ViBRA
Measure the Future

Electronic counting scale

CUX Series

Operation Manual

IMPORTANT

- To ensure safe and proper use of the balance, please read this manual carefully.
- After reading this manual, store it in a safe place near the balance, so you can review it as needed.

SHINKO DENSHI CO., LTD.

460006M01

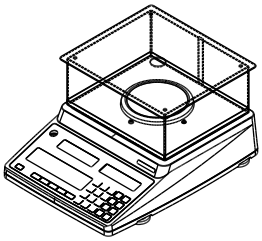
Preface

Thank you for purchasing Counting Scale CUX series.

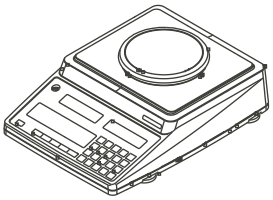
This scale is made for:

- Counting Scale purposed to attain easy to use and accurate counting operation.
- Automatic Variation Compensation and ACR Function enables accurate counting operation.

CUX is an easy-to-use, accurate in counting, and durable counting scale.



CUX60～300



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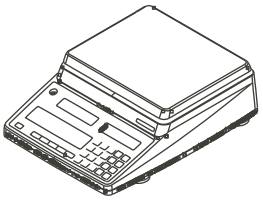
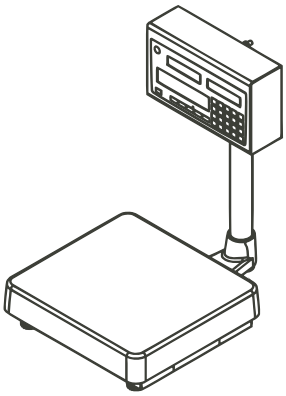
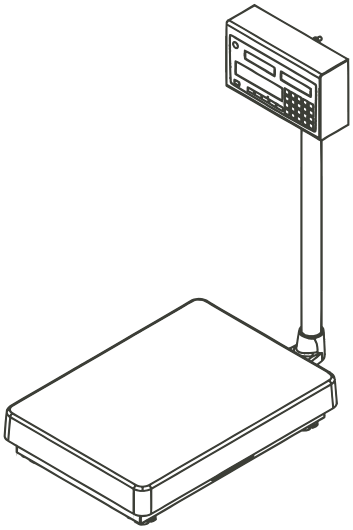


CUX1500～12K



CUX16K／30K



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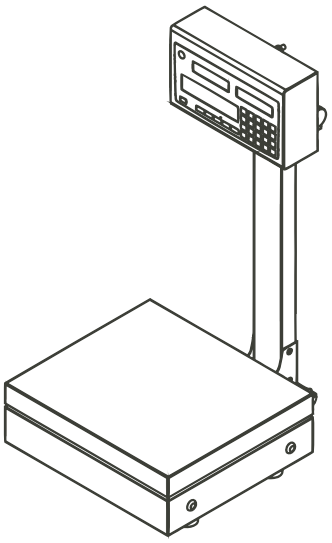

CUX16KS／30KS

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- Manufacturer: SHINKO DENSHI CO., LTD.
  Address: 3-9-11 Yushima, Bunkyo-ku, Tokyo 113-0034 JAPAN

How to use this document

■Symbols used in this document

Understand the meaning of thefollowing symbols and observe the instructions of this document.

Symbols	Meaning
	Used for high risk point concerning the operations that may lead to death or severe physical injury to persons if not being averted.
	Used for warning concerning the operations that may lead to death or severe physical injury to persons, if not being averted.
	Used for caution concerning operations that may lead to a light physical injury or damage of the products, if not being averted.
	Used for preserving issues for avoiding from damage, deletion, overwrite of the weighing data or for accurate weighing and appropriate usage of the equipment.
	Used for referenced information which is useful for product operation.
	Used for “Prohibition” items
	Used for “Mandatory” items requiring positive action
	Used for prohibition items to avoid “Electrical shock”.

■ How to read this document

This document consists of the following contents:

Section	Title	Contents
1	To start to use scale	Precaution for usage, Part name and its function, basic usage of the scale, and turn On/Off scale powerare described. Read carefully at first usage.
2	Setting Function	Describes the setting procedures of function features for setting several scale functions.
3	Memorize Unit Weight	Describes several unit weight memorizing functions.
4～10	CR (Count Revision) function ～ Forced Tare Deduction function	Describes useful functions for piece counting.
11	Scale Adjustment	Describes about Span adjustment procedure.
12	Input/Output from/to peripherals	Describes seting parameter of communication with external periherals.
13	Troubleshooting	Describes the Products troubleshooting for errors and countermeasures when need arises.
Annex		Describes the reference information regarding the specification and several added functions of the scale.

Contents

MEMO

1 Prior to use

1-1 Operating precautions

DANGER

	■**Do not wet the AC adapter.** May cause an electric shock, short-circuiting or failure.
	■**Do not handle the balance with wet hands.** May cause short-circuiting or failure.
	■**Do not use the balance in a wet location.** May cause an electric shock, short-circuiting or failure.
	■**Do not connect to the AC adapter cord or communication cable with its connector or jack being wet.** May cause an electric shock, short-circuiting or failure.
	■**Do not use the balance in a dusty location.** May cause dust explosion or fire. May cause short-circuit or malfunction of the balance.
	■**Do not use the balance in explosive atmosphere.** May cause explosion or fire. Please order our explosive-proof balances to weigh in such a hazardous area.
	■**Never disassemble or modify the batteries. Make sure you insert batteries with the positive and negative poles correctly inserted and be careful of short circuits.** Such mishandling could damage the batteries or cause the balance to fail.
	■**Do not weigh flammable object.** May cause explosion or fire. Please order our explosive-proof balances to weigh such samples.

WARNING

	■**Do not disassemble or modify the product.** Doing so could result in injury, electric shock, fire and other accidents or failures. For inspection and adjustment, contact the retailer from whom the product was purchased.
	■**Do not move the product with a sample to be weighed set on the balance.** That may cause the sample to fall from the weighing pan, leading to a bodily injury or destruction of the sample.
	■**Do not route the AC cord across passages.** The cord could be tripped on by a passerby and the balance could fall down and break or injure someone.
	■**Do not use the product on an unstable table or a place that is subject to vibration.** That may cause the sample to fall from the weighing pan, leading to a bodily injury or destruction of the sample. Besides inaccurate weighing may result.
	■**Do not place an unstable sample on the weighing pan.** The sample may fall down, giving ri se to a danger. Put an unstable sample in a container (tare) before weighing it.
	■**Only use the specified power supply.** Using any power supply other than that specified could cause overheating, fire or failure.
	■**Do not bring the scale by holding the windshield.** The main body could drop and break down or injury someone. Make sure to hold the main body to bring the scale.

WARNING

	■**Do not use the product in an abnormal condition.** If an abnormal event such as smoking or unusual odor occurs, ask the store where you purchased the product or our sales department for repair. Keeping using the product may result in an electric shock or fire. In addition, do not ever try to repair it for yo urself, or very dangerous situation is likely to occur.
	■**Only use the dedicated AC adapter.** Use of other types of power or adapters may result in heat generation or malfunction of the balance.

CAUTION

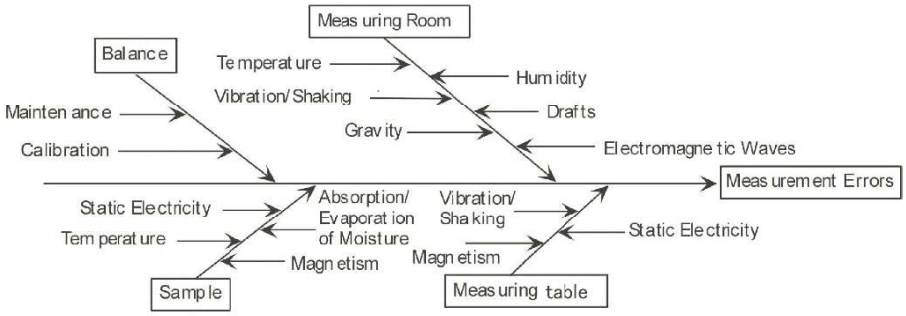
	■**Do not mix old and new batteries, or batteries of different types or manufacturers.**
	■**Do not use the batteries that leak.**
	■**Do not apply excessive force to or impact the balance.** Doing so could damage or result in failure of the balance. Carefully place samples on the balance.
	■**Do not use volatile solvents.** The main unit could deform. Wipe the main unit using dry cloth or a cloth moistened with a small amount of neutral detergent.
	■**Dispose of batteries in accordance with local regulations.**
	■**If the balance is not going to be used for a long time, store it with the batteries removed.**
	■**Observe the precautions printed on the batteries used.**

Note

	■**Do not install the balance in a place where it is directly exposed to airflow from air-conditioning or heating equipment.** Due to changes in the ambient temperature, the balance could fail to accurately weigh samples.
	■**Do not install the balance in a place exposed to direct sunlight.** The internal temperature of the balance could rise, and the balance could fail to accurately weigh samples.
	■**Do not install the balance where the floor is soft.** When a sample is placed on the balance, the balance could slant and fail to accurately weigh samples.
	■**Do not install the balance in a place where the ambient temperature or humidity change significantly.** The balance could fail to accurately weigh samples.
	■**Adjust (calibrate) the balance when it is installed or relocated.** Failure to do so might result in measurement errors. To ensure accurate measurements be sure to adjust (calibrate) the balance.
	■**Check for an error periodically.** Use environment and chronological change cause an error in measured value, leading to an inaccurate measurement.
	■**Unplug the AC adapter from the receptacle when the balance is not going to be used for a long period of time.** Unplug the balance from the receptacle to save energy and prevent degradation.
	■**Always adjust the level of the balance before use.** A tilted balance generates errors which might cause inaccurate weighting.

1-2 For more accurate measurement

To make more accurate measurement, it is necessary to lessen error-causing factors in measurement to the extent possible. Error-causing factors include not only an instrument error and performance of the scale itself but also the nature and condition of aobject, measuring environment (vibration, temperature, humidity, etc.) and the like. These factors will directly affect measurement result in the case of a balance with high resolution capability.



Measurement Errors

1-2-1 Precautions related to measuring environment

Temperature/ humidity/ atmospheric pressure	→ Try to keep the room temperature constant to the extent possible in order to avoid condensation and indication drift due to change in temperature. →Low humidity is likely to cause generation of static electricity, resulting in inaccurate measurement.
Vibration/shaking	→ It is preferable to locate a measuring room on the first floor or the basement. The higher the room is, the larger the vibration and shaking become. Therefore, a highly located room is not suitable for measurement. Rooms near the railway or road side should also be avoided.
Air draft	→ Places directly exposed to air current from an air-conditioner or to direct sun generate abrupt temperature change and resultantly cause unstable weight indication, and therefore, should be avoided.
Gravity	→ The latitude and altitude of a measuring location differentiate the gravity that affects a object, giving a different weight indication to the same object.
Electromagnetic wave	→ At a location where a strong electromagnetic wave generating object is in the proximity of a scale, the scale is affected by the electromagnetic wave, making the scale unable to indicate accurate weight, and therefore, such a location should be avoided.

1-2-2 Precautions related to measuring table

Vibration/shaking	→ Vibrations during measurement destabilizes the indication of measurement value, leading to inability to make accurate measurement. And so use of a measurement table that is robust and hardly affected by vibration is required (a vibration-proof structured table or concrete or stone-made table is suitable). In addition, placing a sheet of soft cloth or paper under the scale causes shaking or makes keeping horizontal attitude difficult, and therefore should be avoided. → The measurement table should be installed in a position free from vibration to the extent possible. A corner rather than the center of a room is less affected by vibration and therefore more suitable for installation of the scale.
Magnetism/Static electricity	→ Use of the scale on the table that is subject to magnetism or static electricity should be avoided.

1-2-3 Precautions related to a weighing object

Static electricity	→ In general, synthetic resin- and glass-made objects are high in electric insulation, and so easily charged electrically. Weighing an electrically charged object makes the indication value unstable, reducing the reproducibility of the test result. Therefore, neutralize an electrically charged object before measurement.
Magnetism	→ Weighing objects affected by magnetism show different weight in a different position of the weighing pan, reducing the reproducibility. When weighing a magnetized object, either eliminate the magnetism from the object or place a setting plate on the weighing pan to distance the object from the weighing mechanism of the scale so that the mechanism may not be affected by the magnetism.
Moisture absorption/ Evaporation	→ Measuring a moist or evaporating (vaporizing) object increases or decreases the indication value of the scale continuously. When this is the case, put the object in a container equipped with a small mouth and closely seal the mouth before measurement.
Weighing Object temperature	→ Difference in temperature between the object and the windshield interior generates convection flow within the windshield, causing a measurement error. When the object temperature is excessively high or low, allow the object temperature to stabilize at the room temperature before measurement. Also, to prevent the convection flow from arising within the windshield, make the windshield interior temperature equal to the room temperature before measurement. → Measurer's body temperature also affects measurement result. Handle a object with tweezers instead of directly holding it with fingers and refrain from putting your hands directly in the windshield during measuring operation.

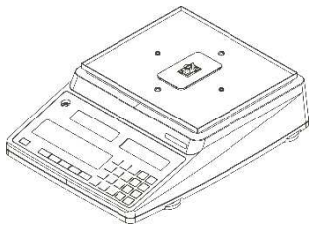
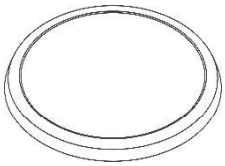
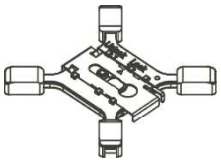
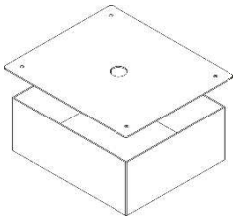
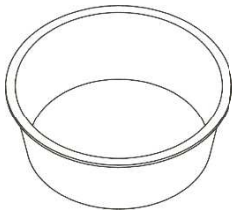
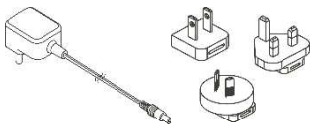
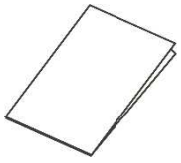
1-2-4 Precautions related to the scale main body

Operating precautions	→ A dust cover, if equipped, for the scale may possibly make the weight indication unstable due to static electricity charged on the cover at a low humidity. When this is the case, wipe the cover with wet cloth or use antistatic agent or use the scale with the cover removed. → For more stable measurement, it is recommended to energize the scale for longer than 30 minutes and load the scale a few times with a weight equivalent to the weighing capacity before measurement.
Adjustment	→ Calibrate the scale periodically with an external adjustment weight or internal adjustment weight. For the sake of precise calibration, use an external adjustment weight weighing nearly equal to the weighing capacity of the scale. → Energize the scale for longer than 30 minutes and load the scale a few times with a weight equivalent to the weighing capacity before adjustment → Adjustment is also needed in the following cases: When using the scale for the first time, When using the scale after a long period of non-use, When changing a place of installation, and When there was a large change in temperature, humidity or atmospheric pressure.
Maintenance	→ Attachment of dirt such as powder or liquid to the weighing pan or pan base will cause measurement error or unstable weight indication. For that reason, frequent cleaning of the scale is required. In cleaning the scale, take care for the dust or liquid not to enter into the scale (mechanism).

