

EXCELL PRECISION CO., LTD.

H4 Series and X Series Counting Scale User Manual

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Check Firmware Version

Thank you for purchasing EXCELL counting scale.

In order to operate smoothly, to last the durability

and to reduce chance of breakdown for this product,

Please read this manual carefully.

Precautions for Use

- 1. The scale should not be drenched by rain or water. (If it gets wet carelessly, please wipe it dry with a cloth. If its operation is abnormal, please send it to our distributor for service)
- 2. Please keep the scale clean. Please keep the scale in a cool and dry place. Do not store at high temperature or damp places.
- 3. Use within the maximum capacity. Avoid sudden drop of heavy object on the platter.
- 4. The rechargeable battery is consumables and is not included in the warranty. If scale is not used for some time, please clean and store it in a plastic bag with desiccative. The rechargeable battery should be recharged every three months. (If using dry batteries, take the dry batteries out before storing)

The numbers of recharges for battery vary with the conditions of use. It can be maximized by re-charging the battery frequently and by avoiding conditions of total discharge.

- 5. The commodity should be placed in the center of platter for accurate weighing. The dimension of the weighted commodity should not exceed the dimension of platter.
- 6. Please operate or charge the scale in an open area. Avoid squeezing the power cable, which might cause short circuit within cable and result in fire. When charging, the charging indicator will light up within 4-6 seconds. Green -> The battery is fully charged. Red -> charging is in progress.
- 7. Operating temperature: $-10^{\circ}C \sim +40^{\circ}C$
- 8. Recommendation: Use this product in an indoor environment with altitude up to 2000m.
- 9. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- 10. Any suggestion for the product is warmly welcome.

Preparations before Using

- 1. Put the scale on a firm and flat surface for accurate weighing reading. Adjust the four leveling feet to get the leveling bubble at the center of the circle.
- 2. Scale must be used under a stable temperature and stable air flow. Avoid direct sunlight onto the scale or use near air vent.
- 3. Scale must be used under individual socket to avoid the interference of other electric appliances.
- 4. Clear the platter before turning on the scale. It requires 15 ~ 20 minutes to warm up.
- 5. When the low power warning symbol flashes, If not charge immediately, auto shut-down within 5~10 hours or 1~2 hours with backlight for H4 series. For X series, it auto shut-down within 8~12 hours or 3~6 hours with backlight. Once it auto shut-down and enter the battery protection mode, it must be charged before it can be used.



6. Lead-Acid Battery Notice

Lead-acid battery adopts the advanced free-maintaining technique, customers need not to replenish electrolyte. The scale should be recharged every 3 months to battery over-discharged and shorten the life of the battery.

- 1. The battery should be fully charged for 8~10 hours.
- 2. The temperature of battery should be below 45°C.

Maintaining

- 1. To ensure the service life of the battery, please do not over-discharge the battery and charge the battery whenever low power warning symbol flashes.
- 2. Please remove the battery when the scale is not used for a long time or disconnect the cable at cathode from the battery. Checked voltage of battery frequently and if voltage is low, charge the battery in time.
- 3. Do not short the battery terminals to check if there is still current. Please check if the connection point is firm to guarantee good connection.
- 4. The battery should be replaced by specialized person. No reverse-battery or the product will be damaged.
 - a) Anode of battery should be connected with Anode of power cable (usually red cable)
 - b) Cathode of battery should be connected with Cathode of power cable (usually brown cable or black cable)



Safety warnings



- 1. The electrolyte of battery is caustic which causes metal, cotton, etc to corrode.
- 2. The hydrogen will be resolved when using or charging the battery and it will cause explosion when approaches fire.





No burning

Caution Corrosion Warning explosion





Chapter 1 Display and Keypad Descriptions

1-1 Display Descriptions

Non-approval models: $\Box \vdash \Box \sqcup = \Box \Box \sim \Box \sqcup$ or resolution equal to 1 / 3,000



Display Column

1. WEIGHT

Total 6 digits. To display the weight or the total accumulation weight; 1st left digit can display "-". **2. UNIT WEIGHT**

Total 6 digits. To display the unit weight of objects on the platter or total accumulation counts. **3. QUANTITY**

Total 6 digits. To display the quantity of the objects on platter or the accumulated quantity.

Symbol Icons " ◀ "

- 1. Tare" indication
- 2. →o← or Zero : "Zero" indication

3. + or M+ : "Accumulation" indication

- 4. Stable : "Stable" indication
- 5. PT: "Pretare" indication (for approval models)

6. [™]: (For non-approval models) If sample weight < minimum required weight, this symbol will display. Please add more samples and then sample again. Minimum required weight is defined: 10d for resolution in 1/3000 and 20d for resolution range from 1/6000 to 1/30000

If symbol $\dot{\mathbb{M}}^{\dagger}$ displays, scale can still be used but may affect the counting accuracy.

7. Ent : If the unit weight of the object < "Minimum Unit Weight", this symbol will display. Please use scale with smaller division. "Minimum Unit Weight" is defined:

0.1d for resolution in 1/3000 and 0.2d for resolution range from 1/6000 to 1/30000

If symbol \mathbb{E}^{\uparrow} displays, scale can still be used but may affect the counting accuracy.



