USA Measurements

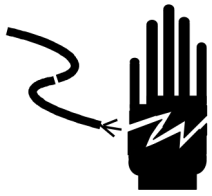
"We Outmeasure the Competition"


# USA Measurements

# US-1011 Indicator

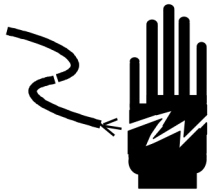
# User Manual

# R1.1



## Warning

**Ask professional personnel to debug, detect and repair controller.**



## Warning

**Please keep good grounding of controller.**

## Warning

**In electrical connection of controller, please cut off the power supply in advance. Wait for 30 seconds between power-on of the controller for 2 times.**

## Pay Attention to Static Electricity

**The controller is a device sensitive to static electricity, thus please take anti-static precautions in use and maintenance.**

# Contents

# I Technical Indicators

- 6-digit 1.2-inch LED display, 7 state indicator lamps. Long service life and shock resistance
- 7 function keys. Operation is simple and convenient
- Protection level: IP5X
- Excitation voltage: +5VDC
- Load capacity of sensor: at most 4 350Ω simulation sensors
- Input signal range of null point: 0-5mV
- Input signal range of full scale: 1-10 mV
- Inner resolution: 1 million
- Weight upgrading rate: 40 times per second
- Power supply mode

  Battery: Lithium battery 7.4V4Ah

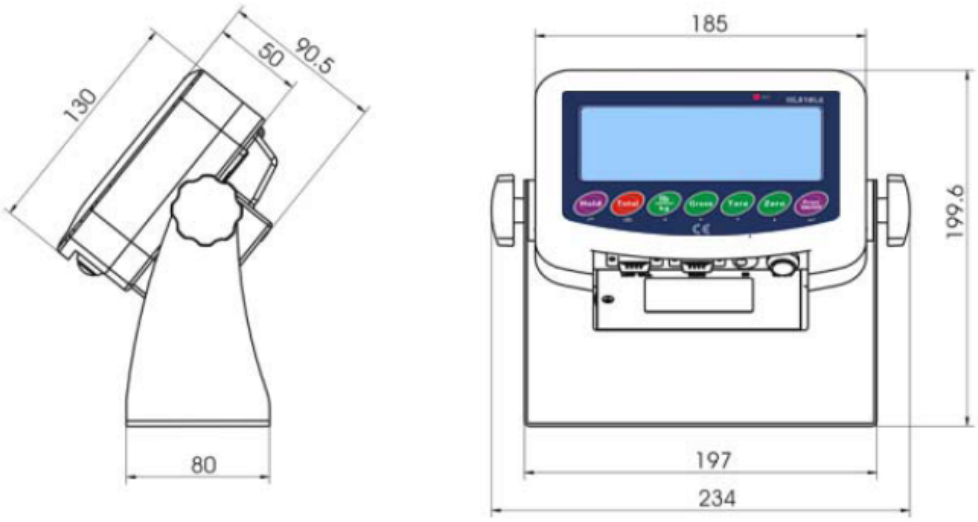
  Adapter: voltage 100-240VAC  Current 0.1A  Frequency 50-60Hz.
- 2 RS232 ports
- Operating temperature: -10℃-40℃, relative humidity is below 85 %
- Storage temperature: -20℃-60℃, relative humidity is below 85 %
- Conforming to standard :GB/T 7724-1999

# II Main Function

- Basic weighing function: resetting, removing the peel and clearing the peel
- Weight detection function, counting function, animal scale function
- Weight keeping function, weight accumulation function, percentage display
- Set redundant backup function of parameters
- Automatic screen protection and automatic shutdown energy-saving function
- Rich printing formats and communication protocol

## III Boundary Dimension

Instrument size: detailed in the following figure (mm); instrument weight: 1.5kg




## IV Introduction to Panel

- Introduction to indicator lamps

| Identification | Analysis |
|---|---|
|  | Sorting and weight check status indicator |
| x10 | Extension indicator |
|  | Counting scale indicator |
|  | Animal scale indicator |
|  | Accumulating scale indicator |
|  | Accumulating scale adjustment display indicator |

| | |
|---|---|
| HOLD | Weight hold indicator |
| NET | Net weight indicator |
| ~ | Scale in dynamic status |
| →0← | Scale at zero indicator |
| ⊗ | Key pressed indicator |
| ▭ | Battery indicator |
| kg | Weight unit |
| PCS | Counting scale unit |
| % | Weight % indicator |