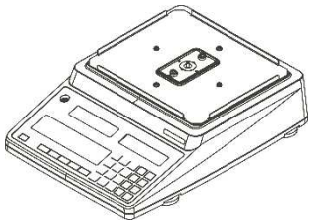
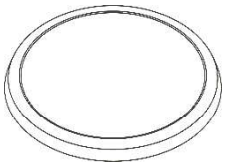
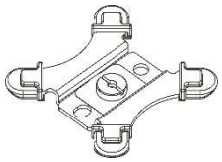
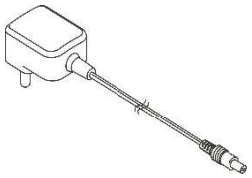
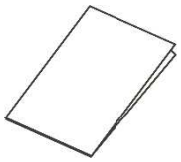
1-3 Bundled Items in the box

Followings are contained in the box.;
Should something is missing or broken, please inform the store where you purchased the product.

1-3-1 CUX60-300

CUX60-300		
① Main unit: 1 	② Weighing pan(round): 1 	③ Pan base (Round): 1 
④ Windshield: 1 	⑤ Tare container: 1 	⑥ Funnel: 1 (CUX60 only) 
⑦ AC adapter: 1 AC adapter plug set: 1 	⑧ Operation manual: 1 Quick Operation Manual: 1 	

1-3-2 CUX600-12K

CUX600		
① Main unit: 1 	② Weighing pan(round): 1 	③ Pan base (Round): 1 
④ AC adapter: 1 AC adapter plug set: 1 	⑤ Operation manual: 1 Quick Operation Manual: 1 	

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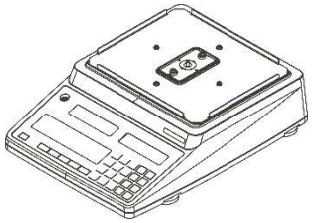
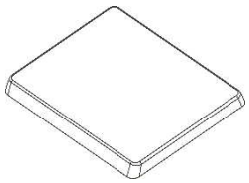
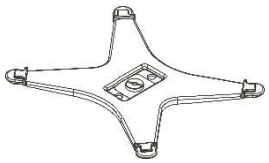
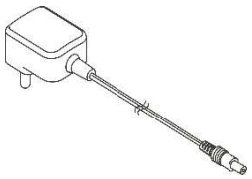
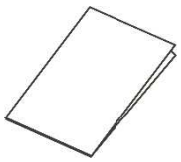
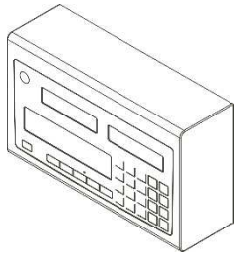
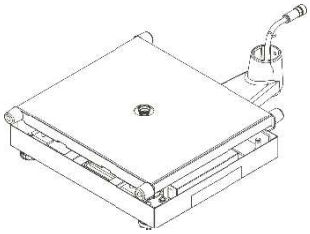
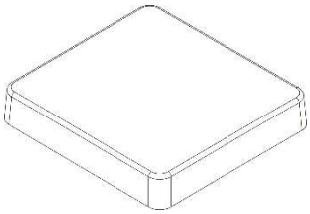
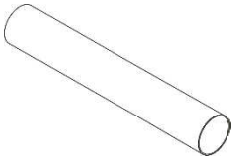
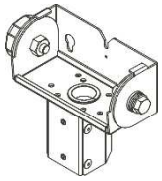
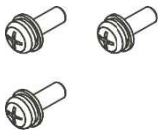
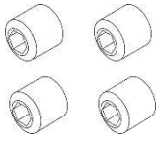
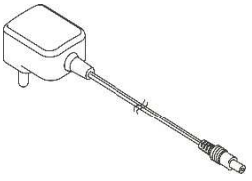
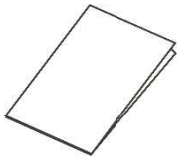
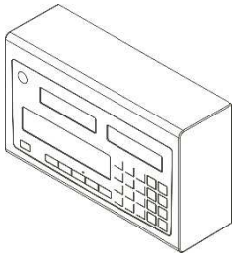
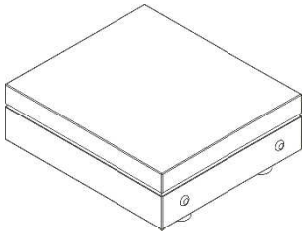
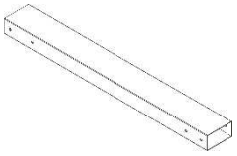
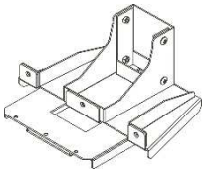
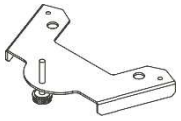
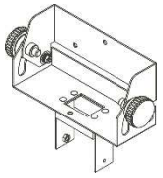
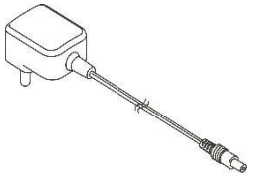
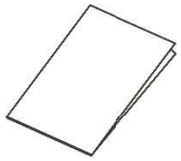
① Main unit: 1 	② Weighing pan(square): 1 	③ Pan base (Square): 1 
④ AC adapter: 1 AC adapter plug set: 1 	⑤ Operation manual: 1 Quick Operation Manual: 1 	

1-3-3 CUX16K-150K

CUX16K-150K

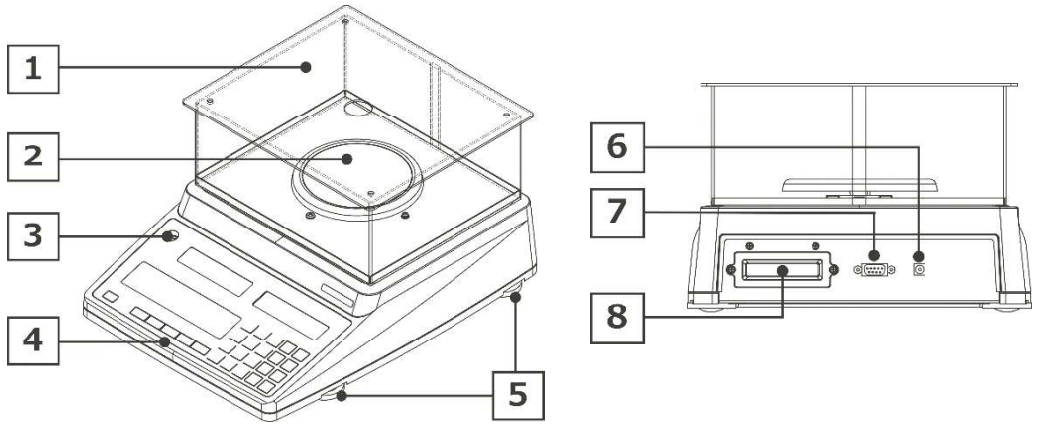
① Indicator unit: 1 	② Weighing unit: 1 	③ Weighing pan: 1 
④ Pole : 1 	⑤ Angle Adjuster for display unit : 1 	⑥ Hexagon head wrench : 1 
⑦ Fixing screw for display: 3 	⑧ Fixing screw for Pole: 4 	⑨ AC adapter: 1 AC adapter plug set: 1 
⑩ Operation manual: 1 Quick Operation Manual: 1 		

1-3-4 CUX16KS／30KS

CUX16KS／30KS		
① Indicator unit: 1 	② Weighing unit: 1 	③ Pole: 1 
④ Pole Base bracket: 1 	⑤ Fall-prevention bracket: 1 Fall-prevention Leg: 1 	⑥ Angle Adjusterfor Display Unit: 1 
⑦ Hexagon Head Wench:1 	⑧ AC adapter: 1 AC adapter plug set: 1 	⑨ Operation manual: 1 Quick Operation Manual: 1 

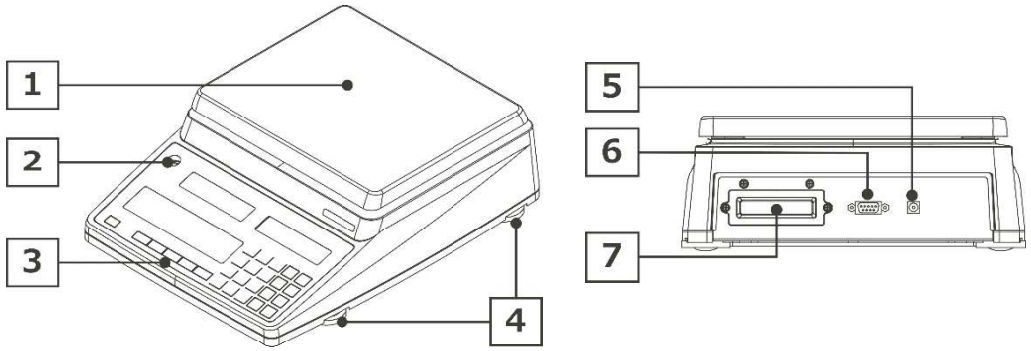
1-4 Part names and functions

1-4-1 CUX60-300



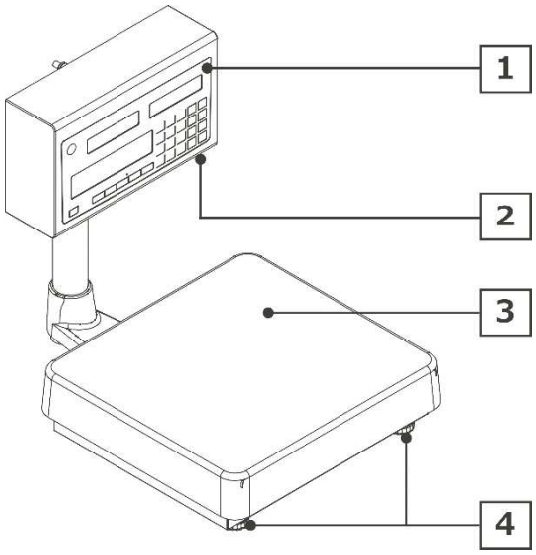
1	Windshield	2	Weighing pan(round)
3	Level	4	Displays and operation keys
5	Adjusters（1 pc eachon four corner, t/l 4 pcs)	6	AC adapter jack
7	RS-232C connector (D-sub 9 pin male)	8	Option slot

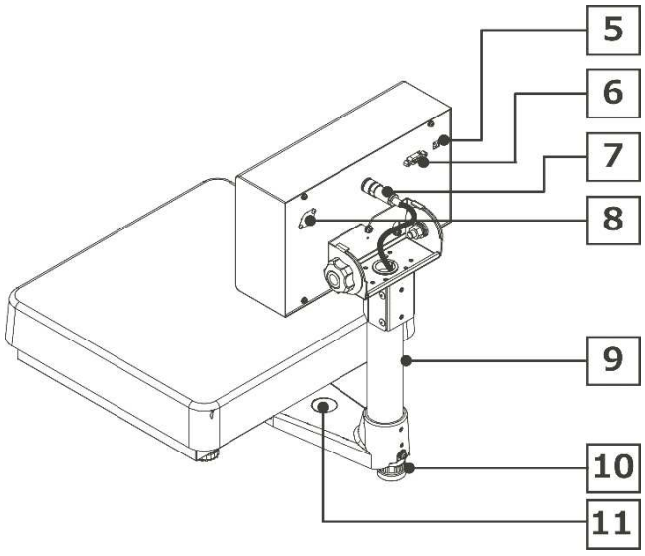
1-4-2 CUX600-12K



1	Weighing pan (CUX600: round, CUX1500-12K: square)	2	Level
3	Displays and operation keys	4	Adjusters（1 pc eachon four corner, t/l 4 pcs）
5	AC adapter jack	6	RS-232C connector (D-sub 9 pin male)
7	Option slot		

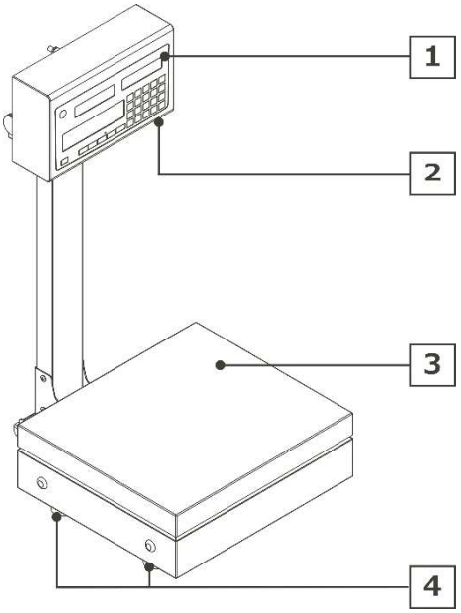
1-4-3 CUX16K-150K

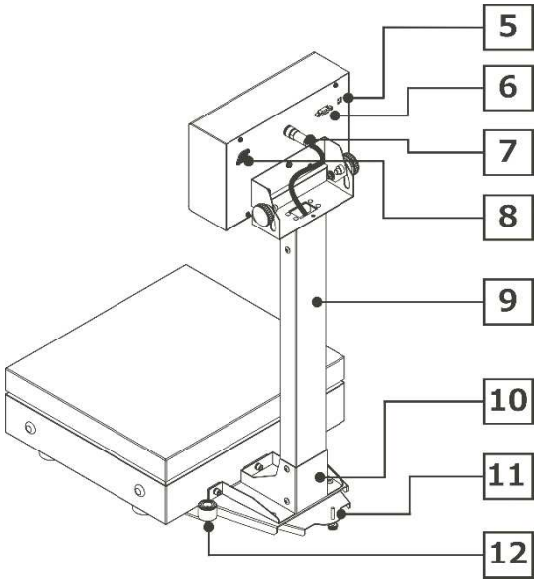




1	Displays and operation keys	2	Option slot
3	Weighing pan	4	Adjusters (1pc eachon four corner, t/l 4 pcs)
5	AC adapter jack	6	RS-232C connector (D-sub 9 pin male)
7	Connecting Cable	8	Relay contact connector(optional)
9	Pole	10	Fall-prevention Leg
11	Level		

1-4-4 CUX16KS／30KS



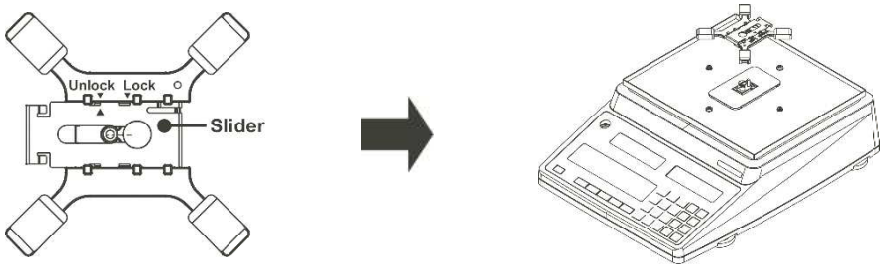


1	Displays and operation keys	2	Option slot
3	Weighing pan	4	Adjusters (1pc eachon four corner, t/l 4 pcs)
5	AC adapter jack	6	RS-232C connector (D-sub 9 pin male)
7	Connecting Cable	8	Relay contact connector(optional)
9	Pole	10	Pole Base bracket
11	Fall-prevention Leg	12	Level

1-5 Assemble and installation

1-5-1 CUX60-300

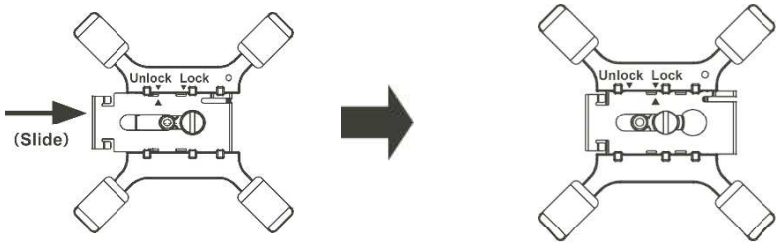
1 **Confirming Slider on Pan base is set at "Unlock", then attach to scale main body.**



(1) Check Arrow ▲ mark on pan base slider is set at Unlock side.