1-2 Power Supply and Power Consumption 100~240Vac, 50/60Hz

		H4 series	X series
Software version		03005XXX	03006XXX
Battery		6V / 4Ah lead acid battery	3.7V / 6100mAh Li battery
Consumption (without backlight)		33mA / 0.20W Operation time: 108 hours	27mA / 0.11W Operation time: 120 hours
Charging time		8~12 hours	5~6 hours
	4	>= 6.2V	>= 3.8V
Battery		< 5.7V	< 3.52V
status	Auto shut-down	< 5.6V	<3.42V

1-3 Keypad Descriptions

[Standard keypad]

7	8	9	CAMDI	Q'TY
	ABC	DEF	SAIVIPL	PST
4	5	6	UNIT	PST
GHI	JKL	MNO	W.T	CE
1	2	3	7	N/L I
PQRS	TUV	WXYZ	2	IVIŦ
0	•	CE	Т	MC

[Double weighing units keypad]

7	8	9	SAMDI	Q'TY
	ABC	DEF		PST
4	5	6	UNIT	ka/lb
GHI	JKL	MNO	W.T	Kg/ID
1	2	3	7	Мт
PQRS	TUV	WXYZ	2	
0		CE	Т	MC

[10 sets of preset unit weight keypad]

7	8	9	CAMDI	Q'TY
	ABC	DEF	SAIVIPL	PST
4	5	6	UNIT	U.W
GHI	JKL	MNO	W.T	PST
1 PQRS	2 TUV	3 WXYZ	Z	M+
0		CE	Т	MC

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Different keys for different models:



- : Press this key to clear preset.
- Press this key to switch the unit : kg or lb



- Press this key to preset the unit weight of sample. Or use this key to enter the setting mode.
- Press this key and release it within 3 seconds, then user can increase or decrease the number of decimal places. Or press this key over 3 seconds, the display resolution will change from 1/3,000 to 1/30,000 temporarily. The display resolution will return back to 1/3,000 after 5 seconds.

1-4 Error Messages

- E1 \Rightarrow zero value is too high (OMIL or NTEP >10% full scale)
- $E2 \Rightarrow$ zero value is too low (OMIL or NTEP <10% full scale)
- E6 \Rightarrow Internal value >700,000 (use in factory calibration)
- E7 \Rightarrow Internal value <100,000 (use in factory calibration)
- oL \Rightarrow The weight value is over 9d of the maximum capacity. (d = division)
- unStAbLE \Rightarrow Internal value is unstable (Unstable over 10 seconds after pressing **ZERO** or **TARE** key)

Chapter 2 Operation

2-1 Power On

SW switch on (Press SW to location " | ")



After return to zero and being stable, scale will enter into counting mode.

2-2 High and Low Resolution Shift Setting

- Only for 1/3,000 resolution models
- The function is subject to OIML and Brazil Approval models.
- Press key and then release this key in 2.5 seconds until 3 seconds, this key has decimal function.
- Press key and then not to release in 3 seconds, the resolution in weight column will convert to 1/30,000 and return back to 1/3,000 in 5 seconds.
- When resolution converts to 1/30,000, key and Printer are not available.

2-3 Zero Function

While operating the scale, zero may sometimes fluctuate. (Slight weight changes happen in weight column.) Press **ZERO** key to return to zero.

2-4 Obtain Unit Weight

2-4-1 Through Sampling

1. Place the sampling object on platter

118.5	U
Weight on platter	

2. Enter the quantity of the sample on platter

: :8.3	188	; ;
Vaiobt an plattar	Enter the compliant supplier	

Weight on platter

Enter the sampling quantity

The number of quantity column will flash 6 seconds. If the user doesn't press the **SAMPLE** key before flashing is over, the scale will complete the unit weight setting procedure automatically after flashing. The scale will also take the number that inputted in unit weight column as the unit weight of object to calculate the quantity of object shown in quantity column.

EXCELL PRECISION CO., LTD. 3. Press **SAMPLE** key while total column number is flashing 118.3 586868 Weight on platter 4. After stable, the scale finishes sampling and enters into counting mode 1.1833 ::8.3 100 stable 4 Weight on platter Unit weight of object Enter sampling quantity 2-4-2 Enter Known Unit Weight 1. Enter known unit weight of object intended to weigh → • ← 1.833 0.0 ; [] ; stable 4 Unit weight of object intended to weigh 2. Press **UNIT WEIGHT** key to complete setting and enter into counting mode → • • 1.833 0.0 \Box stable 4 Unit weight of object intended to weigh 2-4-3 Through Sampling Under Tare 1. Take the sample off the platter -59.8The weight of object on platter 2. Input the quantity of sample on the platter -99.8 \square ; **b** ∈ The weight of object on platter Enter the quantity of sample The number of quantity column will flash 6 seconds. If the user doesn't press the SAMPLE key before flashing is over, the scale will complete the unit weight setting procedure automatically after flashing. The scale will also take the number that inputted in unit weight column as the unit weight of object to calculate the quantity of object shown in quantity column. 3. Press **SAMPLE** key while the number of quantity is flashing -99.8 58766 Weight of the object on platter 4. After stable, the scale finishes sampling and enters into counting mode -99.8 5.98500 ΗŪ stable 4 Weight of the object on platter Unit weight of object quantity of sample entered The larger quantity of sampling, the more precise unit weight counted out. When unit weight column and total quantity column both indicate 0, please press **1UNIT WEIGHT** key, and the previous unit weight value will come out.

