DIGITAL SCALES TM

DIGIWEIGH

Pallet Jack Scale

Model: DWP-PJ-H
DWP-PJ-PH

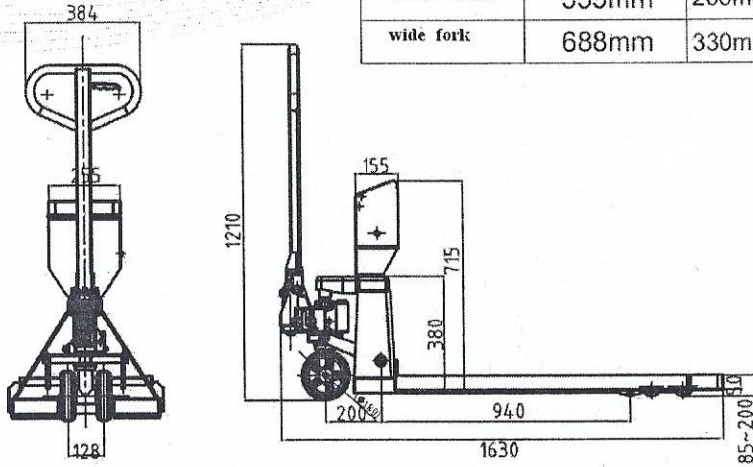
User Manual
V1.30

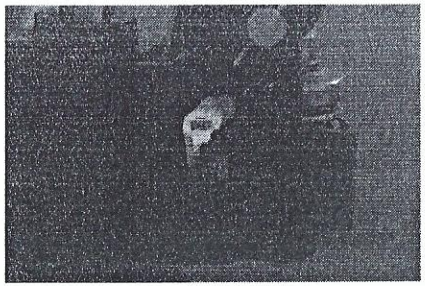
Specification

1.	Model:	DWP-PJ-H/ DWP-PJ-PH Pallet Jack Scale
2.	Accuracy:	Class III, n=5000
3.	Sample Rate:	10 times / second
4.	Load cell sensitivity	1.5 ~ 3mV / V
5.	Scale interval:	1/2/5/10/20/50 for option
6.	Display:	6 bits LCD , 6 state indicating signals
7.	Power supply:	Battery DC6V/4AH
8.	Operating temperature/humidity:	0 ~ 40℃; ≤90%RH
9.	Transporting temperature:	-20 ~ 50℃

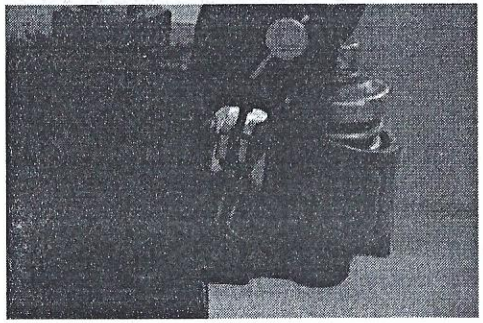
Dimension (mm)

Fork Overall Width(a)		(b)
narrow fork	555mm	200m
wide fork	688mm	330m

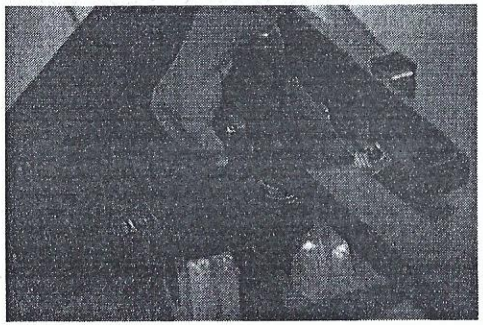




a. Press the paddle and insert the end of the chain into the paddle slot. (You can adjust the screw at the end of the chain to adjust the tightness of the handle.



b. Press down the handle and take out the safety lock.



Indicator

	Warning
	The controller shall be debugged, tested and repaired by professional personnel.

	Warning
	Please maintain the good earthing of controller.

Warning
Please cut off power supply before electric connection of controller; and wait for 30min between the power-on of controller twice.

Mind Static Electricity
The controller is sensitive to static electricity, so please take anti-static measures during utilization and maintenance.