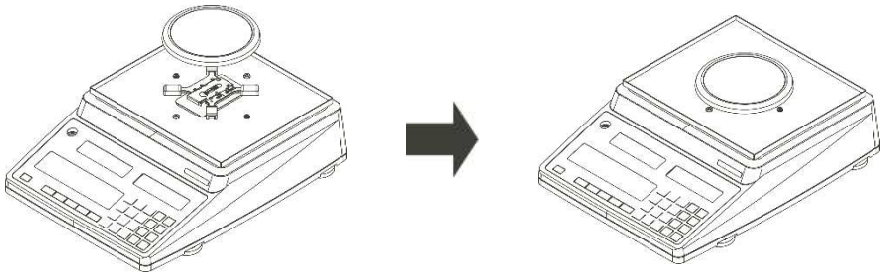
(2) Attach it onto scale with aligning with the hole on Pan base.

2 **Move the slider to "Lock" side.**

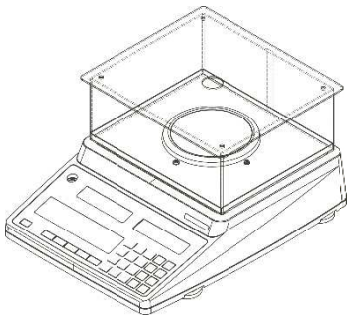


Slide a Slider on pan base, and confirm ▲ arrow is set at "Lock" position.

3 **Mount the weighing pan.**

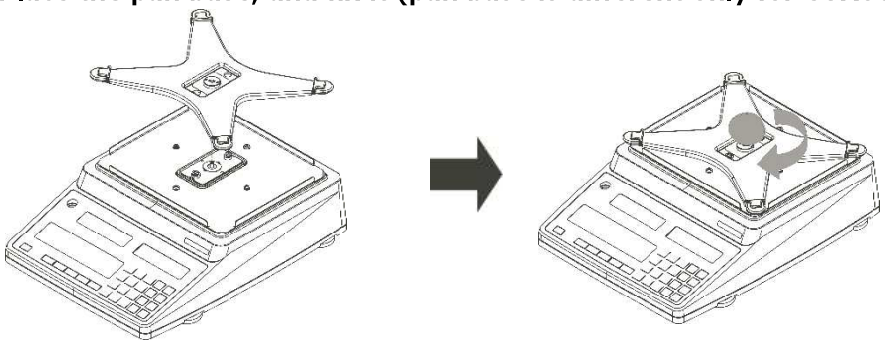


4 **Mount the windshield .**



1-5-2 CUX600-12K

1 **Place the pan base, and fix it (pan base is different only for CUX600)**

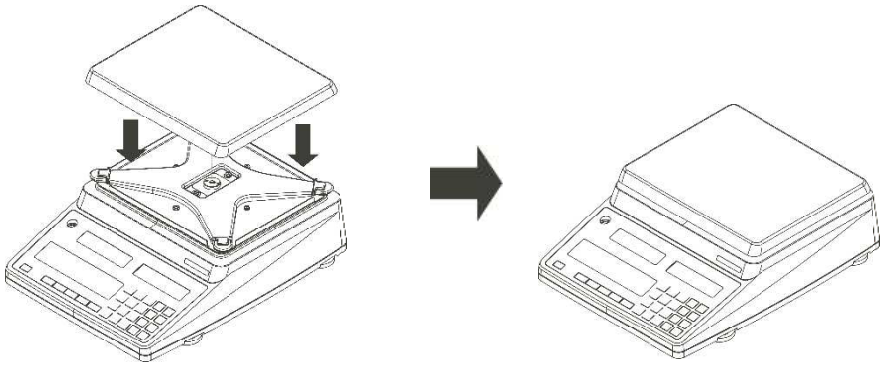


(1) Attach pan base to main body with aligning the hole position.

(2) Tighten fixing screws.

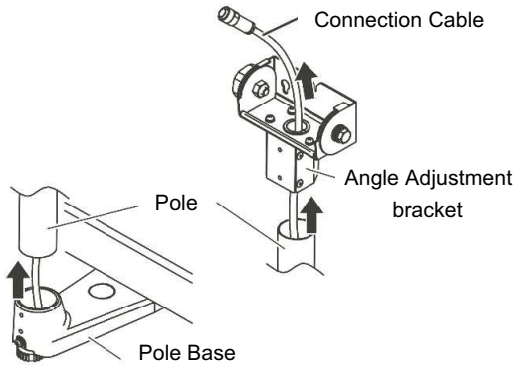
(3) Check pan base do not move.

2 **Place the weighing pan. (Round pan for CUX600)**



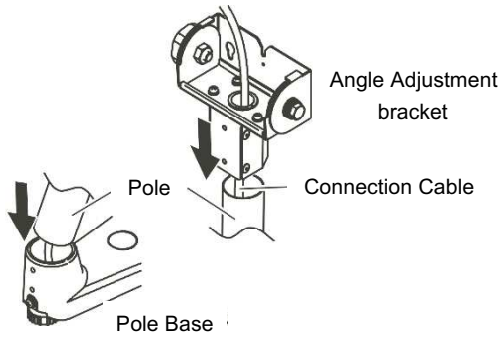
1-5-3 CUX16K-150K

1 Put Connection cable through pole.



Put cnnection cable comes out from Pole Base through pole and angle adjusting bracket.

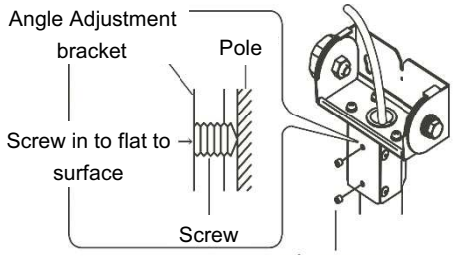
2 Attach Pole and Angle Adjusting bracket.



(1) Insert Pole to a hole on Pole Base.

(2) Insert Angle Adjusting bracket to top of Pole.

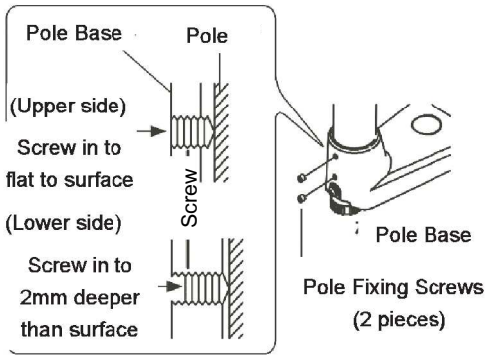
3 Fix the Angle Adjusting bracket.



Pole Fixing Screws (2 pieces)

(1) Using 2.5mm Hexagon Head wrench, fix Angle Adjusting bracket to pole with Pole Fizing screws.
Screw in Pole Fixing screw so that the surface of screws become to the same level with Angle Adjusting bracket.

4 Fix the Pole.

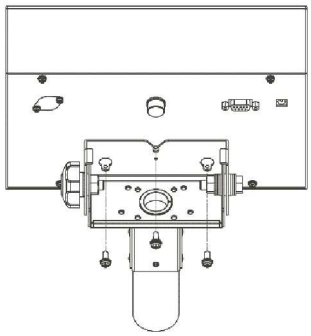


Using 2.5mm Hexagon Head wrench, fix Pole to pole base using Pole Fizing screws.

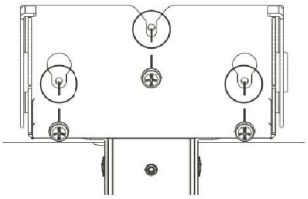
Screw in upper side Pole Fixing screw so that the surface of screws become to the same level with Pole base.

Screw in to lower side fixing screws so that the surface of screws is approximately 2mm lower than the sirface of Pole base.

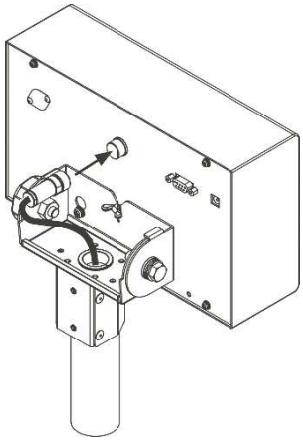
5 Fix Display Unit.



Fix display unit with using display unitfixing screws.

CAUTION	Physical injury damage of Display unit, weighing unit or weighing object damage may occur when display unit is fallen off. Please fix it at narrowest point of slip behind the display unit.	

6 Attach Connection cable

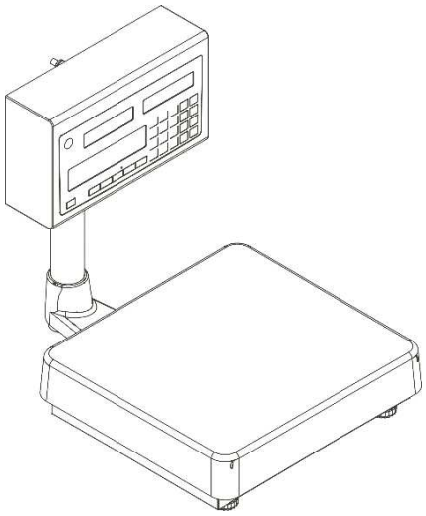


(1) Connect the connection cable to cable connection part on the back of display unit.

(2) Tighten screws on connectorto fix.

7 Place Weighing Pan

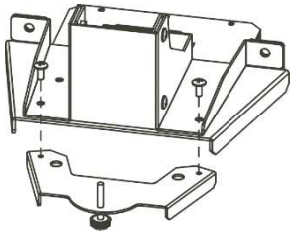
Place the weighing pan on scale unit.



Note	Weighing unit and Indicator unit is a pair unit. Connecting with other scales'unit may not work properly. Model name, unit seiral number(S/N) must be checked on both weighing unit and display unit and connect the correct paired units.

1-5-4 CUX16KS／30KS

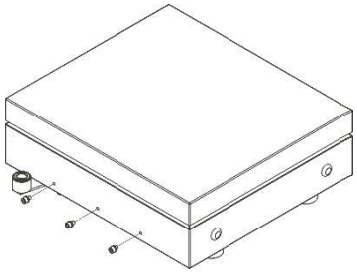
1 **Attach fall-prevention bracket to pole base.**



(1) Remove screws from Fall-prevention bracket.

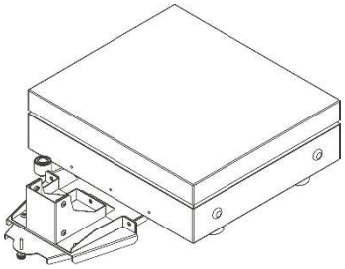
(2) Fix fall-prevention bracket topolebase using removed screws.

2 **Unscrew pole base fixing screws.**

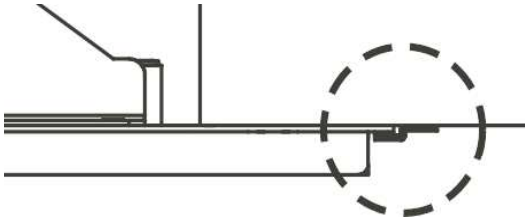


Using the attached Hxagon Head wrench, remove three screws attached on level bubble side of weighing unit.

3 **Attach pole base.**

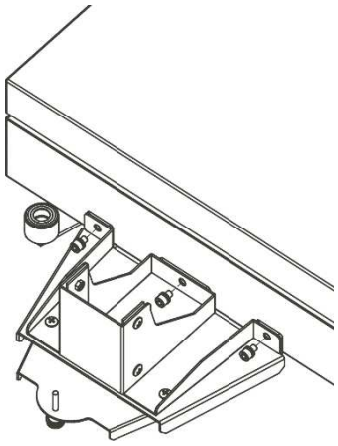


(1) Attach pole base to weighing unit.



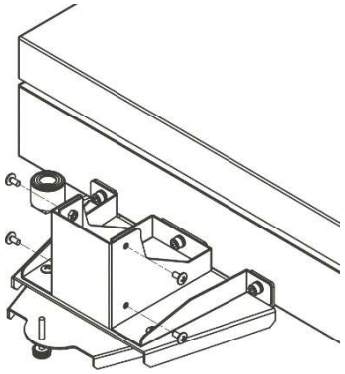
(2) Check whether pole base is inserted correctly to base guide on the side of display unit.

4 **Fix pole base**



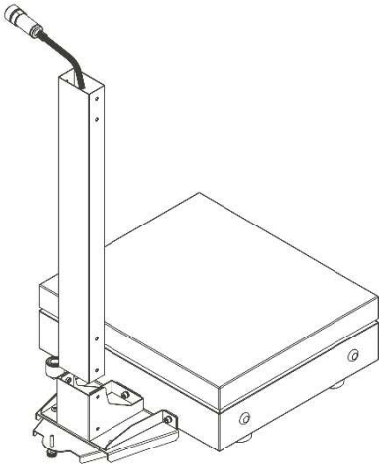
Using the attached Hexagon Head wrench, fix pole base with three screws reove on step 2.

5 **Remove pole fixing screws.**



Remove four screws attached topole base.

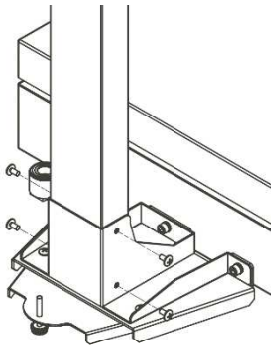
6 **Attach pole.**



(1) Put connection cabel through pole.

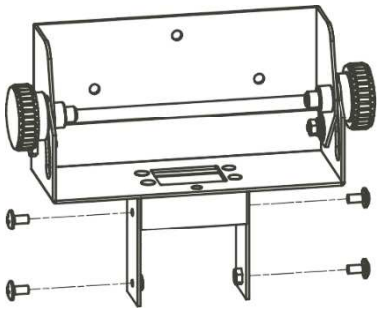
(2) Attach pole to pole base.

7 **Fix pole.**



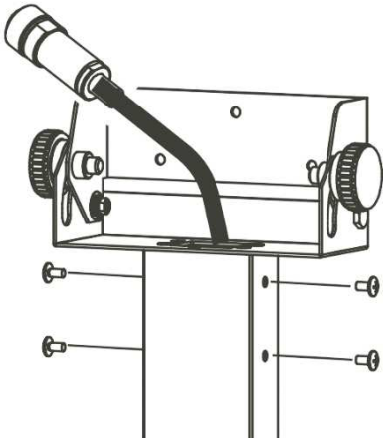
Fix the pole to pole base with using four screws removed on step 5.