Use **ZERO** and **7** keys to turn on/off quantity display with negative weight.

EXCELL® EXCELL PRECISION	CO., LTD.		
2-5 Tare Function Op	peration		
1. Place the packaging container	on platter		
5.8	8		8
Weight of packaging container			
2. Press TARE key			
	8		0
3. The scale will enter into counti	ng mode after stable		
→→ →☆ ↓ └_!,└_!	8	stable 4	8

Clear off the tare value

- Mode 1: After removing the object together with packaging container, weight column will display the negative value of packaging container. Press **TARE** key again to cancel the tare, and return to zero. The tare symbol "4" will disappear.
- Mode 2: After removing the object together with packaging container, weight column will display the negative value of packaging container. Press **ZERO** key again to cancel the tare, and return to zero. The tare symbol "4" will disappear.

2-6 Pre-tare Function Operation

F = C = C = (Pre-tare setting) is set up as C = C = (Pre-tare setting) is set up as C = C = C = C = C

1. No weight on platter → • • 0.0 \Box stable 4 2. Press **TARE** key →↔ 0.0 stable < 3. Enter the known weight of packaging container >० ← ব 5.8 →€ stable weight of packaging container entered 4. Press **TARE** key 5.8 stable 4 →î) F = C = C = C (Pre-tare setting) is set up as C = C (Weight on platter) For Non-approval models 1. Object placed on platter 1775 1 7 7 5 2 100 stable 4 Weight of the object on platter Unit weight of the object Quantity of the object 2. Enter the known weight of packaging container 1.0 1775 stable 4 Weight of packaging container entered

03005XXX/03006XXX

ZSME20000060



Weight of the object without container

Unit weight of the object



Quantity without packaging container

stable 4

- Pre-Tare function is also available even if tare is in operation.
- If the net weight on platter is more than zero weight, the tare function is available. Otherwise, it's not capable of tare function.

Clear off Pre-tare value

After removing the object together with packaging container, weight column will display the negative weight value of the packaging container. Press **TARE** key once again to cancel the pre-tare value and return to zero. Then the tare and pre-tare symbol "4" will disappear.

Recall Pre-tare value

1. Press **Q'TY PRSET** key, and then press **TARE** key



Pre-tare	value

2. After displays pre-tare value about 5 seconds, it automatically returns to the weighing mode

273-2

|--|

Recall pre-tare value function and clear function are not available for Standard keypad models.

2-7 Accumulation

- The accumulation counts are up to 99 counts, but the total quantity column is at most 6 digits.
- Users cannot do positive accumulation and negative accumulation at the same time.
- 2-7-1 Quantity Accumulation 1. Place an object on platter : :8.3 1.1833 stable 4 Weight of the object on platter Unit weight of the object Quantity of the object on platter 2. Press M+ key 822 3. After scale is stable 18.3 stable 4 Accumulated total weight Accumulated total counts Accumulated total quantity 4. After about 3 seconds, scale returns to counting mode ◀ +ł 18.3 1.1833 stable 4 Weight of the object on platter Unit weight of the object Quantity of the object on platter



Recall quantity accumulation

While weight column displays 0, press M+ key to recall the accumulated data

₩ 1 18.3	<u> </u>	+ stable
Accumulated total weight	Accumulated total counts	

188

Accumulated total quantity

Clear off the accumulated quantity value

Press MC key to clear off the accumulated value in the memory, and then accumulation symbol "◀ " will disappear.

2-7-2 Weight Accumulation

1. Place an object on platter when unit weight displays 0



Recall weight accumulation value

While weight column displays 0, press M+ key to recall the accumulated data

₩ 1 18.3	<u> </u>	+ stable	
Accumulated total weight	Accumulated total counts		

Clear off the accumulated weight value

Press MC key to clear off the accumulated weight in the memory, and then the accumulation symbol "◀ " will disappear.

2-8 Quantity Preset

It's available to pre-set the upper limit of quantity in counting mode. If the counts are over the limit, the beeper makes warning sounds, and the weight column displays flashing "- 다는날-"

Upper limit of preset quantity (Non-standard keypad)

1. Whether there is an object on platter or not, press **Q'TY PRESET** key. Press **SAMPLE** key, select "Quantity Preset" mode (Press **UNIT WEIGHT** key to select "Weight Preset" mode)

|--|

Previous preset value

stable 4

EXCELL® EXCELL PRECISION CO., LTD.											
2. Enter the upper limit intended (Press CE key to modify the value entered)											
≫← - ໆと当-											
	Upper limit entered										
3. Press SAMPLE key (Press CE	E key to modify the value entered)										
≫← - └╎と └┤ -											
4. press Q'TY PRESET key, the scale return to the counting mode											
∞ 0.0	stable										

Clear off the pre-set upper limit

To clear the pre-set upper limit of quantity or weight, please follow the above-mentioned operation steps. When entering the pre-set value, please enter "0" instead.

- When switching to "weight preset" mode or "quantity preset" mode, previous preset value will be deleted automatically.
- If it is standard keypad, use number keys to enter number and then press Q'TY PRESET key to finish the setting; If to clear off the pre-set upper limit, press PRESET CE key.