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I. Technical Indexes

- 6-bit 0.8-inch LED display, 13 state indicator lights; long service life, and impact resistance
- 8 function keys, easy and convenient to operate
- Full metal shell, with level of protection IP5x
- Excitation voltage: +5VDC
- Sensor load capacity: At most four 350ohm analog sensors
- Zero-point input signal scope: 0 ～ 5mV
- Full-range input signal scope: 1 ～ 10 mV
- Weight updating rate: 50 times/s
- Mode of power supply: Voltage 100 ～ 240VAC, current 0.1A, frequency 50 ～ 60Hz
- With RS232 interface
- Working temperature: -10℃ ～ 40℃, relative humidity<85%
- Storage temperature -20℃ ～ 60℃, relative humidity<85%
- Meeting standard GB/T 7724-1999

II. Main Functions

- Basic weighing functions: Zero clearing, tare, clear, and printing functions
- Simple check-weighing function, and counting function
- Weight holding function and weight accumulation function
- Auto OFF and energy saving function
- Setting parameter redundancy backup function
- Real-time clock
- Auto OFF function

III. Panel Introduction

Introduction of indicator lights

Identification	Analysis	Remark
~	Dynamic and static indication	The light is on when the scale is in dynamic state, or it is off.
→0←	Zero center indication	The light is on when the absolute weight on scale is less than ±0.2d, or it is off.
Net	Gross weight and net weight identification	The light is on in case of net weight, or off in case of gross weight.
lb	Weight unit	Used to indicate the unit used currently
kg		
Hold	Weight hold	The light is on when the weight is locked, or it is off.
Count	Valid only when counting function is opened	The light is on when counting function is opened, or it is off.
APW		The light is on when single weight is displayed, or it is off.
PCS		The light is on when quantity is displayed, or it is off.
Battery	Power supply and battery voltage indication	The green light is on when the voltage of adapter and battery is normal, and the red light is on in case of undervoltage.
Over	Valid only when upper and lower limit function is opened.	The light is on when the weight is displayed over the upper limit.
Ok		The light is on when the weight is displayed between the upper and lower limits.
Under		The light is on when the weight is displayed under the lower limit.

Introduction of operating keys

Short key-press is for all the operations not described specially.

Key symbol	Normal weighing state	Set state
On/Off	On/Off key Short key → Off state, start up the machine. Long key → On state, shut down the machine.	No definition.
Hold	Weight hold key F2.1 = 0 or 1, hole/ cancel hold F2.1 = 2, switch display item: gross weight/ quantity/ single weight	Menu selection: Back to previous menu. Parameter setting: Not save, exit from menu.
Total	Weight accumulation key Short key → Calculate current displayed weight into the accumulative value. Long key → Enter "display total weight".	No definition.
lb/kg	Unit switching key Short key → Switch weight unit under weighing state. Corresponding unit indicator light is on.	Flicker bit moves leftward.
Gross	Gross key Short key → Convert net weight to gross weight; Long key → 1. Enter "obtain target weight"; 2. Enter "count sampling".	Flicker bit moves rightward.

	Tare key Convert from gross weight to net weight. Net weight indicator light "Net" turns on. It's available to execute tare operation for multiple times.	The figure at flicker bit decreases.
	Zero key Make zero the weight in gross weight state. The operation of zero clearing is invalid if the scale is in net weight, dynamic state, save state, and out of zero clearing scope.	Setting: The figure at flicker bit increases. Displaying: Clear the total.
	Print key Short key → Print the weight displayed currently. (Refer to Appendix 2 for the printing format) Long key → Enter "general parameter setting"..	Confirm operation, and save the set data.

IV. Parameter Setting

Entering Parameter Setting

Press the 『Print』 key on the operating panel in normal weighting state, until the instrument displays 【SEtUP 】, indicating entering the setup state.

If F1.1.1 = 0 (no certification required), then press 『Print』 key to enter F1 menu for setting of all F1 ～ F5 parameters.

If F1.1.1 = 1 (meeting NTEP certification requirements), then press 『Print』 key to enter F2 menu for setting of only F2 ～ F5 parameters. Here, for setting up F1 menu, we must shut down the machine first, then press CAL button on PCB board when starting up the machine, until the instrument displays 【SEtUP 】, and then press 『Print』 key to enter F1 menu.

