XK3190-A28E
Weighing Indicator

User Manual

V1.0

Shanghai Yaohua Weighing System Co., Ltd

XK3190-A28E

MENU

Dear users:

Please read the instruction manual carefully before using this indicator.

XK3190-A28E

Chapter1. Technical Parameter

1. Model XK3190-A28E
2. Accuracy class:3,n=3000
3. Analog part

   Input signal range -19mV～19mV

   Min input voltage for verification interval:ΔUmin= 1.5μV

   Conversion speed 10times/sec.

   Gain drift 0.03%

   voltage DC 5V

   load cell connection 1pc 350Ωload cell
4. Indication

   Indication range -99999～999999(decimal point is not considered)

   Scale interval 1/2/5/10/20/50 optional
5. Operating environment

   Power supply AC 230V / 50Hz

   DC 6V/4Ah (lead battery inside)

   Operating temperature 0 °C～40 °C

   Storage and transport temperature -25 °C～55 °C

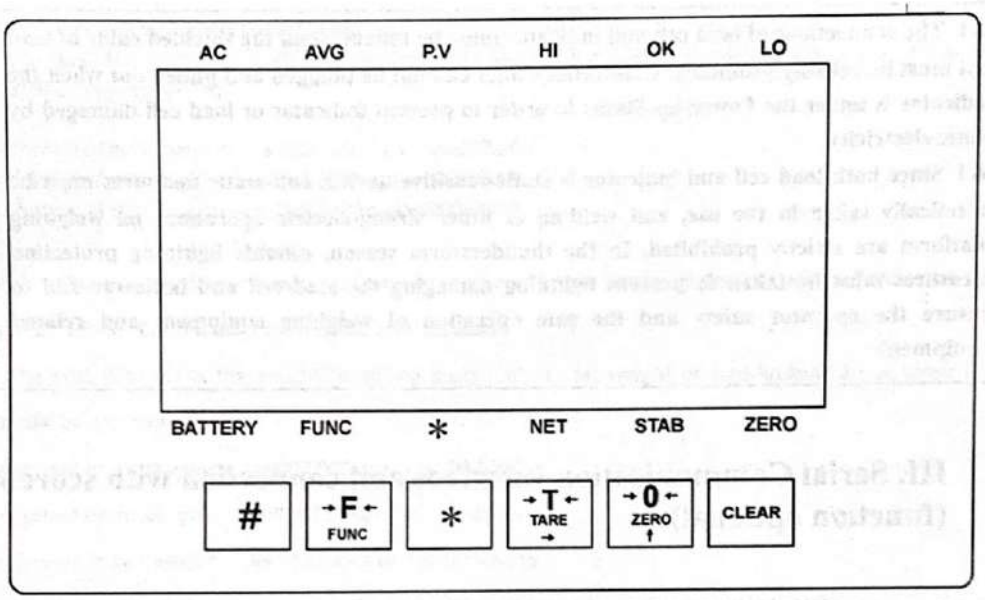
   Relative humidity ≤85%RH

   Fuse 500mA
6. Self Weight Approx.2 kg
7. Max Allowable error

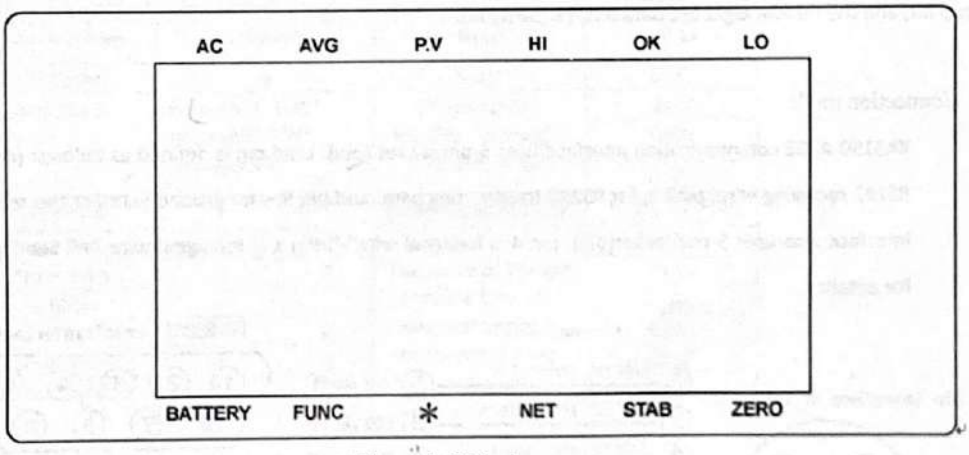
Max Allowable error	Signal"m"showed by Verification interval" e "
±0.25e	0≤m≤500
±0.5e	500<m≤2000
±0.75e	2000<m≤10000