2-9 Weight Preset

It's available to pre-set the upper limit of weight. If the weights are over the limit, the beeper makes warning sounds, and the weight column displays flashing "- $\Box'\Box'\Box'$ -"

Upper limit of preset weight

1. Whether there is an object on platter or not, press **Q'TY PRESET** key. Press **UNIT WEIGHT** key to select "Weight Preset" mode (Press **SAMPLE** key to select "Quantity Preset" mode)



Clear off the pre-set upper limit

To clear the pre-set upper limit of quantity or weight, please follow the above-mentioned operation steps. When entering the pre-set value, please enter "0" instead.

When switching to "weight preset" mode or "quantity preset" mode, previous preset value will be deleted automatically.







ID & ITEM are applied in FIX FORMAT or FREE FORMAT.

ID & ITEM could be set up to 12 digits. They can be numbers (0~9), English letters (A~Z), or _.

- Entering numbers/English letters: Press number key and the digit flashes. Press the same key, and the display shows the number/English letter in cycle. When the entered number/English letter flashes for 2 seconds, the setting will be confirmed and moved to the right place by 1 digit. For example: Press 1 key continuously, and the screen displays 1,P,Q,R,S flashing in cycle. (If to enter too many numbers, please enter _ to clear superfluous numbers.)
- If ID & ITEM are not saved in unit weight preset, the data will be cleared after power off.

2-12 Unit Weight Preset

- The preset data could be saved in up to 50 addresses
- Each address contains: unit weight pre-tare ID and ITEM

2-12-1 Pre-set Unit Weight Operation (Read-in)

Use number keys to enter the unit weight. (The value is 0 or blank without setting)

Press U.W. PST key

٥٥٥ -



EXCELL PRECISION CO., LTD. Press U.W. PST key again P5E888 Press number keys to select 1 of 50 addresses for saving the data. If it is over 50, Please re-enter. P4+848 Press U.W. PST key 2-12-2 Pre-set Unit Weight Saving Operation (Read-out) Press U.W. PST key again P-000 Use number keys to enter preset group that you want. If it is over 50, Please re-enter. Pr 858

Press **U.W. PST** key again to read-out the data you saved. If the data is blank, it shows NULL.

While read-in or read-out, if the waiting time is over 10 seconds, the scale returns to weighing mode automatically. Press **CE** key to cancel the read-in and read-out.

Chapter 3 External Calibration Setting

After starting the machine and it returns to zero, press **ZERO** key and the screen displays "-----". Then press • key to enter external calibration function setting mode. The weight column displays 0 | F - C



Press TARE key



If CF→ C ↓ is set as C = (OIML & NTEP approval), the parameter of F→C CS~ + 3 cannot be modified.

3-1-1 Backlight Mode Setting F⊢⊑ □ ↓



Default Setting: 02 (No backlight)

- $00 \Rightarrow$ Backlight is always on.
- 01⇒ While weighing (weight is higher than 10d) or pressing any key, backlight be turned on automatically. The backlight is turned off automatically when the scale is idle for 10 minutes. (d=division)

 $02 \Rightarrow No backlight.$

When turning on, the backlight mode is the same as previous setting.



3-1-2 Auto. Power-off Setting 두고도 요금

Press **MC** key and enter parameter 00~10. Then press **MC** key to save the setting. Default Setting: 00; up to 10 minutes at most.

- $00 \Rightarrow$ Auto Power-off function is off.
- $01 \sim 10 \Rightarrow$ Scale is automatically powered off after not in use for $1 \sim 10$ minutes. Restart the scale to use again.

3-1-3 Stable Range Setting for Quantity Sampling F⊓C □∃

Press MC key and enter parameter 00~15. Then press MC key to save the setting. Default Setting: 08; that means if deviation is within ±8 counts of internal value, it is considered as stable while in sampling

00~15: The higher value makes the sampling faster, but less accurate.

The smaller value makes the sampling slower, but more accurate.

It can't be shifted after sampling, only when the unit weight is cleared in Brazil version.

3-1-4 Auto Average Unit Weight Setting 두고도 입니

Press **MC** key and enter parameter 00~01. Then press **MC** key to save the setting. Default Setting: 01

- $00 \Rightarrow Off$ (Press **SAMPLE** key for manually update unit weight)
- $01 \Rightarrow On$; auto update average unit weight.
- Auto updates unit weight when the measured sampling number increase greater than 10% but less than 100% of previous sampling number.

3-1-5 A/D Sampling Speed Setting 두고는 민들

Press **MC** key and enter parameter 00~01. Then press **MC** key to save the setting. Default Setting: 00

 $00 \Rightarrow$ Low speed is about 7.5 Hz. (Weighing reflection is slow but relatively stable)

 $01 \Rightarrow$ Fast speed is about 15 Hz. (Weighing reflection is fast but relatively unstable)

3-1-6 Zero Display Range Setting 드는 민들

Press **MC** key and enter parameter 00~03. Then press **MC** key to save the setting. Default Setting: 00 for approval (CFn = 02~04) or 01 for non-approval (CFn = 00~01)

- $00 \Rightarrow Display as it is$
- $01 \Rightarrow$ Display 0, if within ±1 division
- $02 \Rightarrow$ Display 0, if within ±2 divisions
- $03 \Rightarrow$ Display 0, if within ±3 divisions
- It is activated only when the weight is over 1/3 full capacity. The pre-tare value must be greater than setting. For example: If FnC 06 = 03, pre-tare > \pm 3 divisions.

