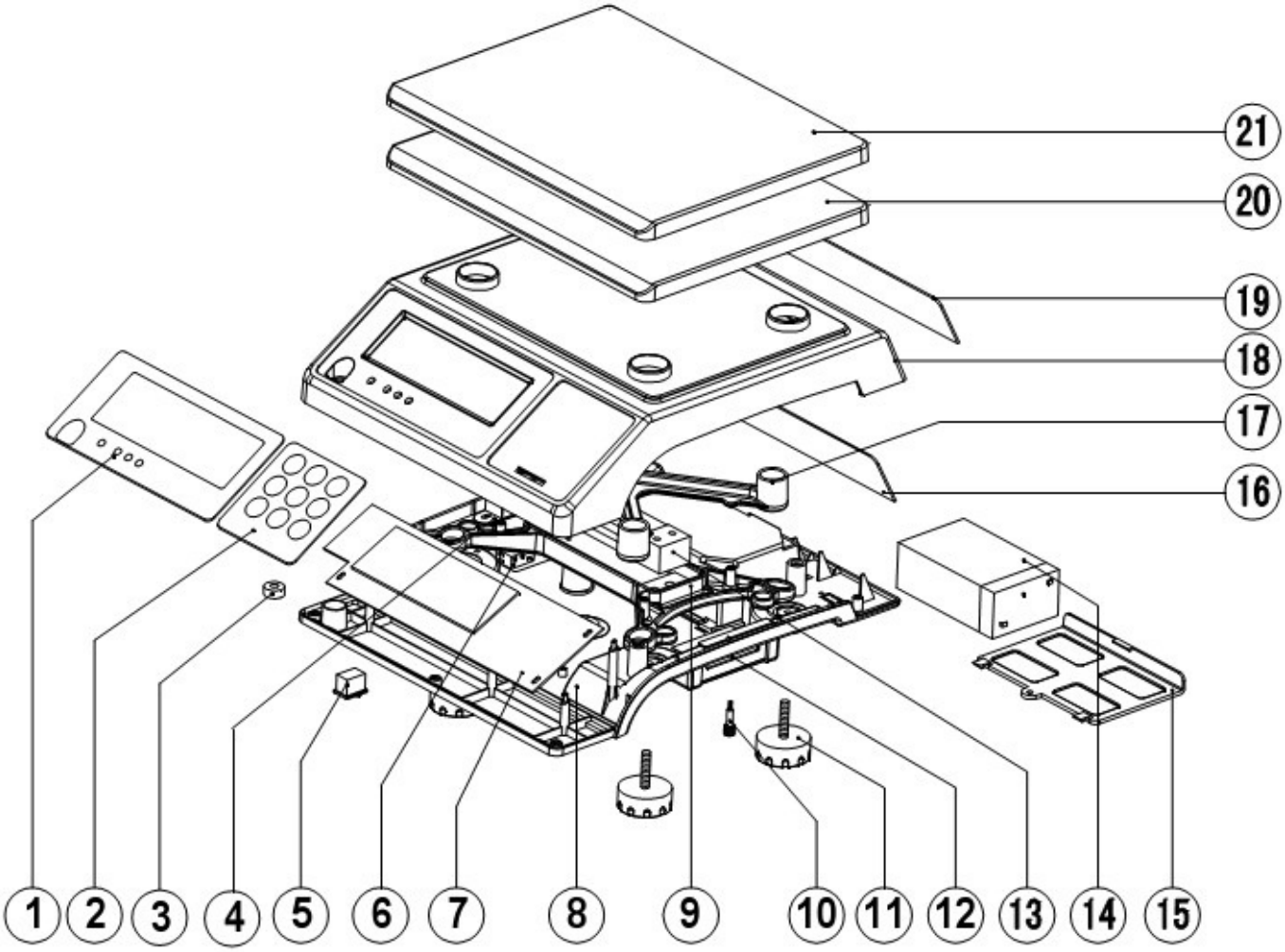
JWL Series

Service Manual

1. Assembly Drawing

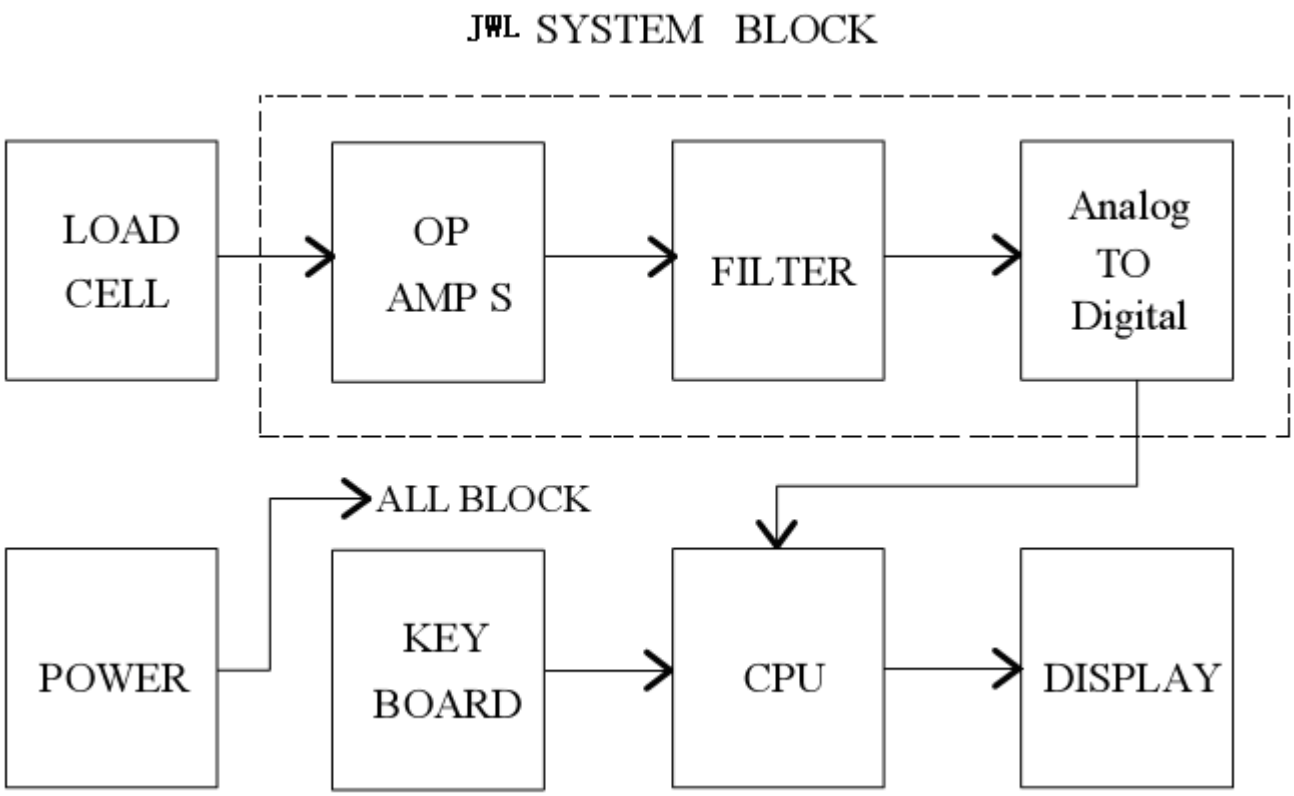
1 – 1 Explosive view



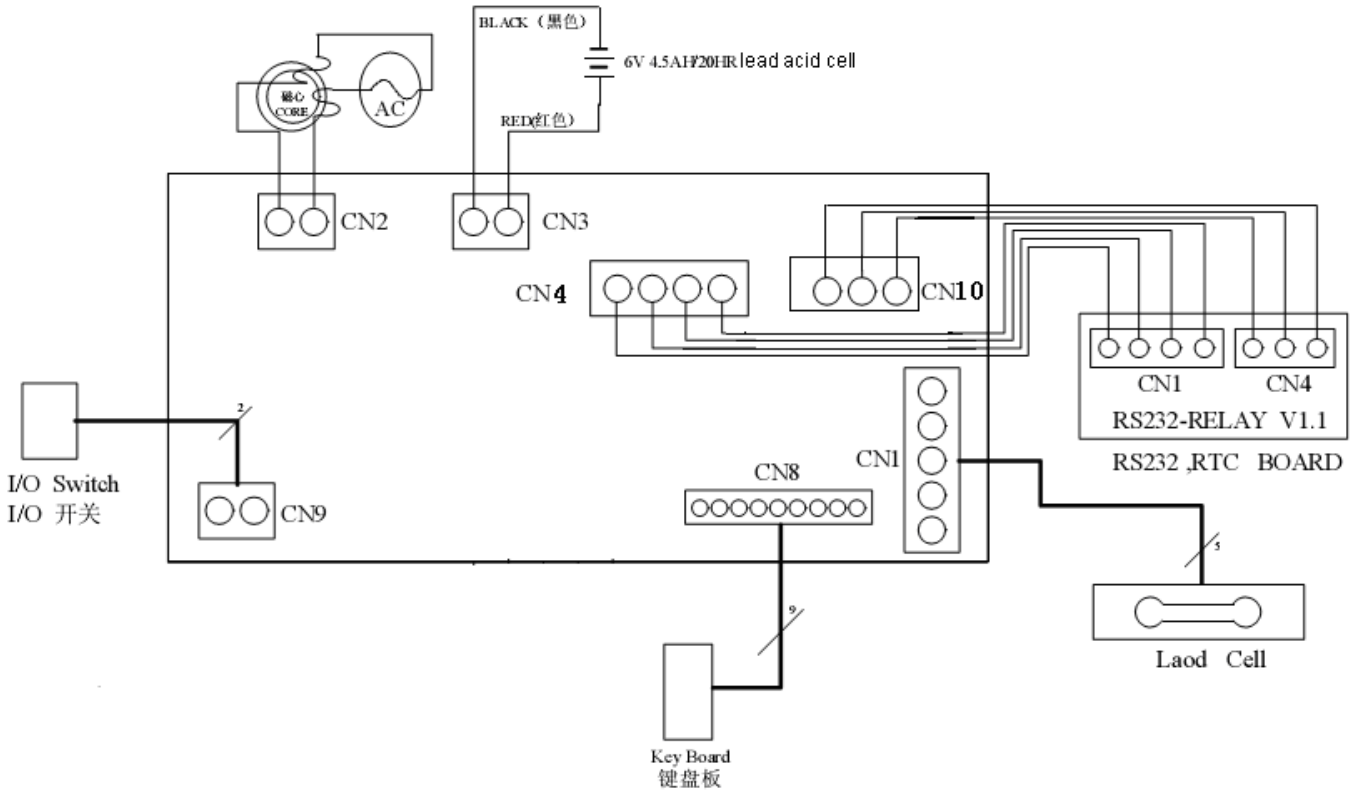
1-2 List of parts

No.	Name	Quantity	Part No.	Material No.
1	xm JWL-Chinese front panel	1	JWL-1	21-1925-0100
2	xm key	1	JWL-2	21-0506-0100
3	xm level meter	1	JWL-3	02-0108-0003xm(14mm)
4	Xm transformer	1	JPL-4	61-0003-0400
5	Xm switch	1	JWL-5	60-0000-0000xm
6	Xm power socket	1	JWL-6	80-0125-0000
7	xm semi-finished JWL board	1	JPL-7	60-0503-0001xm
8	Xm lower cover	1	JWL-8	02-0000-6020
9	xm lower support	1	JWL-9	10-0425-0100
10	Xm screw for transport protection	1	JPL-10	31-0404-0000xm
11	Xm rubber levelers	4	JWL-11	01-0100-0030
12	xm RS232 board	1	JCL-12	80-0900-2200xm
13-1	xm sensor - Chung Yuen 3k	1	JWL-13	51-0400-0400xm
13-2	xm sensor - Chung Yuen 5k	1	JWL-13	51-0410-0000
13-3	xm sensor- Chung Yuen 10k	1	JWL-13	51-0410-0010
13-4	xm sensor - Chung Yuen 20k	1	JWL-13	51-0410-0020
13-5	xm sensor - Chung Yuen 40k	1	JWL-13	51-0410-0040
14	Xm storage cell	1	JWL-14	61-0201-0098xm
15	Xm cell cover	1	JWL-15	02-0000-6030
16	Xm rear PCB	1	JPL-16	80-0126-0010
17	xm upper support	1	JWL-17	10-0425-0000
18	xm upper cover	1	JWL-18	02-0000-6010
19	xm rear panel	1	JWL-19	20-0000-6040
20	xm plastic down-warped pan	1	JCL-20	02-0000-6040
21	xm stainless steel down-warped pan	1	JCL-21	12-0000-1200