- Introduction to operation keys

Operation without special specification refers to short press on keys.

| **Key symbol** | **Normal weighing state** | **Set stage** |
|---|---|---|
| Hold | Weight maintenance key-> 『Hold』<br>Short press→ F2.1 = 1, keep/cancel.<br>F2.1 = 2, switch between percentage and weight.<br>F2.1 = 5, switch between quantity and weight.<br>Long key→ enter setting menu. | Return to the last menu. |
| Total | Accumulation key-> 『Total』<br>Short key → F2.1 = 4, include display weight in accumulation value.。<br>Long key → F2.1 = 3, select scale to sample target weight.<br>F2.1 = 4, accumulate weight of scale display.<br>F2.1 = 5, count sampling of scale. | No definition. |

| | | |
|---|---|---|
|  | Unit conversion key-> 『lb/kg』<br>Short key → in weighing state, switch weight unit. The corresponding unit indication lamp is on. | Flicker bit is on the left. |
|  | Skin removal key-> 『Gross』<br>Short key → net weight turns to gross weight; induction lamp of net weight "Net" is off. | Flicker bit is on the right. |
|  | Skin removal key-> 『Tare』<br>Short key →gross weight turns to net weight. Indication lamp of net weight "Net" is on. Conduct skin removal operation for multiple times. | Digit flicker position reduces. |
|  | Zero clearing key -> 『Zero』<br>Gross weight state resets weight. When the scale is in net weight, dynamic state, saving state and out of resetting range, zero clearing operation is invalid. | In setting, digit of flicker position increases. In adjustment of display, accumulation is cleared. |
|  | Printing key-> 『Print』<br>Short key → start up or print.<br>Printing format refers to *Appendix1*.<br>Long key → shut down. | Confirm operation, to save setting data. |

## V. Parameter Setting

**Setting entry:**

Press the [Hold] button on the operating panel in the state of normal weighing.

If F1.14 = 0, you can set all the parameters within F1~F5.

If F1.14 = 1, you can only set all parameters within F2~F5.

If F1.14 = 1 and you need to set the parameters within F1 menu, you can press the calibration switch button until the F1 menu is entered.

**Parameter Setting of F1 Scale**

F1.1 Measuring Range

Selectable Capacity parameters: 3~10,0000 lbs

F1.2 Decimal Places

Selectable parameters: 0 ---- no decimal point

0.0 ---- 1 decimal place

0.00 ---- 2 decimal places

0.000 ---- 3 decimal places

0.0000 ---- 4 decimal places

F1.3 Number of Divisions

Selectable parameters: 1 (default value), 2, 5, 10, 20, 50

F1.4 Calibration Unit

Selectable parameters: 0 = kg

1= lb

F1.5 Gravitational Acceleration

Selectable parameters: 9.70000~9.99999. Default value = 9.79455.

F1.6 Null-point Calibration

【E_SCL 】 Empty Scale Value

Remove the weights on the weighing platform to guarantee the scale is in the empty state. Press the [Print] key and the meter will display [10 CAL]. The displayed digits will reduce slowly until the meter displays [00 CAL]. In the end it will display [End ] for one second, which indicates the end of null-point calibration.

F1.7 Load-point Calibration

【LOAd 】 Load Calibration Weights on Scale

Load weights on the weighing platform, no less than 10% of Full Capacity, then press the [Print] key to start the next step.

【000000】 Enter the value of weight set onto the scale

Enter the same weight value as that of the loaded weights, press the [Print] key after the scale becomes stable, and the meter will display [10 CAL]. After that, the displayed digits will reduce slowly until the meter displays [00 CAL]. In the end it will display [End ] for one second, which indicates the end of calibration.

F1.8 Automatic Null Tracking

Selectable parameters: OFF, 1 d, 2 d, 3 d (default value)

F1.9 Automatic Reset Range at Startup

Selectable parameters: OFF, 2 %, 10 %, 20 % (default value)

F1.10 Button Reset Range

Selectable parameters: OFF, 2 %, 10 % (default value), 20 %

F1.11 Digital Filter

Selectable parameters: 0 ---- Mild Filtering

1 ---- Moderate Filtering (default value)

2 ---- Severe Filtering

F1.12 Steady Range

Selectable parameters: 1 d, 2 d, 3 d (default value)

F1.13 Overload Display Range

Selectable Parameters: 9d, 5% (default value), 10%, 20%

F1.14 F1 Menu Protection

Selectable Parameters: 0 ---- Enter F1 menu by keyboard operation

1 ---- Enter F1 menu by pressing the calibration button

F1.15 Restoring Factory Default

Set the parameters within F1~F4 as the defaults, which can't impact the parameters of standard scale.