3-1-7 Zero Tracking Range Setting 두고는 요구

Press MC key and enter parameter 00~03. Then press MC key to save the setting. Default Setting: 00 for approval (CFn = 02~04) or 01 for non-approval (CFn = 00~01)

- $00 \Rightarrow$ When gross weight is stable at 0 over 1 second, it could track \pm 1/4 d. (d=division)
- $01 \Rightarrow$ When gross weight is stable at 0 over 1 second, it could track $\pm 1/2$ d.
- $02 \Rightarrow$ When gross weight is stable at 0 over 1 second, it could track \pm 1 d.
- $03 \Rightarrow$ When gross weight is stable at 0 over 1 second, it could track ± 2 d.



3-1-8 Accumulation Ending Mode Setting F ⊢ □ □ □

Press **MC** key and enter parameter 00~02. Then press **MC** key to save the setting. Default Setting: 00

- $00 \Rightarrow$ Press **M**+ key. Displays accumulation for 3 seconds, and return to weighing mode.
- $01 \Rightarrow \text{Press}$ M+ key. Displays accumulation until press CE key to return to weighing mode.
- $02 \Rightarrow$ Press M_+ key. Beeper beeps once and does not display accumulation.

3-1-9 Pre-tare mode setting 무너도 다음

Press **MC** key and enter parameter 00~01. Then press **MC** key to save the setting. Default Setting: 00

- $00 \Rightarrow$ Pre-tare only when weight display is 0
- $01 \Rightarrow$ Pre-tare at any weight value on the display
- Pre-tare value <= max weight of 1st interval or range; pre-tare value > external value set in FnC 06.

3-1-10 "Beeper" Output Setting for Quantity Limit ⊢⊢⊏ □□

Press MC key and enter parameter 00~01. Then press MC key to save the setting. Default Setting: 00 for approval (CFn = 02~04) or 01 for non-approval (CFn = 00~01)

- 00 ⇒ Beeper beeps when stable and quantity exceeds quantity setting (or weight exceeds weight setting)
- $01 \Rightarrow$ Beeper beeps when quantity exceeds quantity setting (or weight exceeds weight setting), regardless if it is stable

3-1-11 Accumulation Acceptable Condition Setting 1 En [

Press **MC** key and enter parameter 00~01. Then press **MC** key to save the setting. Default Setting: 00

- $00 \Rightarrow$ Accumulate only when stable.
- $01 \Rightarrow$ Accumulate regardless if it stable.

3-1-12 Accumulation Acceptable Condition Setting 2 드니는 나는

Press **MC** key and enter parameter 00~04. Then press **MC** key to save the setting. Default Setting: 00

- $00 \Rightarrow$ Accumulate only when weight is within zero band (close to 0) first. Refer rS1 07 for zero band setting (00~99)
- $01 \Rightarrow$ Accumulate with no need to return to zero. That means when no weight on platter, the weight can be accumulated continuously.
- $02 \Rightarrow$ Accumulate only when weight is within zero band of gross weight (close to gross = 0) first. Refer rS1 07 for zero band setting (00~99)
- $03 \Rightarrow$ Press M+ key not to accumulate the value, but RS-232 transmits the data.
- $04 \Rightarrow$ Accumulate only when weight return to within $\pm 1/4d$ of gross weight first.

3-1-13 Combination Key Setting F ⊡ []

Combination key represents **kg/lb** key or **UNIT WEIGHT PRESET** key. This key contains 2 functions: **①** Unit switching **②** 50 sets for unit weight preset

Press **MC** key and enter parameter 00~01. Then press **MC** key to save the setting. Default Setting: 00

- $00 \Rightarrow$ Press the combination key once to select unit (priority function).
- Press the combination key for 3 seconds to preset unit weight (minority function). $01 \Rightarrow$ Press the combination key once to preset unit weight (priority function).
 - Press the combination key for 3 seconds to select unit (minority function).



3-2 External Weight and G Value Calibration CP EC



3-2-1 External Weight Calibration E C

Zero value can be calibrated separately from the weight calibration value.





3-2-2 Calibrate G Value Used in Local or in Verification $\Xi \Box = \Box \Xi$

- It is capable for users to set or modify G value for 9 times. If it is the 10th revised G value, please enter "06 CGr" to calibrate local G value, and the calibration time will be re-set as "1".
- Local G value calibration must be done after external weight calibration.
- If the external weight calibration is done after G value calibration, the previous G value will be set as the value used in verification.
- G value must between 9.78032 m/sec² to 9.83218 m/sec².



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3-3 RS-232 and Serial Printer Setting



 $03 \Rightarrow 4\ 800\ \text{bits/sec}$ $04 \Rightarrow 9\ 600\ \text{bits/sec}$ $05 \Rightarrow 19\ 200\ \text{bits/sec}$ If there is free form device, it is 9600 bits/sec transmit.

3-3-2 Communication Protocol Setting - 🖢 🕴 🗔 🖯

Press MC key and enter parameter 00~02. Then press MC key to save the setting.

Default Setting: 00 (N, 8, 1); If there is free form device, it transmits in n81.

 $00 \Rightarrow N, 8, 1$ $01 \Rightarrow E, 7, 1$ $02 \Rightarrow 0, 7, 1$

If there is free form device, it is 00 (N, 8, 1) transmit.