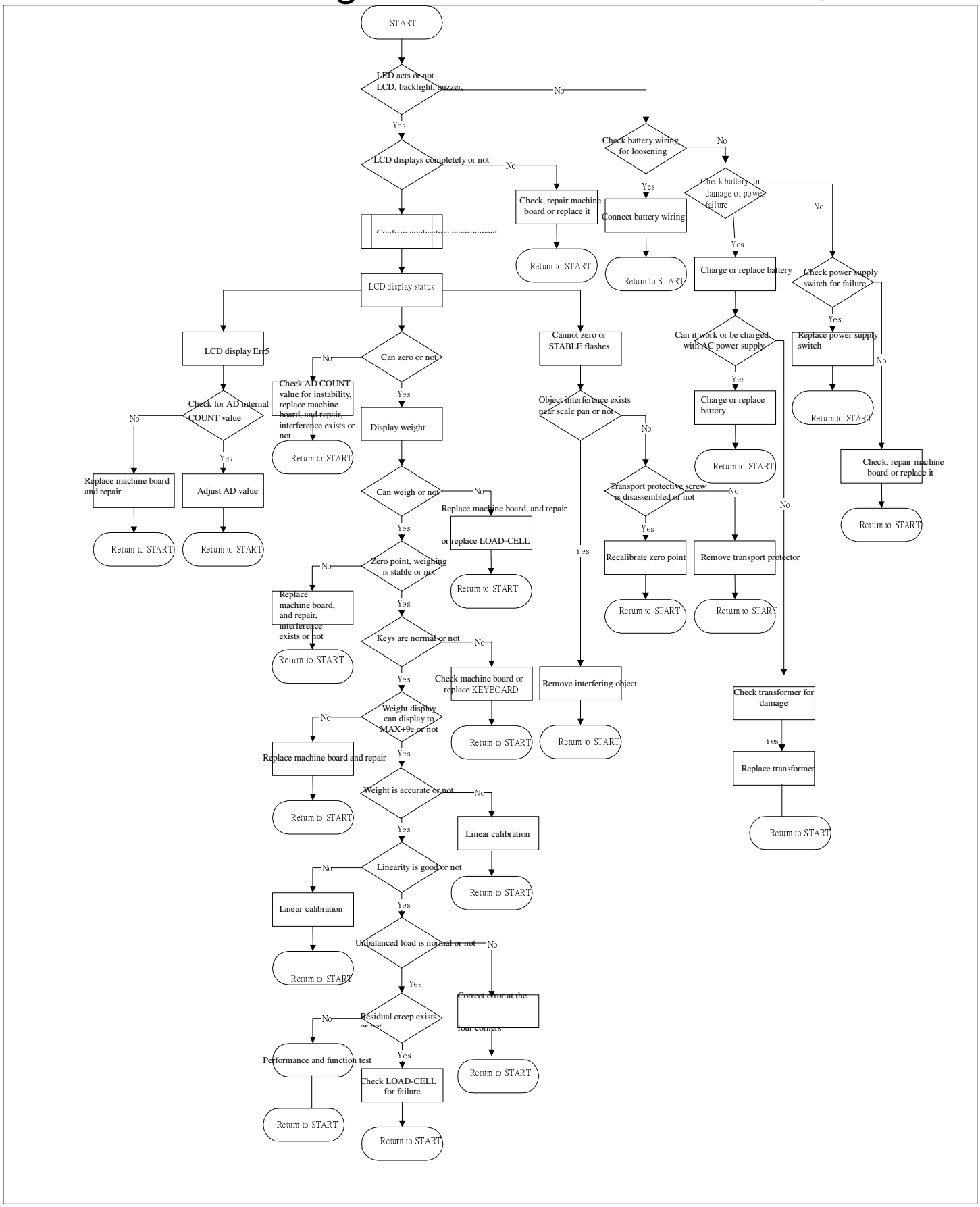
1 – 3 Block diagram of electronic structure



1 – 4 Wiring diagram(圖中中文應去除)



2. Troubleshooting Procedure *2– 1 Troubleshooting flow*



2– 2 Troubleshooting table

Error message	Causes
LCD, backlight board or buzzer does not work	1. Cell or transformer fault 2. Power switch fault 3. Power circuit fault 4. LCD or related LCD circuit fault 5. Backlight board or backlight related circuit fault 6. Buzzer fault or buzzer circuit fault 7. CPU or oscillating circuit fault
AC current or cell can't be used.	1. Power socket fault 2. Transformer fault 3. Cell fault 4. Power circuit fault 5. Main board fault
Err5	1. Overload (max weighing +9e) 2. Too high or inaccurate calibrated COUNT value.
Cell sign	1. Insufficient cell voltage or cell failure 2. Main board fault
Instable indication	1. The pan is interfered by any article. 2. There is strong wind or vibration nearby. 3. The cell voltage is insufficient. 4. There is external electromagnetic interference.
Bad linearity	1. The pan is interfered by any article. 2. Bad L/C

2– 3 Confirmation of the application environment

a. Is there a strong wind in the workplace?
b. Is there vibration or instability in the workplace?
c. Is there any article on the pan?
d. Is the stainless steel pan placed on the tray?
e. Has the screw for transport protection been removed?
f. Is the scale set on a horizontal plane?

2 –4 Simple inspection of electric circuit

a. Check if the power supply is normal

1. Is the voltage 5V at both E+ and E- terminals? Check whether the CPU supply is normal.

b. Check the signal input

1. Check if the outputs from S+ and S- terminals to G change in accordance with the weight on the pan.

c. Check the digital signals

(1) Check if there is oscillation in Y1's output pin.

(2) Check if there is oscillation in Y2's output pin.

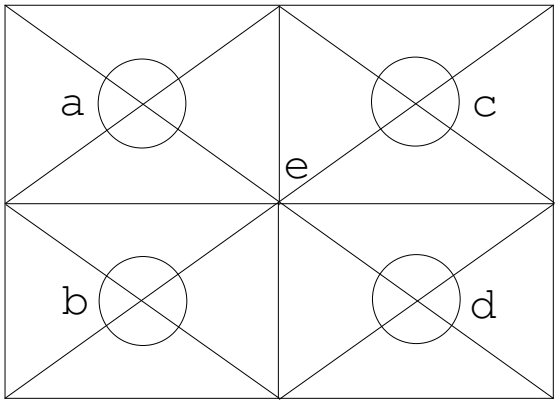
2 – 5 Performance Inspection

a. Repetitiveness

Put the weight of two thirds of the load on the pan for five times , the indication difference between different times should be less than or equal to one division value.

b. Unbalanced loading error

Put the weight of one third of the load on the pan (as shown in the figure). Check if the figure is precise. The indication difference between the four corners should be less than or equal to one division value.

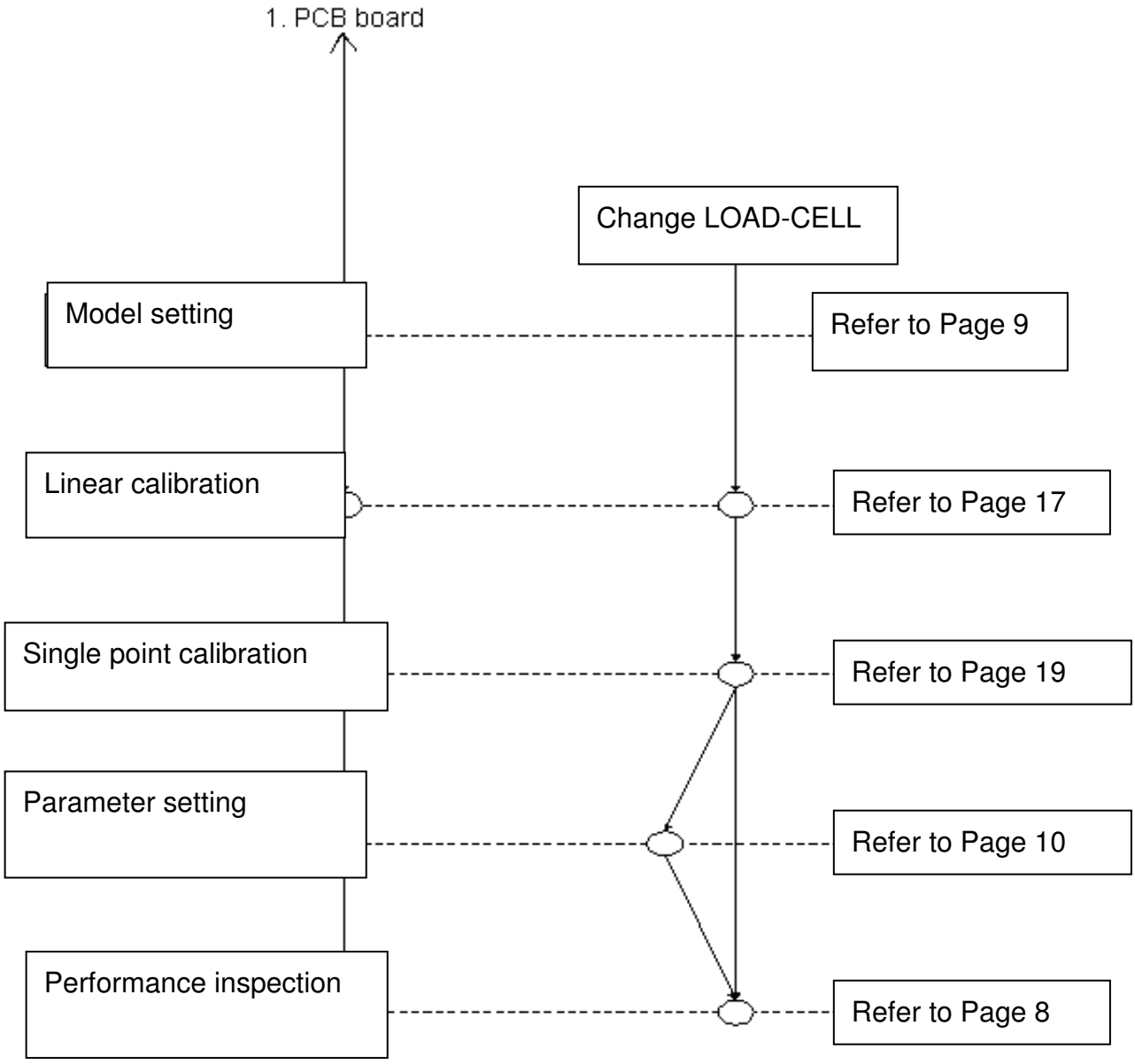


c. Linearity

Load conditions	Permissible error
Idle ~ one third of the load	0 e
One third of the load ~ two thirds of the load	1 e
Two thirds of the load ~ full load	2 e