F1 Scale Setting

F1.1 Basic parameters of scale

F1.1.1 Certification

Optional parameters: 0 ---- No certification required

1 ---- Meeting NTEP requirement (default value)

F1.1.2 Optional parameters: 0 ---- kg (default value)

1 ---- lb

F1.1.3 Range

Optional parameter: 3 ～ 200000 (default value 6)

F1.1.4 Number of decimal point

Optional parameters: 0 ---- No decimal point

1 ---- 1 decimal point

2 ---- 2 decimal points

3 ---- 3 decimal points (default value)

4 ---- 4 decimal point

F1.1.5 Index number

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

F1.2 Calibration

F1.2.1 Acceleration of gravity

Parameter available to set up: 9.70000 ～ 9.99999. Default value = 9.79455

F1.2.2 Zero calibration

Move away the counterpoises on weighing platform to ensure empty scale state. Then, press 『Print』 key. The instrument starts to display 【10 CAL】, then the figure displayed decreases gradually, until 【00 CAL】 is displayed; and finally, 【End 】

information is displayed for 1s, indicating the ending of zero calibration.

F1.2.3 Load point calibration

【LOAd 】 Load counterpoise

Add counterpoises to weighing platform, ensure 10% of full range value ≤ counterpoise weight ≤ full range value, and then press 『Print』 key to enter the next step.

【000000】 value accordant with the counterpoise loaded

Input a weight value accordant with the counterpoises loaded, and after the value is saved stably by the scale, press 『Print』 key. The instrument starts to display 【10 CAL】, then the figure displayed decreases gradually, until 【00 CAL】 is displayed; and finally, 【End 】 information is displayed for 1s, indicating the ending of load point calibration.

F1.3 Zero clearing function

F1.3.1 Automatic zero tracking

Optional parameters: OFF, 0.5 d, 1 d, 3 d (default value)

Under NTEP mode, optional parameter OFF will be closed.

F1.3.2 Optional parameters: OFF, 2 %, 10 % (default value), 20 %

Under NTEP mode, optional parameter 20% will be closed.

F1.3.3 Key zero clearing scope

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

Under NTEP mode, optional parameter 10% and 20% will be closed.

F1.4 Digital Filtering

F1.4.1 Digital filter

Optional parameters: 0 ---- Light filtration

1 ---- Moderate filtration (default value)

2 ---- Severe filtration

F1.4.2 Steady state scope

Optional parameters: 0.5d (default value), 1d, 3d

Only one optional parameter 0.5d under NTEP mode.

F1.4.3 Overload display scope

Optional parameters: 9d (default value), 5 %, 10 %, 20 %

Under NTEP mode: Lower overload: Fixed to be that the object weighed is 5d below 0.
Upper overload: Fixed to be that the object weighed is 9d over the full range.
So the menu does not appear.

F1.5 Recover factory default value

Set up the default value of F1~F4 parameters, without affecting the nominal parameters. Under NTEP mode, the acceleration of gravity won't be recovered as factory default value.

F2 Application Setting

F2.1 Function selection

Optional parameters: 0 ---- Close application function (default value)

1 ---- Upper and lower limits function

2 ---- Counting function

F2.2 Upper and lower limits function

Optional parameters: 0 ---- Check-weighing function (default value)

1 ---- Separation function

F2.2.2 Target weight acquisition

Optional parameters: 0 ---- Weighing acquisition (default value)

1 ---- Manual input acquisition

F2.2.3 Positive error

Optional parameter: 0 ~ full range. (Default value 0.100)

F2.2.4 Negative error

Optional parameter: 0 ~ full range (default value 0.100)

F3 Instrument Setting

F3.1 Real-time clock

F3.1.1 Date format

Optional parameters: 0 ---- year. month. Day (default value)

1 ---- Month. day. year

2 ---- Day . month. year

F3.1.2 Date setting (refer to F3.1.1 for the format)

F3.1.3 Time setting (hour. minute. second)

F3.2 Display

F3.2.1 Overtime function

Optional parameters: 0 ~ 999s (default value 60s)

The function is forbidden if set up to be 0.

F3.2.2 Display brightness

Optional parameters: 0 ---- Low brightness

1 ---- Medium brightness (default value)

2 ---- High brightness

F3.3 Auto Off time

Optional parameters: 0 ~ 60min (default value 10min)

The function is forbidden if set up to be 0.