Chapter 2 Installation Connection

Ⅰ、Indicatorsketch map



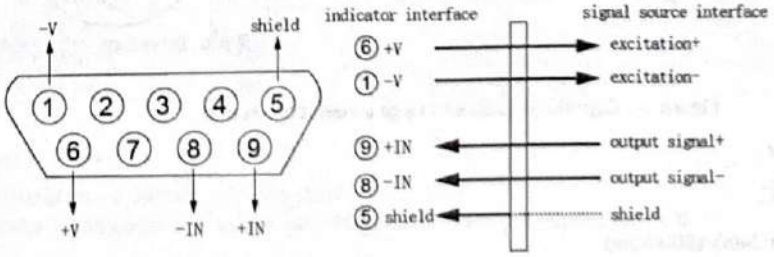
(Figure 2-1) Front cover



(Figure 2-2) Back cover

II. Load cell Connection

1. The load cell is connected through 9-pin plug socket (hole). Figure 2-5 shows the meaning of each lead pin.
2. Please use 4-core shielded cable to ensure perfect metering performance of indicator



(Figure 2-5) Sensor connection

▲! The connections of load cell and indicator must be reliable, and the shielded cable of load cell must be reliably grounded. Connections lines can not be plugged and pulled out when the indicator is under the Power-up Status in order to prevent indicator or load cell damaged by static electricity.

▲! Since both load cell and indicator is static-sensitive device, anti-static measures must be practically taken in the use, and welding or other strong-electric operations on weighing platform are strictly prohibited. In the thunderstorm season, reliable lightning protection measures must be taken to prevent lightning damaging the load cell and indicator and to ensure the operator safety and the safe operation of weighing equipment and related equipment.

III. Serial Communication Interface and connection with scoreboard (function optional)

Serial communication interface (RS232)

Communication interface with RS232C, all data are ASCII, each data are 10 bits, the first one is starting bit, the 10th Is stop bit, and the middle eight are data bits, no parity bit.

1. Connection mode

XK3190-A28E communication interface uses 5-pin socket (pin). Lead pin is defined as follows: pin 2 is for RS232 receiving wire, pin3 is for RS232 transmitting wire, and pin 5 is for ground wire;For the scoreboard interface also uses 5-pin socket(pin): pin 4 is forsignal wire"-", Pin 1 is for signal wire "+", See Figure 2-6 for details.