8 **Remove fixing screws on Angle Adjusting bracket.**



Remove four screws attached on Angle Adjusting bracket.

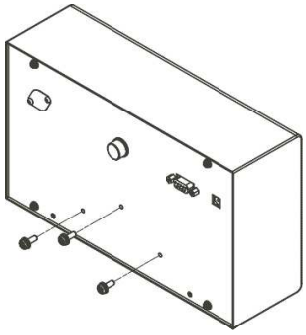
9 **Fix the angle adjusting bracket.**



(1) Put connection cable through Angle adjusting bracket,

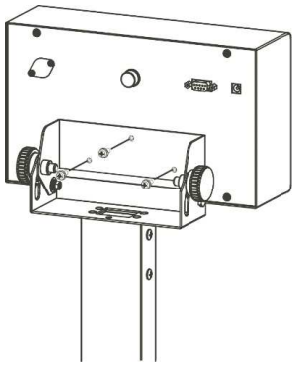
(2) Fix the Angle adjusting bracket to pole using foru screws removed on step 8.

10 **Remove fixing screws from display unit.**



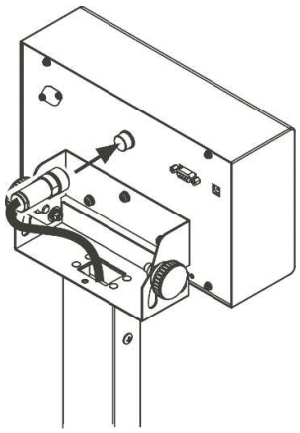
Remove three screws attached on back surface of display unit.

11 **Fix diaplya unit**



Fix Angle adjusting bracket with using three screws removed on step 10.

12 **Attach Connection cable.**



(1) Connect the connection cable tocable connection part on back surface of the display unit.

(2) Tighten connector screws to fix.

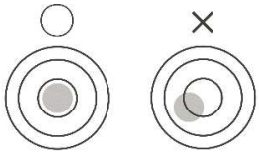
Note	Weighing unit and Indicator unit is a pair unit. Connecting with other scales'unit may not work properly. Model name, unit seiral number (S/N) must be checked on both weighing unit and display unit and connect the correct paired units.

1-5-5 Level

1 **Release the transportation lock of the adjuster.**

At the time of shipment, the adjusters provided at the four corners of the bottom are locked. Turn them in the direction shown in the figure on the left to loosen them.

2 **Level the scale**



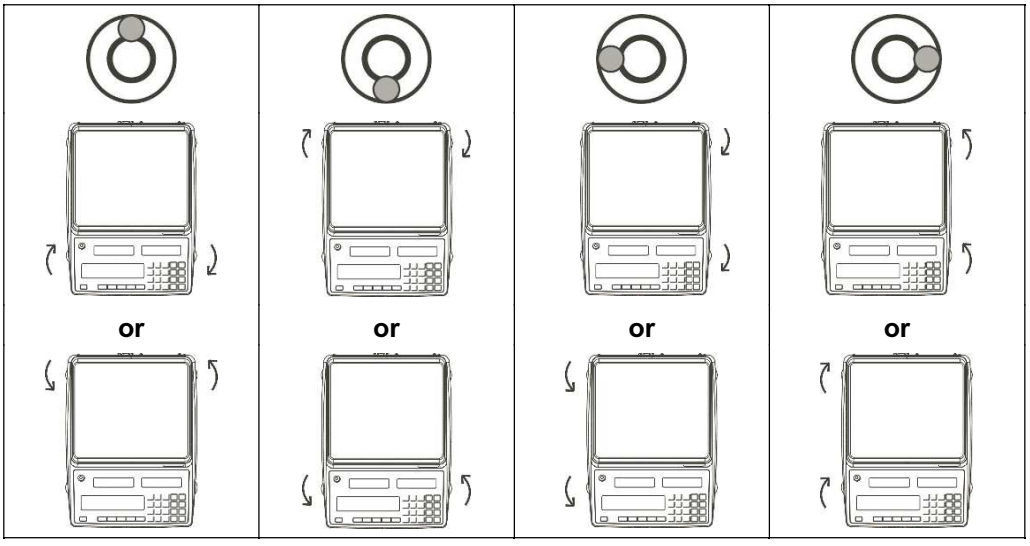
Turn the adjusters so that the bubble enters in the center circle

(1) While watching the level, turn the adjusters provided on the bottom to level the main unit.

(2) Bring the bubble enters in the center circle as shown in the figure on the left.

(3) When having leveled the main unit, slightly push the four corners of the scale to make sure that there is no rattle.

Turn the adjusters as shown below depending on the position of the bubble in the level.

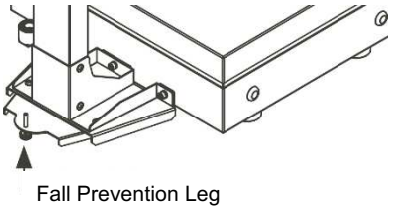


3 **Assemble Fall -Prevention legs.**
（CUX16K、30K、CUX16KS 、30KS only）

CUX16K, 30K

Fall Prevention Leg

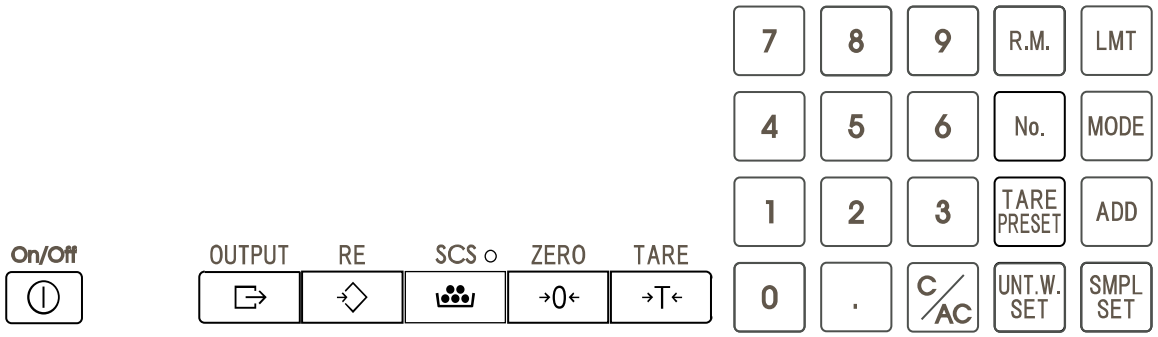
CUX16KS, 30KS



Fall Prevention Leg

Lower Fall-Prevention legs so that they touch to floor.

1-6 Function of Operation Keys



No.	Key Name		Functions
1	On/Off ⏻	[On/Off]	Turn Main Body Power ON/OFF.
2	LMT	[LMT]	Operate/Set counting LIMIT function.
3	MODE	[MODE]	Alternate Counting/Total display. Call up function.
4	ADD	[ADD]	Perform adding function for accumlative total counts.
5	SMPL SET	[SMPL SET]	Setting Number of Pieces.
6	R.M.	[R.M.]	Call up stored Unit Weight/Tare Weight value.
7	No.	[No.]	Set storage number for Unit Weight/Tare value.
8	TARE PRESET	[TARE PRESET]	Setting Tare Weight.
9	UNT.W. SET	[UNIT.W. SET]	Setting Unit Weight.
10	TARE →T←	[TARE]	Tare deduction, setting functions.
11	ZERO →0←	[ZERO]	Setting Zero Point.
12	SCS	[SCS]	Operate AISCS.
13	RE	[RE]	Perform Restore Memory operation.
14	OUTPUT	[OUTPUT]	Start Printing or Initiate output.
15	0 ～ 9 .	[NUMERIC KEY]	Use to enter values.
16	C/AC	[CLEAR]	Use to clear numeric entry. Use to clear all for Unit_Weight / Tare Weight.

1-7 Description of Display

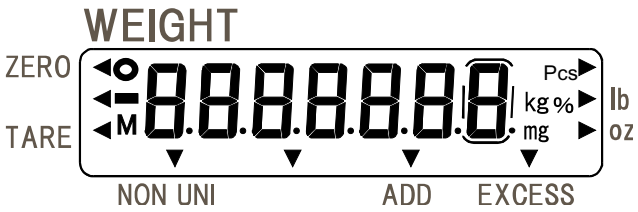
1-7-1 Main-LCD

■ Piece Count LCD

No.	Marking	Name	Description
1	g	gram	Indicates the gram unit.
1	−	Minus	Indicates the negative value.
2	Hi◀ Ok◀ Lo◀	High Ok Low	Lit on when Limit Function is used.
3	**Pcs**	Pieces	Unit for Counting operation
4	**M**	M mark	- Flashes when the scale is in process of stabilization. - Flashes when writing to memory
5	8.	7 segments	Indicate Numerics and Simplified (7-segment font) characters.
6	⇨	Data Output	Displayed when data are being output to external devices.
7	CAL	CAL	Lit on and flashes while span adjustment is in progress.
8	▭	Battery mark	Lit on when the balance is powered by batteries.
9	▮▮▮▮▮	Bar Graph	- Indicates Variation guide. - Indicates the present total amount relative to the weighing capacity defined as 100%.
10	**TOTAL** ▲	TOTAL	Lit ON / Flushing when total is displayed.

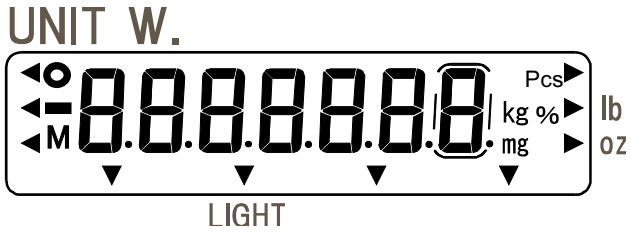
1-7-2 Sub-LCD

■ Weight LCD



No.	Marking	Name	Description
1	g	gram	Indicates the gram unit.
2	—	Minus	Indicates the negative value.
3	ZERO◀	Zero point	Indicates the zero point.
4	TARE◀	Net weight	Indicates that the tare weight is being subtracted.
5	**Pcs**	Pieces	Unit for Counting operation
6	○	Stable	Lit ON: Scale is stable Lit OFF: scale is unstable
7	▼ NON UNI	Non-uniformity	Flushing when sample weight varies a lot.
8	▼ ADD	Add	Flushing when additional sample is needed.
9	▼ EXCESS	Excess	Flushing when sample addition exceeds the set numbers.
10	8.	7 segments	Indicate Numerics and Simplified characters.

■ Unit Weight LCD



No.	Marking	Name	Description
1	g	gram	Indicates the gram unit.
2	▬	Minus	Indicates the negative value.
3	**Pcs**	Pieces	Unit for Counting operation
4	▼ LIGHT	Light	Lit on or flashes when unit weight is too light.
5	8.	7 segments	Indicate Numerics and Simplified characters.

1-8 Buzzer sound variation

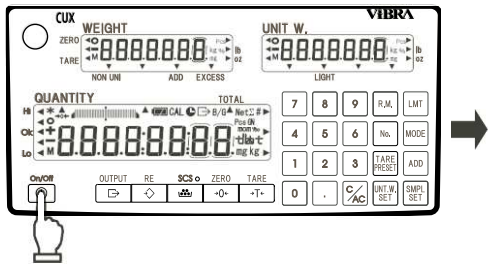
Announce Scale operation status by buzzer.

No.	Buzzer sound	Description
1	Pi, (short mark,1 time)	Confirmation of key depression. When automatic U/W value update is performed.
2	Pi·····(lomg mark, 1 time)	Sounds when setting value is successfully stored.
3	Pi, Pi (short mark, 2 times)	When scale is unable to execute designated function through keyboard.
4	Pi, Pi, Pi (short mark, 3 times)	When out of range value is entered by numeric keys.

1-9 Check Scale Operation

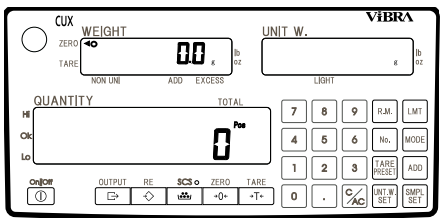
1-9-1 Power ON/OFF and Operational Check

1 **Turn Power ON.**



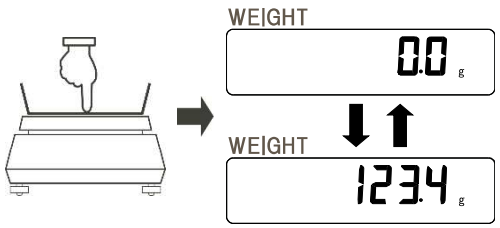
Push [On/Off] key.

All displays flash.



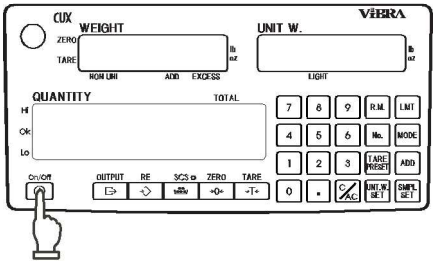
Zero-point indication.

2 **Check Scale operation .**



Press the weighing pan lightly to check if the indication changes.

3 **Turn Power OFF.**



Push and hold [On/Off] key (about 2 seconds).

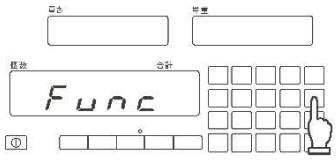
All display goes OFF, and scale power Off.

2 Setting Functions

Setting mode is called up with following step, and proceed to verification and changes of Setting Data.

Reference	Variation and contents of functions are to be referred to“Chapter 8: Function Setting List”.

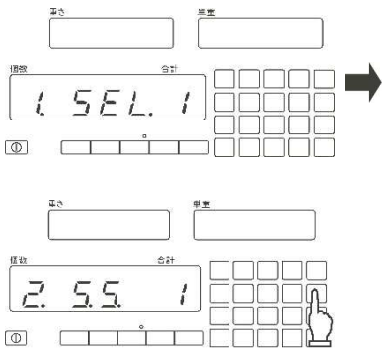
1 Shift to Function Setting mode.



Keep pressing [MODE] key for 3 to 4 seconds, then release key when “Func” is displayed.

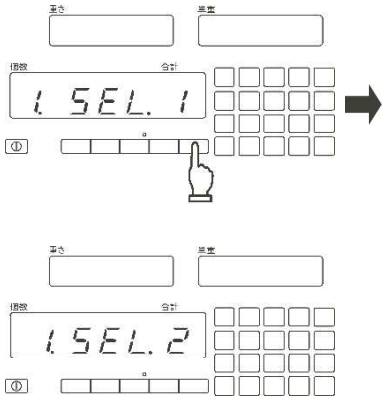
Then “1. SEL. 1” is displayed.

2 Select the Setting Item.



Push [MODE] key several times to select the item you intend to configure.

3 Select the Setting Value.

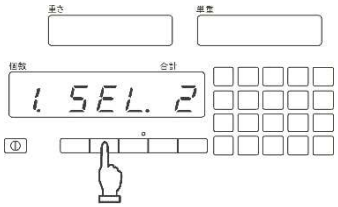


When Setting value is to be changed, push [TARE] key.

