

Weighing  
CWB7  
Service Manual

# Weighing

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## Power Source

100~240V 50/60hz AC INPUT

12V/1A DC OUTPUT 12W

6V/4AH Lead-acid rechargeable battery included

## Power Consumption

Approx. 12mA

Approx. 36mA with backlight

Approx. 48mA with backlight and RS232 interface

## Battery hours per charge

Approx. 320 hours (backlight off)

## OPTION

RS232 Interface

## LOADCELL connection (for indicator)

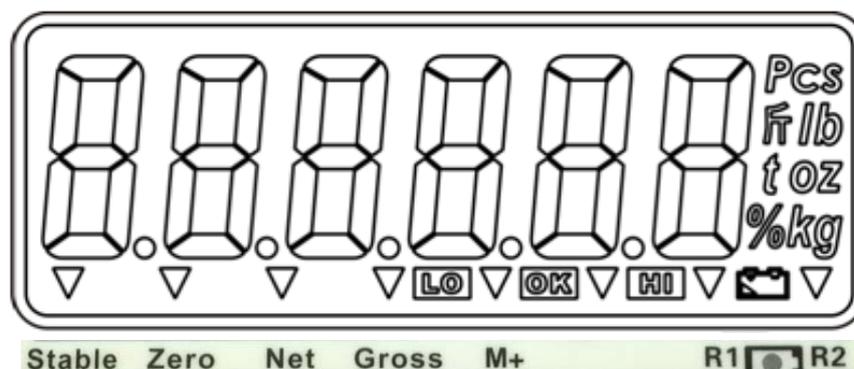
PIN1 : E +      PIN2 : SEN+      PIN3 : E-      PIN4 : SEN-

PIN5 : S+      PIN6 : GND      PIN7 : S -

## How to display version number?

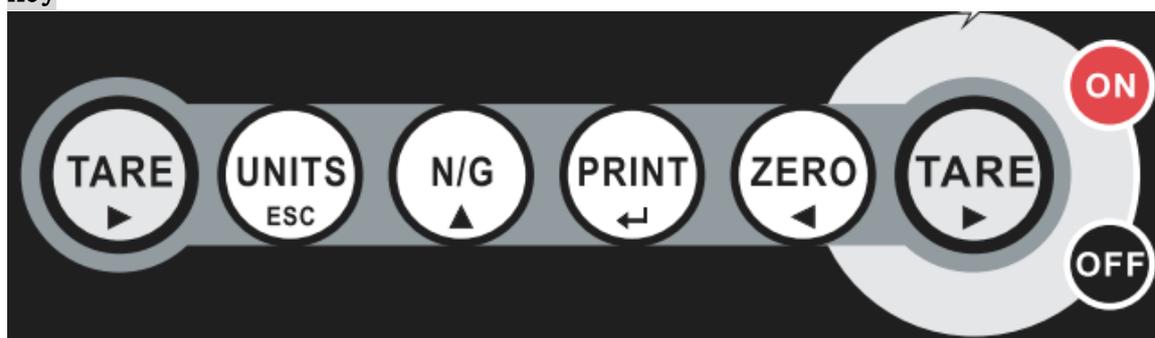
Turn on the scale and press and hold the **ZERO / ◀** key until the countdown sequence has completed. The LCD display will show **1001**. The shown number is the software version of the scale. Release the **ZERO / ◀** key and the scale will start the functions setup

## Display



# Weighing

## Key



## Functions description

**OFF** key:

Press and hold the **OFF** key and the display will show “oFF” for 2 seconds then the scale will turn off automatically.

**ON** key:

Press the **ON** key to turn on the scale. The scale will start self-adjusting sequence then will stabilize in 0.

**UNITS / ESC** key:

UNITS: To select desired weighing unit.

When change into PCS , PCS marker light , Optional number by ▲ switch: 10、20、50、100、200 , put the corresponding number of objects on the scale, after the stable press ◀ key, complete the number of samples.

ESC : To escape (exit) setting in setup mode.

**ZERO / ◀** key:

ZERO : To reset the weight to 0, but the displayed weight value has to be less than  $\pm 2\%$  of maximum capacity.

◀ : To move one space to the left or downward in setup mode.

To the left

000000 → 000000 → 000000 → 000000 → 000000 → 000000

Downward

LF 8 → LF 7 → LF 6 → ..... → LF 1

UF-11 → UF-10 → UF-9 → ..... → UF-1

ECF-3 → ECF-2 → ECF- 1

# Weighing

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**TARE / ▶** key:

TARE : To subtract the container weight. Maximum tare = full capacity

▶ : To move one space to the right or upward in setup mode.

To the right

000000 → 000000 → 000000 → 000000 → 000000 → 000000

Upward

LF 1 → LF 2 → LF 3 → ..... → LF 8

UF-1 → UF-2 → UF-3 → ..... → UF-11

ECF-1 → ECF-2 → ECF-3

**N/G/ ▲** key:

Net/Gross : To see gross and net weight when the scale is on tare status.

All other keys will be disabled when gross weight is activated.

▲ : To increase values upward in setup mode.

例如 : 232 0 → 232 1 → 232 2 → 232 3 → ..... → 232 6

**PRINT / ◀** key:

PRINT : Manually transmitting data through RS232 to computer or printer

at normal weighing mode (RS232 setup must be set at keyboard transmission 232 3 or 232 6)

◀ : Works as enter key in setup mode

※ Error messages:

Err H Initial zero too high (over FULL SCALE + 10%) ,  
For approval models

Err L Initial zero too low (under FULL SCALE - 10%) ,  
For approval models

Err N Unstable internal count

-OL- Overload, when the weight is heavier than the full capacity  
+ 9d of the scale

## Functions Setup

Approval Calibrations and Functions Setup (Lock section) L F 1 ~ 8

Standard Functions Setup UF - 1 ~ 11

Standard Calibrations ECF - 1 ~ 3

# Weighing

## Standard Calibrations:

Press the **ZERO / ◀** key and the **PRINT / ↵** key in weighing mode to start Standard Calibrations

ECF-1 Weight Calibration (Zero and Span)

ECF-2 Zero Calibration

ECF-3 Span Calibration

※ When the scale is programmed for Approval (LF 6), standard calibration will be locked

PRINT / ↵	:	◀	:	N/G/▲	:	▲
ZERO / ◀	:	◀	:	UNITS/ ESC	:	ESC
TARE / ▶	:	▶				

ECF-1

Press the **↵** key to start or press the ESC key to exit menu and back to weighing mode



ECF-2

Press the **↵** key to start or press the ESC key to exit menu and back to weighing mode



ECF-3

Press the **↵** key to start or press the ESC key to exit menu and back to weighing mode

## ECF-1 Weight Calibration :

ECF-1

Press the **↵** key to start Weight Calibration (Press the ESC key to exit back to weighing mode)



CALZ

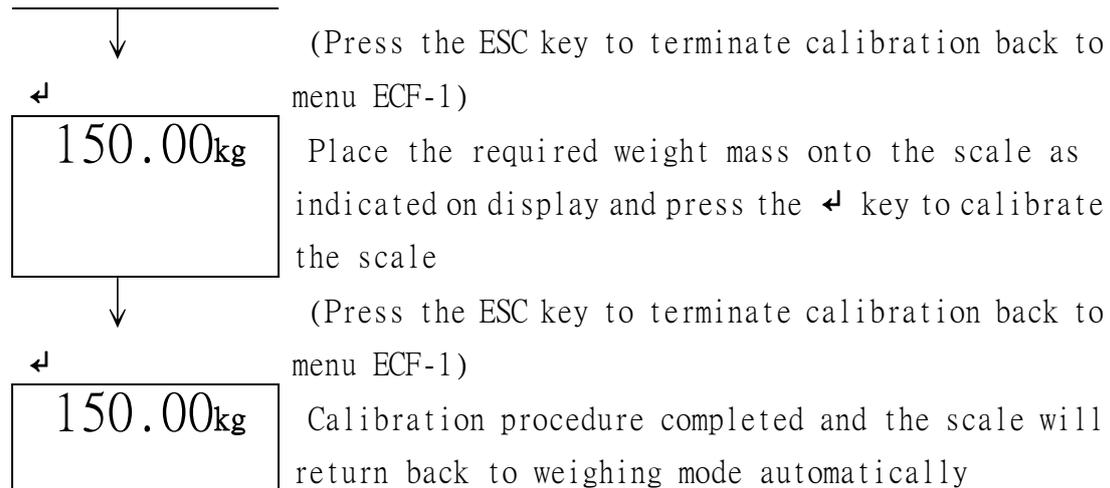
Press the **↵** key to calibrate zero point (Press the ESC key to terminate calibration back to menu ECF-1)