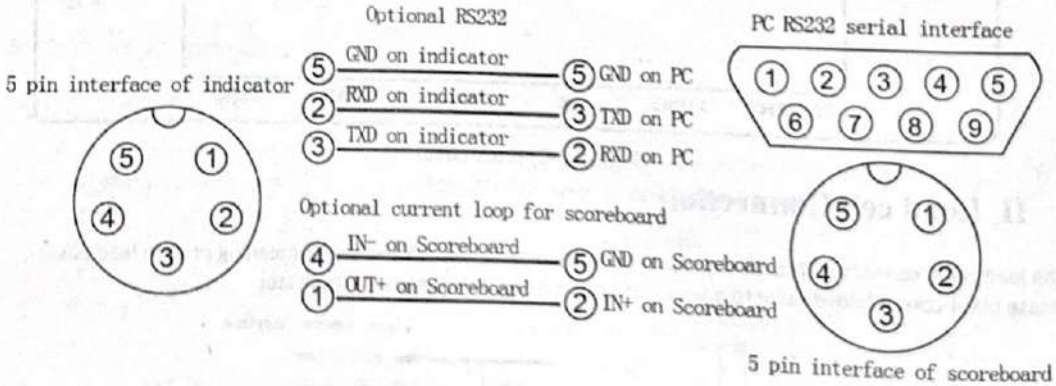


Figure 2-6 Communication and large screen connection

2. Interface parameter

① Signal: RS232C

② Baud rate:1200/2400/4800/9600

3. Communication method

Method 1、P3=2：Continuous transmission

All the sent data for is the weight (including gross weight, net weight or tare weight. All of those are dominated by parameter "P4）

The format of gross weight: ww000.000 kg or ww000.000lb
The format of net weight: wn000.000 kg or wn000.000lb
The format of tare weight: wt000.000 kg orwt000.000lb

note ：Above the position of decimal points are confirmed by the setting up decimal points of indicator.

Method 2、P3=3：Continuous transmission after stability

All the sent data for is the weight (including gross weight, net weight or tare weight. All of those are dominated by parameter "P4）

The format of Gross weight: ww000.000kg or ww000.000lb

The format of net weight: wn000.000kg or wn000.000lb

The format of tare weight: wt000.000kg or wt000.000lb

note ：Above decimal positions are confirmed by the setting up decimal points of indicators.

The examples for Data format are shown as below

No.X Group	Content		Note	16hex	
No.1byte	w		Start	0x77	
No.2byte	w (output. G.W) n(output. N.W) t(output.T.W)		Output gross weight, net weight and tare weight	0x77	
				0x6E	
				0X72	
No.3 byte	0	-	Positive sign bit is 0	0x30	0x2D
No.4 byte	0	0	The value of Weight shows 6 bits. The decimal position confirmed by the setting up parameter of indicator. The highest bit sent 0 when there is no decimal points	0X30	
No.5 byte	0	0		0X30	
No.6byte	.	.		0X2E	
No.7 byte	0	0		0X30	
No.8 byte	0	0		0X30	
No.9 byte	1	1		0X31	
No.10 byte	k	l	Transmitting unit	0X6B	0X6C
No.11 byte	g	b		0X67	0X62
No.12 byte	0x0d		Enter	0x0d	
No.13 byte	0x0a		Line break	0x0a	

Method 3、P3=4

Command mode (all letters are for ASCII):
Indicator command is sent by the computer, and perform the appropriate action.

OrderR Indicator accept the command and send weighing data once time (the format is same as method 1
OrderT Indicator accepts the command, and implements tare function (same as key tare). Indicator returns

back to CRLF

Order Z Indicator accept the command, and indicator implements zero function (same as "zero"); indicator returns back to CRLF.

Method 4、P3=5：continuous transmission

For Weight datas, the lowest is front, the high and sign bit at the end. For negative sign bit send "-", for positive sign bit send 0.

For example, indicator displays the current weight as-500.00kg, the serial output data: = 00.005-. Indicator displays the current weight as500.00kg, the serial output data: = 00.0050

No. X Group	Content	Note	16hex
No.1byte	=	Start bit	0x3D
No.2byte	0	Weight data	0X30
No.3 byte	0		0X30
No.4 byte	.		0X2E
No.5 byte	0		0X20
No.6byte	0		0X20
No.7 byte	5		0X35
No.8 byte	0		0X30

Scoreboard connected by current loop

Please refer to Figure 2-6 for the details of wiring. The signal of scoreboard is the 20mA constant current of current loop. It is output by binary code, and the baud rate is 600. Each frame has 11 date bits, which include one start bit (0), eight date bits (LSB in the front), one flag bit, and one stop bit (1)

Chapter 3 Operation Instruction

I. Startup

The indicator shows 【ON】when it is turned on. All lights of sign will be up, and the software version will be showed up as well. Then, the indictor starts to self-test by counting 000000-999999. If the weight on the platform scale is within range of zero setting, the indicator will automatically implement "zero" function, and then enter into weighing status. Otherwise, the indicator will show value of weight up. Furthermore, the indicator will show times of calibration by pressing [#] key after displaying software version. For instance, n 1, the indicator will show calibration data and software check-sum.; and then indicator starts to self-testing. If users do not press [#] key, indicator will directly skip to self-testing. Finally, the indicator will be weighing status after finishing above initialization.