Setting value (right end value) is changed.

4 Determine the Setting.

Push [RE] key.



Reference	To cease the operation, press [OUTPUT] key. It turns back to counting display.

3 Memorize Unit Weight

3-1 Selecting the Memorizing Method

Counting scale counts numbers of pieces by dividing gross weight of weighing object by memorized averaged unit weight (hereinafter referred to as Unit Weight)
There are two methods of inputing Unit weight shown as below.

- Actual Weight Setting method : Weigh sample with scale and calculate Unit Weight.
- Numerics Setting method : Unit weight is directly input through keyboard.

3-1-1 Description of Memorizing Method

This Product provides four methods of memorizing unit weight, and one method of improving counting accuracy.

No.	**Memorizing Method**	Actual/Numerics Setting method	**Description**
1	AISCS Method (AI variant compensation)	Actual weight	Place 5 pieces of sample first, then add random numbers of sample in accordance with the message appeared in the window. Scale calculate average unit weight automatically for higher accuracy counting.
2	Numbers of Pieces Setting Method	Actual weight	Enter the numbers of sample pieces through keyboard, [0] ~ [9] [.] keys, then calculated average unit weight is stored in memory. When sampled with fewer pieces, the greater error may ocurr.
3	Unit Weight Setting Method	Numerics	In case sample piece unit weight is already known, set the unit weight through [0] ~ [9] [.] keys, and then unit weight is stored in memory. When piece unit weight is less variant and consistent, highest accuracy counting is possible.
4	Subtractive Numbers of Pieces Setting Method	Actual weight	Applied method of #2: Numbers of Pieces Setting Method. Average Piece Weight is calculated with take away numbers of pieces. Take away numbers of Pieces are diaplayed with Minus sign.
5	Re-Memorize Method (Counting Accuracy Improves)	Actual weight	After when average unit weight is memorized, add further sample pieces, then by pressing [RE] key, average unit weight is updated. More accurate average unit weight is stored, and less error counting operation can be taken.

Reference	(1) Latest memorized unit weight is still stored in the scale even when Power is Off. (2) However, for Automatic Memory Update methood 1 and 2, unit weight will not be kept in the memory after when Power Off. When storageretention is required, refer chapter 6: “Unit Weight/Tare Weight Storage Function”.

3-1-2 Selection of Memorizing Method

Select the best appropriate method, in referring to below chart, depend on the status of the object and purpose of the counting.

Status of the object	Small volume of counting objects	Large volume of counting objects	Counts acurately	Quick countinng
Large Variation	No.1	No.1 & No.5	No.1 & No.5	No.1
Small Variation	No.2 or No.4	No.1	No.1	No.2 or No.4
▼ LIGHT is lit on	No.2 or No.4	No.2 or No.5	No.2 or No.5	No.1 or No.4

Reference

(1) No.1: AISCS Memorize Method、No.2: Numbers of Piece Setting Method、
No.3: Unit Weight Setting Method. No.4: Subtractive Numbers of Piece Setting method]
No.5: Re-Memorize Unit Weight Method.

(2) No.3 Setting method can be used at any status.

3-1-3 Cross Reference Chart:

x : Operable, - : In-operable

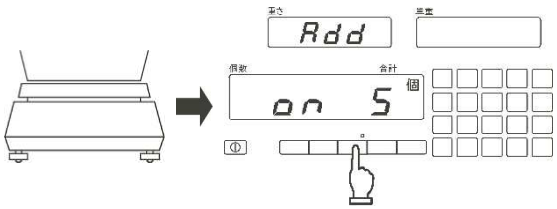
Model Name	Sample Unit Weight	AISCS Method	Numbers of Pieces Setting Method	Unit Weight Setting Method	▼ LIGHT Indication
CUX60	<0.1 mg	-	-	-	Flushing
	≥ 0.1 mg	-	x	x	Lit ON
	≥ 1 mg	x	x	x	Lit Off
CUX150	<0.25 mg	-	-	-	Flushing
	≥ 0.25 mg	-	x	x	Lit ON
	≥ 2.5 mg	x	x	x	Lit Off
CUX300	<0.5 mg	-	-	-	Flushing
	≥ 0.5 mg	-	x	x	Lit ON
	≥ 5 mg	x	x	x	Lit Off
CUX600	<1 mg	-	-	-	Flushing
	≥ 1 mg	-	x	x	Lit ON
	≥ 10 mg	x	x	x	Lit Off
CUX1500	<2.5 mg	-	-	-	Flushing
	≥ 2.5 mg	-	x	x	Lit ON
	≥ 25 mg	x	x	x	Lit Off
CUX3000	<5 mg	-	-	-	Flushing
	≥ 5 mg	-	x	x	Lit ON
	≥ 50 mg	x	x	x	Lit Off
CUX6000	<10 mg	-	-	-	Flushing
	≥ 10 mg	-	x	x	Lit ON
	≥ 100 mg	x	x	x	Lit Off
CUX12K	<20 mg	-	-	-	Flushing
	≥ 20 mg	-	x	x	Lit ON
	≥ 200 mg	x	x	x	Lit Off
CUX16K	<0.16 g	-	-	-	Flushing
	≥ 0.16 g	-	x	x	Lit ON
	≥ 1.6 g	x	x	x	Lit Off
CUX30K	<0.3 g	-	-	-	Flushing
	≥ 0.3 g	-	x	x	Lit ON
	≥ 3 g	x	x	x	Lit Off
CUX60K	<0.6 g	-	-	-	Flushing
	≥ 0.6 g	-	x	x	Lit ON
	≥ 6 g	x	x	x	Lit Off

CUX150K	<1.5 g	-	-	-	Flushing
	≧1.5 g	-	x	x	Lit ON
	≧15 g	x	x	x	Lit Off
CUX16KS	<0.05 g	-	-	-	Flushing
	≧0.05 g	-	x	x	Lit ON
	≧0.5 g	x	x	x	Lit Off
CUX30KS	<0.1 g	-	-	-	Flushing
	≧0.1 g	-	x	x	Lit ON
	≧1 g	x	x	x	Lit Off

Reference	▼ When LIGHT indication flushes, scale is unable to count pieces.

3-2 AISCS

1 **Start AISCS.**



Place tare container on weighing pan, then press [SCS] key.

Tare weight is automatically deducted internally, then s flushing. (When AISCS is in precision mode" 2.55 2", "no. 10" becomes flushing.)

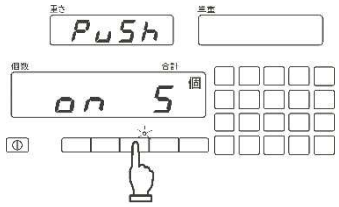
2 **Place sample.**

Place 5 pieces of sample.

(In case precision mode, place 10 pieces of sample.)

Reference	Able to change first "on. 5" number to any given number. At step 1, after AISCS started, enter default number (1 thru 99) manually using [0] ~ [9] keys then press [SCS] key, it is able to start ASCS with any given number.

3 Load in Unit Weight.

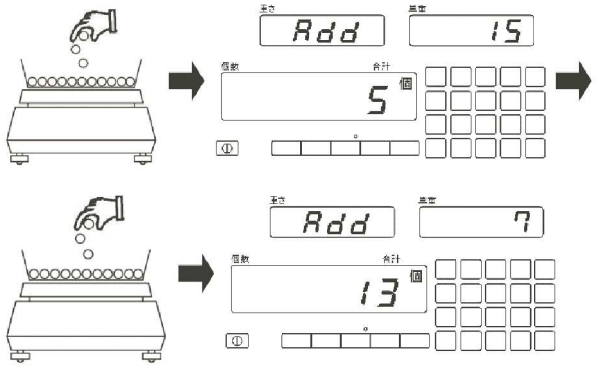


"PuSh" is diaplyed and [SCS] key lamp starts flushing.

Push [SCS] key.

Reference	In case sample unit weight is too light, "on 5" flushing nevr stops and donot advance to next step. Refer "Selection of Memorizing Method" and check sample unit weight.

4 Place supplement sample.



"Add" and ▼ADD indicated in Weight LCD.

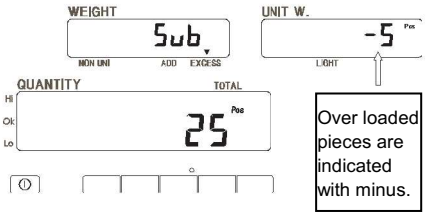
Supplement numbers of pieces are displayed in Weight LCD window.

Place nearby numbers of supplement sample. Currently, it is not necessary to count sample pieces.

As placing samples, supplement piece numbers is reduced.

Reference

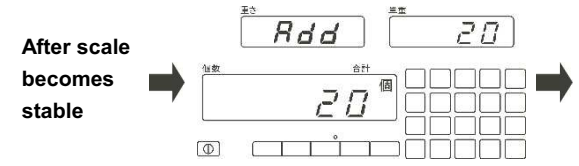
(1) When too many supplement samples are placed on, ▼EXCESS is lit in ▼Weight LCD window and overlade numbers of sample is indicated with minus sign. In this case, when removed overlade sample from cpntainer. Scale advance to next step.

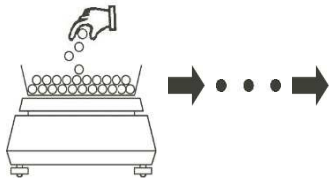


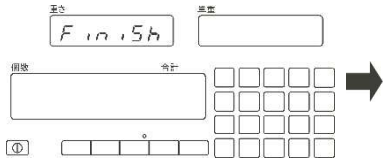
(2) In case when NON UNI indicator starts flushing, sample unit weight varies too much or foreign object mixed in. In this case, check supplement sample or reduce supplemental numbrs of sample then operate again.

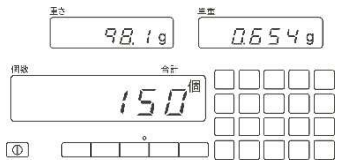
5 Add sample further on.

After scale becomes stable









Upon Scale becomes stable, "Pi" sounds momentary.

"Add" and ADD is displayed in Weight LC.
Supplement number is displayed in Unit Weight LCD.
Put object in accordance with the display. Repeat this step.
"Pi….. (long note) sounds and Memorization (sampling) complete.
"Finish" is displayed in Weight LCD, then Total Weight of sample, Unit Weight and numbers of pieces are displayed automatically in each display window.

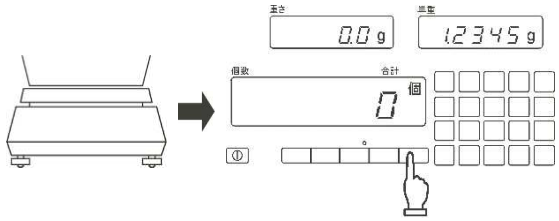
6 Start Counting operation.

Numbers of pieces in the tare container is displayed.

Reference	(1)	To terminate sampling in the middle of operation, press [SCS] key while "Add" is displayed in Weight LCD.
	(2)	With pressing [TARE] key in the middleth of operation, operation is terminated.
	(3)	In case if more accurate counting is needed, or when variation in sample Unit Weight is large, it is recommended to use AISCS operation on Precision Mode. Set "2. 5.5. 2" with referring to **Annex 12: Function List**.

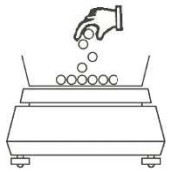
3-3 Numbers of Pieces Setting

1 **Start Numbers of Pieces Setting Method**



Place Tare container on weighing pan, then push [TARE] key.

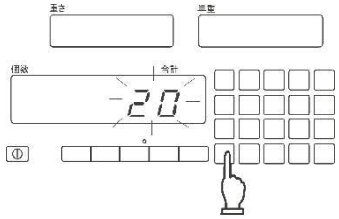
2 **Place samples.**



Place the counted sample in container.

Note	Please count exactly for sample.

3 **Enter the placed number of pieces.**

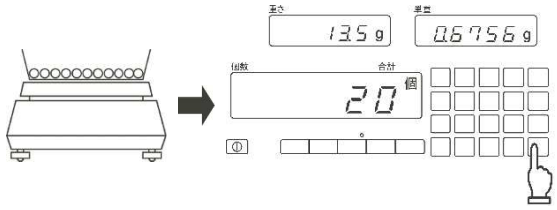


Enter the placed number of pieces through numeric keys [0] ~ [9] [.].

Entered value is flushing in Count LCD window.

Reference	Typo with using [0] ~ [9] [.] key can be cleared by depression of [C/AC] key.

4 **Memorize**



Push [SMPL SET] key.

"Pi…(long note)" sounds.
Weight, Unit Weight and Count display will light on to complete memorization.

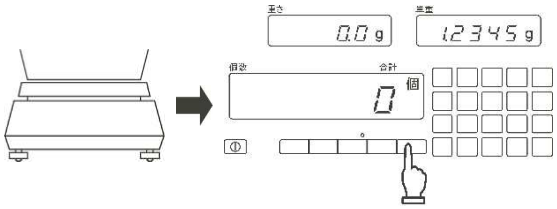
5 **Start Counting Operation.**

Numbers of pieces in the tare container is displayed.

Reference	In case sample is light in weight, LIGHT▼ is lit on or flushed in Unit Weight LCD. LIGHT▼ Lit on : Able to count but may contain error. LIGHT▼ Flushing: Unable to count.

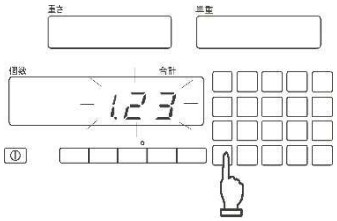
3-4 Unit Weight Setting

1 **Start Unit Weight Setting.**



Place Tare container on weighing pan, then push [TARE] key.

2 **Enter the Unit Weight value.**

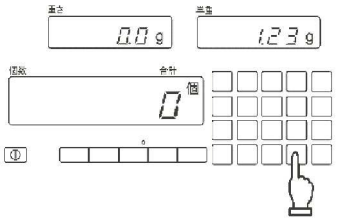


Enter the Unit Weight value withusing numeric keys [0] ~ [9] [.].

Entered value starts flushing.

Reference	Typo with using [0] ~ [9] [.] key can be cleared by depression of [C/AC] key.

3 **Memorize**



Push [UNIT.W. SET] key.

"Pi... (long note)" sounds
Weight, Unit Weight and Count display will lit on to complete memorization.

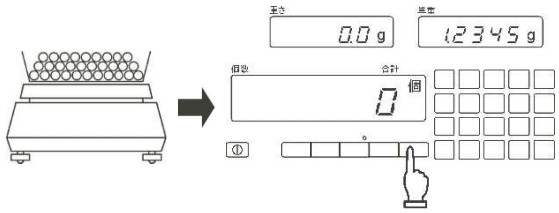
Reference	In case sample is light in weight, LIGHT▼ is lit on or flushed in Unit Weight LCD. LIGHT▼ Lit on : Able to count but may contain error. LIGHT▼ Flushing: Unable to count.

4 **Start Counting Operation.**

Numbers of pieces in the tare container is displayed.