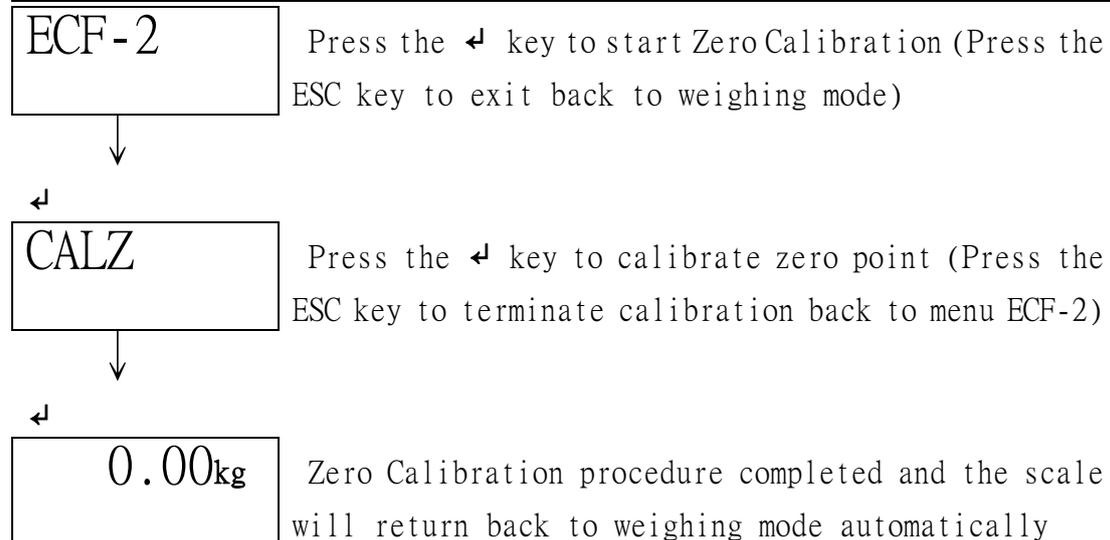
150.00kg

Use **◀, ▶, ▲** and then **↵** key to enter the weight to be calibrated

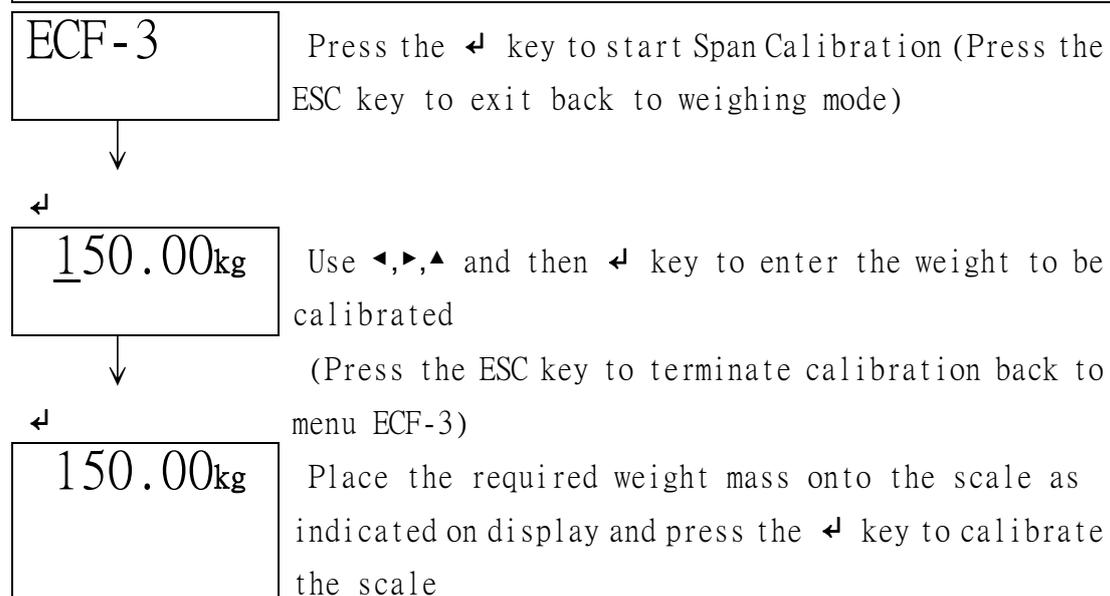
## Weighing



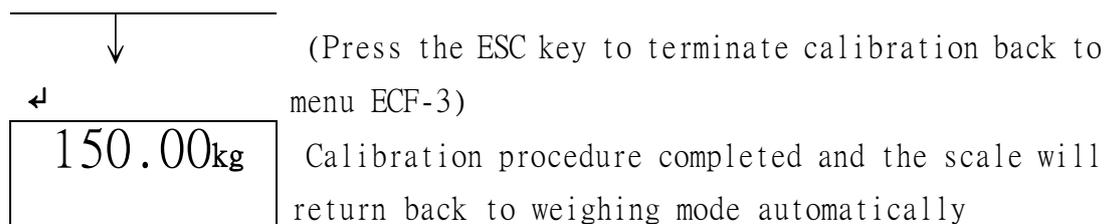
### ECF-2 Zero Calibration :



### ECF-3 SPAN Calibration :



## Weighing



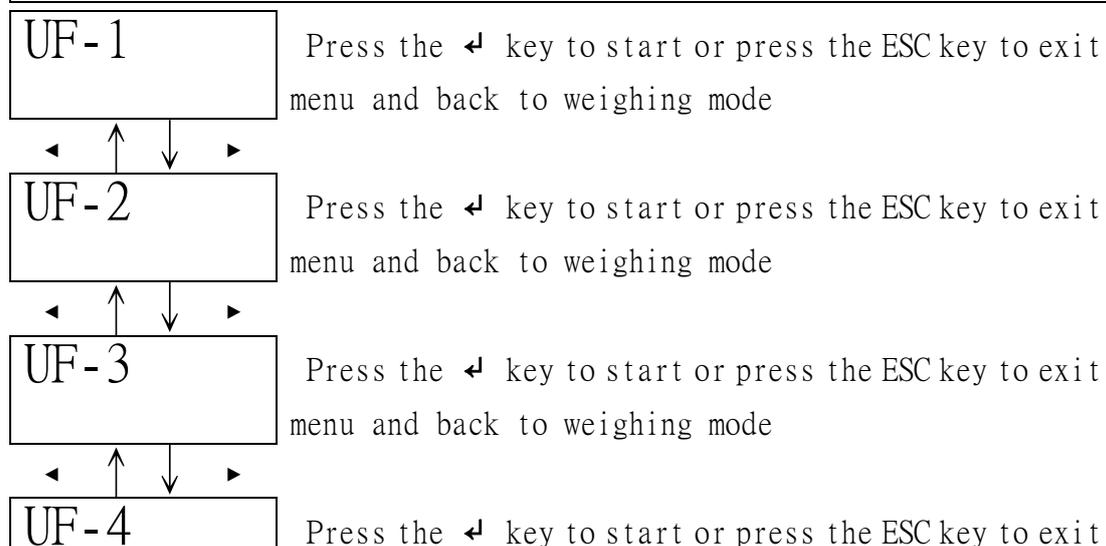
**Standard Functions Setup :**

Press the TARE / ▶ and the PRINT / ◀ key in weighing mode to start Standard Functions Setup

- UF-1 Internal Value
- UF-2 Check Weighing
- UF-3 Auto Power-off
- UF-4 Backlight
- ✿UF-5 Hold
- UF-6 RS232 Output
- ✿UF-7 ADC Update Rate
- ✿UF-8 Display Condition at Zero
- UF-9 Gravitational (G value) Pre-Calibration
- UF-10 Filter set
- UF-11 Stable range

