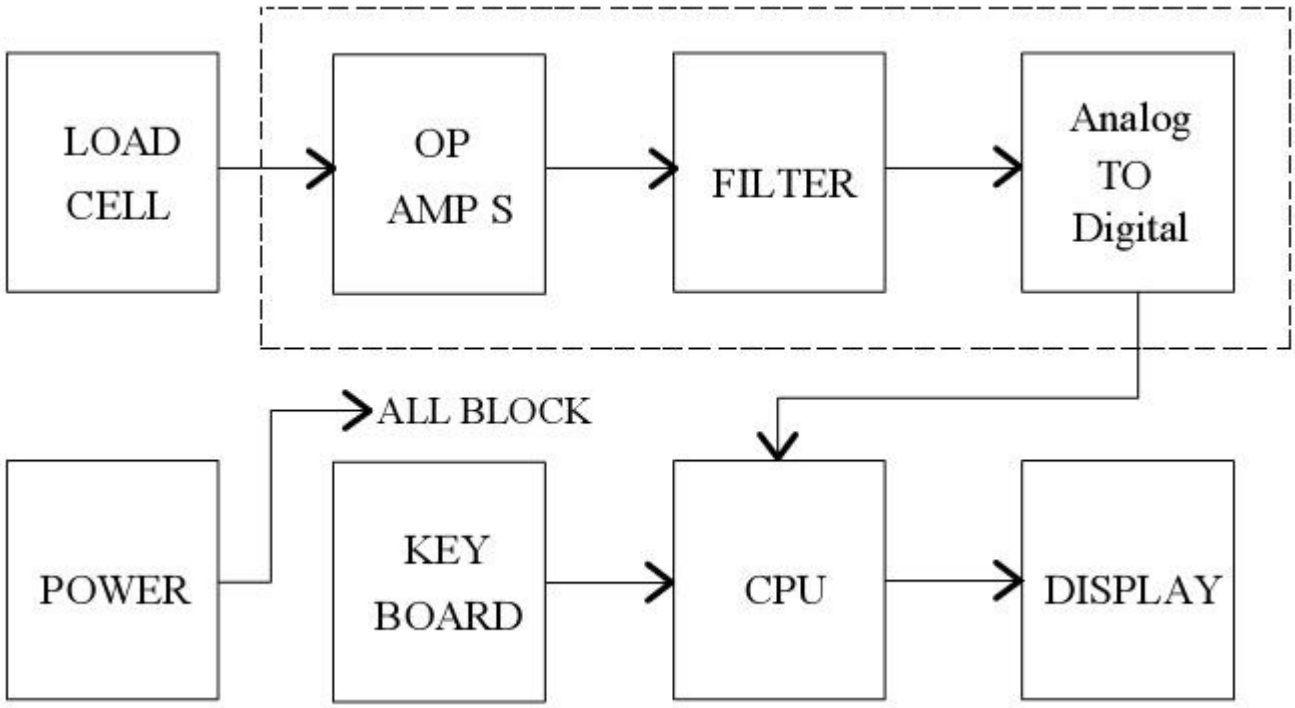
1-2 List of parts

No.	Part Name	Quantity	Part No.	Material No.
1	Xm JCL front panel	1	JCL-1	20-1925-0000
2	Xm Keypad	1	JCL-2	21-0506-0000
3	Xm Leveler	1	JCL-3	02-0108-0003xm(14mm)
4	Xm Transformer	1	JPL-4	61-0003-0400
5	Xm Switch	1	JCL-5	60-0000-0000xm
6	Xm Two-stage switch	1	JPL-6	60-0503-0001xm
7	Xm JCL main board	1	JCL-7	80-0124-0000
8	Xm Bottom cover	1	JCL-8	02-0000-6020
9	Xm Lower support	1	JCL-9	10-0425-0100

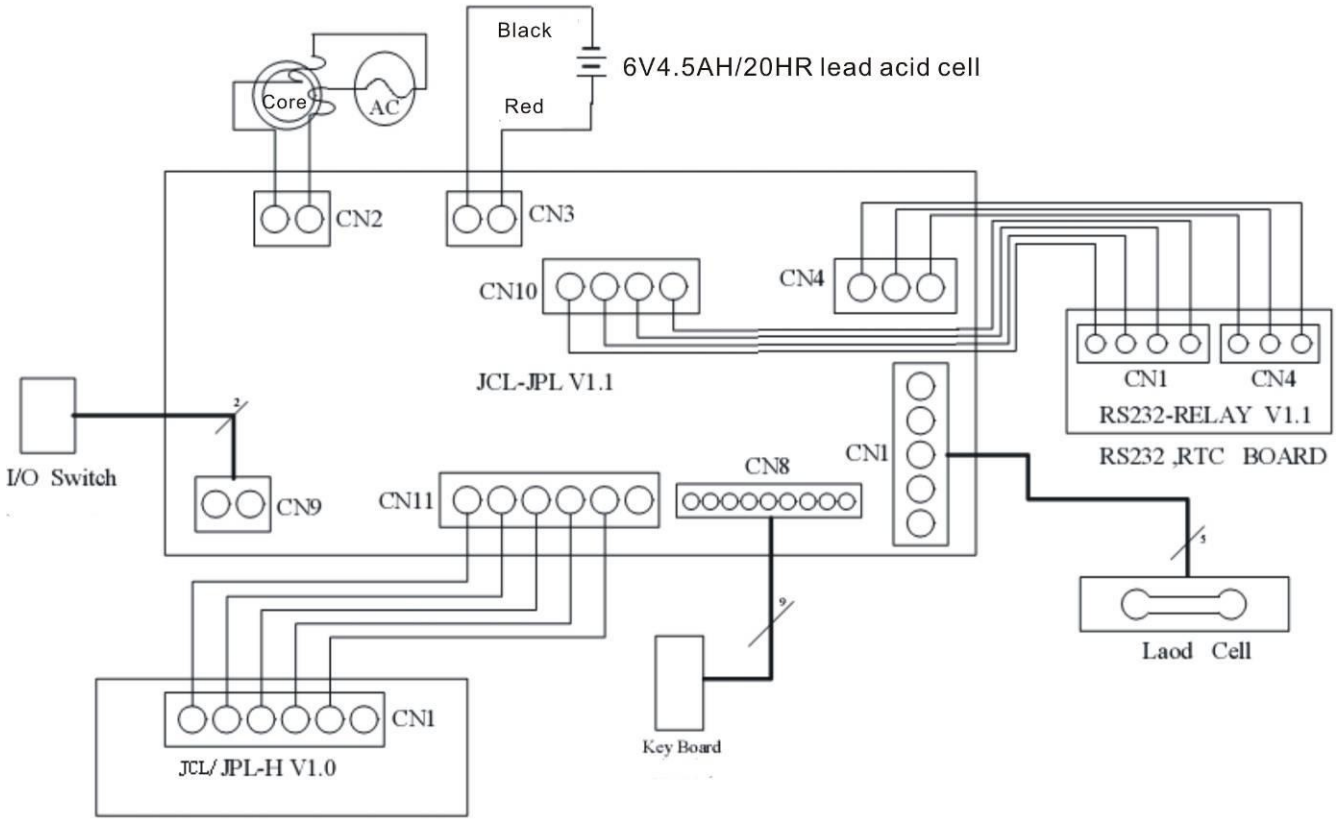
10	Xm Shipping protection screw	1	JPL-10	31-0404-0000xm
11	Xm Leveling foot	4	JCL-11	01-0100-0030
12	Xm RS232 board	1	JCL-12	80-0900-2200xm
13-1	Xm ZEMIC load cell-3k 1		JCL-13	51-0400-0400xm
13-2	Xm ZEMIC load cell-5k	1	JCL-13	51-0410-0000
13-3	Xm ZEMIC load cell-10k	1	JCL-13	51-0410-0010
13-4	Xm ZEMIC load cell-20k	1	JCL-13	51-0410-0020
13-5	Xm ZEMIC load cell-40k	1	JCL-13	51-0410-0040
14	Xm Rechargeable battery	1	JCL-14	61-0201-0098xm
15	Xm Battery cover	1	JCL-15	02-0000-6030
16	Xm Rear display	1	JPL-16	80-0126-0010
17	Xm Upper support	1	JCL-17	10-0425-0000
18	Xm Upper cover	1	JCL-18	02-0000-6000
19	Xm Rear panel	1	JCL-19	20-1925-0010
20	Xm Plastic weighing pan	1	JCL-20	02-0000-6040
21	Xm Stainless Steel weighing pan	1	JCL-21	12-0000-1200