3. Maintenance and Setting

3 – 1 Maintenance flow

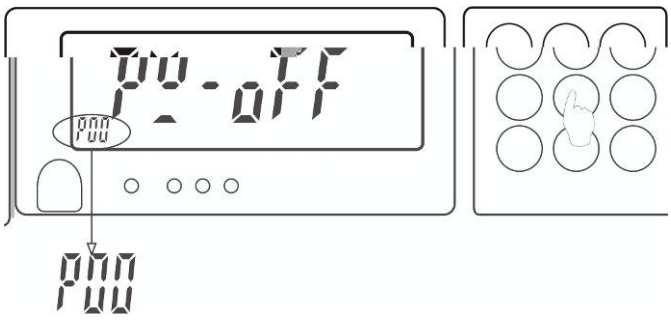
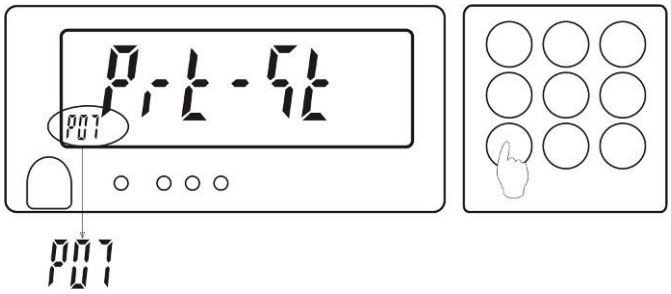
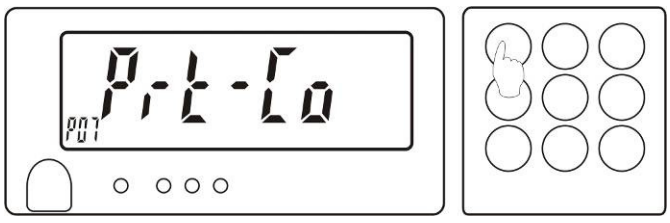
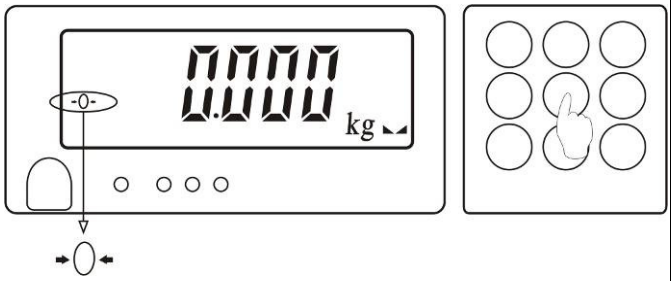


3 –2 Model setting

Model setting: Press **MR** to turn on the unit (the LCD will display 3.0000) and then press **UNIT** to select the unit model (for example:1.50000, 3.0000, 6.0000, 7.5000, 15.0000, 30.000). Press **G**/**N** and the unit will display “dIu-01” and enter accuracy selection. Press **UNIT** to select from diu-01 (1/30000), diu-02 (1/15000), diu-03(1/6000), diu-04 (1/3000), etc. and then press **G**/**N** to store the setting and return to the weighing mode.

4. Setting of Parameters

4-1 Parameter setting

	(1). In weighing mode, press and hold down MODE for 3s or press MODE and release it till the unit is on. SEt_P will appear first and then a parameter value such as Pu:"oFF" will appear, accompanied by an auxiliary sign P00.
	(2). Use M+ or M- to select the parameter items (as shown in the table below).
	(3). Use PRINT or UNIT to select the values of parameters.
	(4). When the setting is completed, press MODE to store the setting and return to the weighing mode.

4-2 Description of parameter values

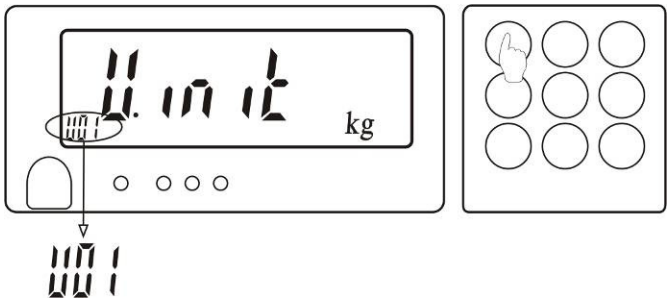
Item	Function	Display	Description
P00	Automatic turn-off will be executed when the weight is smaller than 9 divisions.	☆ oFF	No setting
		5	5 min
		10	10 min
		30	30 min
		60	60 min
		90	90 min
P01	Buzzer beep	in	There will be an acoustic warning when the weight of the material is between the preset upper and lower limits (including the upper and lower limits).
		out	There will be an acoustic warning when the weight of the material is beyond the preset upper and lower limits and the weight is more than 20 divisions.
		Lo	There will be an acoustic warning when the weight of the material is less than the preset lower limit and the weight is more than 20 divisions.
		☆ UP	There will be an acoustic warning when the weight of the material exceeds the preset upper limit.
P02	Printer selection	☆ PC	PC output
		SH-24	Dot-matrix
		CodE5	Automatic sticking, paper size: 5cm*3cm
		ZEbrA	Automatic sticking, paper size: 5cm*3cm
		bPS45d	Automatic sticking, paper size: 5cm*3cm
P03	RS-232 transmission rate	24	The transmission rate is 2400
		48	The transmission rate is 4800

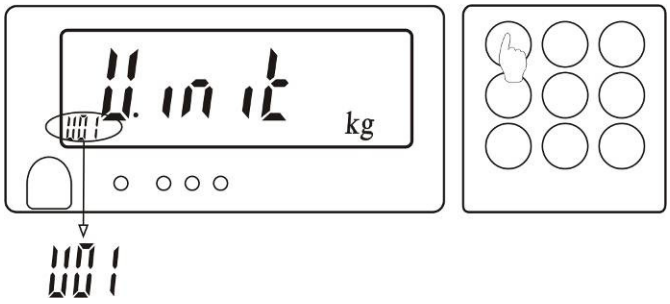
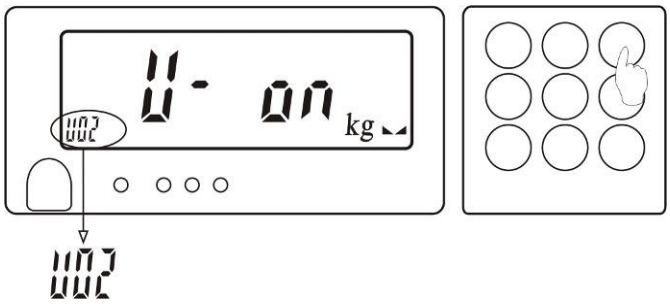
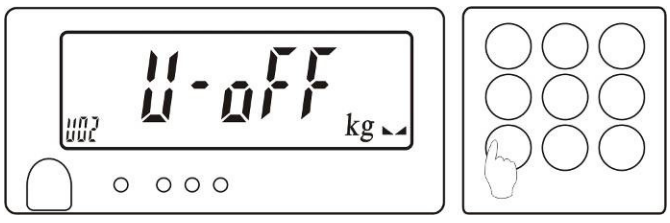
		☆ 96	The transmission rate is 9600
P04	Turn-on or off of the weight check memory	YES	Automatic turn-on of the check mode when the unit is turned on next time.
		☆ no	No automatic turn-on of the check mode when the unit is turned on next time.
P05	Parity check	☆ nonE	No parity.
		PAr itY	The parity can be odd or even.
P06	Backlight selection	on	Backlight display will be on for the whole process
		oFF	No backlight display
		☆ onoFF	Backlight display will be on when the weight is greater than 9 divisions.
P07	Printing mode selection	Pt	Manual printing
		☆ St	Stable printing (the next printing will be made only when the indication is returned to zero.)
		Co	Continuous printing
P08	Filter grade selection	☆ 1	Worst vibration resistance
		2	Average vibration resistance
		3	Good vibration resistance
		4	Best vibration resistance
P09	Zero indication range	☆ PZro-0	No restriction on the zero indication

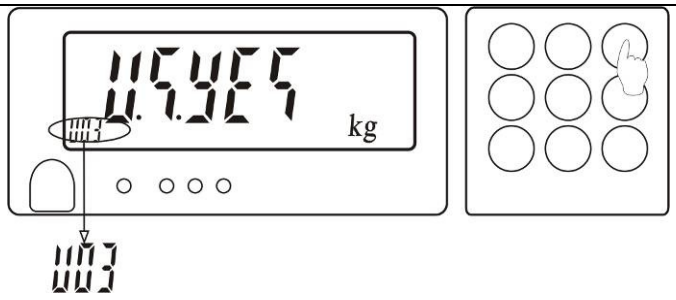
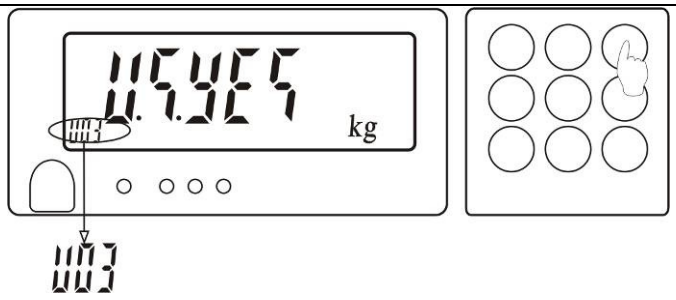
		PZro-1	At a zero indication, only when at least 2 divisions or above is put on the pan will a value be indicated.