**F2 Application Function Setting**

F2.1 Function Selection

Selectable Parameters: 0 ---- ×10 functions

1 ---- Weight keeping function

2 ---- Percentage display function

3 ---- Weight checking and sorting function (default value)

4 ---- Accumulative scale function

5 ---- Counting scale function

6 ---- Animal scale function

F2.2 Empty-scale threshold value

Selectable Parameters: 0~ full range (default value: 0.001)

F2.3 Target Weight for Weight Checking and Sorting

Selectable Parameters: 0~ full range (default value: 2.000)

F2.4 Positive Error for Weight Checking and Sorting

Selectable Parameters: 0~ full range (default value: 0.100)

F2.5 Negative Error for Weight Checking and Sorting

Selectable Parameters: 0~ full range (default value: 0.100)

F2.6 Access to Target Weight for Weight Checking and Sorting, and Counting Sample Weight

Selectable Parameters: 0 ---- Access to Platform Weighing (default value)

1 ---- Manual Input Access

**F3 Energy-saving Parameter Setting**

F3.1 Automatic backlight energy-saving time setting

Parameters selectable: 0 ~ 999。

0: Backlight NC;

1: Backlight NO;

2~999: 2~999s automatic backlight (default 10s)

F3.2 Automatic OFF energy-saving time setting

Parameters settable: 0 ~ 60min. (default 5 minutes)

"0" stands for deactivation of this function.

## F4 Serial-port Setting

F4.1 Setting of UART0 Communication Interface Parameter

F4.1.1 Communication Mode

Selectable Parameters:

0 ---- no output (default value)

1 ---- continuous output protocol A

2 ---- continuous output protocol B

3 ---- continuous output MT

4 ---- firm output protocol A

5 ---- firm output protocol B

6 ---- key dispatch protocol A

7 ---- key dispatch protocol B

8 ---- key dispatch protocol A

9 ---- key dispatch protocol B

10 ---- key dispatch protocol C

11 ---- key dispatch protocol D

F4.1.2 Setting of Data and Check Pit

Selectable Parameters: 8_N_1---- 8-pit no parity check (default value)

7_E_1 ---- 7-pit odd parity check

7_O_1 ---- 7-pit even parity check

8_E_1 ---- 8-pit odd parity check

8_O_1 ---- 8-pit even parity check

F4.1.3 Baud Rate

Selectable Parameters: 1200, 2400, 4800, 9600 (default value)

F4.1.4 Continuous Output & Delivery Parity Check and Character (only for F4.1=3)

Selectable Parameters: 0 ---- no delivery (default value)

1 ---- delivery

F4.1.5 Bluetooth Node Setting (effective only when Bluetooth module option is configured)

Selectable Parameters: HoLi01~HoLi99 (default value: HoLi01)

F4.2 Parameter Setting of UART1 Printing Interface

F4.2.1 Whether to connect the printer

Selectable Parameters: 0 ---- not connected to the miniprinter (default)

1 ---- connected to the miniprinter

F4.2.2 Printing Carriage Return Character

Selectable Parameters: 0~9 carriage return characters (default value: 3)

F4.2.3 Printing Setting of Accumulative Scale

Selectable Parameters: 0 ---- total accumulative data for printing (default value)

1 ---- printing detail + total accumulative data

F4.2.4 Print language setting

Parameters selectable: 0 ---- in Chinese (default)

1 ---- in English

## F5 Maintenance and Service

F5.1 Key test

Instrument display 【PrESS 】, press『Print』, 『Zero』, 『Tare』, 『Gross』, 『lb/kg』 and 『Total』 in order, and the instrument displays 【Pr int 】, 【2Ero 】, 【tArE 】, 【9roSS 】, 【Un it 】 and 【totAL 】, press 『Hold』 to quit key test.

F5.2 Display screen test

All strokes of meter display will have self-inspection, to observe whether there is lacks of strokes.

Press 『Hold』 or 『Print』 to quit test of display screen.

F5.3 Display current internal code

The display will show internal code of current instrument after smoothing. Press 『Hold』 or 『Print』 to quit the interface.