3-3-3 Output Data Format Setting $\Box \Box \Box \Box$

Press MC key and enter parameter 00~09. Then press MC key to save the setting. Default Setting: 00 (Fixed format 1);

If there is free form device, the setting will be fixed as $02 \Rightarrow$ Reserved. $00 \Rightarrow$ Fixed format 1

- $05 \Rightarrow$ Gross weight (general format)
- $06 \Rightarrow$ Net weight (general format)
- $07 \Rightarrow$ Tare (general format)
- $03 \Rightarrow$ Same as display (general format)
- $04 \Rightarrow$ Same as display (simple format)
- $08 \Rightarrow$ Fixed format 3 $09 \Rightarrow$ Fixed format 4

 $01 \Rightarrow$ Fixed format 2

 $02 \Rightarrow \text{Reserved}$



Please see "Appendix 1" for output format.

Fixed format is described as following:

Fixed	format 1	"Press	M+ key to print"	Fixed for	ormat 2 "P	ress M+	key to print"
				ID:	xxxxxx	xxxxx	
				ITEM:	XXXXXXX	XXXXX	
NO.	3			NO.		3	
G	2.480	kg		G	2.480	kg	
Ν	2.000	kg		Ν	2.000	kg	
Т	0.080	kg		Т	0.080	kg	
ΡT	0.400	kg		PT	0.400	kg	
U/W	1.6003	g		U/W	1.6003	g	
Q	1250	pcs		Q	1250	pcs	

If the format in rS1 03 is set that press M+ or MC key to print and the transmission format in rS1 05 is set as continuous or automatic transmission, some content printed out is meaningless.

Fixed format 3 "Press M+ key to print"	Fixed format 4 "continuous or auto. transmission"
NO. 1	N/W 0.500
N/W 0.500	U/W 1.00013
U/W 1.00013	PCS 500
PCS 500	

Fixed format 1,2 "Press **MC** key to print" (Print out total accumulation data and clear data in memory)

=====	=======	====
T/N	3	
T/W	1500	kg
T/Q	300	pcs

Fixed format 3 "Press **MC** key to print" (Print out total accumulation data and clear data in memory)

= = = = = = =	= = = = =
T/N	3
T/W	1500
T/A	300

 $\begin{array}{ll} \text{NO.} \Rightarrow \text{Number of Counts} & \text{Q} \Rightarrow \text{Quantity} & \text{T} \Rightarrow \text{Tare} & \text{PT} \Rightarrow \text{Pre-Tare} & \text{G} \Rightarrow \text{Gross Weight} \\ \text{N} \Rightarrow \text{Net weight} & \text{U/W} \Rightarrow \text{Unit weight} & \text{T/N} \Rightarrow \text{Total Number of Counts} & \text{T/W} \Rightarrow \text{Total weight} \\ \text{T/Q} \Rightarrow \text{Total quantity} & \text{ID: 12 digits (max.)} & \text{ITEM: 12 digits (max.)} \\ \end{array}$

3-3-4 Continuous Output Count Setting Per-second

Press **MC** key and enter parameter 00~04. Then press **MC** key to save the setting.

Default Setting: 00 (1 count/sec)

 $00 \Rightarrow 1 \text{ count/sec}$ $01 \Rightarrow 2 \text{ counts/sec}$ $02 \Rightarrow 4 \text{ counts/sec}$

$$03 \Rightarrow 8 \text{ counts/sec}$$
 $04 \Rightarrow \text{More than 8 counts/sec}$

If parameter in rS1 03 is set as 00 or 01, it may not reach transmit counts due to large size of data for transmission.



If parameter in rS1 03 is set as 02, it is not capable of continuous transmission mode.

If parameter in rS1 03 is set as $03 \sim 07$, it is capable of continuous transmission mode.

3-3-5 Operation Mode Setting - '= | □'=

Press **MC** key and enter parameter 00~05. Then press **MC** key to save the setting.

Default Setting: 03

- $00 \Rightarrow \text{Command mode}$
- $01 \Rightarrow$ Continuous transmission + command mode
- $02 \Rightarrow$ Auto. transmission + command mode
- $03 \Rightarrow$ Manual transmission + command mode
- If rS1 03 is set as 02, rS1 05 is fixed as Manual transmission but without command mode

 $04 \Rightarrow No RS-232$ transmission

 $05 \Rightarrow ZEBERA PRINTER format$

- If there is free form device, the setting will be fixed as 03.
- Please see "Appendix 1" for command mode format.