2. Electronic Structure

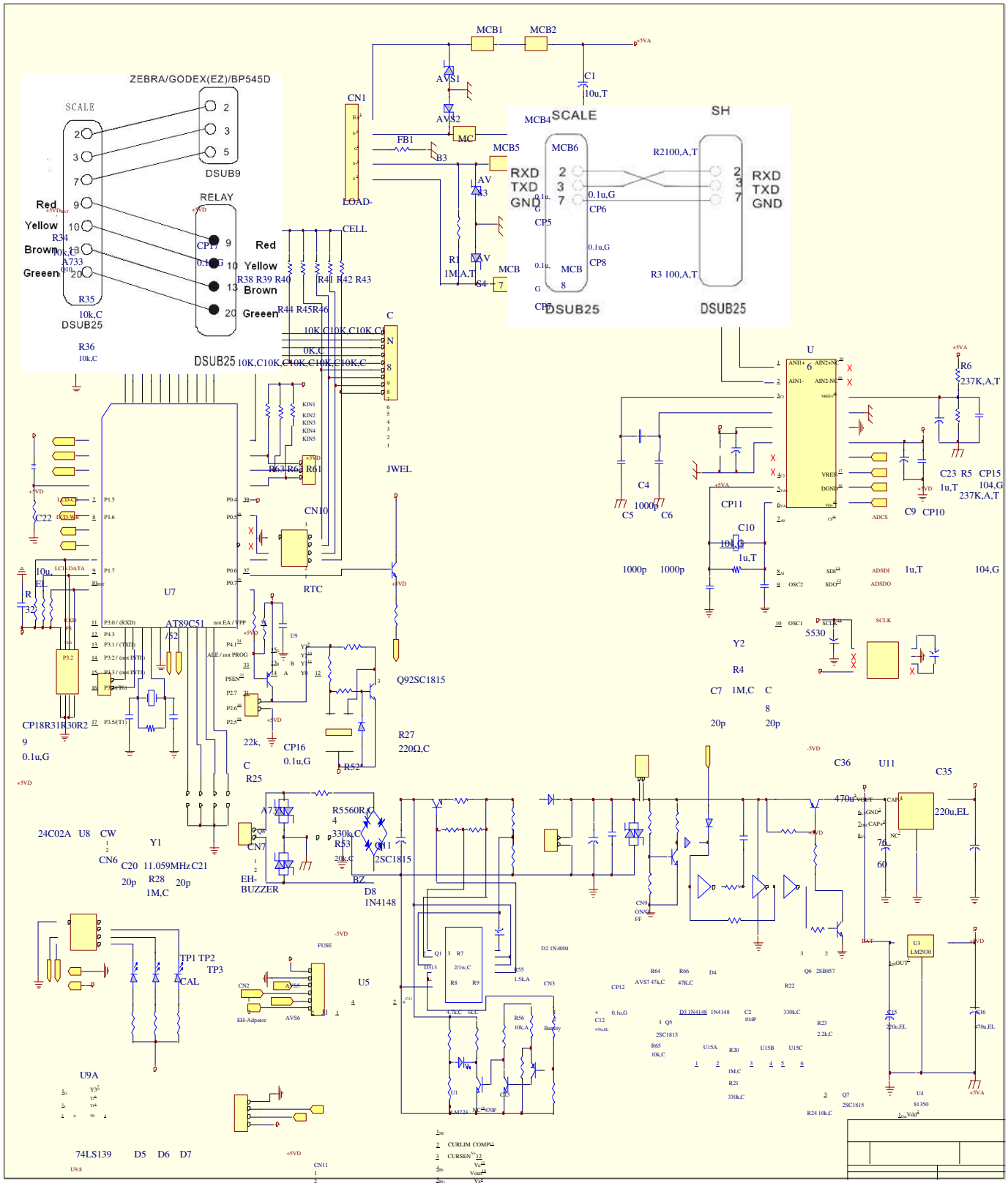
2 – 1 System block



2 – 2 PCB board wiring



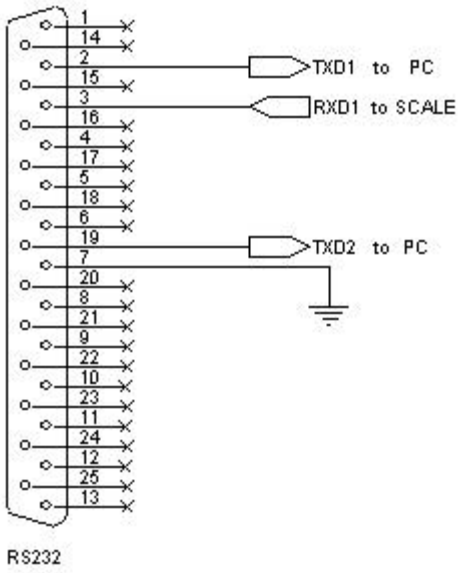
2-3 Power circuit diagram



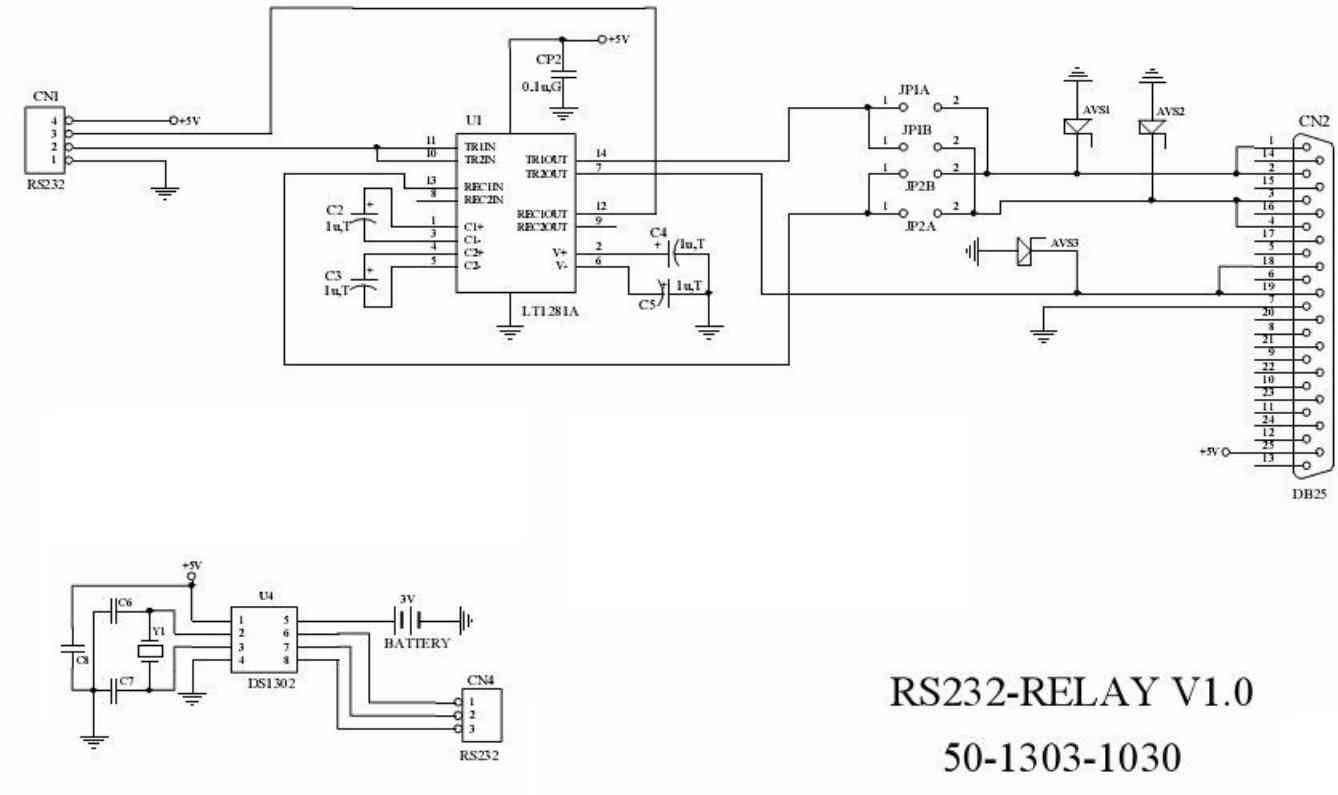
4.7kC
4.7kC
4.7kC
4.7kC
4.7kC
4.7kC
100kC
SCL K
AD S DI
AD S DO
AD C S
LE D
KD UT1
KD UT2
KD UT3
KD UT4
3*K01
3*K01
3*K01
P5
GND
Vss
P2.2
P2.0