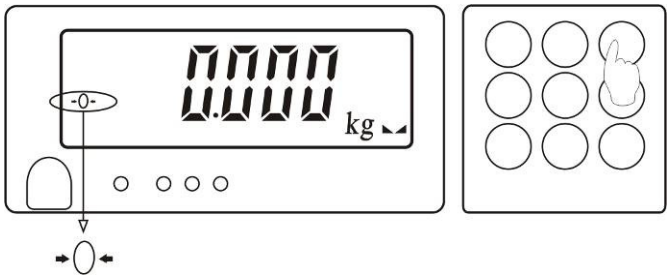
		PZro-2	At a zero indication, only when at least 3 divisions or above is put on the pan will a value be indicated.
		PZro-3	At a zero indication, only when at least 4 divisions or above is put on the pan will a value be indicated.
		PZro-4	At a zero indication, only when at least 5 divisions or above is put on the pan will a value be indicated.
		PZro-5	At a zero indication, only when at least 6 divisions or above is put on the pan will a value be indicated.
P10	Factory initialized setting	init-F	It is a factory set value.
P11	Unit setting	SEtU	The specific operation is as follows:

4-3 **Unit setting**

	(1). Mode 1: press UNIT to turn on the unit till the left picture appears. Mode 2: in the weighing

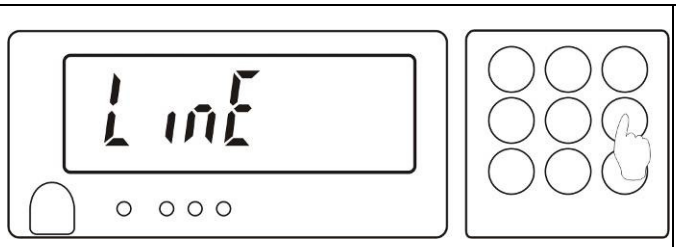
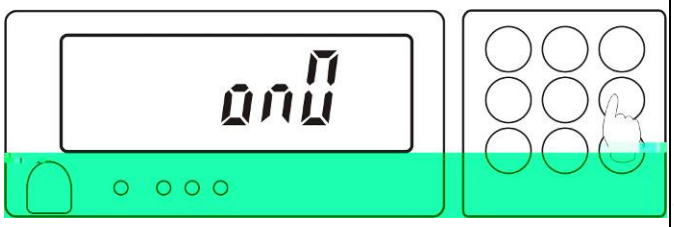
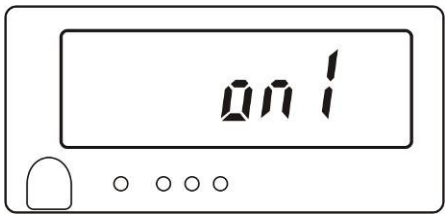
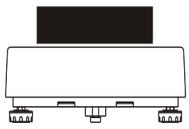
	mode, press MODE for about 3s, press M+ or M- to select the parameter P11 and press UNIT to enter the left picture with U01 appearing on the lower left corner.
	(2). Press UNIT to select the unit from g\ kg\ lb\ jin-liang for the scale.
	(3). Press G/N to store the selection and switch to the setting of unit for use, with U02 appearing on the lower left corner.
	(4). Press UNIT to switch the unit for use. Press M+ to select turn-on or turn-off of this unit.

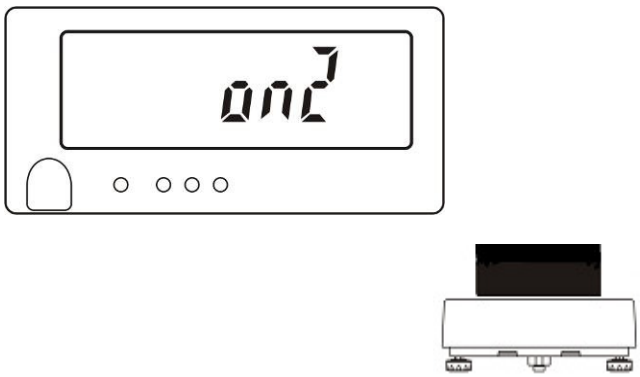
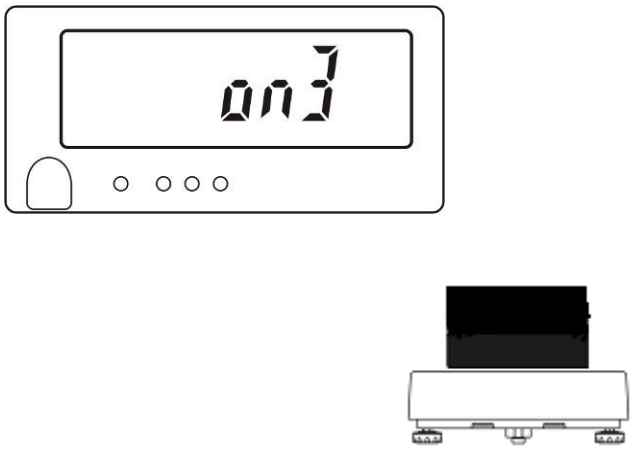
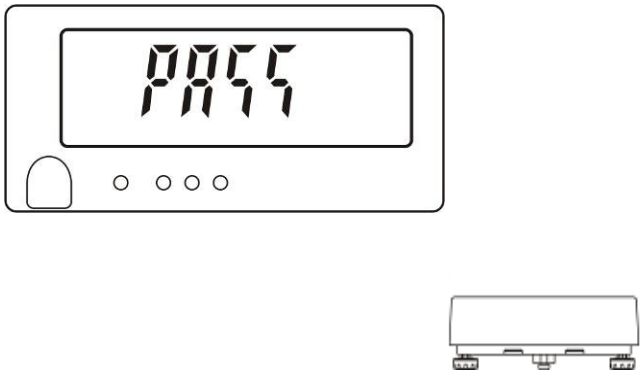
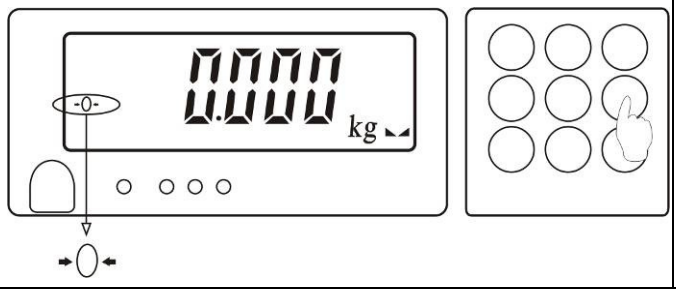
	(5). Press G/N to store the selection and switch to the memory unit of the scale, with U03 appearing on the lower left corner.
	(6).Press M+ and select YES (the unit will be the previously used one when the scale is turned on) or NO (the unit will be a newly set one when the scale is turned on).

	(7).Press G/N to store the selection and return to the weighing mode. Note: If the unit setting is accessed from the parameter options or by Mode 2, press G/N to store the selection and then press MODE to return to the weighing mode.

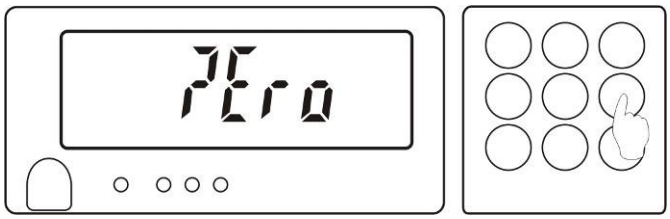
5. Linear Calibration

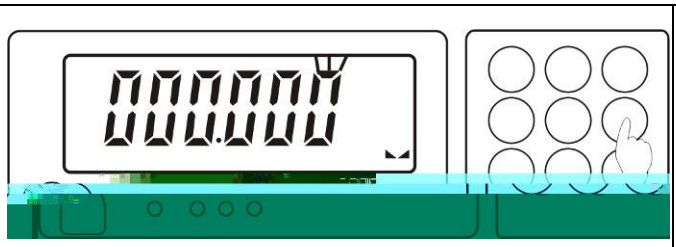
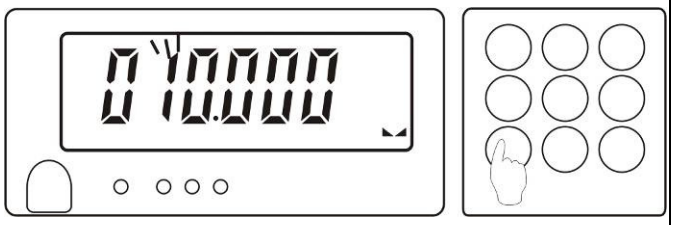
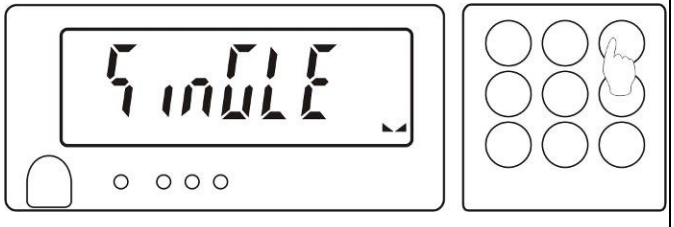
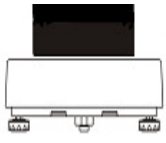
☆If the linear calibration is made, there is no need to make the single point calibration. If the sensor has a good linearity, make the single point calibration directly.

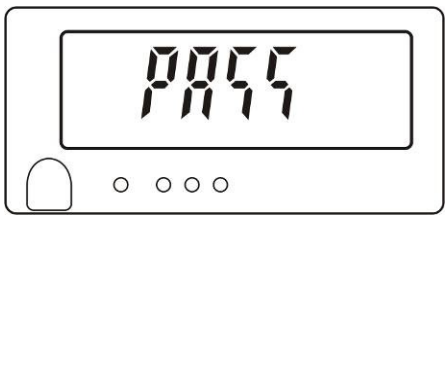
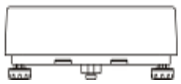
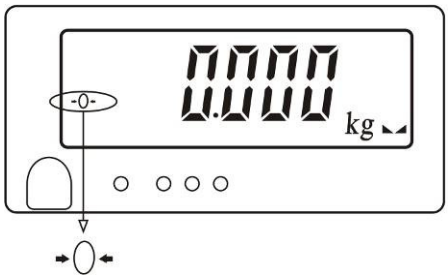
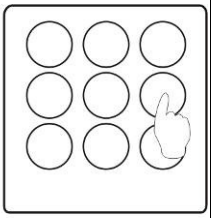
	(1).Press TARE to turn on the unit and release the key when LinE appears on the LCD, the linear calibration mode is entered.
	(2).Press TARE to do the zero point calibration and wait for ON 0 to appear (No weight is put on the pan at this time).
 	(3). Wait till ON 1 flickers on the LCD and put on the weight 1/3 of the full load. For example, 1/3 of the weighing 30kg is 10kg.

	(4). Wait till ON 2 flickers on the LCD and put on the weight 2/3 of the full load. For example, 2/3 of the weighing 30kg is 20kg.
	(5). Wait till ON 3 flickers on the LCD and put on the weight of the full load.
	(6). Wait till PASS appears. Now, take away the load from the pan.
	(7).Press TARE to return to the weighing mode.

6. Single Point Calibration(底下少圖)

	(1).Press M- to turn on the unit and release the key when SinCAL appears, the single point calibration mode is entered.
	(2). Press TARE and wait till ZERO flickers. Now make the single point calibration.

	(3). Wait till a value appears and the most right digit flickers. Press PRINT or UNIT to move the flicker right or left.
	(4). Press M+ or M- to alter the value.
 	(5). After the setting, put a corresponding weight on the pan and press G/N. When the LCD flickers, make the single point calibration.

 	(6). Wait till PASS appears. Now, take away the load from the pan.
 	(7). Press TARE to return to the weighing mode.