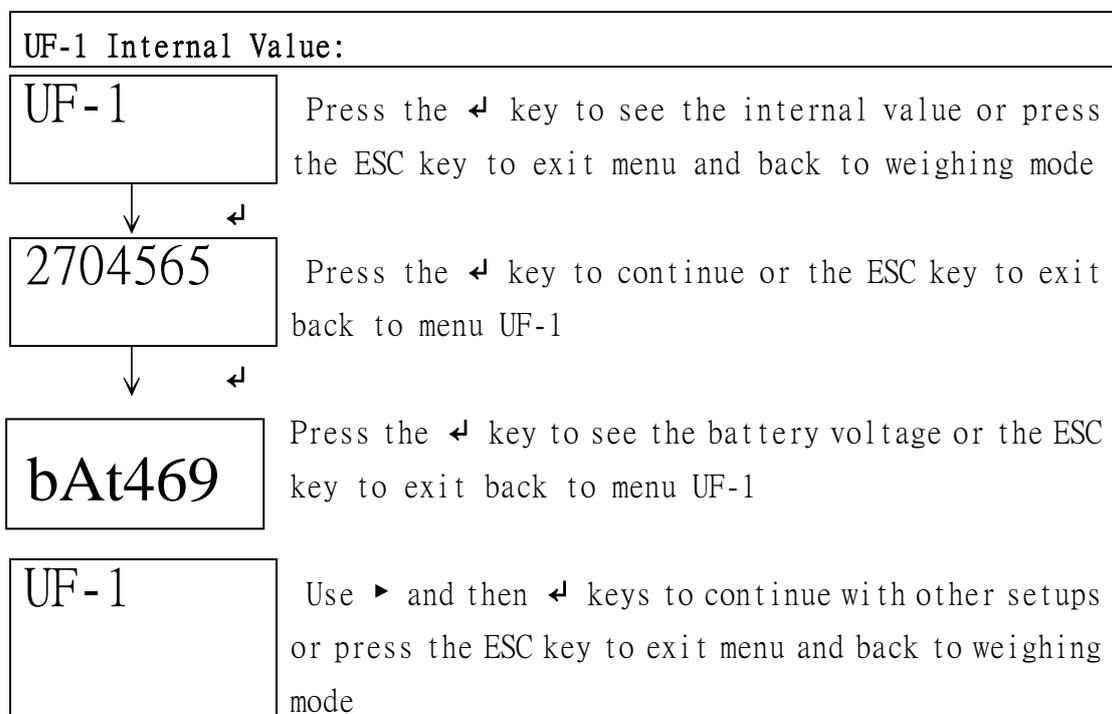
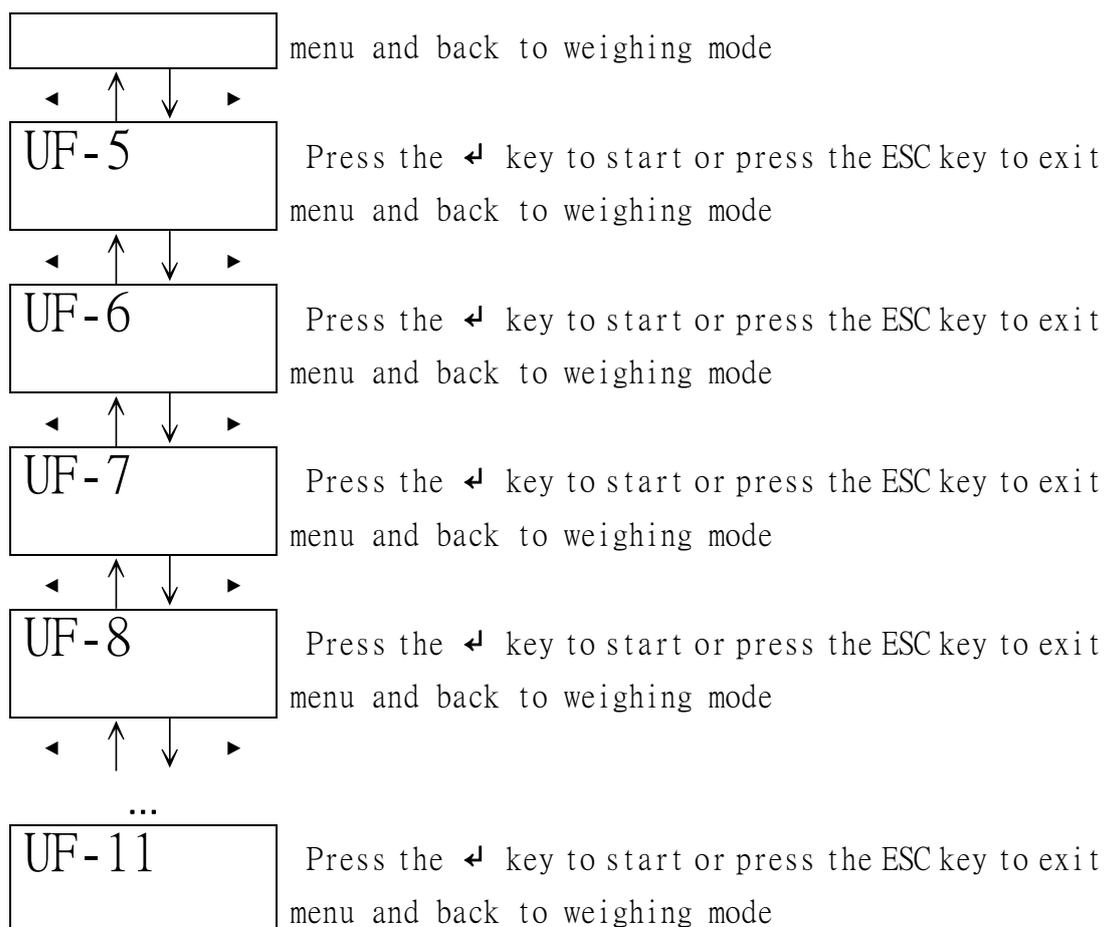
※ ✿ marks function locked when LF 6 is set as “Approval Version”

PRINT / ◀	:	◀	N/G/ ▲	:	▲
ZERO / ◀	:	◀	UNITS/ ESC	:	ESC
TARE / ▶	:	▶			



## Weighing

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## Weighing

### UF-2 Check Weighing :

0000.0L Set LO (low) weight

0000.0H Set HI (high) weight

0 000 Program I/O conditions

- ※ LO set as 0 will clear all check weigh values
- ※ Check weighing conditions can be set independently for each of the weighing units and counting mode
- ※ All settings will be saved until manually cleared
- ※ Last entry will be displayed before setup
- ※ This function is locked when UF-5 is set as "HOLD 1"

UF-2

Press the  $\leftarrow$  key to start or press the ESC key to exit menu and back to weighing mode

$\leftarrow$   
0000.0L

Use  $\leftarrow, \rightarrow, \uparrow$  and then  $\leftarrow$  key to set LO weight value  
(Press the ESC key to exit the setup and back to menu

$\leftarrow$   
0000.0H

UF-2)  
Use  $\leftarrow, \rightarrow, \uparrow$  and then  $\leftarrow$  key to set HI weight value  
(Press the ESC key to exit the setup and back to menu

$\leftarrow$   
0 000

UF-2)  
Use  $\leftarrow, \rightarrow, \uparrow$  and then  $\leftarrow$  key to set I/O SET value  
(Press the ESC key to exit the setup and back to menu

$\leftarrow$   
UF-2

UF-2)  
Use  $\leftarrow, \rightarrow$  and then  $\leftarrow$  key to continue with other setups  
or press the ESC key to exit menu and back to weighing mode

### UF-3 Auto Power-off :

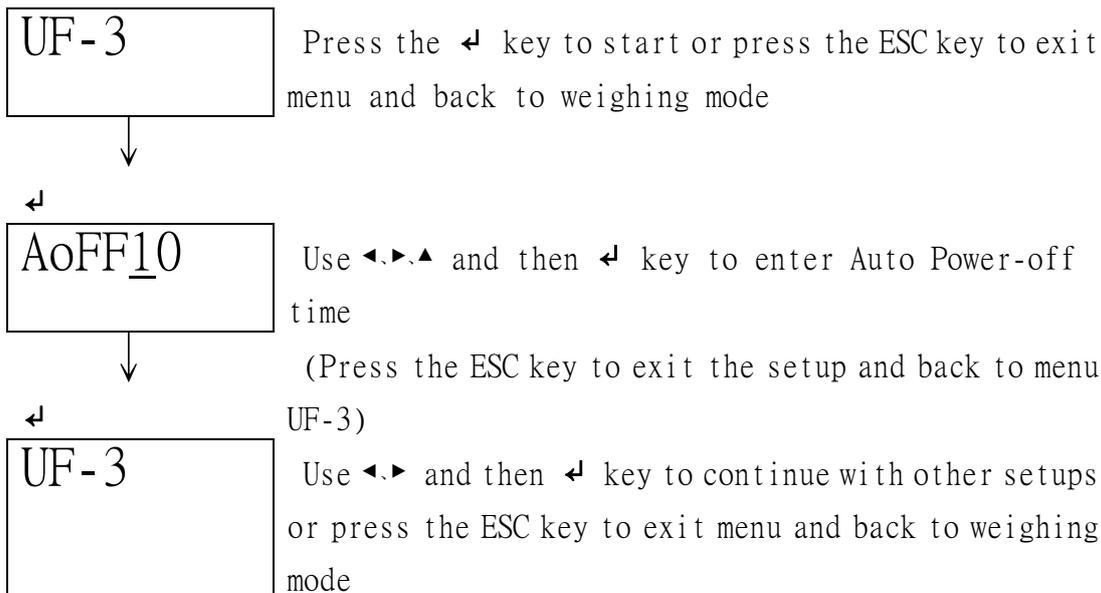
AoFF 00 Auto power-off disable

AoFF 01 The scale turns off automatically in 1 minute when the scale  
s  
not in operation and weight at 0