II. Key Operation

In the calibration and parameter setting status, some keys will implement the following functions:

1.[ZERO] key performs the "plus 1" function. After the ZERO key is pressed, the indication light corresponding to figure will plus, and automatic zero setting will be made after it is added to 9.

2. [TARE] key performs the "shift" function. After the TARE key is pressed, the indication light corresponding to figure will move one bit from highest, and it will automatically move to the highest effective bit as reaching the lowest bit.

3. [#] key performs "input" function. Press the [#]key to input the set data into indicator.

4. CLEAR key performs "exit" function. Press the CLEAR key to exit calibration or setting state.

5. [*] key perform "parameter switch" function. Press [*] to enter into next parameter setting state.

III. Weighing Operation

1. ZERO:

   Press "ZERO"key to return the data to zero. Make surethe data is within zero setting range of the indicator. Zero setting can be performed only after the STABLE light is on.

2. TARE

   When the displayed weight in weighing state is positive and the" STABLE" light is on, press the "TARE" key to deduct the indicated weight (as the tare). In this case, the indicator will show a net weight of "0" and the NET WEIGHT light is on. Press the "TARE" key again when gross weight is 0, the indicator will clear the tare value.

   【note】Tare function does not work when the gross weight data is negative

3. INNER CODE CHECKING

   Under the normal weighing state ,F9=2, shortly press【Function】key, the indicator shows inner code, and press 【Clear】to exit. This code only for testing purpose

4. PEAK VALUE HOLD, AVERAGE VALUE:

   Set F7 for functionselection. then press 【#】to start or stop this function. For example:

   Choose F7 to " 2", press[#], the average value light is on, the indicator will calculate automatically and Lock weight, the buzzer rings; When the weight changes too much, the indicator will be unlocked, after re-calculating the weight, the weight will be locked again, meanwhile the buzzer rings. After the weighing products come down from the scale, the weight will be back to Zero and unlocked. Go circulation for the weighing. Set F6 to 1, adjust stable range, the lowerthe value, more accuratethe final displayed value is, while it requires longer time to get stable; the higher the value, the less accurate the final displayed value is, while it requires shorter time to get stable.

   Set F7 to 3,press [#] under the weighing state, the peak value light is on and indicates peak value. It will keep the maximum weighing data. When weight is back zero, the data is unlocked.

   For above operations, press【#】anytime to exit the average value/peak value status; Press【#】for every start of indicator

5. Manual accumulation of measured value:

   Press 【ACCUM】when the measured value is not lessthan 20 divisions and the data is stable in the normal weighing state, the indicator will perform "manual accumulation" function. In this case, the indicator will indicate the total accumulation data (in two steps): [total =] (indicating that the content shown below is the amount of accumulation data) will show the accumulation data 【******】 in about 1 second. The times of accumulation will be then indicated (in two steps): [n =] (indicating that the times is shown below) will show the times of accumulation 【 ***】 in about 1 second. The 【ACCUM】 indicating light is then on.

   Note: the maximum time of accumulation is 9999 (when accumulation **result is ensured to be ≤999999); the**accumulation **results will be held before they are cleared and the data will not be lost**

after power-off. When the 【ACCUM】 key is pressed, if the net weight is less than 20 divisions, only the accumulation value will be indicated, and the accumulation of weight and times will not be made.