F4 Communication Setting

F4.1 Communication port setting

F4.1.1 Communication method

Optional parameters

0 ---- Command output (default value)

1 ---- Continuous output

F4.1.2 Baud rate

Optional parameters: 1200, 2400, 4800, 9600 (default value), 19200.

F4.1.3 Data and check bit

Optional parameters: 0 ---- 8-bit no check (default value)

1 ---- 7-bit odd check

2 ---- 7-bit even check

F4.1.4 Continuous output sending check and character

Optional parameters: 0 ---- Not send (default value)

1 ---- Send

F4.2 Newline enter character

Optional parameters: 0 ~ 9 newline enter characters (default value 3)

F5 Maintenance

F5.1 Calibration value

F5.1.1 Zero reading

Press 『Hold』 key or 『Print』 key to exit.

F5.1.2 Loaded weight for load point calibration

Press 『Hold』 key or 『Print』 key to exit.

F5.1.3 Corresponding reading when loading weight

Press 『Hold』 key or 『Print』 key to exit.

F5.2 Key test

The instrument displays 【PrESS 】. Here, press in turn the 『Print』, 『Zero』, 『Tare』, 『Gross』, 『lb/kg』, 『Total』, 『Hold』 keys, and the instrument will display in turn 【Pr int 】, 【2Ero 】, 【tArE 】, 【9roSS 】, 【Un it 】, 【totAL 】, 【HoLd 】.

Press 『On/Off』 key to exit from key test.

F5.3 Display screen test

The instrument display will execute self-checking of strokes to observe whether any stroke is omitted.

Press 『Hold』 key or 『Print』 key to exit from display screen test.

F5.4 Serial port test

The instrument displays 【SEnd P】. Connect serial port with computer, send ASCII code "p" or "p" command, and observe whether the printing test returned by the instrument is correct or not. Press 『Hold』 key or 『Print』 key to exit from serial port test.

V. Function Description

Weight hold function

Under the state of normal weighing, press the 『Hold』 key on operation panel. The instrument may lock the current weight displayed on the scale, and "Hold" indicator light will turn on. The operation of weight hold will be valid only when the displayed weight is bigger than or equal to 5 scale divisions, or else the invalid operation information 【--nO--】 will be displayed. One second later, the scale will return to normal weighing state.

If the weight is locked, press 『Hold』 key to cancel weight hold. The scale will return to normal weighing state, and "Hold" light will turn off.

If the weight is locked, tare, clear, and zero light operation will be refused.

Weight accumulation function

Operating method

Under the state of normal weighing, when the scale is at zero position, we may load weight to the scale and press the 『Total』 key on the operating panel. If the display unit displays 【Add-- 】 progress bar, it indicates that the current displayed weight have been calculated into the accumulative value, and then, the scale will return to normal weighing state. If the display unit displays 【--nO--】 for 1s, and then returns to normal weighing, it indicates that the operation is invalid! Reasons: 1. The scale must be zeroed between two accumulation operations, or accumulation will be refused. 2. Accumulation operation is valid only when the displayed weight is bigger than or equal to 5 scale divisions. 3. The scale is in dynamic state.

Accumulative value display and clear

Under the state of normal weighing, press the 『Total』 key on the operating panel for more than 2s. The display unit will display 【totAL 】 for 1s, and next, the display unit will display current total value and flicker. Here, for clearing accumulative value, we may press 『Zero』 key to make flickering weight become 0, press 『Print』 key to confirm "clear" operation, and then, the instrument will exit from the display screen automatically. If it's unnecessary to clear the accumulative value, we only need to press 『Hold』 key to exit from display screen directly.

Upper and lower limits function

Parameters to be set up

F2.1 = Upper and lower limits function;

F2.2.2 target weight acquisition method;

F2.2.3 Positive error (Ptol);

F2.2.4 Negative error (Ntol)

Target weight sampling or setting (TARGET)

If F2.2.2 = 0, obtain target weight by weighing. Move away materials on the weighing platform, and observe whether the scale is at zero position; if not, press 『Zero』 key to make it return to zero. Then, place target weight on weighing platform. Press 『Gross』 key for long time, until 【tArGEt】 key is displayed; then press 『Print』 key, the instrument will display original target values and flicker., press 『Print』 key to save new target weight (the weight of target weight which placed on the weighing platform), and go back to the main interface.