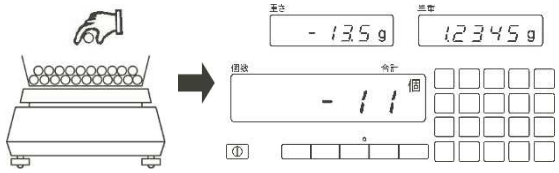
3-5 Subtractive Numbers of Pieces Setting

1 **Start Subtractive Numbers of Pieces Setting.**



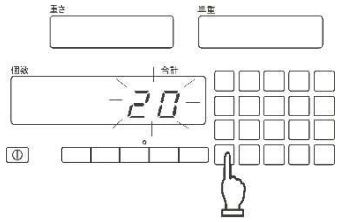
Place Tare container with objects in on weighing pan, and push [TARE] key.

2 **Pick up some (roughly around 10 pieces) sample.**



Pick up some sample and count exactly.

3 **Enter number of pick up sample.**

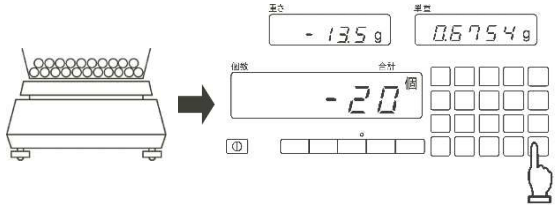


Enter the counted sample numbers with using [0] ~ [9] [.] key.

Entered number flushes.

Reference	Typo with using [0] ~ [9] [.] keys can be cleared by depression of [C/AC] key.

4 **Memorize**



Push [SMPL SET] key.

"Pi…(long note)" sounds.
Memorization complete.

5 **Start Counting.**

Numbers of pieces in Tare container is displayed.

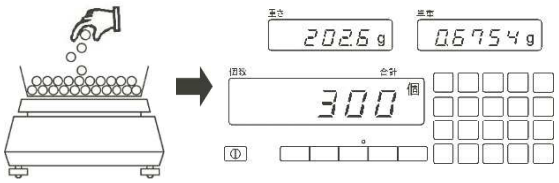
Reference	In case sample is light in weight, LIGHT▼ is lit on or flushed in Unit Weight LCD. LIGHT▼ Lit on : Able to count but may contain error. LIGHT▼ Flushing: Unable to count.

3-6 Memory Update

After when memory storage complete, add or deduct sample toupdate Unit Weight into newer value.

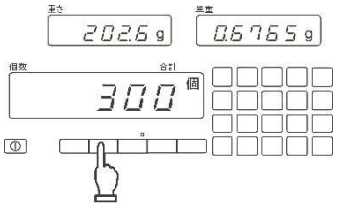
3-6-1 Re-memorizing

1 **Add sample.**



Put random numbers of pieces into container.

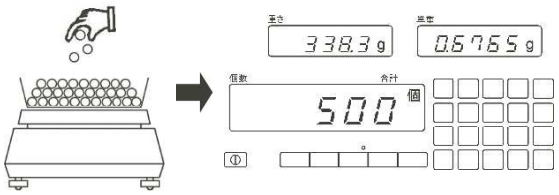
2 **Re-memorizing.**



Push [RE] key.

"Pi…(long note)" sounds.
Memory is updated.

3 **Repeat Re-memorization process 1 & 2.**



Repeat step 1 and 2, then increase numbers of sample.

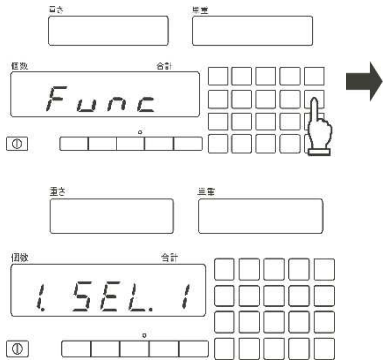
More accurate Unit Weight value is stored.

Reference	Re-memorization proccess after memorization operation by AISCS enables high-precision average Unit Weight.

3-6-2 Automatic Memory Update 1

Current Unit Weight can be updated without pushing [RE] key.

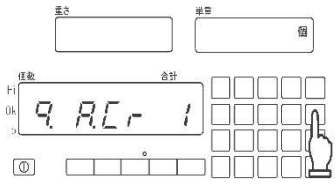
1 **Set to Function Setting mode.**



Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

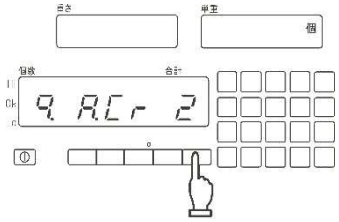
"1. SEL. 1" is displayed.

2 **Select Setting Item.**



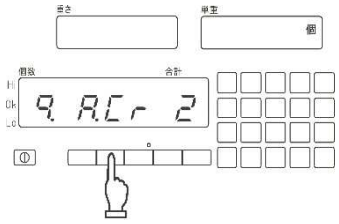
Push [MODE] key several times to select "9. ACr 1".

3 **Select setting value.**



Push [TARE] key and select "9. ACr 2".

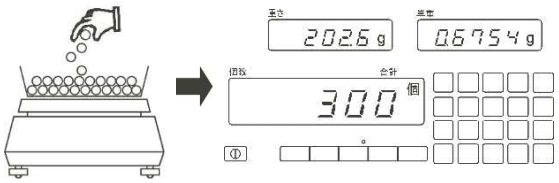
4 **Determine setting value.**



Push [RE] key.

5 **Add counting objects.**

Add random numbers of pieces.



6 **Updated automatically.**

When scale become stabled, "Pi" sound to show updated Unit Weight.

7 **Add more objects.**

More accurate average Unit Weight is updated.

Reference	(1) Updated Unit Weight is cleared when Power off scale. (2) When Storage is needed in above (1), store data with referring "6 Memory Function for Unit & Tare Weight".

3-6-3 Automatic Memory Update 2

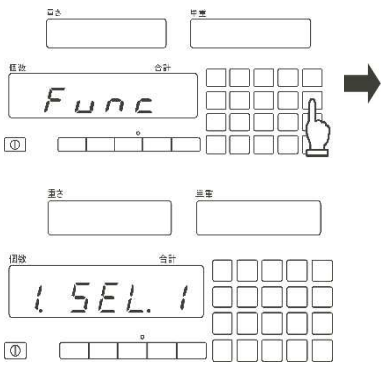
Current Unit Weight can be updated without pushing [RE] key.

Reference	(1) Do not function when numbers of object needed for re-memorization is less than 10 pieces. (2) In addition to the above (1), this feature does not function when currect numbers of pieces is less than previously updated number of pieces.

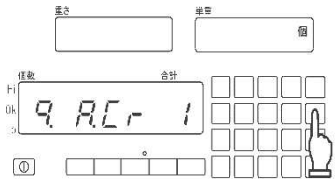
1 **Set to Function Setting mode.**

Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

"1. SEL. 1" is displayed.

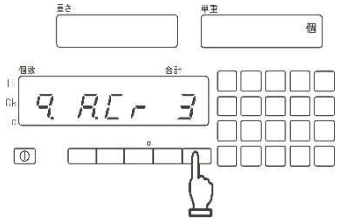


2 **Select Setting Item.**



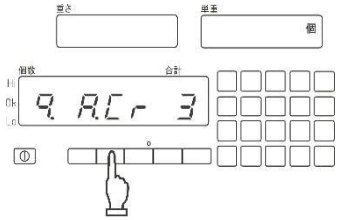
Push [MODE] key several times to select "9. ACr 1".

3 **Select setting value.**



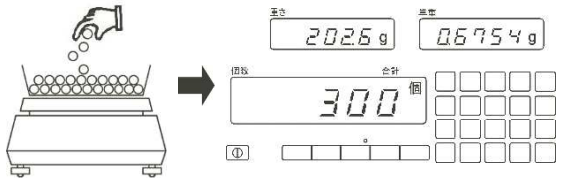
Push [TARE] key and select "9. ACr 3".

4 **Determine setting value.**



Push [RE] key.

5 **Add counting objects.**



Add random numbers of pieces.

6 **Updated automatically.**

When scale become stabled, "Pi" sound to show updated Unit Weight.

Reference	(1) Updated Unit Weight is cleared when Power off scale. (2) When Storage is needed in above (1), store data with referring "6 Memory Function for Unit & Tare Weight".

7 **Add more objects.**

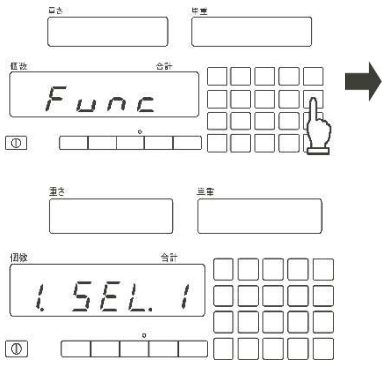
More accurate average Unit Weight is updated.

4 CR (Count Revision) Function

Function to be used for accurate counting of wider variation in unit weight object. Unit Weight will not be updated. Use this function after when memorization complete.

4-1 CR Function

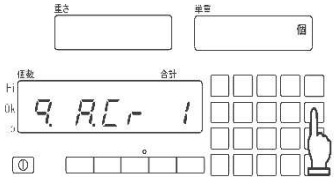
1 **Set to Function Setting mode.**



Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

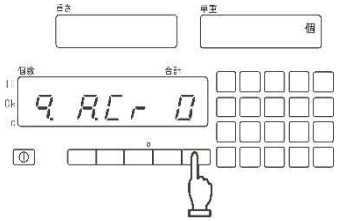
"1. SEL. 1" is displayed.

2 **Select Setting Item.**



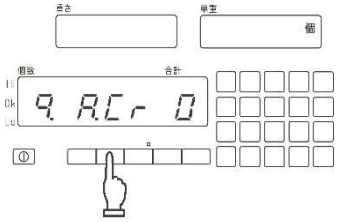
Push [MODE] key several times to select "9. ACr 1".

3 **Select setting value.**



Push [TARE] key and select "9. ACr 3".

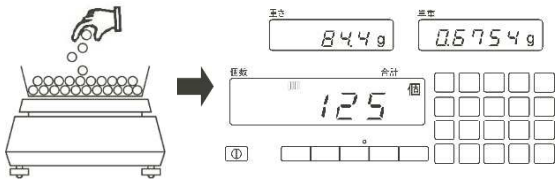
4 **Determine setting value.**



Push [RE] key.

5 **Add more object pieces.**

Add more pieces dradually.

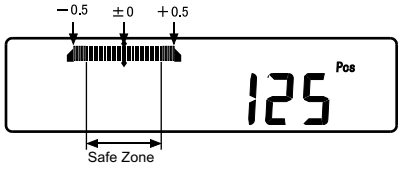


6 **Check Variation Guide.**

Add moore objects.

Variation degree in Variation Guide will fluctuate.

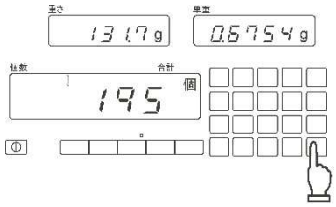
Widened to left or right shows variation degree is bigger.



7 **Compensate the variation degree.**

Verify the variation guide bar is within the safety area, then push [SMPL SET] key.

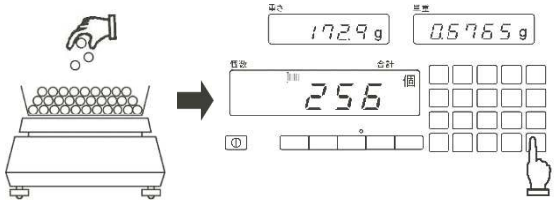
Variation degree is compensated and becomes zero (0).



Reference	When variation degree is large, it is unable to compensate by pushing [SMPL SET] key, Warning Buzzer only activated with "Pi, Pi, Pi" sound. Reduce numbers of object pieces until bar comes into Safety Area, then push [SMPL SET] key.

8 **Repeat Variation Compensation.**

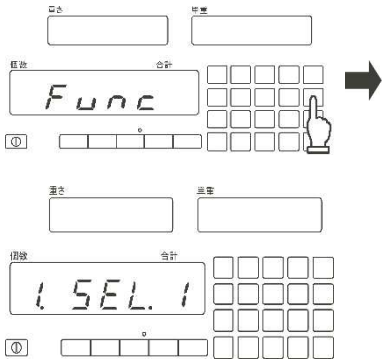
With repeating step 4 thru 6, accurate count operation can be done with compensating variation for widely variant unit weight objects.



Reference	Variation Guide will not be displayed in case when Unit Weight of the sample piece is lighter than countable unit weight. (Refer 3-1-2: Selection of Memorization)

4-2 ACR (AUTO CR) Function

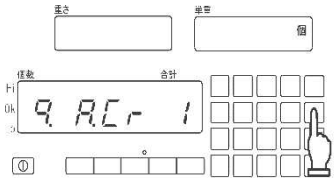
1 **Set to Function Setting mode.**



Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

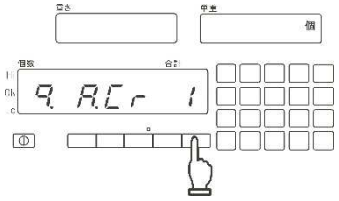
"1. SEL. 1" is displayed.

2 **Select Setting Item.**



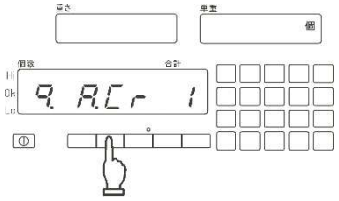
Push [MODE] key several times to select "9. ACr 1".

3 **Select setting value.**



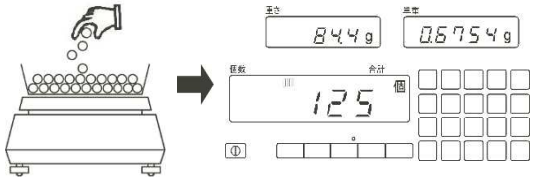
Push [TARE] key and select "9. ACr 1".

4 **Determine setting value.**



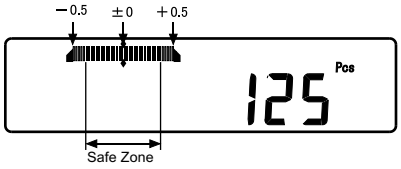
Push [RE] key.

5 **Add more object pieces.**



Add more pieces gradually.

6 **Check Variation Guide.**

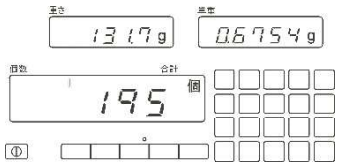


Add moore objects.

Variation degree in Variation Guide will fluctuate.

Widened to left or right shows variation degree is bigger.

7 **Variation Ratio is compensated automatically.**



When stabled, variation ratio is automatically compensatedso to zero (0), when Variation Guide Bar is within safety area.

Reference	When variation degree is large, it is unable to compensate by pushing [SMPL SET] key, Warning Buzzeronly activated with “Pi, Pi, Pi” sound. Reduce numbers of object pieces until bar comes into Safety Area, then push [SMPL SET] key.

8 **Repeat Step 4 through 6.**

With repeating step 4 thru 6, accurate count operation can be done with compensating variation for widely variant unit weight objects.