# VI Function Description

- ×10 function F2.1 = 0

How to operate

In normal weighing mode, press 『Total』 on the operation panel once, the display accuracy will display 10 times and icon ×10 appears at the same time; press the key again and it returns to normal weighing mode and the icon of ×10 dissapears.

Note:

1. In net weight status, it's forbidden to change over to ×10 function status;

2. If there have been 4 decimal places, it's forbidden to change over to ×10 function status;

3. Under ×10 function status, both serial output and printing output are forbidden.

4. Under ×10 function status, it's forbidden to tare.

- Weight hold function F2.1 = 1

How to operate

In normal weighing mode, press 『Hold』 on the operation panel once, the weight presently displayed can be locked and "Hold" will be highlighted on indicator. Weight Hold operation is valid only when the displayed weight is ≥F2.2 set value; otherwise, it displays invalid operation with【--00--】for one second and the scale goes back to normal weighing mode.

If the weight is locked, press 『Hold』 again to unlock and it goes back to normal weighing mode and "Hold" indicator goes off.

In weight locked status, you will be unable to tare, clear tare and zero.

- Percentage display F2.1 = 2

Display introduction

Displaying 【 20.5】 indicates 20.5 %.

Pr = present actual weight / measuring range ×100%

Pressing 『Hold』 key to change over between percentage and weight.

- Weight check, sorting scale function F2.1 = 3

Function description:

Parameters as F2.2 = A, F2.3 = B, F2.4 = C, F2.5 = D etc shall be set.

Presently displayed weight is X.

If X ≤ A, no weight check or sorting will be performed.

If X ＜ (B – D), it stands for short weight; the short-weight icon goes on.

If (B – D) ≤ X ≤ (B – C), it stands for PASS; PASS icon goes on.

If X ＞ (B – C). It stands for overweight; overweight icon goes on.

Target value acquisition

Hold 『Total』 until【TARGET】is displayed, and then press『Print』; the present target value goes on and flashes.

If F2.6 = 0, press 『Print』, the present weight on the scale will be taken as new target value and it exits setting interface.

If F2.6 = 1, it displays【000000】, requiring modifying the target value manually. After the modification, press『Print』 to save the data and exit the setting interface.

Press 『Hold』 to exit target value acquisition.

- Accumulating scale function F2.1 = 4

How to operate

In normal weighing state, the scale is at zero; load weight onto the scale and press 『Total』 on the operation panel; if it displays【Add--】, it means that the present weight has been counted in the accumulated value; then it goes back to normal weighing status. If it displays 【--00--】 for one second and then goes back to normal weighing mode, it means invalid operation! Causes: 1. The scale must be zeroed between two successive accumulation operations, otherwise, accumulation will be refused. 2. Accumulation is valid only when the displayed weight is ≥F2.2 setting. 3. The scale is in dynamic status.

Adjusted display, clearing, and printing of accumulated value

In normal weighing mode, hold 『Total』 on the operation panel for over two seconds, it displays 【TOTAL】 for one second; then the monitor shows the present accumulated value【 9.500】or times of accumulation 【Cn 9】; press 『Gross』 and 『Ib/kg』 to change over; now the adjustment display icon goes on. Now if it's necessary to clear the accumulated value, press 『Zero』 to get back to normal weighing mode. If F4.2.1=1, pressing 『Print』 can print the accumulated data. To exit the interface, press 『Hold』.

- Counting Scale Function F2.1 = 5

Instrument display

【 128】displays the present counts

Sampling method

1. Check whether the scale is at Zero, otherwise, press 『Zero』.
2. Put the counted material onto the scale platform.
3. Hold 『Total』 until 【SAMPLE】 is displayed; then press『Print』. If F2.6 = 0, it displays【 000】. Enter the value just counted and then press 『Print』 to confirm, the sampled data will be saved and the system exits sampling interface. If F2.6 = 1, it displays【000000】; enter the sample weight and press 『Print』; the system saves the setting data and exits sampling setting interface.
4. In this function, press『Hold』 to switch between counts and weight.

- Animal Scale Functions F2.1 = 6

Operation method

In normal weighing state, place the animal on the weighing platform and its weight must be ≥threshold value set in F2.2. Press 『Total』, instrument will collect data sampling. After sampling, the average value of sampling data will be locked, showing X.XXX lb; animal state indicator flashes. Press 『Print』 to print; press 『Hold』 or 『Total』 to quit the interface.