6. Automatic accumulation of measured value:

Press 【FUNCTION】 and 【ACCUM】 at the same time in normal weighing state and not the peak value holding and average value state,the indicator will enter the automatic accumulation state. In this case, the 【ACCUM】 light is on. In the automatic accumulation state, the indicator will perform an automatic accumulation and indicate the times of accumulation and the results whenever the measured data is larger than or equal to 20 divisions and after about 1-2 seconds after the data is stable. Re-press the 【FUNCTION】 and 【ACCUM】 at the same time to exit the automatic accumulation.**Note: automatic accumulation state will not be saved when the power is off; however, the accumulation data will be saved.**

7. Clear the accumulation result:

Press 【CLEAR】 in weighing state, the indicator will clear the times of accumulation and the overall accumulation data.

8. Switching between kg and lb.:

Under the normal weighing state, the accumulation is 0 and tare weight 0,F9=3, shortly press【Function】, the indicator performs unit switch; When the measurement unit is lb., the last digit behind decimal point of the shown data is on.Also switch units through F8

9. Pre-set tare and upper & lower limits alarm:

Under the normal weighing status, long press [#], the steps as below

Step	Operation	Display	Description
1		[******]	Weighing indication status
2	long press[#]	[H00000]	Indicator uses to input the upper limit alarm data
3	Upper limit alarm value, e.g. "3000"	[H03000]	Press[#] to confirm, enter into step "4"
4	Lower limit alarm value, e.g. "50"	[L 00050]	Press[#] to confirm, enter into step "5"
5		[******]	Back to weighing status, display result after tare

【note】 cancel the upper and lower limit alarm operation when both the upper and the lower limit is 0;

Chapter 4 Calibration Instruction

Properly connect the signal source and power supply to preheat the indicator for 15-30 minutes when there is no load on weighing platform.

After the lead sealing broken, they indicator will get into the calibration state by opening the calibration switch (it's approved to calibrate when leave factory, and this step can be omitted when first use of this new indicator), then refer to the following steps (please lead sealing again after calibration):

1.Press 【#】 when turn on the indicator to get into the calibration state.

1) Set the division value

display 【d X 】Press 【tare】to choose 1、2、5、10、20、50, press【#】to confirm, enter

into the set of next parameter automatic. Press 【tare】 to enter into the cycle display automatic.

display 【d X 】
display 【d 1 】
display 【d 2 】
display 【d 5 】
display 【d 10 】
display 【d 20 】
display 【d 50 】
display 【d 1 】

For example, when display 【d 5】, press 【#】, set division value as 5, enter into the decimal point setting state automatic.

2) **Decimal setting:**

display 【P X】 Press 【tare】 to choose 0、1、2、3, press【#】 to confirm, enter into the set of next parameter automatic.

Press 【tare】 to enter into the cycle display automatic.

display 【P 0】
display 【P 0.0】
display 【P 0.00】
display 【P 0.000】
display 【P 0】

For example, when display【P 0.000】, press 【#】, the decimal point set as 0.000, enter into the Max. Weigh setting state automatic.

3) **Setting of Max. weigh:**

display 【FULL 】 Press 【tare】 to enter into the number input state.

display 【0 0 0 0 0 0】 Press 【tare】, indication light turn to right in line to choose number input location, press【zero】 corresponding location to add one automatic, until the required number appear. Press 【#】 to confirm, enter into the setting of next parameter automatic.

For example, when display【025000】, press 【#】 to confirm, enter into the zero calibration state automatic.

4) **Zero calibration:**

display 【nOLOAD】 No goods on scale, waiting for stabilization indication light appear, Press 【#】, zero calibration finished, enter into capacity calibration state.

5) **Full capacity calibration:**

display 【AdLOAD】 Place weight on the scale, after stabilization, press 【tare】 enter into input state.

display 【0 0 0 0 0 0】Press【tare】key to select the number input position with the indication light moving rightward. Press【zero】 constantly until it shows the required number., then Press【tare】 key to select the number input position with the indication light moving rightward, press【zero】 corresponding location to add

one automatically , until the display number the same as the weightsweight, Press 【#】to confirm, to finish the capacity calibration condition.

6) Display 【 End】Press "clear", go back to weighing mode, the new calibration parameter are actived. Continue keep pressing 【**Function**】 to adjust the other parameters .