If F2.2.2 = 1, obtain target weight by manual input. Press 『Gross』 key for long time, until 【tArGEt】 key is displayed; then press 『Print』 key, and the instrument will display original target values and flicker. If it's unnecessary to modify the target values, press 『Hold』 key to exit from setting, and go back to the main interface. If it's necessary to modify the target values, press 『Print』 key once again. Original target values flicker at the highest order, and here, new target values may be input. After inputting, press 『Print』 key. The instrument will save the newly set up target weights, and go back to the main interface of weighing.

Check-weighing function (F2.2.1 = 0)

Under the state of normal weighing, the main display unit will display current weight.

If the weight displayed < (TARGET – Ntol) :

"Over" indicator light and "Ok" indicator light will turn off, while "Under" indicator light will turn on;

If (TARGET – Ntol) ≤ Weight displayed ≤ (TARGET + Ptol) :

"Over" indicator light and "Under" indicator light will turn off, while "Ok" indicator light will turn on;

If the weight displayed > (TARGET + Ptol) :

The "Over" indicator light will turn on, while "Ok" indicator light and "Under" indicator light will turn off.

(TARGET – Ntol) ≤ Weight displayed ≤ (TARGET + Ptol)

Separation function (F2.2.1 = 1)

If the weight displayed < (TARGET – Ntol) :

"Over" indicator light and "Ok" indicator light will turn off, while "Under" indicator light will turn on; Main display unit: 【nnnnnn】.

If (TARGET – Ntol) ≤ Weight displayed ≤ (TARGET + Ptol):

"Over" indicator light and "Under" indicator light will turn off, while "Ok" indicator light will turn on; Main display unit: 【------】.

If the weight displayed > (TARGET + Ptol) :

The "Over" indicator light will turn on, while "Ok" indicator light and "Under" indicator light will turn off; Main display unit: 【uuuuuu】.

Counting Function

Display switching

Press 『Hold』 key, and the main display will be circularly switched among total weight, quantity and unit weight.

When total weight is displayed: The main display unit will display the total weight of materials 【 15.028】."Count" light will turn on, while "APW" light and "PCS" light will turn off.

When quantity is displayed: The main display unit will display the quantity of materials 【 20】."Count" light and "PCS" light will turn on, while "APW" light will turn off.

When single weight is displayed: Single weight indicates the weight of single material. Here, the main display unit will display the single weight of materials 【 0.765】. "Count" light and "APW" light will turn on, while "PCS" light will turn off.

Count sampling

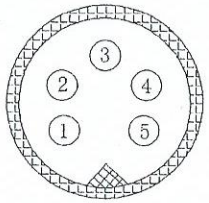
Check whether the scale is at zero position, and if not, press 『Zero』 key to make it return to zero.

Place a counted quantity of materials on weighing platform.

Press 『Gross』 key for long time, until the display unit displays 【SAMPLE】; then press 『Print』 key, and the display unit displays 【PCS 00】. Input the quantity value counted, and then press 『Print』 key to confirm. The instrument will save the sampling data, and then exit from sampling interface.

VI. Sensor Interface

5-core aviation joint (male) is used as sensor interface.



①	+EXC	Pin1:	Positive excitation
②	+SIG	Pin2:	Positive signal
③	Shield	Pin3:	Shield ground
④	-SIG	Pin4:	Negative signal
⑤	-EXC	Pin5:	Negative excitation

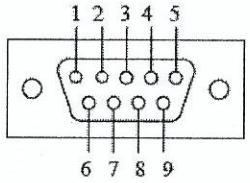
VII. Communication Interface

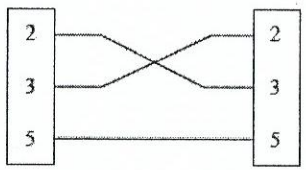
ire D-Sub Male joint is used as serial interface.

Pin2 --- RXD Received

Pin3 --- TXD Transmitted

Pin5 --- GND Ground





Instrument end Computer end

VIII. Instrument Prompt Information

The instrument has extremely high stability and reliability, and won't have errors easily generally. Once any error occurs, we shall make clear the type of errors, then power on again to check whether the instrument still has errors, instead of being urgent to repair the scale body or instrument. We shall try to repair the instrument according to the error code displayed.