Auto power-off timer up to 99 minutes (AoFF01~AoFF 99)

※ Factory default: AoFF 10

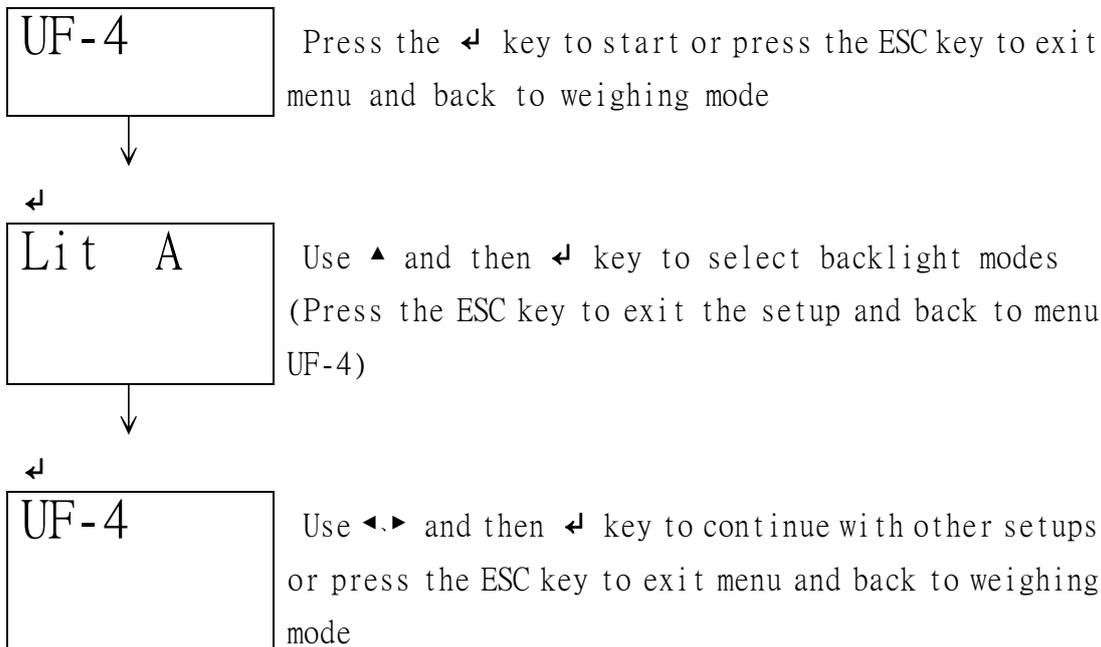
## Weighing



### UF-4 Backlight :

Lit off :Backlight off   Lit A :Auto light up   Lit on :Backlight on

※ Factory default: Lit A



### UF-5 Hold :

HOLD 0   Hold function off

HOLD 1   Animal (motion) Hold function

Pct XXX   To set the range from 001 ~ 100 of the animal hold  
(for HOLD 1 only)

## Weighing

timEXX To set 1-2-4-8-16-32-64 times within the hold range  
(for HOLD 1 only)

※ This function is locked when LF 6 is set as “Approval Version”

※ Factory default: HOLD 0

UF-5

Press the  $\leftarrow$  key to start or press the ESC key to exit menu and back to weighing mode

$\leftarrow$

HOLD 0

Use  $\blacktriangle$  and then  $\leftarrow$  key to select Hold modes  
(Press the ESC key to exit the setup and back to menu UF-5)

$\leftarrow$

UF-5

Use  $\leftarrow$ ,  $\rightarrow$  and then  $\leftarrow$  key to continue with other setups or press the ESC key to exit menu and back to weighing mode

HOLD 1 mode :

UF-5

Press the  $\leftarrow$  key to start or press the ESC key to exit menu and back to weighing mode

$\leftarrow$

HOLD 1

Use  $\blacktriangle$  and then  $\leftarrow$  key to select Hold 1 mode  
(Press the ESC key to exit the setup and back to menu UF-5)

$\leftarrow$

PCt 010

Use  $\leftarrow$ ,  $\rightarrow$ ,  $\blacktriangle$  and then  $\leftarrow$  key to enter the hold range  
(Press the ESC key to exit the setup and back to menu UF-5)

$\leftarrow$

time 8

Use  $\blacktriangle$  and then  $\leftarrow$  key to select times  
(Press the ESC key to exit the setup and back to menu

# Weighing

[ ] UF-5)



UF-5

Use ◀▶ and then ◀ key to continue with other setups or press the ESC key to exit menu and back to weighing mode

## UF-6 RS232 :

232 0 RS232 disable  
232 1 Stable output - Format 1  
232 2 Stream output - Format 1  
232 3 Manual output - Format 1  
232 4 Stable output - Format 2  
232 5 Stream output - Format 2  
232 6 Manual output - Format 2

### RS232 Baud rate

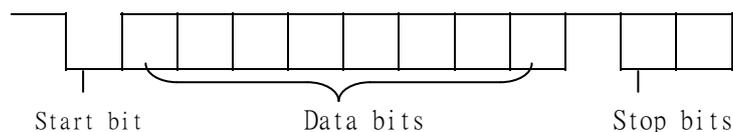
b 1200 Baud rate 1200  
b 2400 Baud rate 2400  
b 4800 Baud rate 4800  
b 9600 Baud rate 9600  
b19200 Baud rate 19200  
b38400 Baud rate 38400

### Communication Protocol

UART signal of EIA-RS232 C

#### Format :

1. Serial output: 1200 / 2400 / 4800 / 9600 / 19200 / 38400 BPS
2. Data bits : 8 BITS
3. Parity bits : None
4. Stop bits : 1 BIT



Format 1 (232 1 ~ 3) :

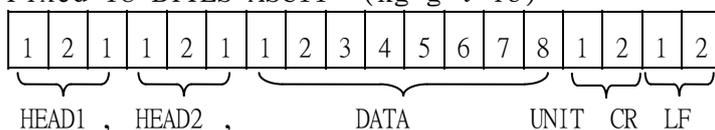
HEAD1 ( 2 BYTES )

HEAD2 ( 2 BYTES )

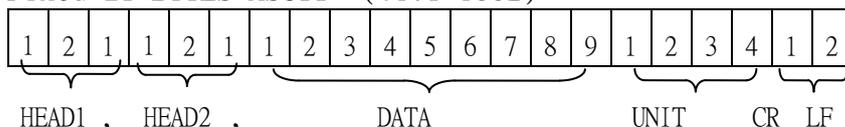
# Weighing

OL - Over Load	
ST - Stable	NT - Net Weight
US - Unstable	GS - Gross Weight

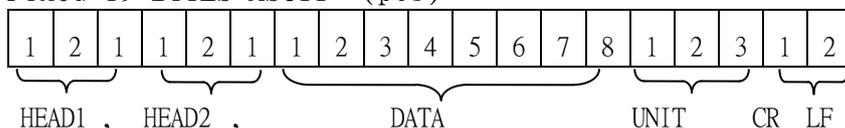
Fixed 18 BYTES ASCII (kg g t lb)



Fixed 21 BYTES ASCII (tl.T lboz)

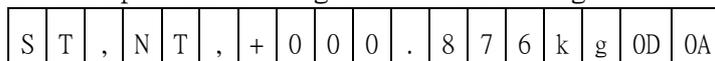


Fixed 19 BYTES ASCII (pcs)



Output examples :