2. Press 【#】 to enter into the calibration page while turning on the instrument.

quick zero calibration:

Any time before display 【nOLOAD】,press【Function】to keep the invariability of parameter setting of the original division value、decimal point、Max weigh, indicator enter to zero calibration state directly. When stabilization indication light appear, press 【zero】, display 【 End】, means to keep the parameter of the original full capacity calibration, then press 【clear】 to save the parameter go back to weighing state.

Access to full capacity calibration state directly:

Any time before display 【AdLOAD】,press 【*】 to keep the invariability of parameter setting of the original division value、decimal point、Max weigh, keep the invariability of the original zero parameter, access to full capacity calibration state directly.

Note: Switch off the calibration switch after the calibration, and seal it .

Chapter 5 User's Function Setting

At weighing mode, keeping pressing [Func] for more than 5 seconds, it enters user functions setting mode P1~P8 (user can change it at any time)、F1~F8(protect by permission calibration switch)16 parameter setting, press [Tare] to change the value, press [*] to choose the next parameter. Parameter description as follows:

1、P1 x **Baud rate setting**

x=1: 9600
x=2: 4800
x=3: 2400
x=4: 1200

2、P2 x **RS232 output gross weight、net weight selection**

x=1: Net weight output
x=2: Gross weight output
x=3: tare output

3、P3 x **RS232 output mode selection**

x=1: No transmission (RS232 stop)
x=2: Continuous transmission
x=3: Continuous transmission only when stable
x=4: Command mode（Z:zero，T:tare，R:send the weight date one time）
x=5: A7 Continuous transmission
x=6: save setting

4、P4 x **energy - saving function setting**

x=1: turn off energy saving
x=2: energy saving mode 1，about 30 seconds
x=3: energy saving mode 2，about 60 seconds
x=4: power saving mode 3，about 30 seconds，quit power saving state only by press key

x=5: power saving mode 4，about 60seconds，quit power saving state only by press key

（Note：It just can enter to power saving state under the condition of the gross weight as zero）

5、P5 x battery indicator refresh time

x=1:slow

x=2: fast

6、P6 x main-display brightness setting

x=1: brightness 1
x=2: brightness 2
x=3: brightness 3
x=4: brightness 4
x=5: brightness 5

7、P7 x vise-display brightness setting

x=1: brightness 1
x=2: brightness 2
x=3: brightness 3
x=4: brightness 4
x=5: brightness 5

8、P8 x vice-display switch setting

x=1: open vice-display
x=2: close vice-display

The changing the parameters below may affect the accuracy of weighing result, hence, if you want to change the following parameters, it need to plug the protection jumper on the PCB.

1、F1 x Zero-tracking range

x=1: 0.5e
x=2: 1e
x=3: 1.5e
x=4: 2e
x=5: 2.5e
x=6: 3e
x=7: 3.5e
x=8: forbid tracking

2、F2 x zero setting range

x=1: ±2%F.S.
x=2: ±4%F.S.
x=3: ±10%F.S.
x=4: ±20%F.S.
x=5: ±100%F.S.
x=6: forbid zero setting by hand

3、F3 x starting up zero range

x=1: ±2%F.S.
x=2: ±4%F.S.
x=3: ±10%F.S.
x=4: ±20%F.S.
x=5: ±100%F.S.
x=6: forbid starting up zero

4、F4 x Digital filtering time intensity

x=1: fast
x=2: medium
x=3: slow

5、F5 x stable time

x=1: fast

x=2: medium
x=3: slow

6、F6 x stable range

x=1: low
x=2: medium
x=3: high

7、F7 x function setting

x=1: have no other function
x=2: open average value function
x=3: open peak holding function

8、F8 x Kg、Lb setting

x=1: Kg
x=2: Lb

9、F9 x auxiliary function setting

x=1: have no auxiliary function
x=2: open internal code
x=3: open one-key change kg to Lb

Chapter 6 Error Indication

[Err 1] The signal is too small of loaded weight or the capacity of load cell is too big
[Err 2] Out of manual zero setting range
[Err 3] Zero position is too high or there is heavy object on weighing platform when starting up the indicator.
[Err 7] The calibration short-circuit ring did not connected
[Err 8] The wrong connection of load cell signal line, please connect the load cell line in right way
[----------] Out of display range, should be within -99999～999999