3. RS-232 communication

3-1 RS-232 connector

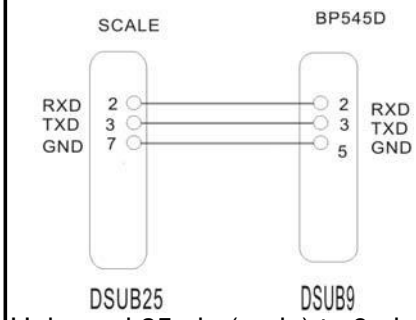
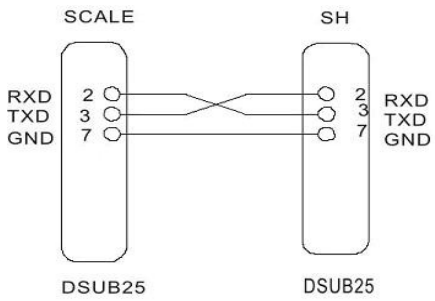
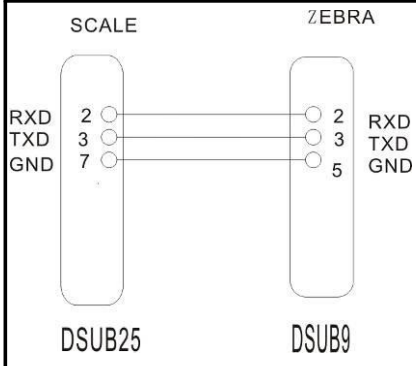
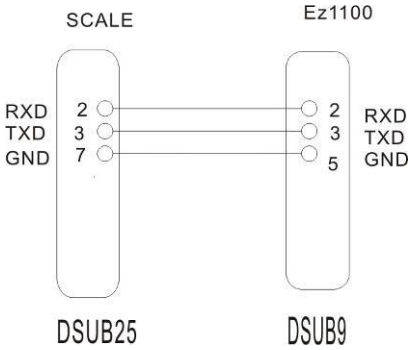


3-2 RS-232 Circuit Diagram



3-3 Single option

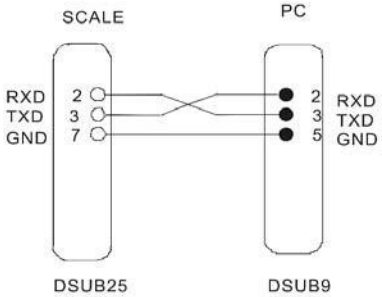
Scale to printer

Scale to BP545D(TDP) printer	Scale to SH-24（TP）printer
	
Universal 25 pin (male) to 9 pin (male) RS-232 connecting cable.	Universal 25 pin (male) to 25 pin (male) RS-232 connecting cable.
Scale to ZEBRA printer	**Scale to EZ printer**
	
Universal 25 pin(male) to 9 pin(male) RS-232 connecting cable.	Universal 25 pin(male) to 9 pin(male) RS232 connecting cable.

Corresponding settings(refer to 4-4)

Scale to PC

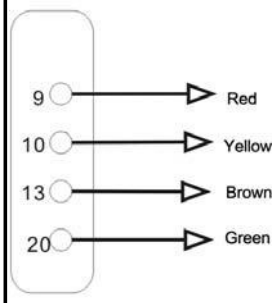
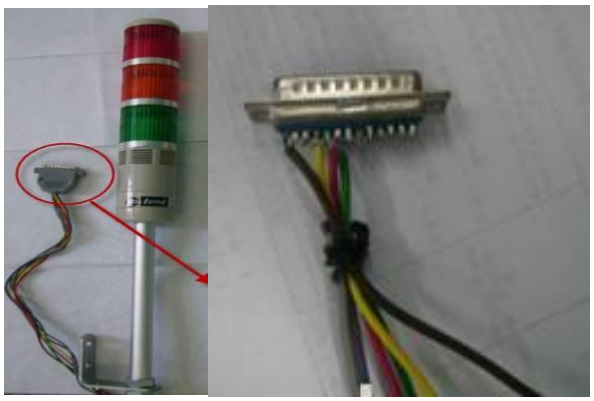
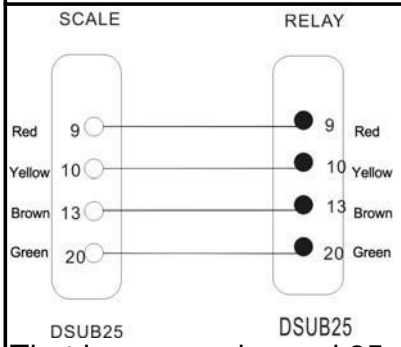
1. Get receiving program ready on your computer.
2. Please set the print mode as “Prt.Co” (continuous print, the scale will output the data to the PC continuously).



Commonly used 9 female ~25male RS232 connecting wire.
Note: The hollow dots represent male connectors and the black dots represent female connector.

Corresponding settings(refer to 4-4)

Scale to light tower

The pin of light tower	Pictures
RELAY  DSUB25 The light tower should be connected to the 25-pin (male) socket.	
Light tower to scale	**Picture**
 That is commonly used 25pin port (male) ~ 25 pin port (female) RS232 connecting wire. Note: The hollow dots represent the male connectors and the black dots, female connectors.	

Note: after the light tower connected to scale properly, the corresponding lamp will light up to indicate the result of quantity check.

Red lamp on: The quantity of weighing articles on the weighing pan exceeds the upper limit.
Green lamp on: The quantity of weighing articles on the weighing pan is between upper and lower limits.
Orange lamp on: The quantity of weighing articles on the weighing pan is less than lower limit and the weight of the articles is more than 20 divisions.