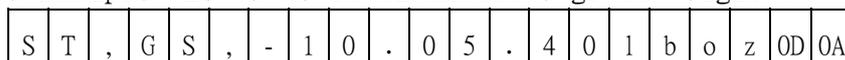
1. Example +0.876 kg Stable net weight :



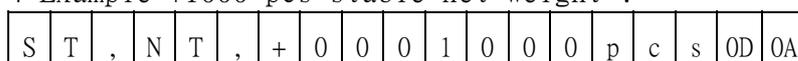
2. Example -1.568 lb unstable gross weight :



3 Example -20. 5.40 lb oz unstable gross weight :

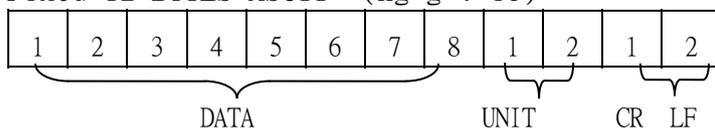


4 Example +1000 pcs stable net weight :

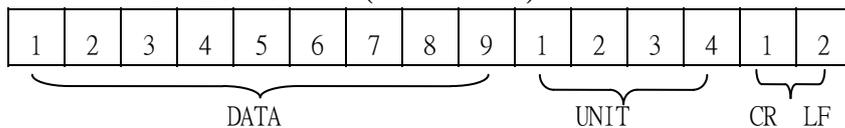


Format 2 (232 4 ~ 6) :

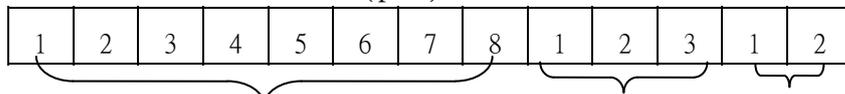
Fixed 12 BYTES ASCII (kg g t lb)



Fixed 15 BYTES ASCII (tl.T lboz)



Fixed 13 BYTES ASCII (pcs)



# Weighing

DATA	UNIT	CR	LF											
Output examples :														
1. Example +0.876 kg stable net weight :														
+	0	0	0	.	8	7	6	k	g	OD	0A			
2. Example -1.568 lb unstable gross weight :														
-	0	0	1	.	5	6	8	l	b	OD	0A			
3 Example -20. 5.40 lb oz unstable gross weight :														
-	1	0	.	0	5	.	4	0	l	b	o	z	OD	0A
4 Example +1000 pcs stable net weight :														
+	0	0	0	1	0	0	0	p	c	s	OD	0A		
※ Factory default: 232 0														

UF-6

Press the  $\leftarrow$  key to start or press the ESC key to exit menu and back to weighing mode

$\leftarrow$

232 0

Use  $\blacktriangle$  and then  $\leftarrow$  key to enter RS232 output format (Press the ESC key to exit the setup and back to menu UF-6)

$\leftarrow$

b 9600

Use  $\blacktriangle$  and then  $\leftarrow$  key to select baud rate (Press the ESC key to exit the setup and back to menu UF-6)

$\leftarrow$

UF-6

Use  $\blacktriangle$ ,  $\blacktriangleright$  and then  $\leftarrow$  key to continue with other setups or press the ESC key to exit menu and back to weighing mode

## UF-7 ADC Update Rate :

SPEED 1 Standard speed 15 hz

SPEED 2 High speed 30 hz

SPEED 3 Low speed 7.5 hz

※ This function is locked when UF-5 is set as "HOLD 1"

## Weighing

※ This function is locked when LF 6 is set as “Approval Version”

※ Factory default: SPEEd 1

UF-7

Press the  $\leftarrow$  key to start or press the ESC key to exit menu and back to weighing mode

$\leftarrow$

SPEEd 1

Use  $\blacktriangle$  and then  $\leftarrow$  key to select ADC speed  
(Press the ESC key to exit the setup and back to menu UF-7)

$\leftarrow$

UF-7

Use  $\leftarrow$  and  $\rightarrow$  and then  $\leftarrow$  key to continue with other setups or press the ESC key to exit menu and back to weighing mode

### UF-8 Zero Weight Display Condition :

ZP 0 Off

ZP 1 One division not to display at zero

ZP 2 Two divisions not to display at zero

ZP 3 Three divisions not to display at zero

ZP 4 Four divisions not to display at zero

ZP 5 Five divisions not to display at zero

※ This function is locked when UF-5 is set as “HOLD 1”

※ This function is locked when LF 6 is set as “Approval Version”

※ Factory default: ZP 0

UF-8

Press the  $\leftarrow$  key to start or press the ESC key to exit menu and back to weighing mode

$\leftarrow$

ZP 0

Use  $\blacktriangle$  and then  $\leftarrow$  key to select how many divisions not to display at zero  
(Press the ESC key to exit the setup and back to menu UF-8)

## Weighing

↵

UF-8

Use ◀▶ and then ↵ key to continue with other setups or press the ESC key to exit menu and back to weighing mode

### UF-9 Standard Gravitational (G value) Pre-Calibration:

Approval Model: When the CAL switch is at OFF, 10 gravitational values can be entered and can be also recalled for reference. After 10 gravitational values have been filled, the scale will only allow recalling previous 10 values (-00- ~ -09-) for reference and adding new value will not be allowed. Internal Gravitational Calibration or LF1 Internal Weight Calibration has to be done to erase previously entered values.

Non-approval Model: Even the scale allows to do the Standard Calibration, Gravitational Calibration can help to provide accurate scale when end users received it without all the trouble to recalibrate the scale. Pre-calibration is allowed when the scale is setup as non-approval model or the CAL switch is at ADJ position. Gravitational value will be saved at -00- and will be replaced each time a new value has been entered.

- ※ Sender G value: Set it before Weight Calibration
- ※ Recipient G value: Set it after Weight Calibration
- ※ The G value will be denied when the value is greater than 9.83217 (Polar G value) or less than 9.78031 (Equator G value)
- ※ Factory Default: 9.79423

UF-9

Press the ↵ key to start or press the ESC key to exit menu and back to weighing mode



↵

-03-

The display will show the last value for 1 second

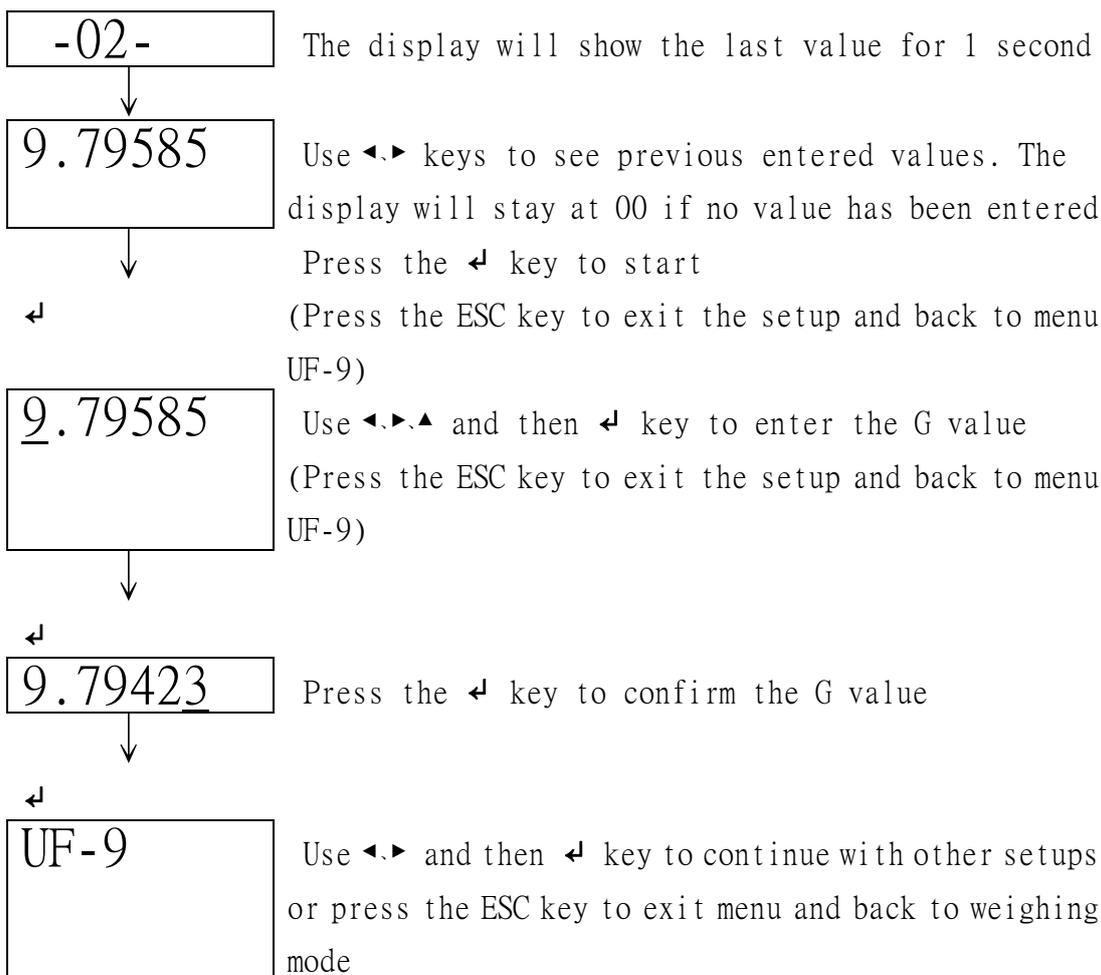


9.79423

Use ◀▶ keys to see previous entered values. The display will stay at 00 if no value has been entered