ZEBERA PRINTER output format

1. Press M+ key to print

F	R	"	5	2	0	Р	"	<lf></lf>										
?	<lf></lf>						_											
G	G	,	G	G	G	<lf></lf>												
Т	т	,	Т	т	т	<lf></lf>												
PT	PT	,	PT	PT	PT	<lf></lf>												
Ν	N	,	Ν	N	Ν	<lf></lf>												
UW	UW	,	UW	UW	UW	<lf></lf>												
PCS	PCS	PCS	PCS	PCS	PCS	<lf></lf>												
n	n	n	n	n	n	t	t	t	t	t	t	pcs	pcs	pcs	pcs	pcs	pcs	<lf></lf>
Р	1	,	1	<lf></lf>														

G = Gross T = Tare PT = Pretare N = Net

UW = Unit Weight PCS = Quantity, Fill in blanks for zero "0" on the left.

n = Net t = Tare + Pretare pcs = Quantity, zero "0" on the left reserved <LF> = 0x0A line feed

For example:

<u>FULE</u>	lamp	e.																
Gross	=	0,5	500 kg	g														
Tare	=	0,1	50 k	g														
Pre-ta	re =	0,0)50 k	g														
Net	=	0,3	300 k	q														
UW	=	0,5	<u>5</u> q	0														
PCS	=	60	õ															
F	R	"	5	2	0	Р	"	<lf></lf>										
?	<lf></lf>								•									
SP	0	,	5	0	0	<lf></lf>												
SP	0	,	1	5	0	<lf></lf>												
SP	0	,	0	5	0	<lf></lf>												
SP	0	,	3	0	0	<lf></lf>												
SP	0	,	5	0	0	<lf></lf>												
SP	SP	SP	6	0	0	<lf></lf>												
0	0	0	3	0	0	0	0	0	2	0	0	0	0	0	6	0	0	<lf></lf>
Р	1	,	1	<lf></lf>														
< F>	ed)	SP	SP = 0x20 (Blank)															

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Z. Ple			ey to	print														
F	R	"	5	2	0	т	"	<lf></lf>										
?	<lf></lf>																	
ΤN	TN	TN	TN	TN	ΤN	<lf></lf>												
тw	тw	,	TW	тw	тw	<lf></lf>												
TA	ТА	TA	ТА	ТА	TA	<lf></lf>		-	-	-	-						_	
tn	tn	tn	tn	tn	tn	tw	tw	tw	tw	tw	tw	ta	ta	ta	ta	ta	ta	<lf></lf>
Р	1		1	<lf></lf>														

TN: Total number TW: Total weights TA: Total quantities

tn: Total number tw: Total weights ta: Total quantities NOTE: Fill in zero "0" for the blanks on the left.

For example:

TN = TW =	3 2,	395 k	g															
<u>TA =</u>	= 23	3937																
F	R	"	5	2	0	Т	"	<lf></lf>										
?	<lf></lf>		_		-				-									
SP	SP	SP	SP	SP	3	<lf></lf>												
SP	2	,	3	9	5	<lf></lf>												
SP	2	3	9	3	7	<lf></lf>												
0	0	0	0	0	3	0	0	2	3	9	5	0	2	3	9	3	7	<lf></lf>
Р	1	,	1	<lf></lf>														

<LF> = 0x0A (line feed) SP = 0x20 (Blank)

3-3-6 Continuous Transmission Output Condition Setting - 🖢 🌾 🗔 🖯

Press MC key and enter parameter 00~01. Then press MC key to save the setting.

Default Setting: 00 (Output all)

 $00 \Rightarrow \text{Output all}$

 $01 \Rightarrow$ No output under OL or unstable condition

In rS1 06 is effective only when rS1 05 set to 01 (Continuous transmission)

Press MC key and enter parameter 00~99. Then press MC key to save the setting.

Default Setting: 05 (External value "5d")

 $00 \Rightarrow$ External value "0d"

$$01 \Rightarrow$$
 External value "1d"

 $99 \Rightarrow$ External value "99d"

Weight must return within zero band first (weight < r S1 07 setting), and then put the weight >= r S1 07 setting before data will be sent once

I rS1 07 is effective only when rS1 05 set to 02 (Auto. transmission)

is related to FnC 12 (accumulation acceptable condition)



3-3-8 Weight Band Setting for Auto. Transmission - 🖢 🕴 🗍 🗄

Press MC key and enter parameter 00~99. Then press MC key to save the setting.

Default Setting: 05 (External value "5d")

- $00 \Rightarrow$ External value "0d"
- $01 \Rightarrow$ External value "1d"
- 99 \Rightarrow External value "99d"
- Is rs 108 must be used with rs 107. After data has been sent once and the weight is not removed, to send data again, please keep adding weight until "rs 107 zero band setting" + "rs 108 weight band setting".

I rS1 08 is effective only when rS1 05 set to 02 (Auto. transmission)

Appendix 1 RS-232 Full Duplex Format

Table 1 Command Format Command Format A

Host Slave Command

Command

MZ	Return to zero	СР	Clear off pre-tare value
MT	Tare	СТ	Clear off tare value
AT	Current net weight accumulation & count plus 1	DT	Clear off accumulated data and counts
SC	Set continuous transmission mode	SA	Set automatic transmission mode.
SM	Set manual transmission mode	SO	Set command mode
UA	Shift to first unit	UB	Shift to second unit
%	Cease continuous transmission mode and enter	· into	command mode

Command Format B

Host		Command			
Slave	9				Data
RW	Read cur	rrent displaying	weight	RB	Read current displaying weight(simple)
RG	Read gro	oss weight		RT	Read tare
RN	Read net	t weight		RI	Read net weight (simple)
RH	Read gro	oss weight (simp	ole)	RE	Read pre-tare (simple)
RU	Read uni	it weight (simple	e)	RD	Read accumulated quantity (simple)
RC	Read acc	cumulated count	ts (simple)	RI	Read tare (simple)
Rf	Read pre	e-set name (ITEI	M)	Rk	Read accumulated weight (simple accumulation format)
Rg	Read ID#	ŧ		Rh	Read weighing unit
RQ	Read qua	antity (simple)		Ri	Read unit weight unit
Re	Read PL	U#			

Add % before italic and magnified letter to read continuously.