Example of single option

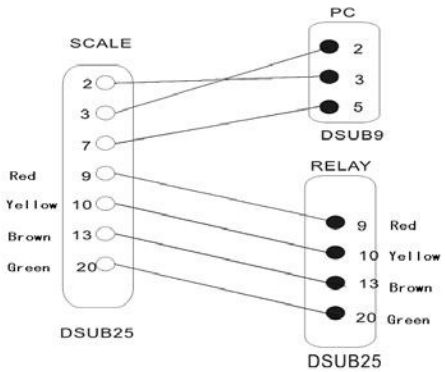
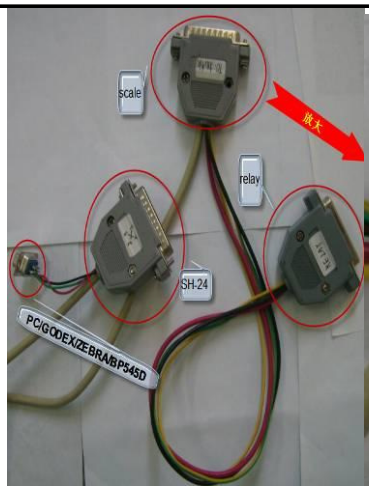
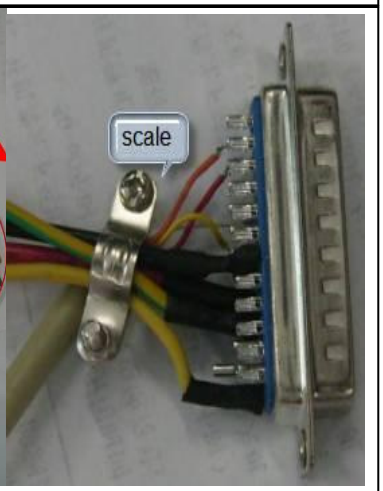
	Option		External Device		Print out format
AP1	RS232+RTC+Relay 	+	 TDP	→	2008/06/25 17:30:44 WEIGHT: + 0.0 g U.W.: 0.g/pcs TOTAL: 0pcs
AP2	RS232+RTC+Relay 	+	 SH-24（TP）	→	2008-06-26 10:42:30 G.W.: +4.994kg U.W.: 20.000g/pcs Total: 250pcs
AP3	RS232+RTC+Relay 	+	 ZEBRA	→	2000-00-00 00:00:00 G.W.: + 0.0 g U.W.: 0.g/pcs Total: 0pcs
AP4	RS232+RTC+Relay 	+		→	Applicable to the quality control of the factory product quantity or weight and that of the total production line.

			LED Light Tower		

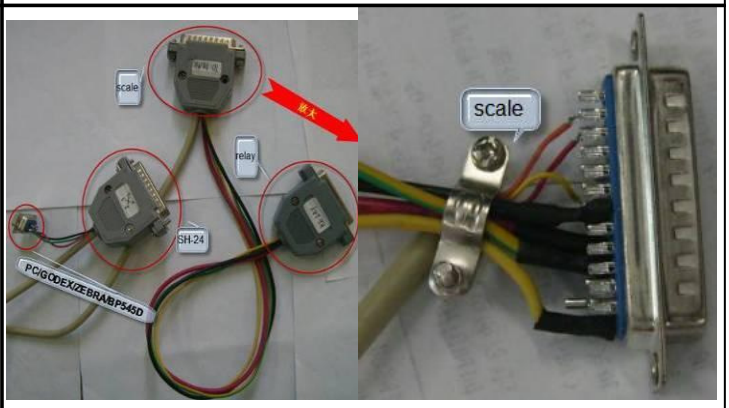
	RS232+RTC+Relay 	+		→	2008/06/25 16:01:57 G.W.:+ 500.0 g U.W.:1.2300g/pcs Total:406pcs
			EZ		
	RS232+RTC+Relay 	+	 →		**2008-06-28** **14:47:25** **G.W.:+ 4.000kg** **U.W.: 20.000g/pcs** **Total: 200pcs**
			PC		

3-4 Two options

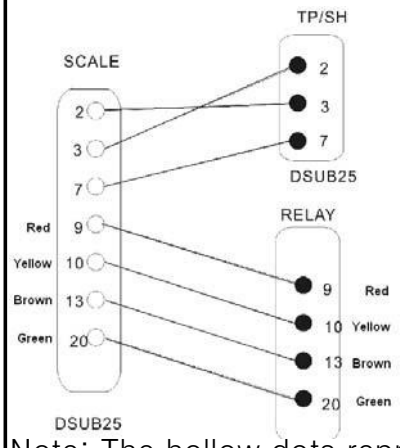
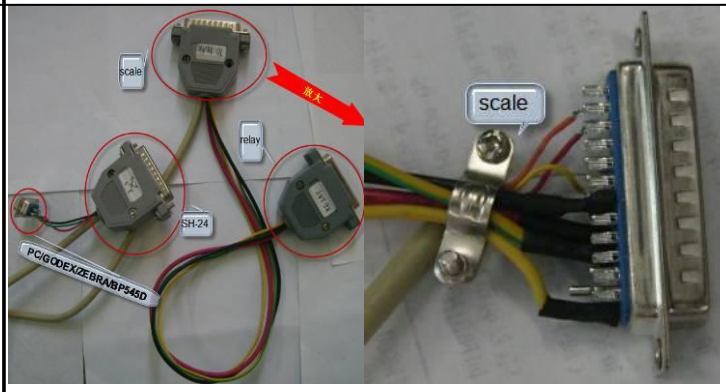
Scale to PC and light tower

Wire connection	Pictures
 Note: The hollow dots represent the male connectors and the black dots are for female connectors.	 

Scale to ZEBRA/GODEX(EZ)/BP545D（TDP）printer and light tower

Wire connection	Pictures
Note: The hollow dots represent the male connectors and the black dots are for female connectors.	

Scale to SH-24（TP）printer and light tower

Wire connection	Pictures
 Note: The hollow dots represent the male connectors and the black dots are for female connectors.	

3-5 Time setting

1) The RTC function should be switch on before setting is allowed. (Refer to 4-4)

2 When the scale is in weighing mode, long press key **MR** for 2-3 second and three windows will display. 

2) Press key **M+** to select the position to be altered and the position under alteration will

flicker.

3) Press **0** ~ **9** to alter the Year/Month/Date/Hour/Minute.

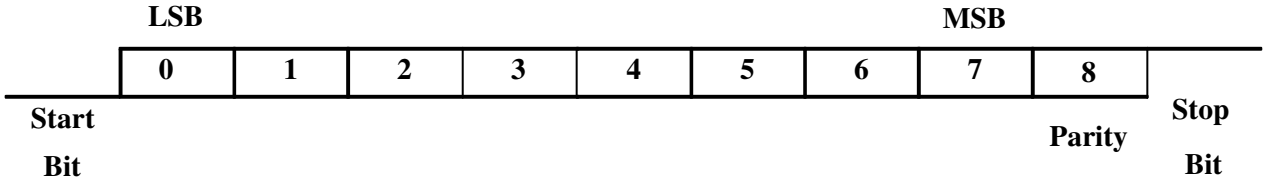
4) Press key **MR** to save the settings.

5) Press key **PRINT** to return to the weighing mode.

3-6 RS-232 output format

Baud Rate : **2400、4800、9600**
Data Bit : **8**
Parity : **N (None)**
Stop Bit : **1**
Code : **ASCII**

Bit Format :



Data Format：

Kg

G/N	.	W	.	:	+/-								k	g	CR	LF

weight

U	.	W	.	:									g	/	p	c	s	CR	LF

Unit weight

T	o	t	a	l		:							p	c s			CR	LF

pcs

Example:
G.W. : + 2.2352 kg
U.W. : + 0.5352 g/pcs
Total : 4176 pcs

lb

G/N	.	W	.	:	+/-									b	CR	LF		

weight

U	.	W	.	:								l		b	/ p		c s		CR	LF

Unit weight

T	o	t	a	l		:							p	c s			CR	LF

pcs

Example:
G.W. : + 2.2352 lb
U.W. : + 0.5352 lb/pcs
Total : 4pcs

G = GROSS N = NET

4. Adjustments and Settings

4-1 Model setting

1) Turn on the power while pressing key **SMPL**.