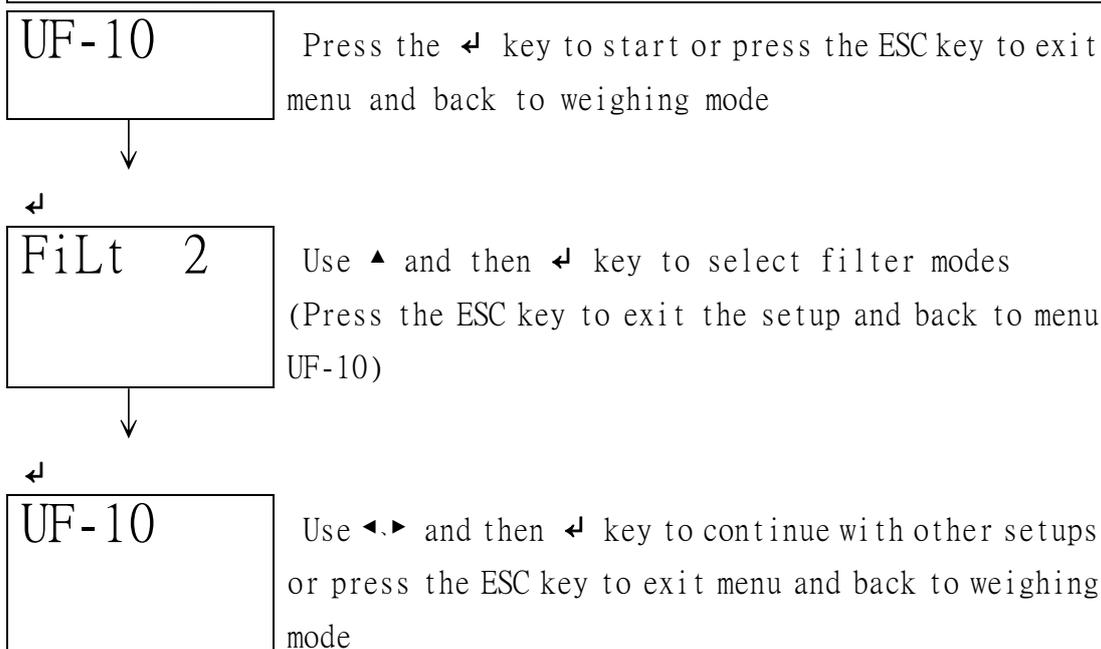


## Weighing



**UF-10 Filter set :**

Select 1-4, Filter from low to high



## Weighing

**UF-11 Stable range :**

1 :Low    2 :Medium    3 :High

UF-11

Press the  key to start or press the ESC key to exit menu and back to weighing mode



StA 2

Use  and then  key to select stable modes (Press the ESC key to exit the setup and back to menu UF-11)



UF-11

Use  and  and then  key to continue with other setups or press the ESC key to exit menu and back to weighing mode

### Approval Calibrations and Functions Setup (Lock section):

Turn on the scale and press and hold the  key until the countdown sequence becomes 1001, then release the  key and the scale will show LF 1

LF 1 Weight Calibration

LF 2 Spec Calibration

LF 3 Linearity Calibration

LF 4 ADC Update Speed

LF 5 Zero Weight Display Condition

LF 6 Approval Conformity

LF 7 Gravitational (G value) Pre-Calibration

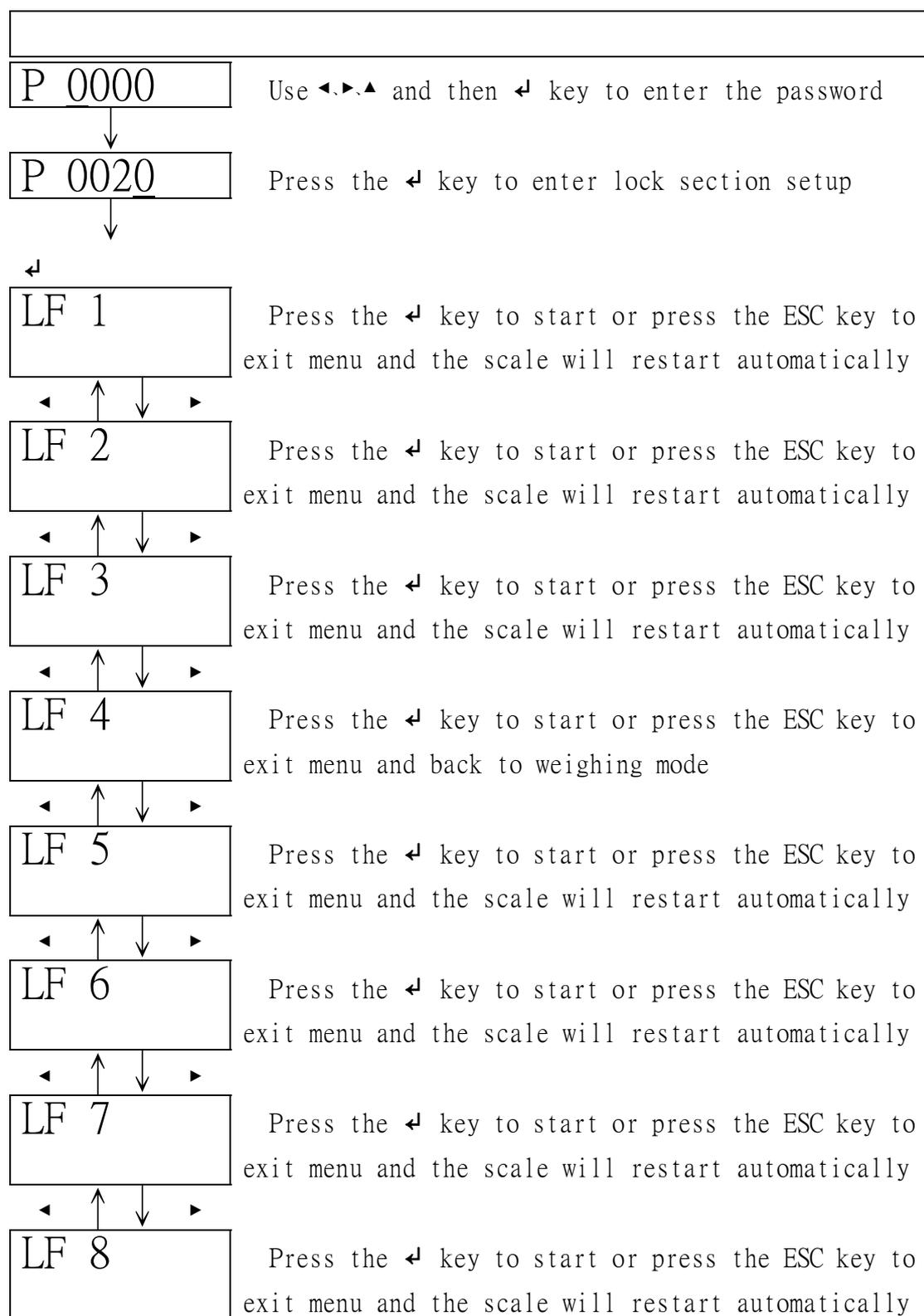
LF 8 Zero Weight Display Condition

※ CAL switch has to be ON

※ Password is required to use Lock Section when LF 6 is set as “none” and CAL switch is OFF

PRINT / 	:		N/G/ 	:	
ZERO / 	:		UNITS/ ESC	:	ESC
TARE / 	:				