## ● VII Prompt Message of Instrument

The US-1011 indicator has extremely high stability and reliability, thus it is not easy to have errors in a normal situation. However once an error does occur, first identify what the error is and then make sure the idicator still has an error after turning off and then turning on again before proceeding to troubleshoot. Repair the error according to the error code as listed below:

| No. | Symbol | Analysis | Treatment Method |
|---|---|---|---|
| 1 | 【 -EEE 】<br>【 EEE 】 | Unable to reset after startup | 1、Determine it is no-load state in startup;<br>2、Calibration needed |
| 2 | 【⌜-----⌝】 | The weighed object is over full range for 9 days | Reduce weight on weighing platform |
| 3 | 【⌞_____⌟】 | The weighed object is | Press 『Zero』 to reset |

| | | | |
|---|---|---|---|
| | | below 0 for 5 days | |
| 4 | 【r-no-】<br>【L_no_J】 | Out of zero clearing range | Check whether the weighing platform has weight.<br>Remove weight. |
| 5 | 【--NO--】 | Invalid operation | |
| 6 | 【Err 03】 | EEPROM checksum and error | Press 『Print』 reprint factory value. Start up again. If the information occurs again, return to factory for repair. Please calibrate the scale again if the situation does not occur; |
| 7 | 【Err 05】 | The calibration input weight is too small | Input≥10 % weight of full capacity |
| 8 | 【Err 06】 | The weight in calibration is too light | Load≥10% weight of full capacity |
| 9 | 【Err 07】 | The scale is in dynamic state | Inspect the scale body |
| 10 | 【Err 08】 | Setting error of date and time | Set according to specification of date and time |
| 11 | 【Err 09】 | Error of AD initialization | If the error occurs after restarting, call manufacturer |
| 12 | 【LOAd 】 | In loading scale, it indicates to loading weight; | Load weight according to requirements; |
| 13 | 【SEtUP 】 | It has enters menu setting | Press 『Print』 to continue setting. |
| 14 | 【End 】 | End of zero point and loading point calibration | |
| 15 | 【Add-- 】 | Including current display weight in accumulated value | |
| 16 | 【-OUEr-】 | Accumulated weight overflows | Clear accumulated weight in time |
| 17 | 【Ld--- 】 | Loading default value | |

| | | | |
|---|---|---|---|
| 18 | 【Print】 | Printing | |

# Appendix 1. Continuous Output Format Specification

## 1. Continuous output MT format

Continuous output MT format has 18 digits.

| Continuous output format | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STX | A | B | C | X | X | X | X | X | X | X | X | X | X | X | X | CR | CKS |
| 1 | 3 | | | 6 | | | | | | 6 | | | | | | 1 | 1 |

Where:

1. <STX> ASCII start characters (02H)

2. Status word: A, B, C

3. Display weight, possibly gross weight or net weight, 6 digits without symbol or decimal point.

4. Tare weight, 6 digits without symbol or decimal point

5. <CR> ASCII carriage return (ODH)

6, <CKS> optional checksum and (no output in F4.2.3 = 0)

Status word: A, B, C.

| Status word A | | | |
|---|---|---|---|
| Bit 0 | Bit 1 | Bit 2 | Position of decimal point |
| 0 | 1 | 0 | XXXXXX |
| 1 | 1 | 0 | XXXXX.X |
| 0 | 0 | 1 | XXXX.XX |
| 1 | 0 | 1 | XXX.XXX |
| 0 | 1 | 1 | XX.XXXX |
| Bit 3 | Constant 0 | | |
| Bit 4 | Constant 1 | | |
| Bit 5 | Constant 0 | | |
| Bit 6 | Constant 1 | | |
| Bit 7 | Constant 0/check bit | | |

| Status word B | |
|---|---|
| Bits | Function |
| Bit 0 | Gross weight = 0, net weight = 1 |
| Bit 1 | Symbol: positive = 0, negative = 1 |
| Bit 2 | Overload (upper and lower overload) = 1 |
| Bit 3 | Static = 0, dynamic = 1 |
| Bit 4 | Constant 1 |
| Bit 5 | Constant 1 |
| Bit 6 | Constant 0 |
| Bit 7 | Constant 0/check bit |
| Status word C | |
| Bits | Function |
| Bit 0 | Unit: kg = 0, lb = 1 |
| Bit 1 | Constant 0 |
| Bit 2 | Constant 0 |
| Bit 3 | Constant 0 |
| Bit 4 | Constant 1 |
| Bit 5 | Constant 1 |
| Bit 6 | Constant 0 |
| Bit 7 | Constant 0/check bit |

**2. Continuous output A format**

The data transmitted by continuous output protocol A is present display weight.