2) Key in 1130 with the numeric keys.

3) Again press key **SMPL** to confirm.

4) Press numeric key **1** to set maximum capacity. Available options are:3/6/15/30(kg).

5) Press numeric key **2** to select version. Available options are: TW/CN.

6) Press key **SMPL**, then press key **ZERO** to go back to weighing mode.

4-2 Single Point Calibration

1) Press and hold key **SMPL** while powering on the scale.

2) Input 11 with numeric keys.

3) Again press key **SMPL** to enter the zero point calibration modes.

4) Wait till "CAL" flashes, press numeric key **1** to select calibration weight .Options are 1/3 of full load, 2/3 of full load and full load. E.g., options for JCL-15K are 5, 10 and 15(kg).Put the corresponding weights on the weighing pan.

5) Press key **·** to confirm.

6) The calibration procedure is completed with a "PASS" flashing on the weight screen. Now, remove all the weights.

7) Press key **SMPL** to save, and then press key **ZERO** to return to the weighing mode.

4-3 Linear Calibration

1) Press and hold key **TARE** while powering on the scale.

2) Again press key **TARE** to enter zero point calibration mode, with "On 0" flashing on the weight screen.

3) Wait till "On 1" appears and flashes on weight window, put weights of 1/3 of full load on (e.g. 15k model, 1/3 of full load is 5kg.)

4) Wait till "On 2" appears and flashes on total weight screen, put weights of 2/3 of full load on (for 15k model, 2/3 of full load is 10kg)

5) Wait till "On 3" appears and flashes on total weight screen, put weights of full load on (for 15k model, full load is 15kg)

6) The calibration Procedure is finished with a symbol of "PASS" flashing, and then take away the weights.

7) Press key **TARE** to return to weighing mode.

4-4 Function Setting

1) Turn on the power while pressing key **ZERO** and setting mode starts.

Note: The following Steps (2) ~ (11) do not require to operate in order.

2) Press numeric key **0** to shift backlight modes. Options are On, OFF and OnOFF.

onoFF=Auto-on with items greater than 9 divisions placed on the pan.
oFF= No backlight
on= Backlight

3) Press numeric key **2** to set the level in which the stable indication turns on (filtering). The lower the setting, the faster stabilization time.

4) Press numeric key **3** to set the period of inactivity before the scale automatically turns off.

Options are OFF(Non power-off)、 5、10、30 and 60 (minutes).

5) Press numeric key **4** to set the range in which the zero indication turns on .Options are d0, d1, d2, d3, d4 and d5. (d= scale division)

6) Press numeric key **5** to set serial transmission rates. Options are 9600, 4800 and 2400. If the selected external device is printer, please set the transmission rates as 9600.

7) Press numeric key **7** to set buzz sounds. Options are Un，In，no，Lo and nbEEP.

Un=There will be a warning sound when the quantity of the articles exceeds upper limit.

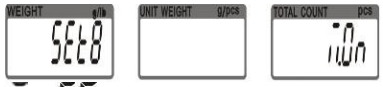
In=There will be a warning sound when the quantity of the articles is between the upper and lower limit (including the upper and lower limits).

no= There will be a warning sound when the quantity of the material exceeds the upper and lower limits, and the weight of the material is more than 20 divisions.

Lo= There will be a warning sound when the quantity of material is less than the preset lower limit and the weight of the material is more than 20 divisions.

nbEEP= No sound alarm.

8) Press numeric key **8** to select whether to save previously quantity checking values.



n.oFF= Previously set quantity checking values are not retained when the unit is turned on.

n.on= Previously set quantity checking values are retained when the unit is turned on.

9) Press numeric key **9** to shift print modes. Options are Prt.Pr, Prt.Co and Prt.St. If Prt.Co is chosen as the print mode, PC will be automatically selected as the external devices. If printer

is selected as the external device, please set the print modes as Prt.Pr or Prt.St.

Prt.Pr= manual print

Prt.Co= continuous print

Prt.St= Stable printing (the weight of weighted articles should be more than 9 divisions. Weighted articles should be removed and the scale goes back to zero before print out the next record.)

10) Press key **MC/CK** to select external devices. Options are AH,TDP, ZEBRA,TP,SH,EZ and PC.

11) Press **MR** to switch On or OFF RTC function.

12) When setting is completed, press key **ZERO** to save and return to weighing mode.

4-5 Scale initializations

1.Turn on the power while pressing key **TARE**. 

2. Press numeric key **2**. 

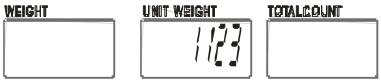
3. Press key **MC/CK**. 

4. Initialization procedure ends up with a symbol of “OK”. 

5. Press key **TARE**, then press key **ZERO** to go back to weighing mode.

4-6 Set Division

1. Turn on the power while pressing key **SMPL**. 

2. Key in 1123 with the numeric keys. 

3. Press key **SMPL**, the current division is displayed. 

4. Press numeric key **1** to set the division to 0.1g or 0.2g. (the available options might be different for different models. 

5. Press key **SMPL** press key **ZERO** to go back to weighing mode.

4-7 Offset value display and key test

1) Turn on the power while pressing key **ZERO**.

2) Again press key **ZERO** to check the offset value and start key testing.

3) After key testing is done, press key **ZERO** to exit.

4-8 Unit switch operation

1) Press key **SMPL** while powering on the scale.

2) Key in 1132 via numeric keys. 

3) Again press key **SMPL** to enter unit Selection mode. Numeric key ***1*** is to toggle between g (kg) and Lb units. 

4) Press key **SMPL** to save, and then press key **ZERO** to return to the weighing mode.

5. Trouble shootings

5-1 Preliminary checks

Is the bubble of the level indicator at the center?

Is the battery electricity capacity ok?

Is power cord connected both with the scale and with the outlet properly?

Is the weighing pan the right one?

Is there anything under the weighing pan?

Is the scale at a flat and steady base?

Are there any vibrating, rotating, and/or reciprocating equipment around?

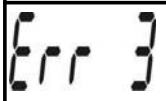
5-2 Problems and solutions

Problem	Possible Cause	Basic Inspection and troubleshooting
Power on failure	Lead-acid battery defective	Remove battery and power on by using charging transformer to see if the failure is due to battery defect.
	Charging transformer problem	Please try a normal charging transformer to see if the scale can be powered on.
	CPU / Crystal 11.0592M (oscillating circuit) fault	Replacement is needed.
	LCD or related LCD circuit fault	After confirming that there is no broken board line or short circuit of connection between LCD and other conducting objects, please replace LCD.
	Power circuit fault	Please check the working voltage of CPU (pin 44)/LM2930/TIP32C/Q7/4069(pin3/6/14)/Q5, then replace the one which working voltage is abnormal.
	Malfunction in ON/OFF switch	Replace the ON/OFF switch
Charging Failure or Service Life Shortened	Lead-acid battery defective	Remove battery and power on by using charging transformer to see if the failure is due to battery defect.
	Charging transformer problem	Please try a normal charging transformer to see if the scale can be powered on.
	Components or power circuit defective	1. Fuse burn down, replacement is required.
		2. Check D2/ Q1(D313)/U5 Q2/Q3/Q4,then replace the defective components.
		3. Charge lamp defective, replacement is required.
		4. The polarity or the charging lamp is reversed.