No.	Symbol	Analysis	Solution
1	【 -EEE 】 【 EEE 】	Zero clearing is unavailable after start-up of instrument.	1. Ensure that the scale is empty when being started up. 2. Re-execute zero calibration.
2	【⌜-----⌝】	The material weighed exceeds the full range by 9d.	Reduce the heavy objects on weighing platform.
3	【⌞_____⌟】	The object weighed is lower than 0 by 5d.	Press 『Zero』 key for zero clearing.
4	【⌜-no-⌝】 【⌞-no-⌟】	Exceed the scope of zero clearing.	Check whether there are heavy objects on weighing platform. Move away heavy objects.
5	【--00--】	Invalid operation	
6	【Err 03】	EEPROM calibration and error	Press 『Print』 key to re-print factory value, and then re-start the machine. If such information still appears, return the product to factory for repair; and if not, recalibrate the scale.
7	【Err 05】	The input counterpoise weight is calibrated too small.	Input a weight of ≥10 % full range.
8	【Err 06】	The counterpoise loaded during calibration is too light.	Load counterpoises of ≥10 % full range.

9	【Err 07】	The scale is in dynamic state during calibration.	Check the scale body.
10	【Err 08】	Wrong setting of date and time	Set date and time according to specifications.
11	【Err 09】	Wrong AD initialization	If such information appears after the machine is started up again, the product shall be returned to factory for repair.
12	【LOAd 】	It's prompted to add counterpoise during load point calibration.	Add counterpoises according to requirements.
13	【SEtUP 】	Have entered menu setting.	Press 『Print』 key to continue setting.
14	【End 】	Ending of zero and load point calibration	
15	【Add-- 】	Calculating current weight displayed into accumulative value	
16	【-OUEr-】	Accumulative weight overflows.	Clear the accumulative value in time.
17	【Ld--- 】	Loading default value	
18	【Print 】	Printing	

Appendix 1. Serial Port Continuous Output Format

Continuous output format is 18 bytes.

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

Wherein

<STX> ASCII start symbol （02H）

Status words: A, B, C

Display weight, possibly gross weight or net weight, 6-bit figure without symbol and decimal point

Tare value, 6-bit figure without symbol and decimal point

<CR> ASCII enter symbol （ODH）

<CKS> optional check sum (not output in case of F4.1.4 = 0)

State words: A, B, C

State word A			
Bit 0	Bit 1	Bit 2	Decimal point position
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	Constantly 0		
Bit 4	Constantly 1		
Bit 5	Constantly 0		
Bit 6	Constantly 1		
Bit 7	Constantly 0/ check bit		

State word B	
Bits	Function
Bit 0	Gross weight = 0, net weight =1
Bit 1	Symbol: Positive=0, negative =1
Bit 2	Overload (upper, lower overload) =1
Bit 3	Static =0, dynamic = 1
Bit 4	Constantly 1
Bit 5	Constantly 1
Bit 6	Constantly 0
Bit 7	Constantly 0/ check bit
State word C	
Bits	Function
Bit 0	Unit: kg=0, lb=1
Bit 1	Lower overload 1
Bit 2	Qualified 1
Bit 3	Upper overload 1
Bit 4	Constantly 1
Bit 5	Constantly **1**
Bit 6	Constantly 0
Bit 7	Constantly 0/ check bit

Appendix 2. Command Printing Format

Commands may be printed by two means:

- Press 『Print』 key on operating panel;
- Serial port sends ASCII code "P" or "p".

When F2.1 = 0, the concrete printing format is as shown below:


```
        REPORT
--------------------
Date  25/09/2013
Time    10:18:28
Gross    2.000kg
Tare     0.000kg
Net      2.000kg
```

When F2.1 = 1, the concrete printing format is as shown below:

```
        REPORT
--------------------
Date  2013/09/14
Time    15:05:06
Target   1.984kg
Actual   1.984kg
Result     OK
```

When F2.1 =2, the concrete printing format is as shown below:

```
        REPORT
--------------------
Date  2013/09/14
Time    14:51:14
Total    1.985kg
Single   0.100kg
Quantity    20
```