7. Error Message List

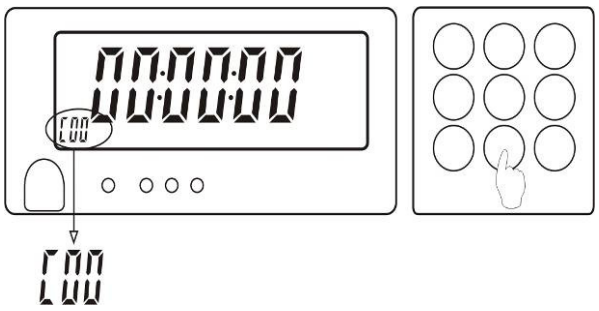
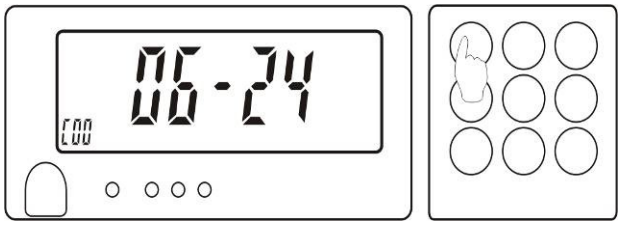
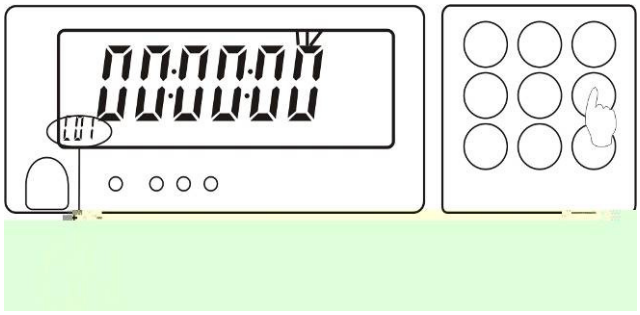
Error message	Possible causes	Solutions
E02 no.samp	No PCS sampling	Press G/N to make the sampling.
E04 EE.ERR	EEPROM reading error	Re-weld the EEPROM or contact the service department.
E05 out.ran	Overload (max weighing+9 divisions)	Take away the overload.
E07 E.Lo>Hi	The upper limit set for the weight check is lower than the lower limit.	Press PRINT to correct the setting of HI/LO.
E08 CK.UNIT	The unit set for the weight check is not the same as the current unit.	Close the weight check or re-set the value of HI /LO.
EU.nit	Interference between the accumulation units	Return to the last accumulation unit or re-do the accumulation.

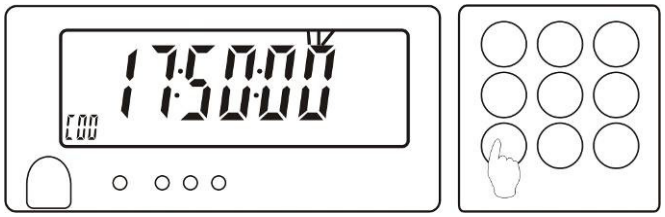
8. External Interface

☆If an external interface is needed, please select a three-in-one board, which combines RTC (time display) ,RS-232 and Relay (weight check) on one circuit board. Only by selecting this board can the three functions be realized.

☆ After a three-in-one board is selected, a setting should be made on the scale for time display if necessary.

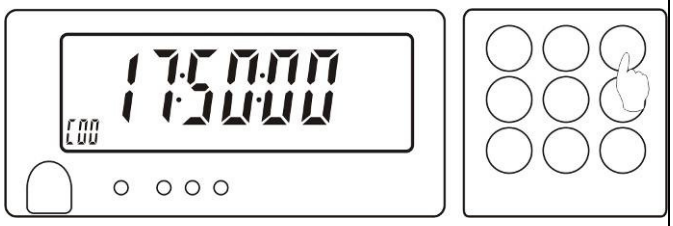
8-1. RTC function setting

	(1). Press M- for 3s till time display appears, with C00 on the lower left corner.
	(2). Press PRINT or UNIT to switch to date-month or year display. Note: For time/date setting, skip to Step 3 and for returning to the weighing mode, press ZERO ESC.
	(3). Press TARE to enter the setting for the current time and the last digit for second will flicker, with C01 appearing on the lower left corner, representing that the first digit from right to left can be altered.



(4). Press TARE to move between the digits and a corresponding digit will flicker when the movement is made from right to left. Now, press M+ or M- to increase or decrease the value.

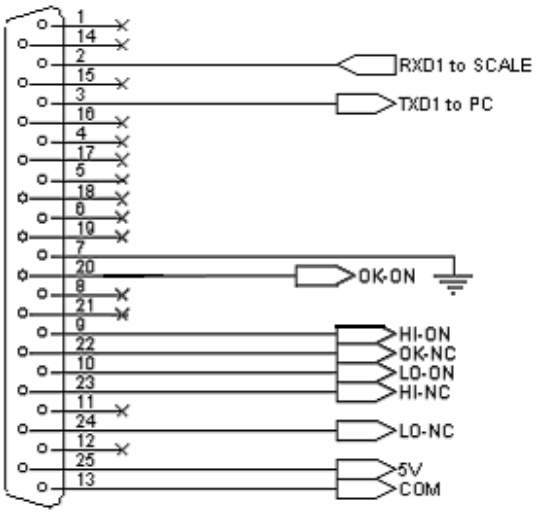
Note: You may press PRINT or UNIT to switch to the setting for date-month or year.



(5). Press G/N to complete the time setting and display the time/date that is already set. To return to the weighing mode, press ZERO ESC

Note: This time/date setting should be made again when the scale is turned on next time if a three-in-one board is not selected for the scale.

8-2 Signal output pins of three-in-one board

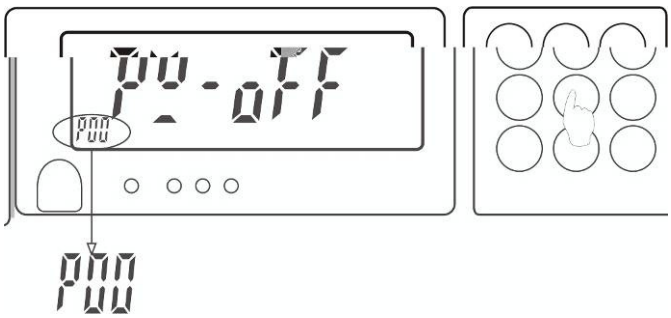


RS232/RELAY

8-3 Single option

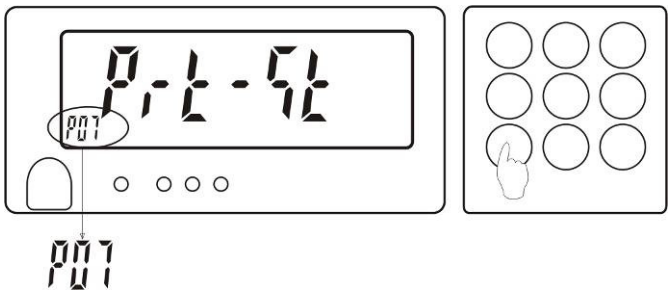
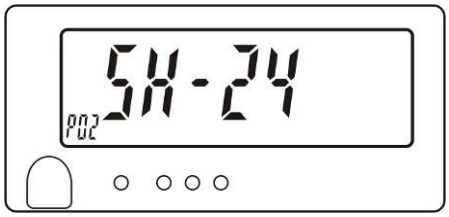
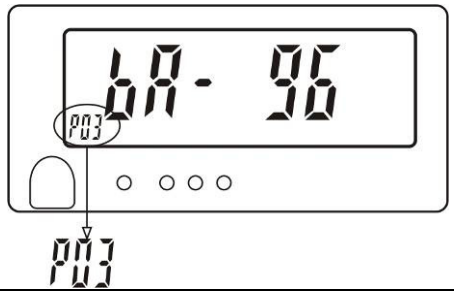
8-3-1 Printer output

■Parameter setting

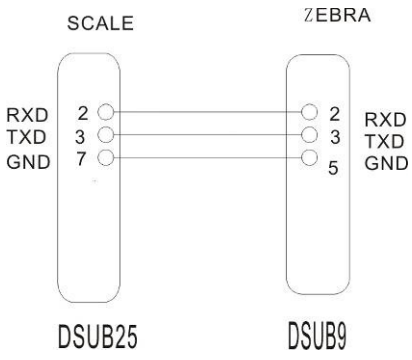
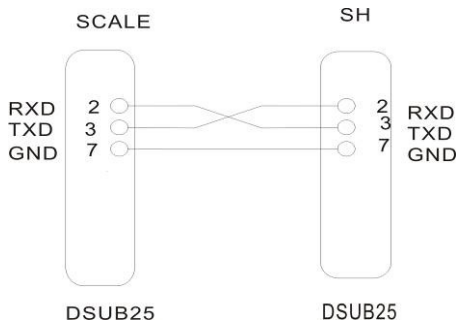


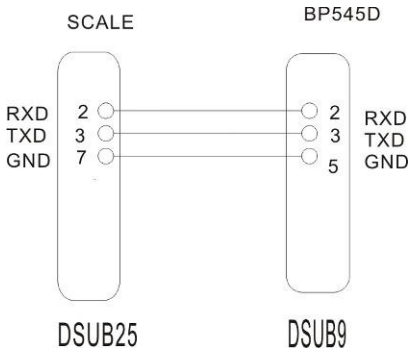
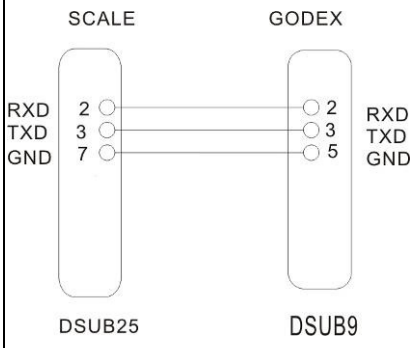
(1). In weighing mode, press MODE for about 3s or press MODE and release it when the scale is turned on. SEt_P will first appear and then a parameter value such as

Pu:"oFF" and also an auxiliary sign PUU.

	(2).Use M+ or M- to select a parameter item such as PO7. Press PRINT or UNIT to select the parameter value, with the printing modes including St / Pt / Co.
	(3). Follow Step (2) to select the parameter item P02, with the printing modes including SH-24 / CodE5/ ZEbrA / bPS45d.
	(4). Follow Step (2) to select the parameter item P03, selecting the Baud rate of 9600.