Poor LCD Display	LCD defective	After confirming that there is no broken board line or short circuit of connection between LCD and other conduction objects, please directly replace LCD.
	Component or part defective	Please check CP19/LM2930 , then replace the defective one.
	IC(PT6554) related circuit fault	Please check IC (PT6554) related circuit fault, replacement is needed for the defective one.
Incorrect weighing	Component LM2931,AD5530 or 4.9152M is defective	Replacement is required
	Load cell Malfunction	Replacement is required
buzzer does not work	Q11 or Q8 defective	Please check / replace Q11 or Q8
	BUZZER defective or buzzer circuit fault	Replacement is required
Keypad dysfunction	Keypad or keypad circuit fault	Check/replace keypad or keypad circuit.
	CPU / CPU program effective	Check/replace CPU
	Component 74LS139 defective	Check / replace component 74LS139
Memory dysfunction	Component 24C02,R29,R30,R31 or CP18 defective	Please check 24C02,R29,R30,R31and CP18,then replace the defective components
messy code occur in the print out copies	Wrong setting	Please check /reset external device/ baud rate/print mode(refer to 3-3)
	RS-232 board defective	Please check/replace RS-232 board.
	Bad connection between RS-232 board and main board	Please check/replace the wire connection
	Defective in external device	Maintenance/replacement is need.

LCD backlight no function	LCD backlight defective	Replacement is required
	Component defective	Please check/ replace Q9,CPU,P71, R72,R73,R74,R75,R76
Battery symbol	Insufficient cell voltage	Please recharge the battery
	Rechargeable failure	If the voltage of the battery is lower than 5.7V and the battery indication lamp is still in green color, please immediately replace the rechargeable battery.
	Component defective	Please check/replace R34,R35,R36,Q10
	Bad connection between R34 and LM2930	Please repair the wire connection between the two components.

5-3 Error Message

Error message	Problems	Solutions
	Initial zero point exceeds + /-30% (take 30% as reference basis)	1. To check whether there are other alien articles on the scale pan, remove those articles. 2. LOAD CELL failure, which requires to be changed or to contact our Service.
	Higher or lower than A/D resolution range.	1. Check whether it is A/D failure, if yes, please replace AD. 2. LOAD CELL failure, replacement is required or contacts our Service.

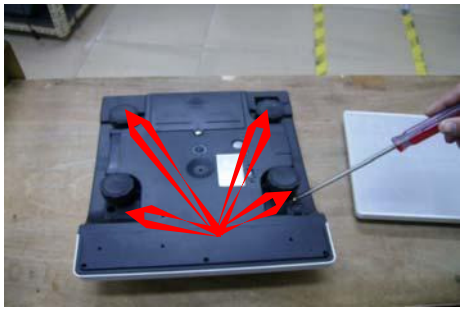
Err 4	EEPROM Chksum failure	Re-sold EEPROM or contact our Service.
Err 5	The weighed articles are overload.	Do not load the item exceeds the maximum tolerance.
Err 7	The accumulated number of weighments, total count or weight exceeds display range.	No more accumulation.
OUER	The quantity of weighed articles exceeds display range when the scale is under unit weight entering or sampling mode.	----------
	Low battery	Recharge the battery. The scale can be used while it is recharging.

6. Parts replacement

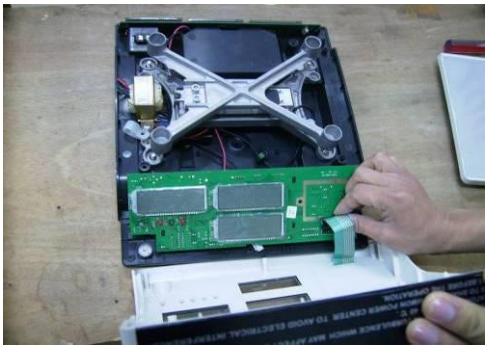
Please switch off the scale before part replacement.

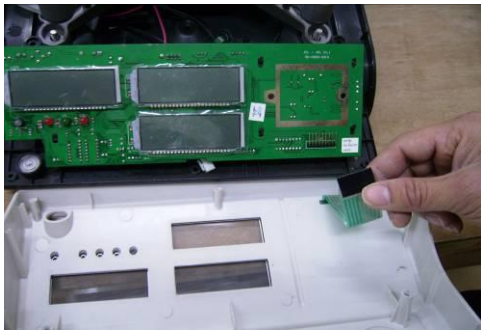
6-1 Main board replacement

1. Remove the weighing pan.



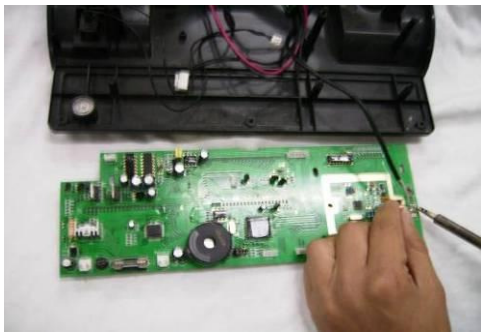
2. Turn the scale upside down, loosen and remove the 4 fixing screws.



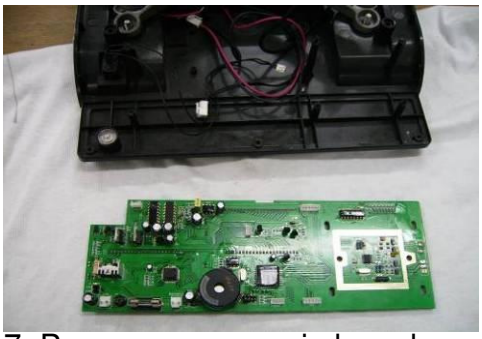


3.Open the upper housing.

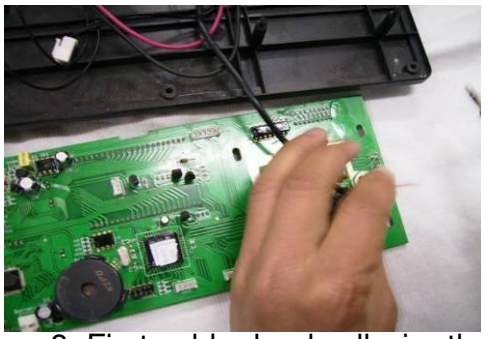
4. Remove the keypad from board.



5. Turn the main board upside down with care.

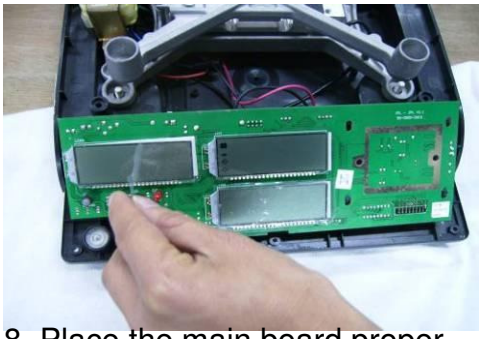


6. Dismount every connector from the board.



7. Prepare a new main board.

8. First solder load cell wire then install every connector to the new board. （refer to 6-2）



8. Place the main board proper then remove the protection cover from the LCD display.

9. Please insert the keypad.

10. Install the upper cover, turn the scale upside down, then tighten 4 fixing screws.

11. Place the stainless steel weighing pan properly on the scale.

Note:

1) ZEMIC and MAVIN Load cell:“E+”in red, “E-”in black

“S+”in green ,and “S-”in while)

2) Tedea load cell: “E+”in green, “E-”in black

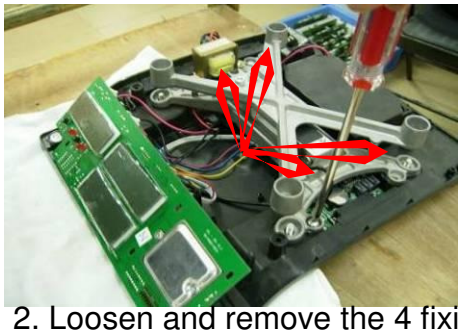
“S+”in red ,and “S-”in while.