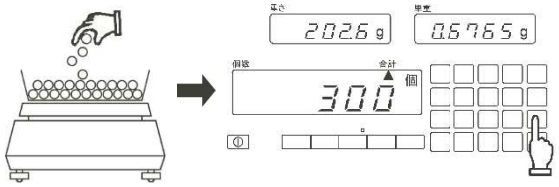
Reference	Upon the completion of Counting Operation, there may be the case where Zero Point has shifted even after all object are removed from weighing pan. But no effects on counting result. Perform Zero Point Adjustment before proceeding next Counting operation.

5 Add Accumlation Function

5-1 Add Accumlation Function

Add Accumlation function is usefull for counting large volume object which is unable to count in 1 time. Able to count in multiple times with accumlating each count.

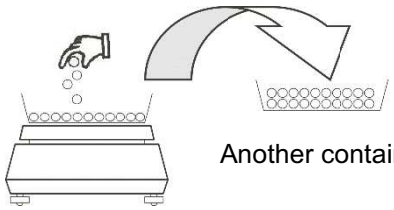
1 **Start Add Accumlation Function.**



Place object on weighing pan, then push [ADD] key.

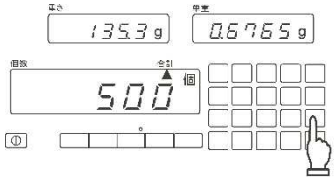
TOTAL
▲ mark and accumlated total count, as result of Addition, will lit on for 2 seconds at top right of even digits Count LCD display.

2 **Exchange objects.**



Transfer counted object at step 1 to another container, then place new batch onto weighing pan.

3 **Adding calculation**



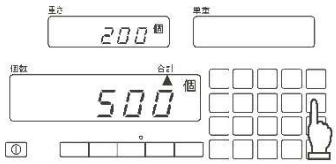
Push [ADD] key.

TOTAL
▲ mark and accumlated total count, as result of Addition, will lit on for 2 seconds at top right of even digits Count LCD display. Then display returns to current display.
Repeat step 1 through 3.

Reference	(1) As Protection function for duplicated addition works, second addition for the same data is not possible unless all object tokk away from weighing pan and scale goes back to zero (0) or negative status. (2) When count total exceed defined value (9,999,999), display shows " o-Err " therefore unable to add.

5-2 Display Total count

1 **Display Total Count.**

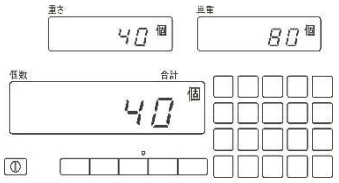


Push [MODE] key.
The display switches between current numbers indication and total numbers indication by each depression of [MODE] key.

Reference

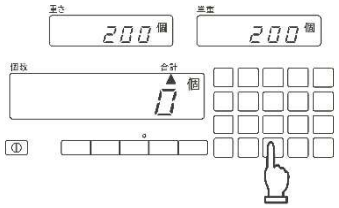
Description of Total Display

(1) Weight LCD: Adding number of pieces
(2) Count LCD: Current number of pieces
(3) Unit Weight LCD: Add number ＋ current number



5-3 Delete (Clear) Total

1 **Delete (clear) total value.**



To delete(clear) total value, push [C/AC] key during Total display.

Total count value is deleted (cleared).

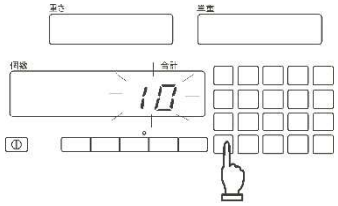
6 Memory Function for Unit & Tare Weight

At Counting operation, Unit Weight or Tare Weight can be called up without performing memorization operation.
(1) address 1-30 : Unit Weight and Tare Weight
(2) address 31-300 : Unit Weight only

6-1 Register stored value to Memory

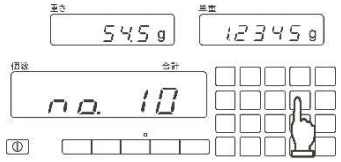
After the object Unit Weight is stored, it is able to register such Unit Weight and Tare Weight at any desirable address in the memory.

1 **Select address to be registered.**



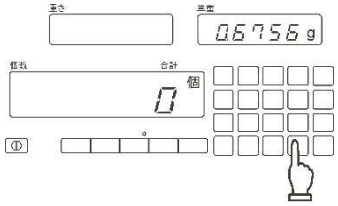
After the object Unit Weight is stored, enter address to be registered, using [0] ~ [9] [.] keys.

2 **Determine Address.**



Push [No.] key.

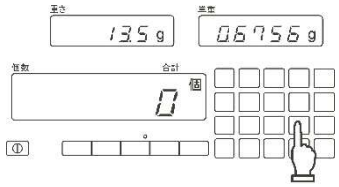
3 **Store Unit Weight value.**



Upon the depression of [UNIT.W. SET] key, “Pi….(long mark)” sounds, then Unit Weight is stored/updated in memory.

Reference	For memory registration at address 31-300, display returns back to Count display upon the storage.

4 **Store Tare Weight.**

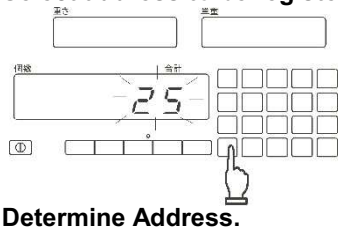


Upon the depression of [TARE PRESET] key, “Pi….(long mark)” sounds, then Tare Weight is stored/updated in memory.

Reference	(1) When Tare Weight is not registered at address 1 through 30, or when operationneed to be terminated, push [TARE] key, then scale return back to Count operation. (2) When selecting already registered address, already registered Tare weight: Weight LCD and Unit Weight: Unit Weight LCD are displayed.

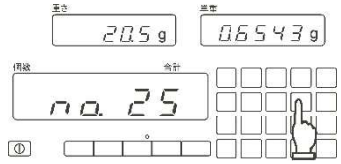
6-2 Memory Registration by Numeric Entry

1 **Select address to be registered.**



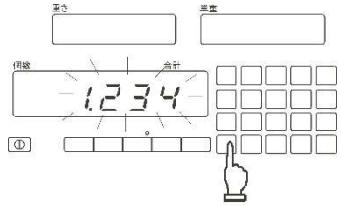
Enter address to be registered using [0] ~ [9] [.] keys.

2 **Determine Address.**



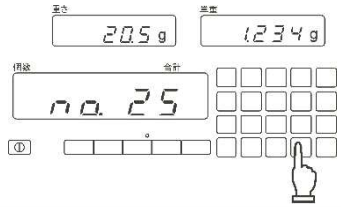
Push [No.] key.

3 **Enter Unit Weight value.**



Enter Unit Weight value using [0] ~ [9] [.] keys.
Entered value flushes in Count LCD.

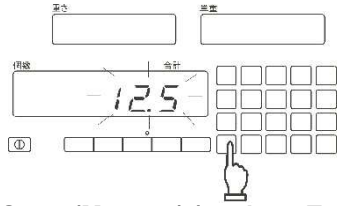
4 **Store Unit Weight.**



Upon the depression of [UNIT.W. SET] key, "Pi....(long mark)" sounds, then Unit Weight is stored/updated in memory.

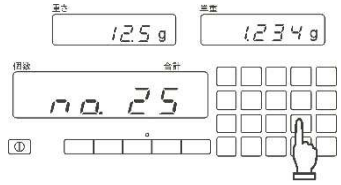
Reference	For memory registration at address 31_300, display returns back to Count display upon the storage.

5 **Enter Tare Weight value.**



Enter Tare Weight value using [0] ~ [9] [.] keys.
Entered value is flushing in Count LCD.

6 **Store (Memory) / register Tare Weight.**

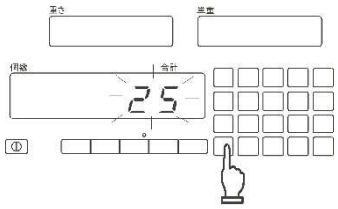


Upon the depression of [TARE PRESET] key, "Pi....(long mark) " sounds, then Tare Weight is stored/updated in memory.

Reference	(1) When Tare Weight is not registered at address 1 through 30, or when operationneed to be terminated, push [TARE] key, then scalereturn to Count operation. When selecting already registered address, already registered Tare weight: Weight (2) LCD and Unit Weight: Unit Weight LCD are displayed.

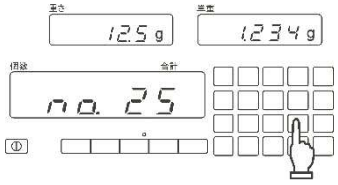
6-3 Use registered Unit & Tare Weight

1 **Designate already registered address.**



Enter registered address using [0] ~ [9] [.] keys.

2 **Stored Unit Weight/Tare Weight are displayed.**



Push [No.] key.

Already registered Unit Weight and Tare Weight are displayed.

In case call up number (registered address) is wrong, scale return back to Count mode with just pushing [TARE] key.

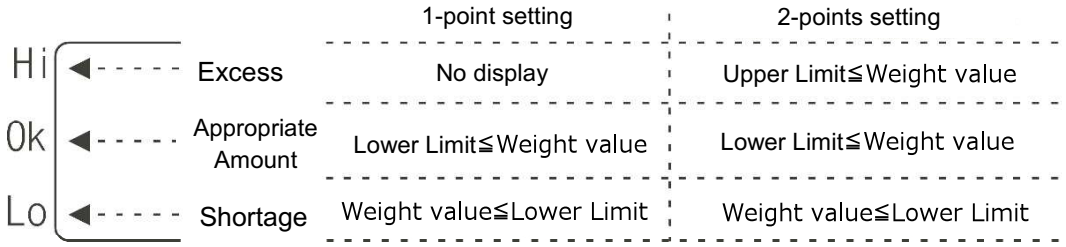
7 Limit Function

7-1 Limit Function discriminate “excess”, “appropriate amount” or “shortage”

Able to discriminate whether counted value is within the limit or not, by setting limit value (Upper and lower).

■How to discriminate

With setting Lower limit and upper limit, counted value is determined whether lessthan lowerlimit, within the limit, or more than upper limit. Result is displayed by “◀“ sign.



Reference	Lower Limit only is set at one limit setting. It discriminates whether “OK (appropriate amount)” or “Lo (shortage)”.

■Particular Function Setting

Able to set in- detail of Limit Function through Function Setting.

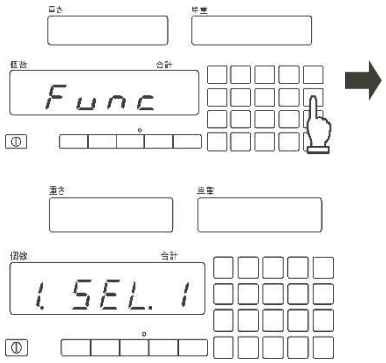
Discriminate Condition	11.Co.	1: always 2：stable/unstable only
Discrimination Range	12.Li.	0：Do not discriminate when object is 0 or negative. 1：Discriminate all area including Zero point.
Numbers of Set Point	13.Pi.	1：Only one limit (Lower Limit only) 2：Two Limits (Upper limit and Lower limit)
Buzzer behavior	14.bu.	1：Buzzer stops 2：activate at LO range 3：activate in OK range 4：activate at HI range 5：activated in LO+OK range 6：activate at OK+HI range 7：activate at LO+HI range

Reference	(1) Perform Zero Point adjustment or Tare deduction as neccesary before setting Limit value (Upper or Lower). (2) Three “◀“ sign will lit on when magnitude relation of Limit value (UpperorLower). Re-enter value again.

7-2 Setting Limit Function

Set Limit Function first, then set Limit value (Upper and Lower Limit).

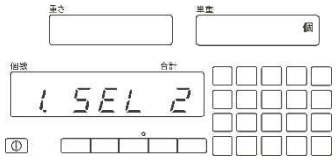
1 **Set to Function Setting mode.**



Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

"1. SEL. 1" is displayed.

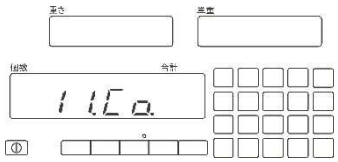
2 **Select Limit Function.**



Push [MODE] key few times to select "1. SEL.".

Push [TARE] key to select "1. SEL. 2".

3 **Set the discriminant condition.**

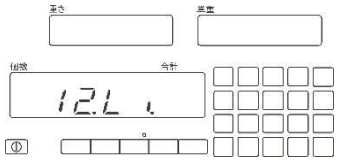


Push [MODE] key several times to select "1 1.Co.".

Push [TARE] key to select discriminant condition.

1：Constant discrimination
(even at non-stable status)
2：Stable discrimination only.

4 **Set discriminant range.**

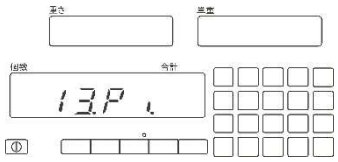


Push [MODE] key to select "12.L 1".

Push [TARE] key to select Discriminant range.

0：Do not discriminate when object is zero or negative.
1：Discriminate all area including zero point.

5 **Set the number of Set point.**

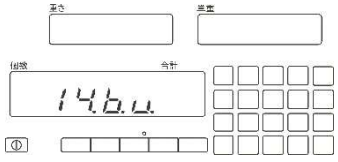


Push [MODE] key to select " 13.P 1 ".

Push [TARE] key to select number of Set Point.

1：1 point set（discriminate OK/LO）
2：Upper and Lower Limit（discriminate HI/OK/LO）

6 **Set Buzzer behavior.**



Push [MODE] key to select " 14.bu. ".

Push [TARE] key to select discriminant range.

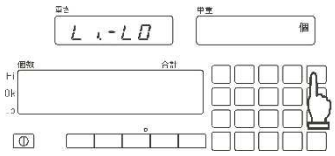
0：No Buzzer
1：activate buzzer within LO range
2：activate buzzer within OK range
3：activate buzzer within HI range
4：Activate buzzer within LO+OK range
5：activate buzzer within OK+HI range
6：activate buzzer within LO+HI range

7 **Determine the Setting.**

Push [RE] key.

7-3 Setting Method of Limit Value

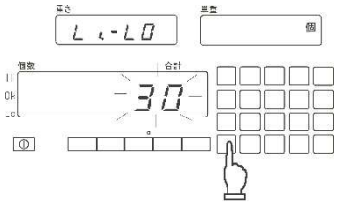
1 **Start Setting of Limit Value.**



Push [LMT] key.

" L i-LO" is displayed in WeightLCD.
Turns into Lower Limit setting status.

2 **Enter Lower Limit value.**

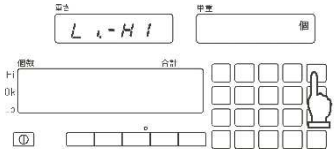


Enter Lower Limit using [0] ~ [9] keys.

In case of inputting minus lower limit, press [MODE] key

[▬] is displayed in Count LCD window.

3 **Complete Lower Limit setting and set Upper Limit value.**

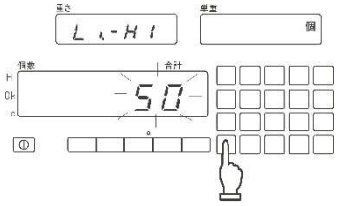


Push [LMT] key, then" Pi…(long mark)" sounds. Lower Limit has been set.