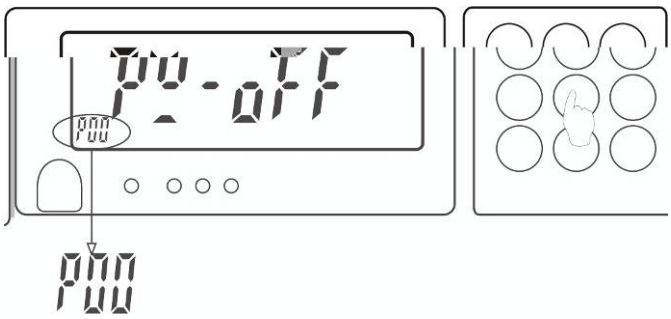
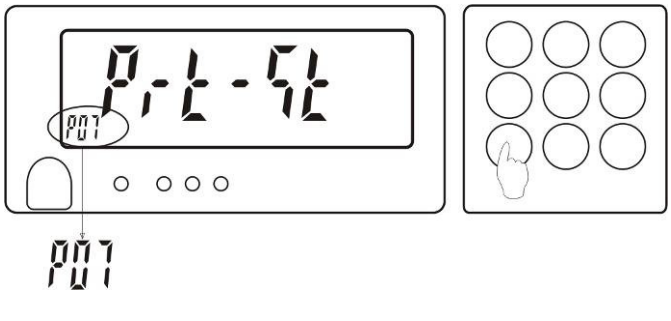
■Wire connecting the scale and the printer

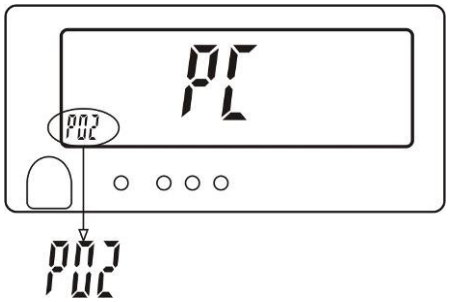
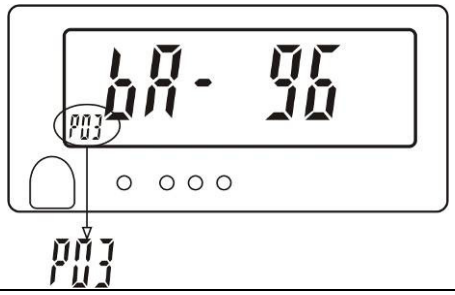
Wire connecting ZEBRA	Wire connecting SH-24
	
That is the commonly used 9male ~25male RS232 connecting wire.	That is the commonly used 25male~25 male RS232 connecting wire. You have to exchange by yourself the pin 2 with the pin 3

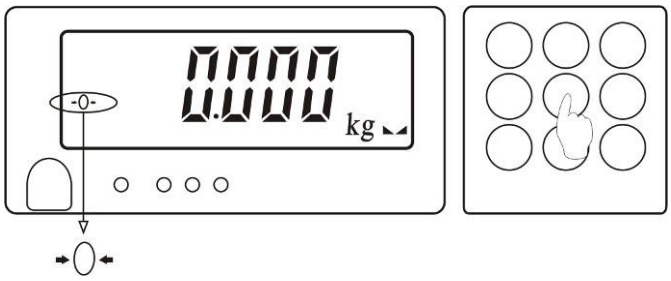
	at one end of the wire bought.
Wire connecting BP545D	Wire connecting GODEX
 That is the commonly used 9male ~25male RS232 connecting wire.	 That is the commonly used 9male ~25male RS232 connecting wire.

8-3-2 PC output

■Parameter setting

	(1). In weighing mode, press MODE for about 3s or press MODE and release it when the scale is turned on. SEt_P will first appear and then a parameter value such as Pu:"oFF" and also an auxiliary sign P00.
	(2). Use M+ or M- to select a parameter item such as PO7. Press PRINT or UNIT to

	select the parameter value, with the printing modes including St / Pt / Co.
	(3). Follow Step (2) to select the parameter item P02, with the printing mode selected as PC.
	(4). Follow Step (2) to select the parameter item P03, selecting the Baud rate from 2400/4800/9600.

	(5).When the setting is completed, press MODE to store the setting and return to the weighing mode.

■Wire connecting the scale and the PC

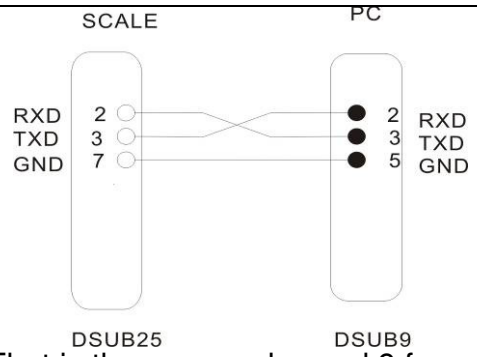
How to use a PC to receive the weighing information?

(1) Use the connecting wire as shown in the following figure to connect the scale and the PC.

(2) Set the printing mode as continuous.

(3) Now, the scale will output the data to the PC.

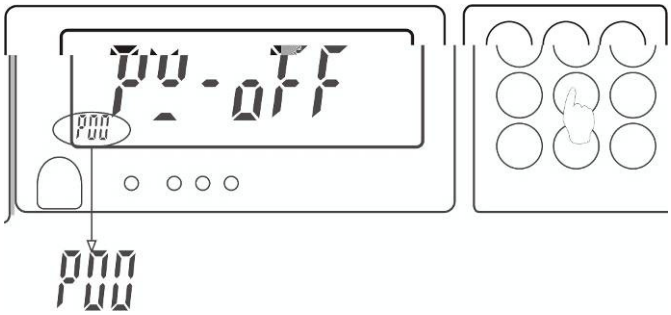
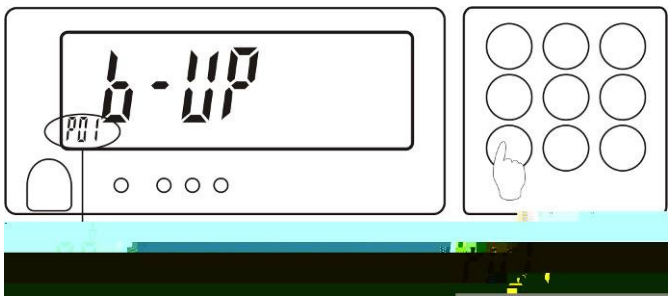
(Of course, you must have a receiving program at the PC end.)

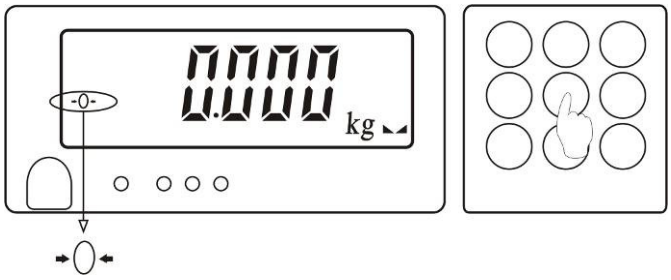


That is the commonly used 9 female ~25male RS232 connecting wire. You have to exchange by yourself the pin 2 with the pin 3 at one end of the wire bought.
Note: The hollow dots represent that the connectors are male and the black dots, female.

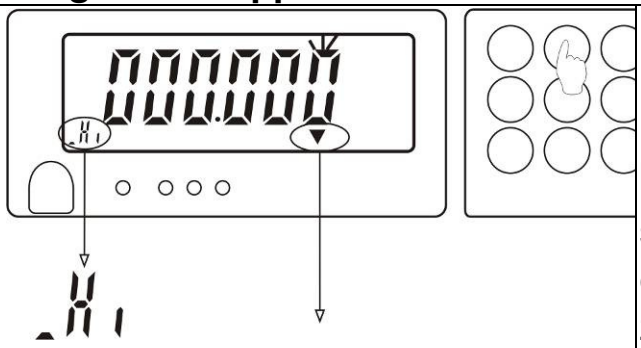
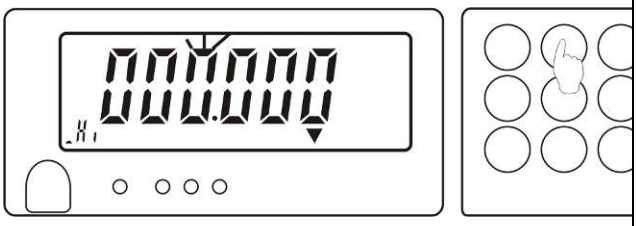
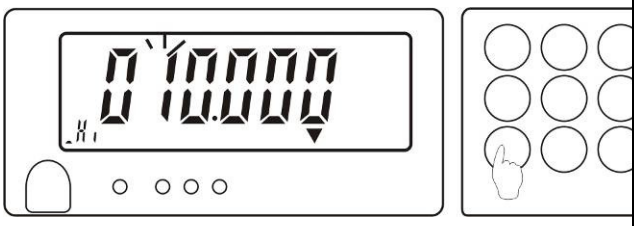
8-3-3 Warning light connection for use

■ Parameter setting of beeps for weight check:

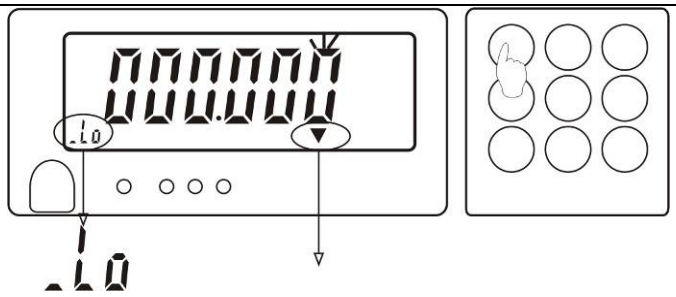
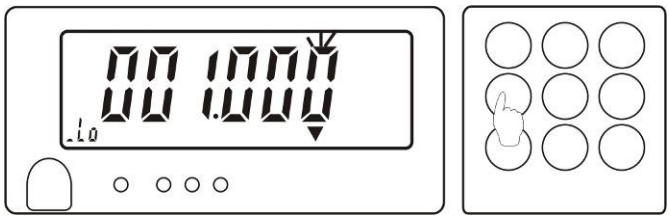
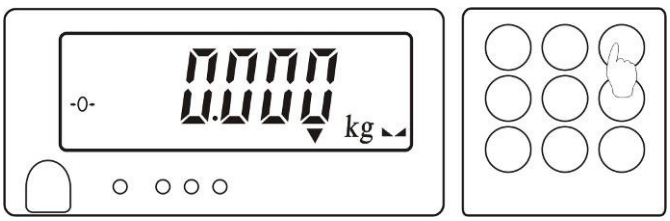
	(1). In weighing mode, press MODE for about 3s or press MODE and release it when the scale is turned on. SEt_P will first appear and then a parameter value such as PU:"oFF" and also an auxiliary sign P00.
	(2). Use M+ or M- to select a parameter item such as PO1. Press PRINT or UNIT to select the parameter value, with four modes UP/oUt/in/Lo_ for selection.

	(3). When the setting is completed, press MODE to store the setting and return to the weighing mode.

■ Setting for the upper and lower limits of weight check

 Triangle indicator for the upper or lower limit	(1). In weighing mode, press PRINT for 3s and the screen enters the state for digit entry. Enter the value at the first zero on the right which flickers on the LCD.
	(2). Press PRINT or UNIT to move the flickering cursor left or right to the digit where you want to enter a value.
	(3). Press M+ to increase the value or M- to decrease the value and select the weight value you want to enter. (4). Repeat Steps (2) and (3) to complete the setting for the upper limit. For example, 10.000kg.

	Note: After completing Step (4), you may directly press G/N to store the upper limit value or directly skip to Step (6).