After the replacement is done:

1. Switch on the scale to check.
2. Refer to 4-1（model setting）, 4-4(Function setting) 4-6(Division setting), to do the proper settings.
3. To conduct calibration (refer to section 4-2，4-3)

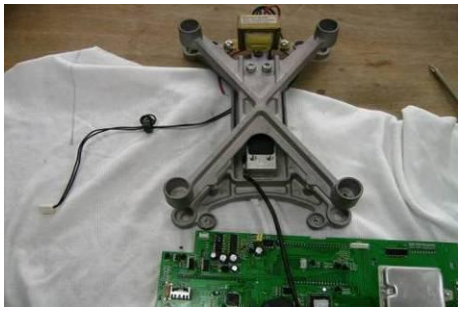
6-2 Loadcell Replacement

1.Remove the upper housing (refer to 5-1, step 1-4).

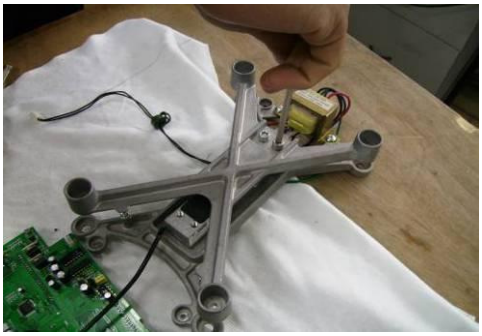


2. Loosen and remove the 4 fixing screws to remove the load cell support module.

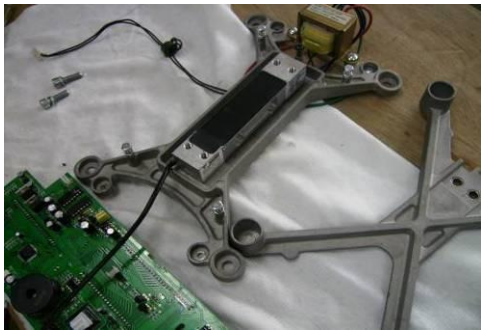
3. Lift the whole load cell support Module out of the scale.



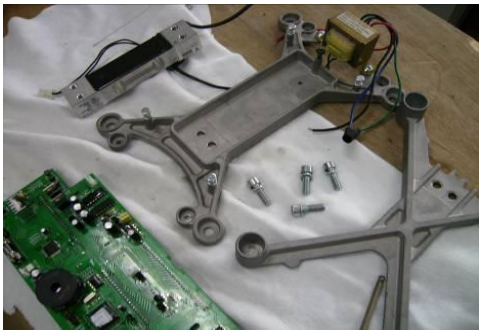
4. Disconnect the load cell wire from main board.



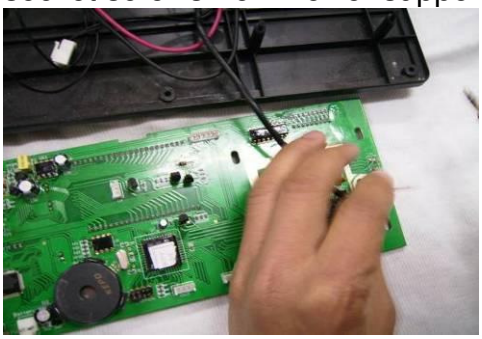
5. Loosen and remove the 2 hexagonal socket screws from the upper support.



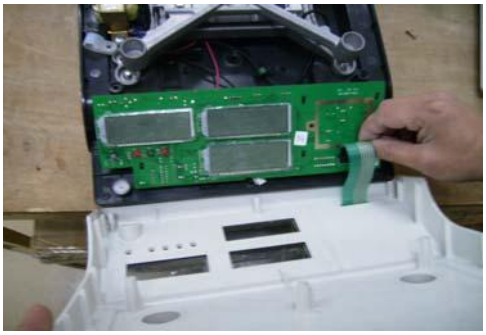
6. Remove the upper support.



7. Loosen and remove the 2 Hexagonal socket screws from Lower support.



8.Prepare and install a new load cell reversibly.



9.First solder load cell wire, then install every connector to the new board.

10.Please insert the keypad.

Note:

1) ZEMIC and MAVIN Load cell:“E+”in red, “E-”in black
“S+”in green ,and “S-”in while)

2) Tedea load cell: “E+”in green, “E-”in black
“S+”in red ,and “S-”in while

11.Scale grinding

A. First switch on the scale and conduct a calibration.

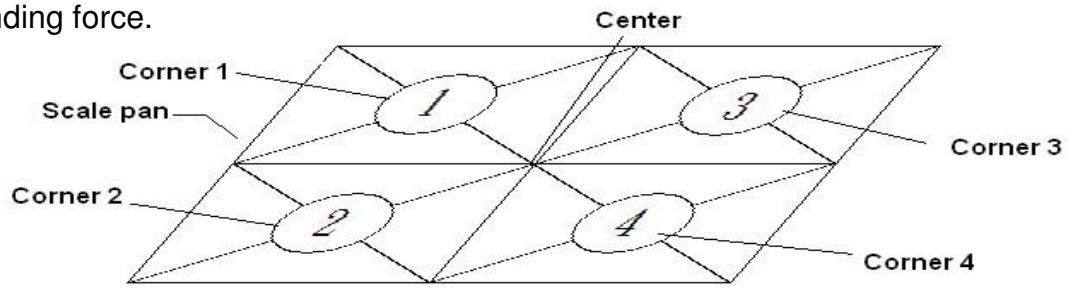
B. Use weights of 1/3 full load to test the 4 corners and record the shown values.

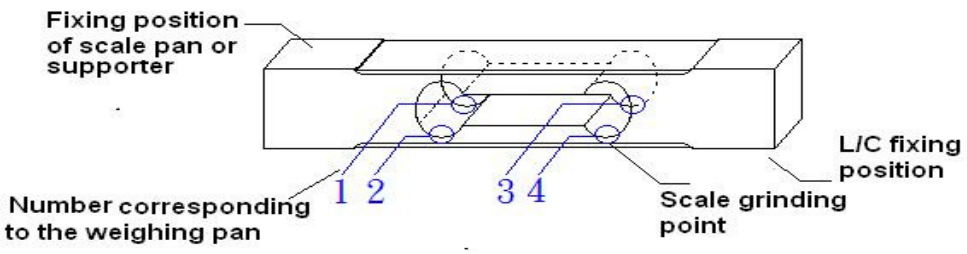
C. Use a file to grind the “Scale grinding point” corresponding to the lowest display value out of the four corners.(when grinding for the first time, please test force by means of trial grinding with small strength so as the avoid damage to L/C), after grinding, press ZERO key to measure the four corners again.

D. Repeat step B-C until the difference between the four corners and the center is ±1 division, then recalibrate the scale.

E: After grinding the scale, if there are still big differences In the displayed weighing between the 4 corners and center of the scale, it means malfunction in L/C.

F: Pay attentions to L/C specification when grinding, the smaller Max. Capacity, the weaker grinding force.





After finished grinding the scale, please install the upper cover, turn the scale upside down, then tighten 4 fixing screws, and then cover the stainless weighing pan.

12. Switch on the scale, conduct calibration then check weighing functions.

Model	LC Max. capacity (ZEMIC load cell)	LC Max. capacity (MAVIN load cell)
JCL-1.5K	3kg	3kg
JCL-3K	5kg	4.5kg
JCL-6K	10kg	7.5Kg
JCL-7.5K	10Kg	10Kg
JCL-15K	20Kg	20Kg
JCL-30K	40kg	45Kg

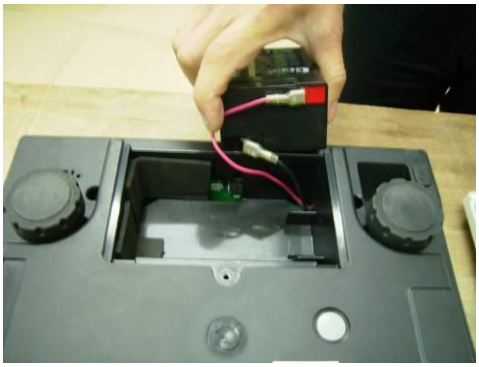
6-3 Rechargeable Battery Replacement

1.Remove the stainless weighing pan.