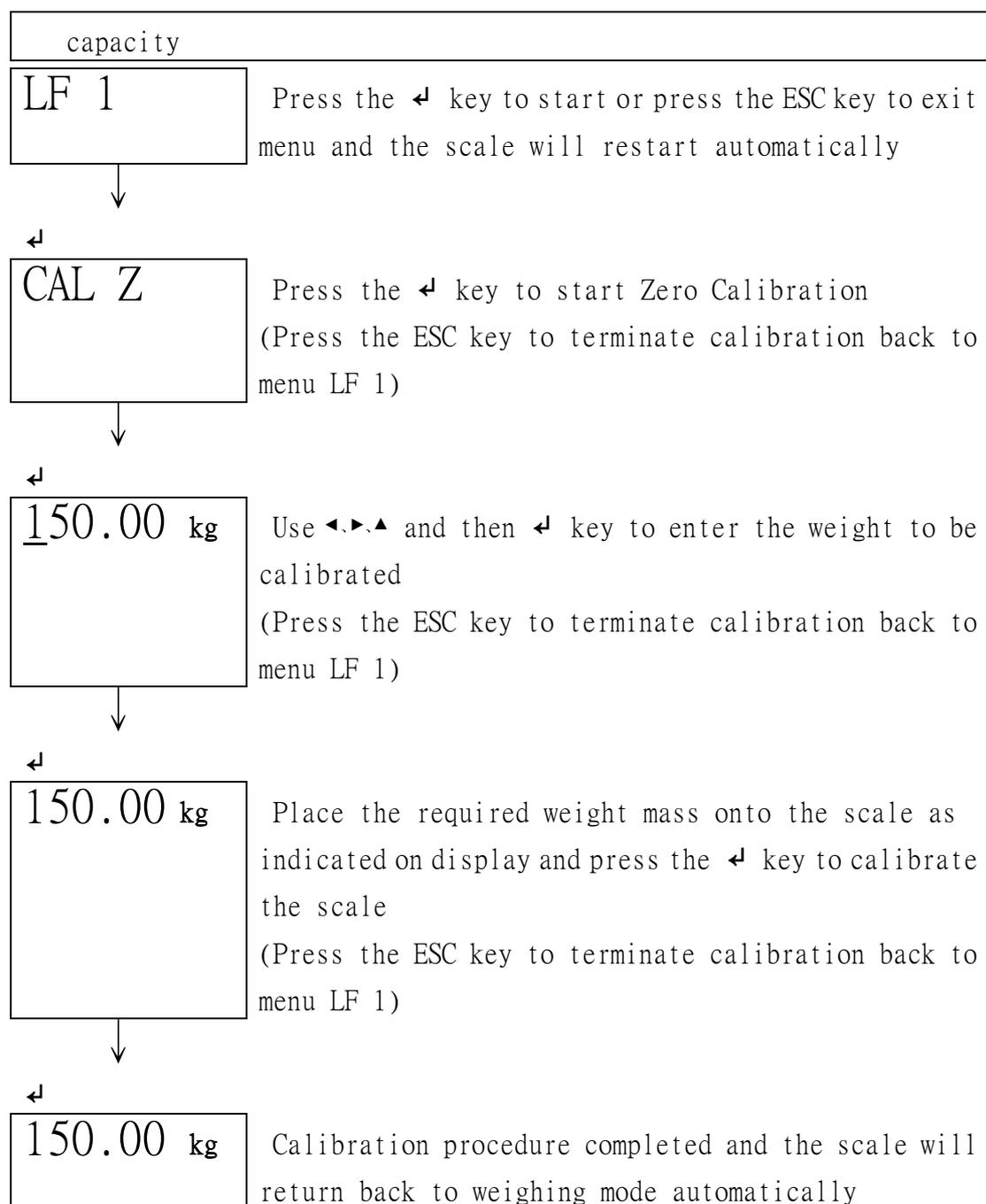
## Weighing



### LF 1 Weight Calibration :

※ Calibration can be done with any weight, but the weight should not be less than 1/100 of the max. capacity and not to exceed the max.

# Weighing



**LF 2 Spec Calibration:**

First step  
2 6 2 1 4 4 Display Internal Value

Second step  
1 0 0 0 0 1  
A B C D E F

A : Metric System    0 : None    1 : kg    2 : T    3 : g

## Weighing

B : American System 0 : None 1 : lb 2 : lb oz

C : Other Units 0 : None 1 : TW Kg 2 : HK Kg 3 : VISS

D : PCS 0 : Off

1 : On

E : Duo range 0 : Off

1 : MULTI INTERVAL

2 : MULTIRANGE

F : Calibration Unit 1 : Metric units as calibration unit

2 : American units as calibration unit

※ lb oz unit cannot be selected as calibration unit

※ The scale will not allow to continue to the next setup step if an error has occurred during the programming

Third step

000000kg

Use ◀▶▲ and then ⏴ key to enter the max. capacity

→ Showing the calibration unit

Forth step

d 0.0

d 0.00

d 0.000

d 0.0000

0.00000

Use ◀▶ keys to move the position of the decimal point

Fifth step

div 01

div 02

div 05

div 10

div 20

div 50

Press the ▲ key to select division

※ After entering LF 2, the scale will display the last saved setup.

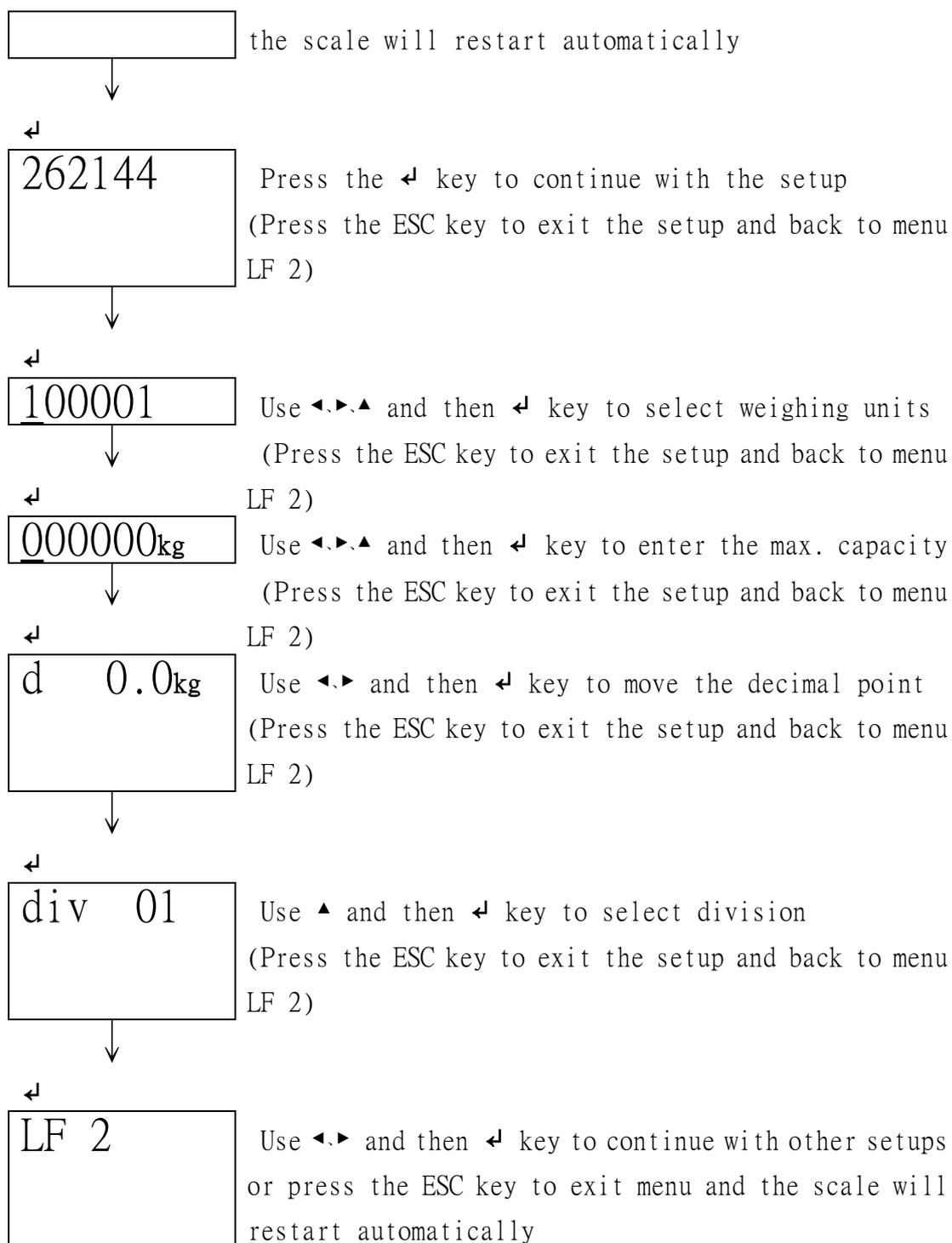
All steps have to be completed to save the changes, otherwise the scale will keep the last setup