 Triangle indicator for the upper or lower limit	(5). Press UNIT for 3s and the screen enters the state for digit entry. Repeat Steps (2), (3) and (4) to complete the setting for the lower limit. For example, 1.000kg. Note: you may directly press G/N to store the lower limit value or directly skip to Step (6).
	(6). Press MR to start or cancel the check.
	(7). Press G/N to return to the weighing mode. If the triangle indicator for the upper or lower limit appears, it is in the check mode. Note: Only when the lower limit ≦the upper limit value can the check mode be started. It is the same for other unit setting.

Note: UP- 1. When the material weight exceeds 10.000kg, there will be an acoustic warning and the red light will be on.

2. When the material weight is smaller than or equal to 10.000kg and greater than or equal to 1.000kg, the green warning light will be on.

3. When the material weight is smaller than 1.000kg and greater than or equal to 20 divisions, the orange warning light will be on.

oUt- 1. When the material weight exceeds 10.000kg, there will be an acoustic warning and the red light will be on.

2. When the material weight is smaller than or equal to 10.000kg and greater than or equal to 1.000kg, the green warning light will be on.

3. When the material weight is smaller than 1.000kg and greater than or equal to 20 divisions, there will be an acoustic warning and the orange warning light will be on.

in- 1. When the material weight exceeds 10.000kg, the red light will be on.

2. When the material weight is smaller than or equal to 10.000kg and greater than or equal to 1.000kg, there will be an acoustic warning and the green warning light will be on.

3. When the material weight is smaller than 1.000kg and greater than or equal to 20 divisions, the orange warning light will be on.

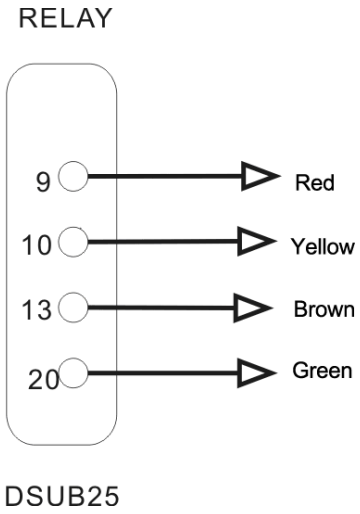
Lo-1. When the material weight exceeds 10.000kg, the red light will be on.

2. When the material weight is smaller than or equal to 10.000kg and greater than or equal to 1.000kg, the green warning light will be on.

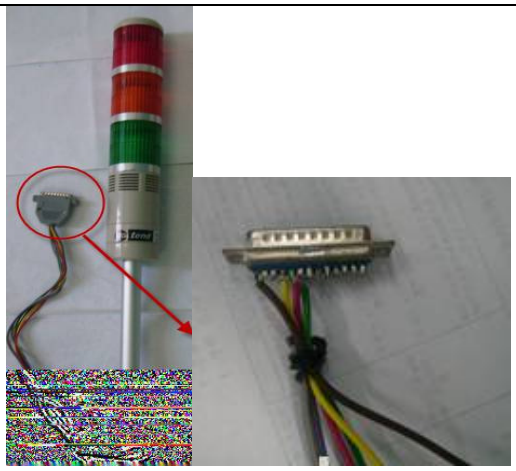
3. When the material weight is smaller than 1.000kg and greater than or equal to 20 divisions, there will be an acoustic warning and the orange warning light will be on.

■Pins for connecting the warning lights

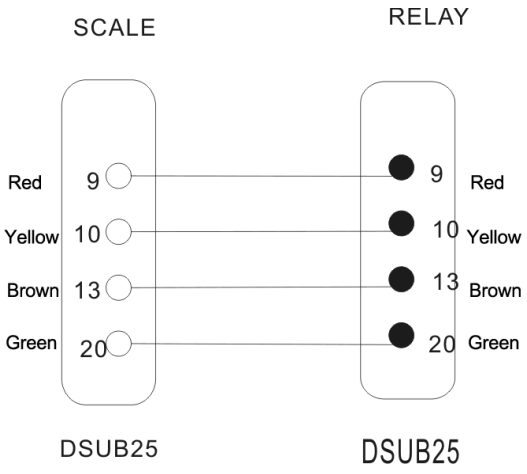
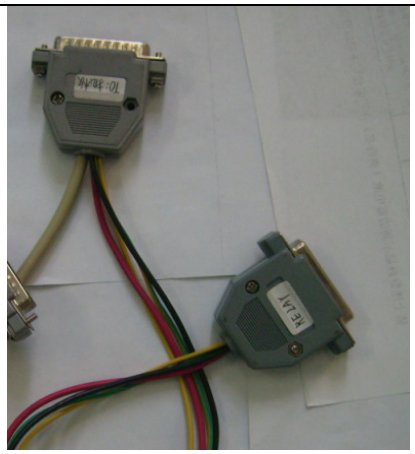
Pins for connecting the warning lights	Picture



The pins for the warning lights are connected to the 25-male socket.



■ Wire connecting the scale and the warning light

Wire connecting the warning lights	Picture
	

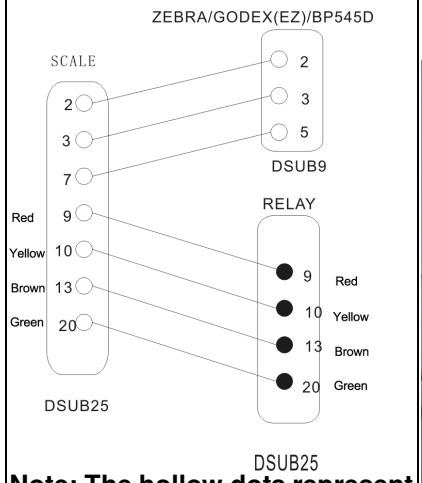
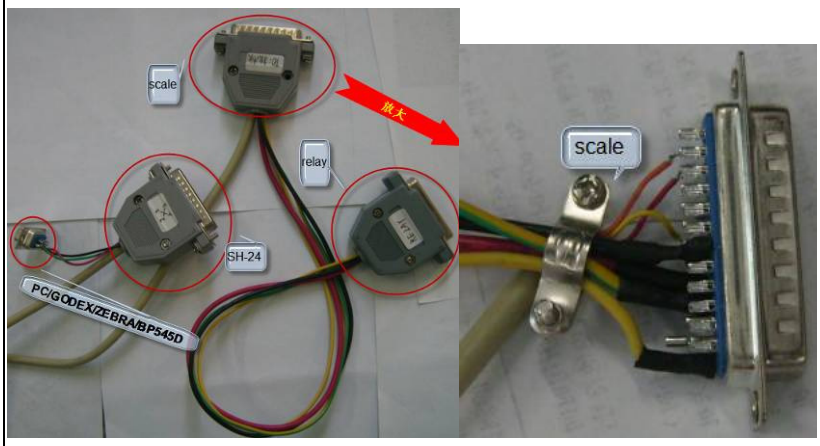
That is the commonly used 25male and 25 female RS232 connecting wire.
Note: The hollow dots represent the male connectors and the black dots, female connectors.

8-4. Two options

8-4-1 Joint use of PC output and warning light

8.4.1.1 The parameter setting is the same as specified in 8-3-2, 8-3-3

8.4.1.2 Wire connecting the scale to the PC and the warning light

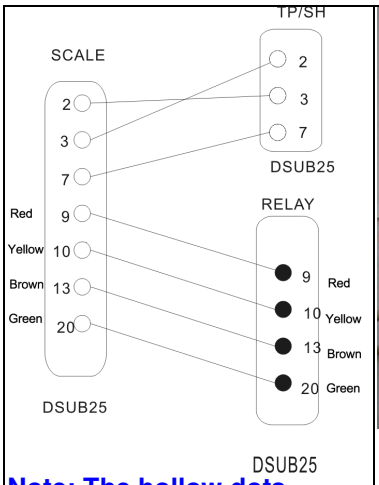
Wire connecting the PC and the warning light	Picture
 **Note: The hollow dots represent the male connectors and the black dots, female connectors.**	

8-4-2 Joint use of SH-24 printer output and warning light

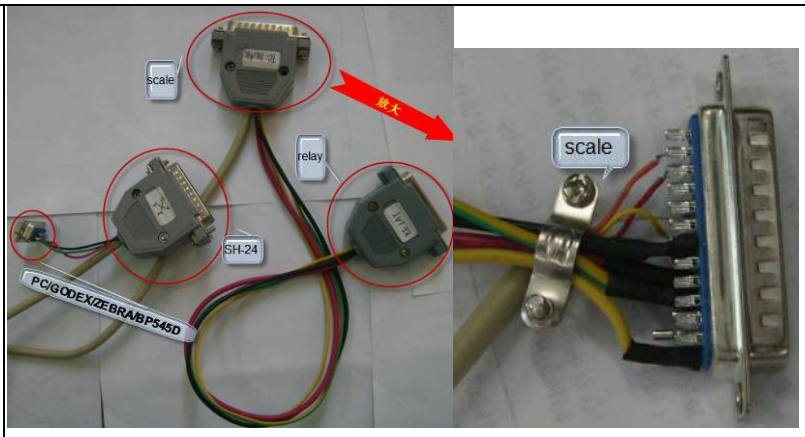
8-4-2-1 The parameter setting is the same as specified in 8-3-1 and 8-3-3

8-4-2-2 Wire connecting the scale to the SH-24 printer and the warning light

Wire connecting the SH-24 printer and the warning light	Picture



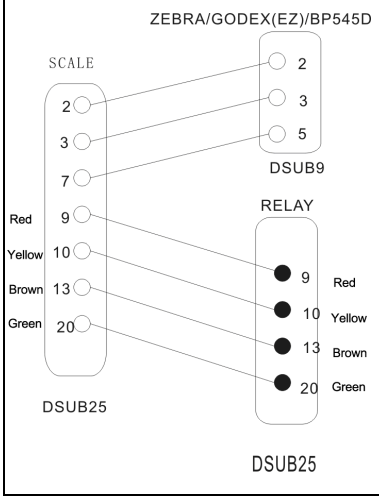
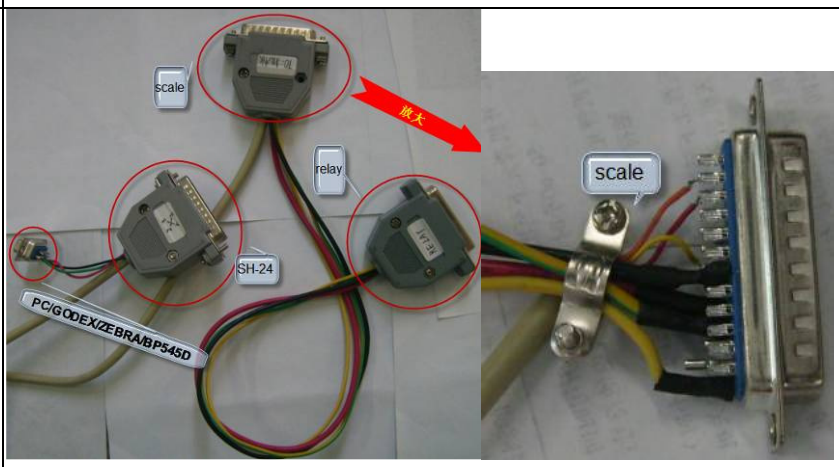
Note: The hollow dots represent the male connectors and the black dots, female connectors.