2. Put the scale upside down, Loosen and remove the screw on the battery cover.

3.Remove the battery cover.

4. Disconnect the wire connection then remove the rechargeable battery.



5.Prepare for a new rechargeable battery and make sure the red end connected to red wired and black end connected to black wire.

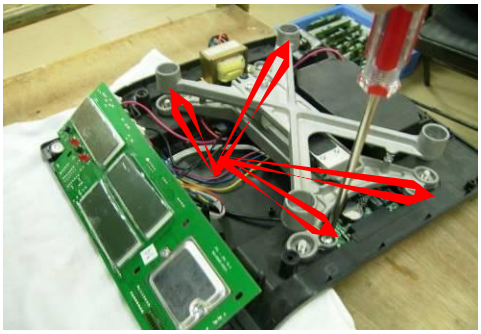
6. Put the rechargeable battery in the chamber with literal side upward and the wire to the right side.

7.Install the battery cover and tighten the fixing screw.

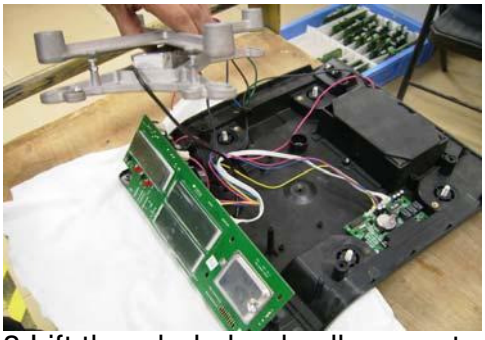
8. Install the stainless weighing pan properly.

6-4 RS-232 Replacement

1.Remove the upper housing(refer to 5-1, step 1-4)

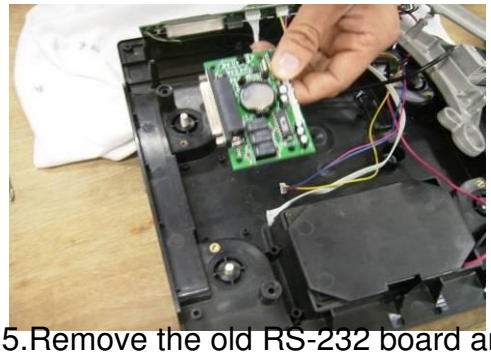


2. Loosen and remove the 4 fixing screws to remove the load cell support module.

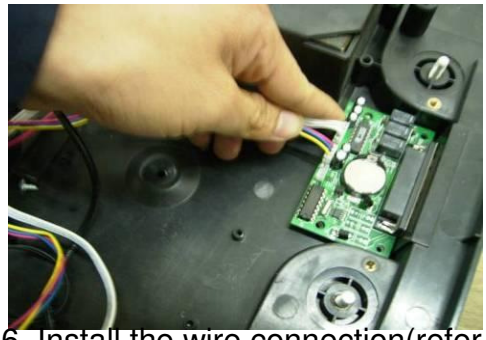


3.Lift the whole load cell support Module out of the scale.

4.Loosen and remove the fixing screw on the RS-232 board.



5.Remove the old RS-232 board and install a new one.

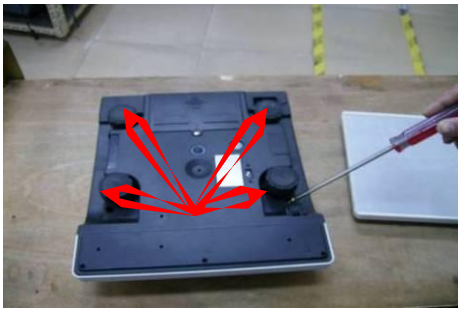


6. Install the wire connection(refer to 2 – 2)

7.Put the load cell supporter module back, cover upper housing and tighten with the fixing screws, then put the scale pan properly.
8.Proper setting is required(i.e. Baut rate, external device and print mode);
9. Wire connection between the external devices, please refer to 3.

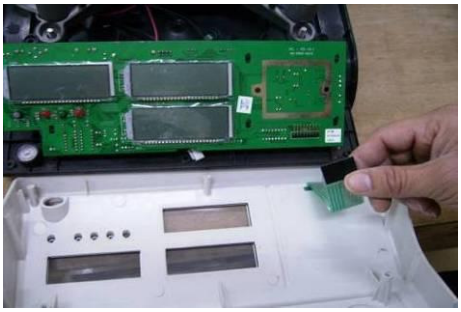
6-5 Keypad Replacement

1. Remove the weighing pan.



2. Put the scale upside down, loosen and remove the 4 fixing screws.

3. Open the upper cover.



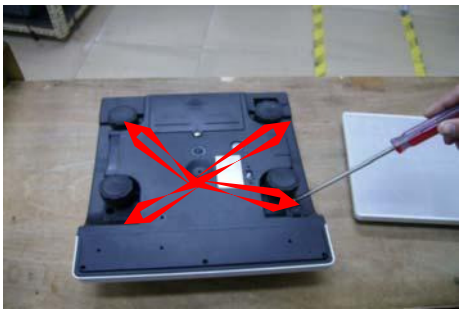
4. Remove the keypad from the main board.

5.Remove the upper house and tear off the keypad.

6.After the removal of residual glue, attach the new keypad.

7.Please insert the keypad .

8. Put the upper housing on the scale and test the keypad (refer to 4-6)

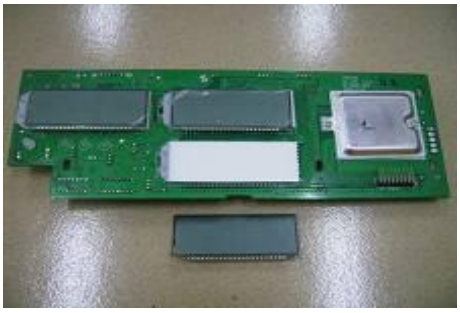


9. Put the scale upside down, and tighten the 4 fixing screws.

10. Install the stainless steel weighing pan properly.

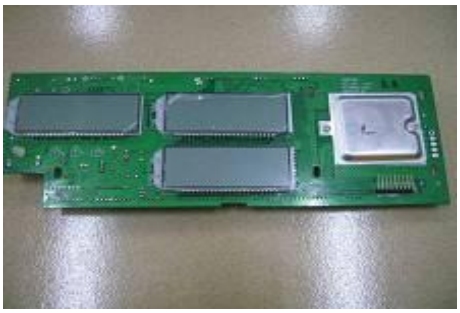
6-6 LCD replacement

1. Cut off the defective LCD.



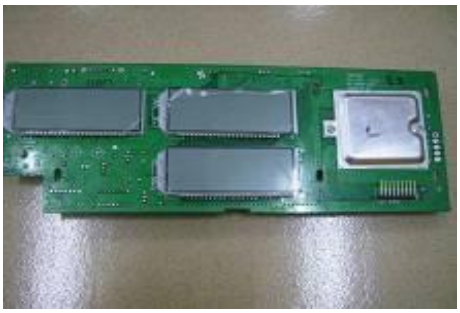
2. Remove the LCD which is been cut off from the main board.

3. Remove the residual tin from main board.



4.Install a new LCD in level.

5. Use tin to weld the LCD, with care.



6. Replacement is completed.

8. Applicable machine version and software version

Version:02

Revision date: September 22, 2009