Chapter7 Maintenance and Attention

1. To ensure the clarity and service life of the indicator, it must be kept away from direct sunlight during working, and the ground where the indicator stands must be smooth.
2. It is improper to use this indicator in a dust or vibrant or damp environment.
3. The load cell and indicator need good connection. System must have a good ground connection, and kept away from strong electric field, strong magnetic field. The load cell and indicator must be kept away from strong corrosive substances and inflammable& explosive materials.

▲! Do not use it where inflammable gases or steams exist. Don't use it for canning system of compressive container.

▲! In the area where lightning and thunder happen frequently, reliable lightning arrester should be installed to ensure the personal safety and to prevent any damage to the indicator and relative equipment caused by lightning stroke.

▲! The load cell and indicator are both static sensitive equipment, so anti-static measures must be taken during the use. It is strictly invalid to carry out welding operation or other operations with high current on the weighing platform. In the stormy season, lightening prevention measures must be taken reliably to prevent any damage to load cell and indicator caused by lightening stroke, and to guarantee the personal security of operators and safe running of weighing devices and relative equipment.

4. Strong solvents such as benzyl and nitro oils are forbidden for cleaning the housing
5. Don't inject any liquid or other conductive particles so as to avoid any damage of indicator and electric shock
6. Before plugging in or out of the connecting line between indicator and external equipment, the power of both indicator and equipment should be cut off

▲! Before plugging in or out the connecting of load cell, it must be to cut power of indicator (power off)!

▲! Before plugging in or out the connecting of scoreboard, it must be to cut power of indicator and scoreboard!

▲! Before plugging in or out the connecting of load communication, it must be to cut power of indicator and the

upper computer!

7. Advice of the company: please check and accept our indicator before using. Our company responsible for the quality of indicator, the highest compensation is double value of the breakdown indicator.

8. Please use the indicator outward interfaces strictly as per the operating instruction manual. Do not change the connection at random. If failure occurs in the using process, draw the plug immediately, and send it for professional factory for reparation. Non-professional balance manufacturers are not supposed to do the repairing to avoid any worse damage. It is not allowed to open the indicator at will, or else, repairing will be refused.

9. If non artificial defects and failures happen after normal use within one year after the sale date, the users can mail the product and guarantee repair card (with correct code) to the appointed reparation station or supplier. The manufacturer guarantees the life-time maintenance for the indicator.

10. Using of battery

① The battery will be charged after power cord is connected to AC 220V power supply. So please remove the battery if it is not used frequently.

In order to avoid internal over-heat and battery over-charging, the current will be limited. If you feel that charging is too slow, please buy a special charger for external charging. Please note that the wire ends connected to battery shall not be connected inversely (red +, black -), or the indicator may burn out. Be sure to fully charge the battery before using the built-in battery for the first time! If it needs to change the battery, it requires to opening the housing and need to be checked by statutory department, then lead sealing again.

② When the indicator is battery-powered, it will automatically switch to AC supply mode once the AC power supply is connected; in this case, the AC indicating lamp will light on. There are battery level indications at the lower left corner of indicator screen. The indicator will automatically cut off the DC power supply after the last indicating lamp goes out. Please charge the battery immediately in this situation. The current battery voltage can be displayed when the indicator is started. Please pay attention to this data from time to time.

③ Please charge the battery for about 10-16 hours before its first use so as to avoid a too low voltage caused by self-discharging of battery which may be mistakenly taken as failure.

④ The battery shall be charged for about 10-16 hours at a time during the normal operation. If the indicator is not to be used for long, the battery shall be charged for 10-16 hours every two months in order to extend its service life.

⑤ Four grade battery voltage display, and battery voltage are :6.19V、5.99V、5.77V、5.55V。The indicator will turn off when the last light is off.

The built-in battery of indicator is a consumable part that is not within the range of "three guarantees".

Power supply earth terminal should reliable contact ground