※ Proceed with Weight Calibration after LF2 Spec Calibration

LF 2

Press the ⏴ key to start and will display the internal value or press the ESC key to exit menu and

## Weighing



### LF 3 Linearity Calibration :

Up to six calibration sections W0 ~ W6

Be sure that the scale pan is empty before start the calibration. Press

▶ key for first calibration point. Previously saved calibration point will be erased and the display will show

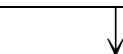
Press the ▶ key to proceed to the next calibration point

## Weighing

Press the ◀ key to return back to the previous calibration point  
Press the ↵ key to save the calibration  
Press the ESC key to terminate calibration back to menu LF 3  
Suggest that the correction value is greater than max. capacity to ensure the measuring range is within linearity range  
Suggest the linearity calibration should be in three points 0 · 1/3 · 2/3 · 1  
※ Proceed with Weight Calibration after Linearity Calibration

LF 3

Press the ↵ key to start or press the ESC key to exit menu and the scale will restart automatically



↵

W 0

Press the ▶ key to calibrate zero (Press the ESC key to terminate calibration back to menu LF 3)



W 1

Place 1/3 weight mass of full capacity onto the scale and press the ▶ key to calibrate 1/3 of the capacity (Press the ESC key to terminate calibration back to menu LF 3)



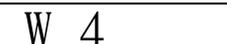
W 2

Place 2/3 weight mass of full capacity onto the scale and press the ▶ key to calibrate 2/3 of the capacity (Press the ESC key to terminate calibration back to menu LF 3)



W 3

Place weight mass of full capacity onto the scale and press the ▶ key to calibrate full capacity 放 (Press the ESC key to terminate calibration back to menu LF 3)



W 4

Press the ↵ key to complete linearity calibration (Press the ESC key to terminate calibration back to menu LF 3)

↵

LF 3

Use ◀, ▶ and then ↵ key to continue with other setups or press the ESC key to exit menu and the scale will restart automatically

## Weighing

### LF 4 ADC Update Rate :

SPEED 1 Standard speed 15 hz

SPEED 2 High speed 30 hz

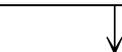
SPEED 3 Low speed 7.5 hz

※ This function is locked when UF-5 is set as "HOLD 1"

※ Factory default: SPEED 1

LF 4

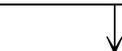
Press the  $\leftarrow$  key to start or press the ESC key to exit menu and back to weighing mode



$\leftarrow$

SPEED 1

Use  $\blacktriangle$  and then  $\leftarrow$  key to select ADC speed  
(Press the ESC key to exit the setup and back to menu LF 4)



$\leftarrow$

LF 4

Use  $\blacktriangleleft$  and then  $\leftarrow$  key to continue with other setups or press the ESC key to exit menu and the scale will restart automatically

### LF 5 Zero Weight Display Condition :

ZP 0 Off

ZP 1 One division not to display at zero

ZP 2 Two divisions not to display at zero

ZP 3 Three divisions not to display at zero

ZP 4 Four divisions not to display at zero

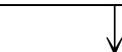
ZP 5 Five divisions not to display at zero

※ This function is locked when UF-5 is set as "HOLD 1"

※ Factory default: ZP 0

LF 5

Press the  $\leftarrow$  key to start or press the ESC key to exit menu and the scale will restart automatically



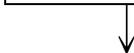
$\leftarrow$

ZP 0

Use  $\blacktriangle$  and then  $\leftarrow$  key to select how many divisions not to display at zero

## Weighing

(Press the ESC key to exit the setup and back to menu LF 5)



LF 5

Use ◀▶ and then ↵ key to continue with other setups or press the ESC key to exit menu and the scale will restart automatically

### LF 6 Approval Conformity:

nonE Non-approval version; Initial Zero not restricted, Standard calibration allowed

oiML EC approval; Initial Zero FULL SCALE  $\pm 10\%$ , Manual Zero FULL SCALE  $\pm 2\%$ , No standard calibration allowed

※ Factory default: nonE

LF 6

Press the ↵ key to start or press the ESC key to exit menu and the scale will restart automatically



nonE

Use ▲ and then ↵ key to select approval or non-approval  
(Press the ESC key to exit the setup and back to menu LF 6)



LF 6

Use ◀▶ and then ↵ key to continue with other setups or press the ESC key to exit menu and the scale will restart automatically

### LF 7 Internal Gravitational (G value) Pre-Calibration:

※ Sender G value: Set it before Weight Calibration

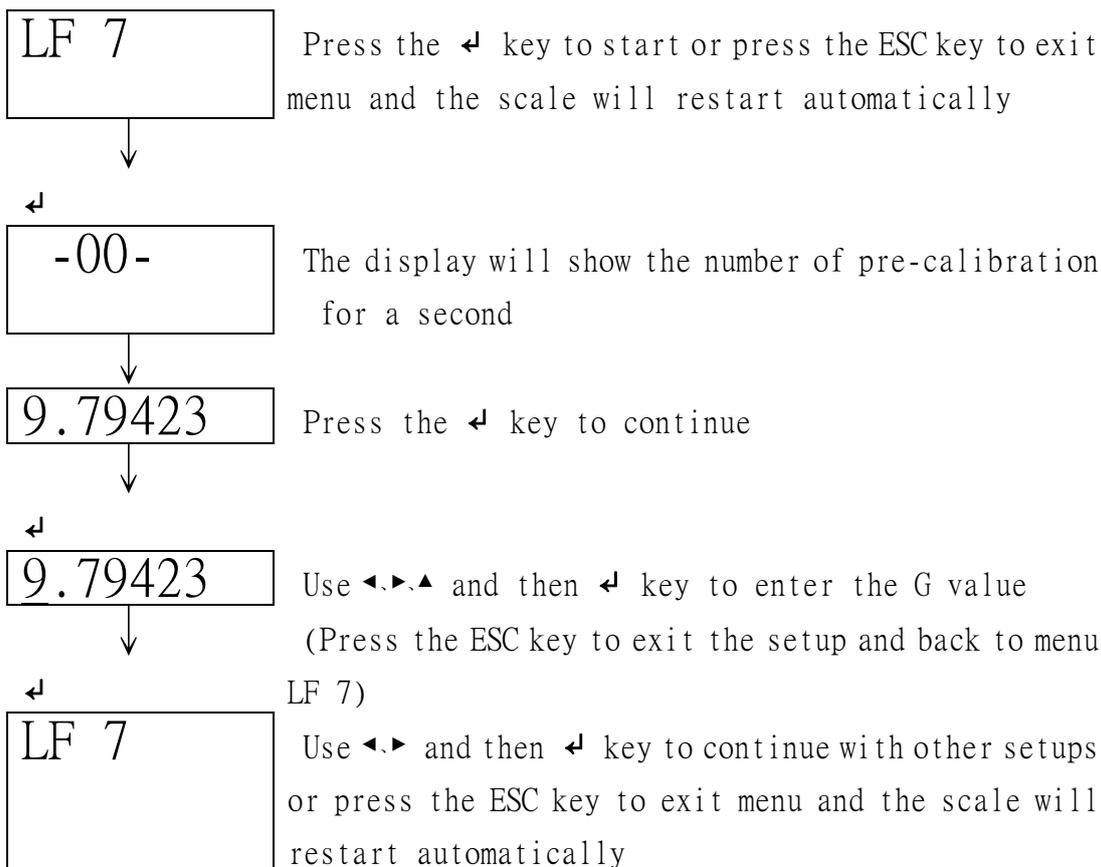
※ Recipient G value: Set it after Weight Calibration

※ The G value will be denied when the value is greater than 9.83217 (Polar G value) or less than 9.78031 (Equator G value)

※ Factory Default: 9.79423

## Weighing

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### LF 8 Initial Zero:

SEtZ Y Reset zero point every time the scale has been switched on  
SEtZ n Zero point reset off  
※ Factory Default: SEtZ Y