8-4-3 Joint use of ZEBRA or other printers and warning light

8-4-3-1 The parameter setting is the same as specified in 8-3-1 and 8-3-3

8-4-3-2 Wire connecting the scale to a ZEBRA or other printers and the warning light

Wire connecting the ZEBRA/GODEX(EZ)/BP 545D printer and the warning light	Picture
	

8-5. RS-232 output format

Baud Rate: 2400, 4800, 9600

Data Bit: 8

Parity: N (None)
Stop Bit: 1
Code: ASCII

Bit Format:

	LSB							MSB		
	0	1	2	3	4	5	6	7	8	
Start Bit									Parity	Stop Bit

Data Format:

g

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

Weight

Example
N.W.: + 1000.0 g
T.W.: + 500.4 g
G.W.: + 1500.4 g

kg

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

Weight

Example

N.W.: + 1.0000 kg
T.W.: + 0.4998 kg
G.W.: + 1.4998 kg

lb

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

Weight

Example
N.W.: + 2.2050 lb
T.W.: + 1.1020 lb
G.W.: + 3.3070 lb

Jin (Taiwan)

N	.	W	.	:		+/-										G	-	t	l	.	T	CR	LF
T	.	W	.	:		+/-										G	-	t	l	.	T	CR	LF

G	.	W	.	:		+/-									G	-	t	l	.	T	CR	LF

Weight

Example
N.W.: + 1.94.8 G-tl.T
T.W.: + 0.13.2 G-tl.T
G.W.: + 2.08.0 G-tl.T

Jin (Hong Kong)

N	.	W	.	:		+/-									G	-	t	l	.	H	CR	LF
T	.	W	.	:		+/-									G	-	t	l	.	H	CR	LF
G	.	W	.	:		+/-									G	-	t	l	.	H	CR	LF

Weight

Example
N.W.: + 1.94.4 G-tl.H
T.W.: + 0.13.2 G-tl.H
G.W.: + 2.07.6 G-tl.H

PCS

t	o	t	a	l	:																CR	LF
																		p	c	s	CR	LF

Example

Total:
50pcs

9. Others

9-1 Options

■ Example of use of single option

	Option		External device		Output format
AP0	RS232+RTC+Relay 	+	 PC	→	2008/06/16 10:25:54 N.W.: + 52 g T.W.: + 0 g G.W.: + 52 g
AP1	RS232+RTC+Relay 	+	 BP-545D	→	2008/06/26 14:58:48 N.W.: + 3.662 kg T.W.: + 0.000 kg G.W.: + 3.662 kg
AP2	RS232+RTC+Relay 	+	 SH-24	→	2008/06/16 10:25:54 N.W.: + 52 g T.W.: + 0 g G.W.: + 52 g
AP3	RS232+RTC+Relay 	+		→	2000/00/00 00:00:00 N.W.: + 3.658 kg T.W.: + 0.000 kg G.W.: + 3.658 kg
			ZEBRA		

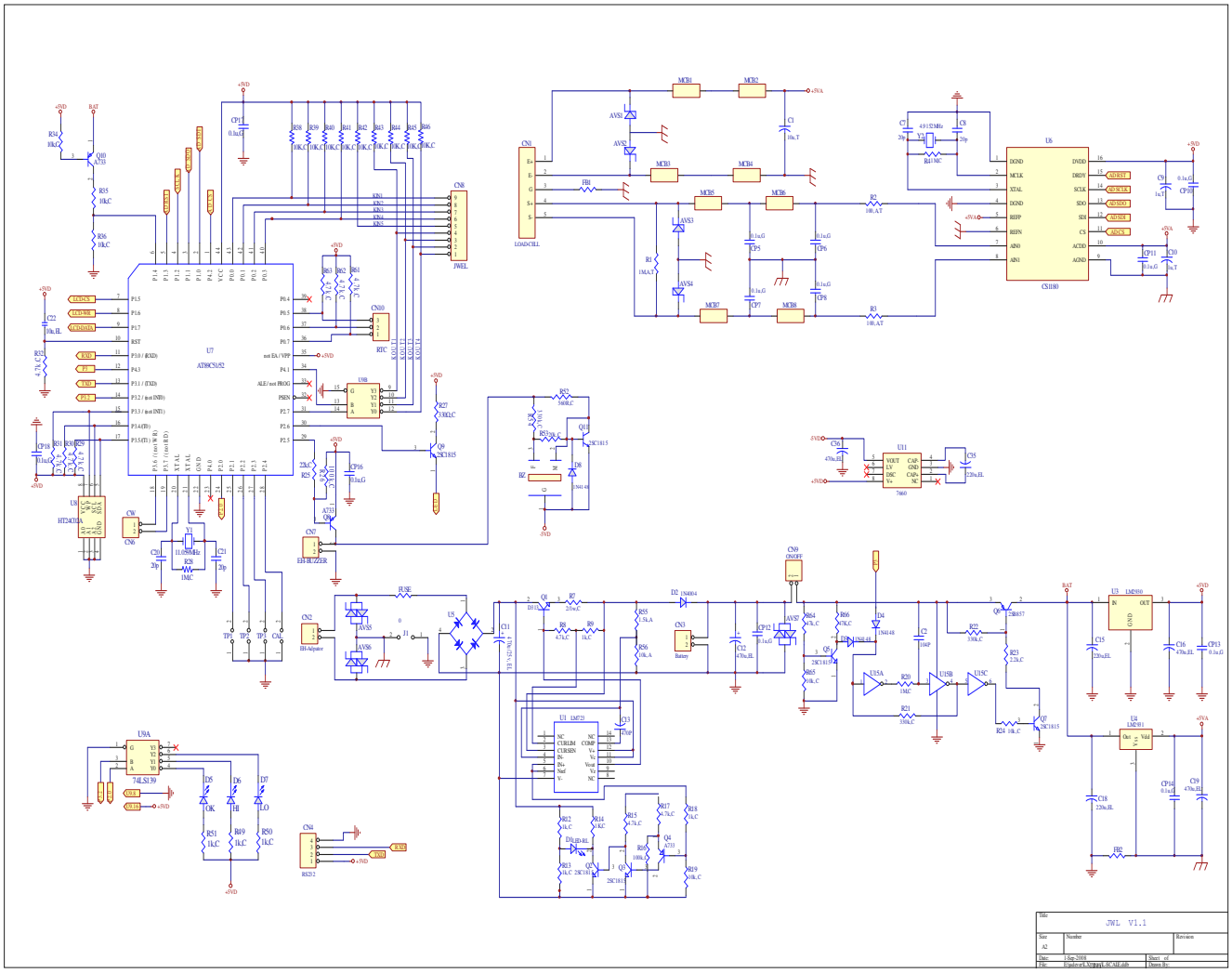
AP4	**RS232+RTC+Relay** 	+		→	Applicable to the quality control of the factory product quantity or weight and that of the total production line.
			LED Light Tower		
AP5	**RS232+RTC+Relay** 	+			2008/06/26 17:27:45 N.W.: + 3.661 kg T.W.: + 0.000 kg G.W.: + 3.661 kg
			GODEX(EZ)		

- **Examples of use of options**

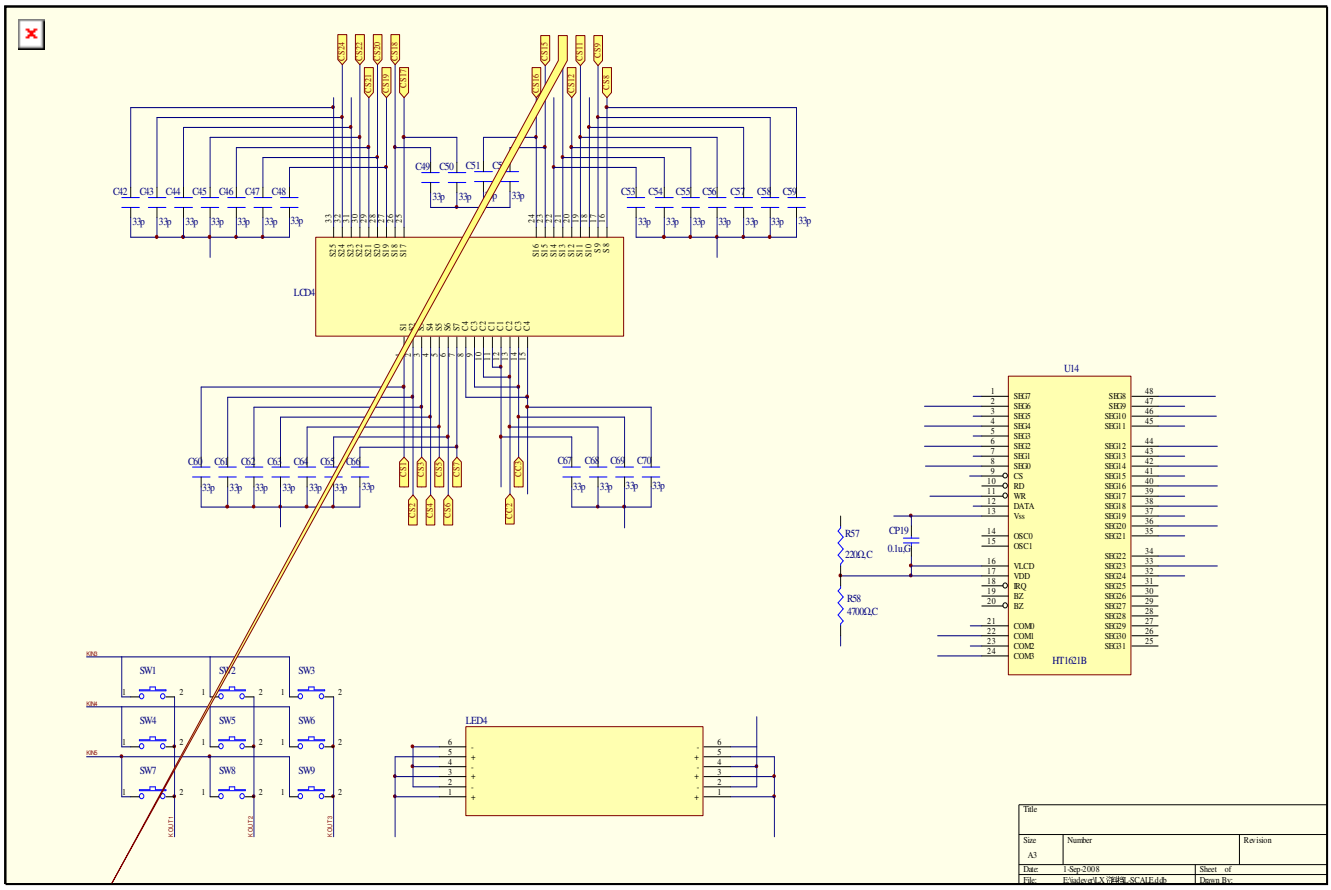
	Option		External device	
AP1		→	 + LED Light Tower	 or  or  or  or  PC / SH-24 / ZEBRA / EZ / BP-545D

10 Circuit Diagram

10-1. CPU, peripheral circuit and other circuits



10-2. LCD circuit



10 - 3. Applicable mainboard version and software version

Mainboard version: JWL-V1.1 (50-0900-0000)

Software version: JWL1.01

Revision date: Nov. 28, 2008