Gross weight format: ww0000.000kg or ww0000.000lb

Net weight format: wn0000.000kg or wn0000.000lb

Example: gross weight of 15.000kg

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **w** | **w** | **0** | **0** | **0** | **1** | **5** | **.** | **0** | **0** | **0** | **k** | **g** | **0d** | **0a** |

Net weight of 15.000kg

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **w** | **n** | **0** | **0** | **0** | **1** | **5** | **.** | **0** | **0** | **0** | **k** | **g** | **0d** | **0a** |

Gross weight-15.000kg

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **w** | **w** | **-** | **0** | **0** | **1** | **5** | **.** | **0** | **0** | **0** | **k** | **g** | **0d** | **0a** |

Note: the above position of the decimal point is determined according to that in the instrument.

## 3、 Continuous output B format

Continuous output agreement B format:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HEAD1 , | | | HEAD2 , | | | DATA | | | | | | | | UNIT | | CR/LF | |

HEAD1: OL Upper overload or lower overload, or no zero clearing in startup;

ST the scale is in stable state;

US the scale is in unstable state;

HEAD2: GS gross weight；

NT net weight；

DATA: instrument display data；

UNIT: kg or lb；

CR/LF: new line.

Example 1: in stale state, gross weight is 18.000kg. sp = space.

| S | T | , | G | S | , | sp | sp | 1 | 8 | . | 0 | 0 | 0 | k | g | 0d | 0a |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Example 2: in unstable state, net weight is -0.200kg. sp = space.

| U | S | , | N | T | , | - | sp | sp | 0 | . | 2 | 0 | 0 | k | g | 0d | 0a |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## 4. Continuous output format C

Data format: = **<weight data (including decimal point)>**; all the data are ASCII codes.

**Note:‘ =’ is data format head, ASCII code.**

**< weight data (including decimal point)> : Six bits including decimal points have sign weight data and ASCII code.**

For weight data, the lowest bit is in the front; high bits and signs are in the back; negative sign bit is sent as “-”. For positive number, the sign bit is set as “0”.

For example: present displayed weight **-500.00**kg, the serial output data is: **= 00.005-**。

present displayed weight **500.00**kg, the serial output data is: **= 00.0050**。

## 5, Continuous output format D

All the data transmitted is the present weight (gross weight or net weight) displayed; each frame of data is composed of 12 groups of data.

| Byte X | Contents and Explanation |
|---|---|

| | | |
|---|---|---|
| 1 | 02(\STX) | start character |
| 2 | ＋ or - | sign bit |
| 3 | weighing data | highest bit of weight data |
| - | weighing data | - |
| - | weighing data | - |
| 8 | weighing data | lowest bit of weight data |
| 9 | Decimal places | Right to left (0~4) |
| 10 | xor checkout | Four high bits |
| 11 | xor checkout | Four low bits |
| 12 | 03(\ETX) | End character |

xor = 2⊕3⊕……8⊕9

# Appendix 2. Printing Format Specification

F2.1 = 0, 1, 4, 6， print current resetting, press『Print』.

```
      REPORT
------------------------
Gross       0.200kg
Tare        0.000kg
Net         0.200kg
```

F2.1 = 1 weight maintenance function:

Weight is not in maintenance state:

```
      REPORT
------------------------
Gross       0.200kg
Tare        0.000kg
Net         0.200kg
```

Weight is in maintenance state:

```
      REPORT
----------------------
Gross    25.000kg
Status       Hold
```

or

```
      REPORT
----------------------
Net      25.000kg
Status       Hold
```

F2.1 = 3 selection, check weight, press 『Print』:

```
      REPORT
----------------------
Gross    1.980kg
State        Less
```

```
      REPORT
----------------------
Gross    2.000kg
State         OK
```

```
      REPORT
----------------------
Gross    2.020kg
State        Over
```

Underweight Qualified Overweight

F2.1 = 4 accumulation scale, print detailed statement or format of total weight:

Print details and total weight

```
      REPORT
-------------------------
   1        0.200kg
   2        0.175kg
   3        0.347kg
   4        0.375kg
-------------------------
Total       1.097kg
```

Only print total weight

```
      REPORT
-------------------------
Total       1.097kg
```

F2.1 = 5 counting scale, press『Print』:

```
      REPORT
----------------------
Gross       0.547kg
Amount        55
```