Add # before italic and magnified letter to read stable value only.

Two formats (AB) mentioned above are all RS-232 full duplex. If the slave terminal receives the below-listed messages, it represents Error condition.

E1: Wrong command E2: Wrong format (wrong parameter) E3: Mismatch proceeding condition

If read PLU command, PUL of N group is NULL or unit weight is re-entered, otherwise read PUL command



and return value is 255.

Command Format C

According to the command format to modify ID,ITEM ,PT, UW : ın

).															
	S	Ι	А	А	А	А	А	А	А	А	А	А	А	А	CR	LF
IT	EM:															
	S	С	А	А	А	А	А	А	А	А	А	А	А	А	CR	LF
P	T:															
	S	Т	0	0	1		0	0	0	CR	LF					
U	W:															
	S	Т	0	0	1		0	0	0	CR	LF					

Description:

- 1. 2 previous code is command code (must be capital letter), A is 0-9 or A-Z. Other symbol is unacceptable (because it can't be showed on LCD). 2. Decimal point of PT or UW can be moved.

Table 2 Output Format

General Format

Gross weight	S	Т	,	G	S	,	+	1		2	3		4	5	6	I	b	0	z		
Net weight	S	Т	,	Ν	Т	,	+	1	2		3	4		5	6	Т	I		g		
Tare	S	Т	,	Т	R	,	+	0	1	2		3	4	5	6	SP	SP	k	g	СР	
+ overload	0	L	,	G	S	,	+	SP	Cκ												
- overload	0	L	,	G	S	,	-	SP													
Unstable	U	S	,	G	S	,	+	0	1	2	3		4	5	6	SP	SP	Ι	b		

Totally 21 bytes (including CR LF)

Simple Format (Price Computing, Counting)

ID#	0	0	0	0	0	0	0	0	0	0	0	2	CD	
Read preset name	SP	А	Ρ	Ρ	L	Е	UK	LF						

Totally 14 bytes (including CR LF)

Simple Format

Read current weighing unit	0		
Read current price computing unit	1	CR	LF
Read current unit weight unit	2		

Totally 3 bytes (Including CR LF)



Simple Format (Price Computing, Counting, Weighing)

Gross weight	+	1		2	3		4	5	6		
Net weight	+	1	2		3	4		5	6		
Tare	+	0	1	2		3	4	5	6		
Pre-tare	+	0	1	2		3	4	5	6		
+ overload	+	SP									
- overload	-	SP	CR	IF							
Unstable	+	0	1	2	3		4	5	6		
Quantity	SP	1	2	3	4	5	6	7	8		
Unit weight	SP	1	2	3		4	5	6	7		
Accumulated counts	SP	0	0	0	0	0	0	0	1		
PLU#	SP	0	0	0	0	0	0	1	2		

Totally 11 bytes (including CR LF)

Simple Accumulation Format

Accumulated weight	SP	0	1	2	3	4		5	6		7		
Accumulated quantity	SP	0	1	2	3	4	5	6	7	8	9		
Accumulated weight + overflow	+	SP	SP,	SP	UK								
Accumulated weight - overflow	+	SP	SP,	SP									

Totally 13 bytes (including CR LF)

Appendix 2 Fixed Format RS-232 Transmission Line Description

SCALE	\rightarrow	RS-232 PRINTER
DB 9	\rightarrow	DB 9
2TX	\rightarrow	3TX
3RX	\rightarrow	2RX
5GND	\rightarrow	5GND

SCALE	\rightarrow	PC
DB 9	\rightarrow	DB 9
2TX	\rightarrow	2TX
3RX	\rightarrow	3RX
5GND	\rightarrow	5GND

Serial Data Transfer / Receive Format





	0	1	2	3	4	5	6	7	8	9	
ASCII	30H	31H	32H	33H	34H	35H	36H	37H	38H	39H	
	А	В	С	D	Е	F	G	Н		J	K
ASCII	41H	42H	43H	44H	45H	46H	47H	48H	49H	4AH	4BH
	L	М	Ν	0	Р	Q	R	S	Т	U	V
ASCII	4CH	4DH	4EH	4FH	50H	51H	52H	53H	54H	55H	56H
	W	Х	Y	Z	а	b	С	d	е	f	g
ASCII	57H	58H	59H	5AH	61H	62H	63H	64H	65H	66H	67H
	h	i	j	k		m	n	0	р	q	r
ASCII	68H	69H	6AH	6BH	6CH	6DH	6EH	6FH	70H	71H	72H
	S	t	u	V	W	Х	у	Z			Ļ
ASCII	73H	74H	75H	76H	77H	78H	79H	7AH			0DH

Appendix 3 ASCII Code Table

Appendix 4 7-Segment Display Characters

0	1	2	3	4	5	6	7	8	9
				L	רי	ĿD			
А	В	С	D	E	F	G	Н	I	J
			<u>-</u> D		_ا _	L_]	_!_		1
K	L	М	Ν	0	Р	Q	R	S	Т
Ľ	 		Ľ		Ū_	[]''	١_	_	_ _
U	V	W	Х	Y	Z				
I_I		I_I _							