Following to the above, " L i-H I" is displayed in Weight LCD.
Turns into Upper Limit setting status.

Reference	In case of One Point Setting, scale returns to Count display after Lower Limit Setting complete.

4 **Enter Upper Limit value.**



Enter Upper Limit value using [0] ~ [9] keys.

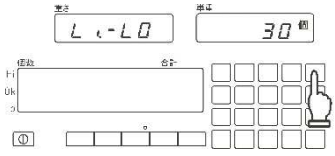
In case of inputting minus lower limit, press [MODE] key

[▬] is displayed in Count LCD window.

Reference	Able to change positive or negative status of the value by [MODE] key.

7-4 Checking the Limit Value

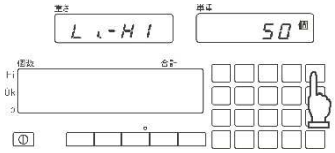
1 **Check the Lower Limit value.**



By pressing [LMT] Lower Limit value is displayed.

Weight LCD : "L i-LO" display
Unit Weight LCD : Lower Limit display

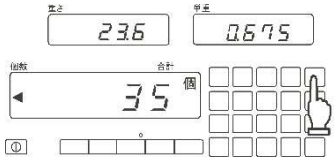
2 **Check the Upper Limit value.**



Push [LMT] key following to step 1 above, Upper Limit value is displayed.

Weight LCD : "L i-H 1" display
Unit Weight LCD : Upper Limit display

3 **Return back to Count display.**



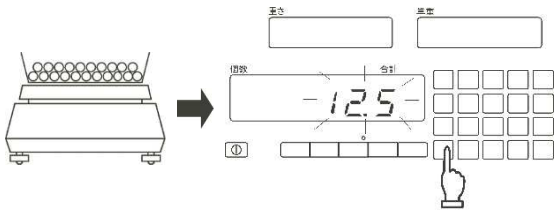
Pressing [LMT] key following to step 2 above, scale goes back to Count display.

Reference	In case of One Point Setting, Scale returns to Count display after Lower Limit Setting display.

8 Keybord Tare Function

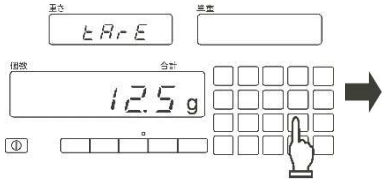
When Tare Weight is already known, Tare Deduction can be done by entering the tare value through the "keyboard".

1 **Start Keyboard Tare function.**



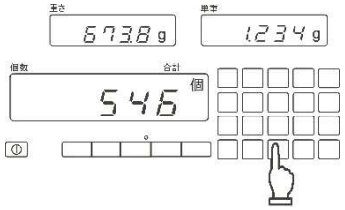
Place Tare container with object on the weighing pan.
Enter Tare Weight value using [0] ~ [9] [.] key.

2 **Decide Tare value then perform tare deduction.**



Push [TARE PRESET] key.

"Pi….(long mark) " sounds and Tare Weight is displayed for roughly 2 senconds.



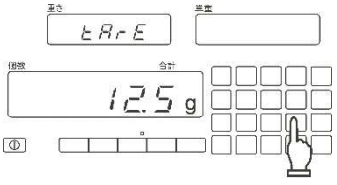
Weight and Count, tare is already deducted, are displayed in each LCD.

Reference

(1) Entered value using [0] ~ [9] [.] keys can be deleted (cleared) by depression of [C/AC] key.

(2) To terminate operation, push [TARE] key, then scale returns backto Count display.

(3) Push [TARE PRESET] key to display entered Tare Weight value in Count LCD for roughly 2 seconds.

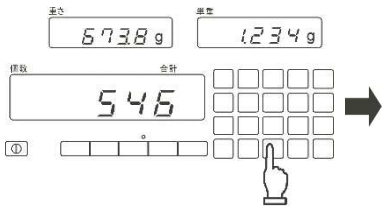


9 Clear Unit Weight / Tare Weight

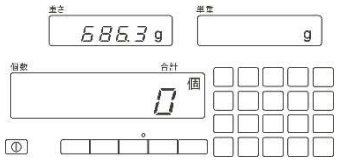
Able to delete (clear) currently set Unit Weight and/or Tare Weight by keyboard operation.

1 **Start Unit Weight / Tare Weight deletion (clear).**

Keep pressing [C/AC] key for 3 to 4 seconds while in Count mode.



Unit Weight and/or Tare Weight are deleted (cleared).

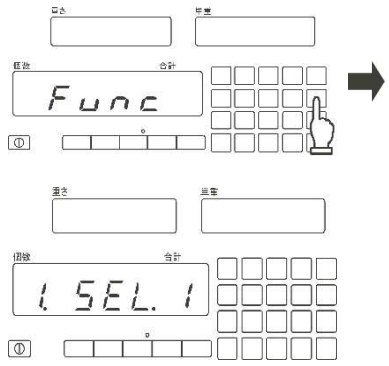


Reference	While in Total count display at Add Accumlation Function mode, it is unable to delete (Clear).

10 Forced Tare Deduction Function

Zero adjustment or Tare Deduction is forced to do in order to secure correct Countingoperation. This function make sure Count display is zero (0 pcs) in prior to count operation, so that mis-count operation can be prevented.

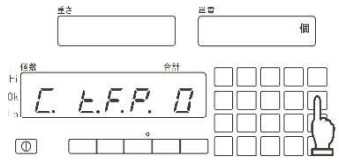
1 **Set to Function Setting mode.**



Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

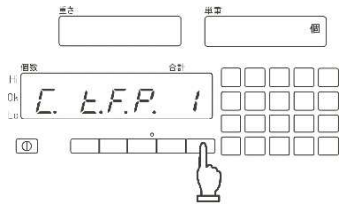
"1. SEL. 1" is displayed.

2 **Select Setting Item.**



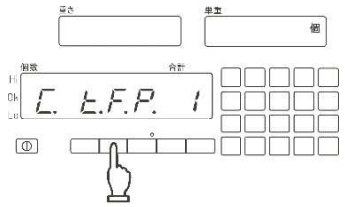
Push [MODE] key several times to select "C. t.F.P. 0".

3 **Select setting value.**



Push [TARE] key and select "C. t.F.P. 1".

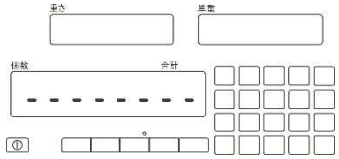
4 **Determine setting value.**



Push [RE] key.

5 **Stand -by screen for Tare input**

Count display shows " - - - - - - - - "



6 **Deduct Tare**

Press [TARE] key.

When tare is deducted, count display changes to [0peice]

Reference	Instead of pressing [TARE] key, Tare Deduction can be done by Command through RS232C or External Tare Deduction Terminal.

7 Add more objects.

Count of added object is displayed.

8 Remove objects.

With removing objects from container and numbers of pieces in the container goes below 2 pieces,
Display changes to " - - - - - ".

9 Repeat step 6 through 8.

Reference	When removing sample with tare container at step 8. [- - - - -] is indicated. In case when counting is continued, press [R.M.] key to return to Count Display.

11 Scale Adjustment

11-1 Span Adjustment

Span adjustment is to "decrease" the difference between an indicated value and the true value (mass), and span test is to "check" the difference between an indicated value and the true value.

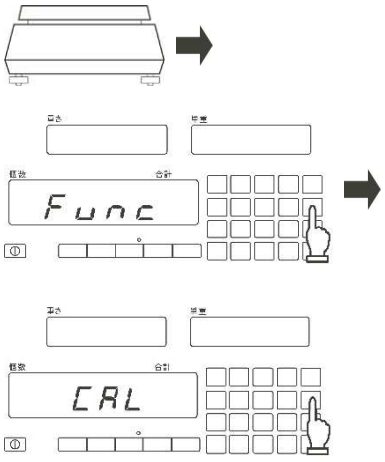
This must be performed without fail in the case of doing high-accuracy weighing work.

Because an electronic balance is affected by the acceleration of gravity, adjustment/test is needed at every weighing location. The adjustment/test is also needed when (1) using a long period and (2) an accurate indication does not appear any longer.

Note	(1) Please use OIML F2 Class Compatible Weighs for External Span Adjustment Weights (2) The span adjustment significantly affects the weighing accuracy. Please read this procedure carefully before getting to the adjustment.

11-2 Call up Span adjustment

1 **Call up Span Adjustment function .**

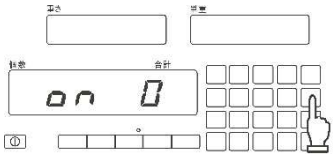


Check nothing on weighing pan.

Keep pressing [MODE] key.

Release key when display changes from 「Func」 to 「CAL」

2 **Zero Point adjustment**

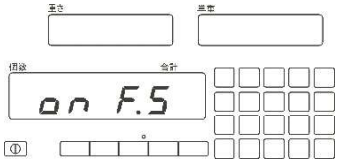


Push [MODE] key.

"on 0" display flashes, and Zero Point Adjustment starts.

3 **Span Point adjustment**

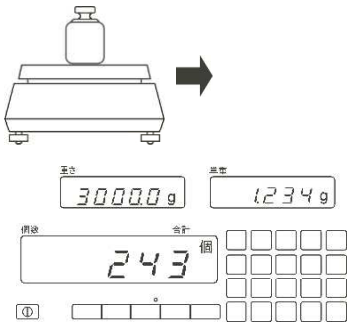
When Zero Point adjustment complete, display changes to "on F.S".



4 **Place Adjustment Weights on weighing pan.**

Place Adjustment Weight at the center of weighing pan.

"on F.S" display flushes, and Span Point adjustment is performed automatically.
When adjustment complete, weight value is displayed in Weight LCD.



Reference	It is recommended to use as close to capacity weight as possible for Span adjustment, although it can be done with using 50% or more to capacity weight.

5 **Remove Adjustment Weight from weighing pan.**

Remove external adjustment weight from weighing pan.

Reference	
	(1) When confused in the middleth of operation, push [RE] key to terminate Span Adjustment.
	(2) In case "o - Err" is displayed, adjustment weight exceed scale capacity sothat remove weight from weighing pan immediately.
	(3) In case "1 - Err" is displayed, adjustment weight is less than 50% of scale capacity.
	(4) For CUX16K-150K, [PUSH F] is displayed when external adjustment wiehgt is placed on the center of pan at step 4. Press [SCS] key, then start adjustment of sapn point.

12 Input/Output with Peripherals

12-1 Interface and Peripheral connection

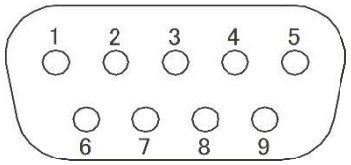
CAUTION	May cause damage to the equipment. Disconnect AC Adaptor of Scale first when connecting peripheral equipment.

12-1-1 Connector Terminal Number and its function

Perform Input/Output to/from peripheral equipment like PC through RS-232C interface.
RS-232C interface of this scale is D-sub, 9P, Male connector type.
It connects with peripheral equipment with following specifications.

Pin layout of RS-232C connector of the Scale is as follows.

D-SUB 9P Positive Connector
Cable Fixing Screw: Nos.4-40 UNC



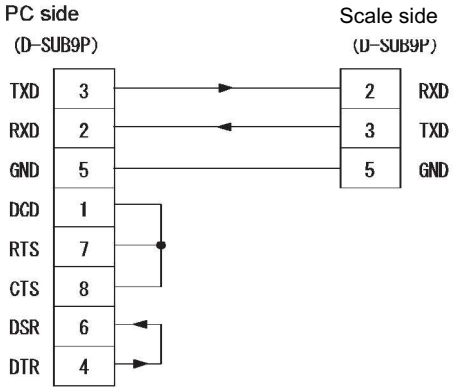
Terminal No.	Signal name	Input/output	Function/Remark
1	–	–	–
2	RXD	Input	Receive Data
3	TXD	Output	Send Data
4	DTR	Output	HIGH（while scale is Power ON）
5	GND	–	Signal Ground
6	–	–	–
7	–	–	–
8	–	–	–
9	EXT.TARE	Input	External Tare Deduction

Reference	Able to deduct Tare or adjust Zero Point from external peripherals with connecting External Tare Deduction Input (pin #9) to Signal Ground (pin#5) by Contact or transistor. In this case, connection time should be more than 400ms. (OFF: voltage, MAX15V、ON sink current: 20mA). Detail should be referred to **"Annex 9 External Tare Deduction by Transister Switch"**.

12-1-2 Connection with PC

■ Cable connect peripheral equipment to Scale, with referring to below example.

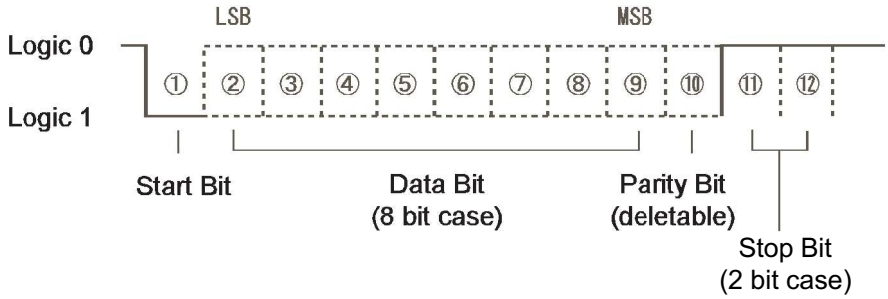
・ Connection example : D-SUB9P



Reference	Able to use commercially supplied D-sub9P Cross Cable.

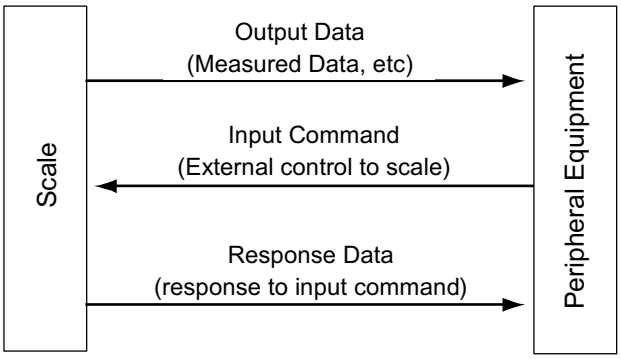
12-1-3 Interface Specifications

Transmission Policy	Serial Transmission, Syncronous
Transmission Speed	1200/2400/4800/9600 bps
Transmission Code	ASCII code (8 bit)
Signal Level	EIA RS-232C Compliant HIGH Level (Data Logic:0):+5～+15V LOW Level (Data Logic:1):-5～-15V
Character Bit configuration	Start Bit: 1 bit Data Bit: 8 bit Parity Bit：0/1 bit Stop Bit：2/1 bit
Parity Bit	None / Odd / Even



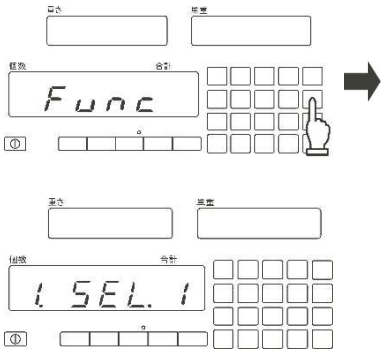
12-2 Communication Data and Command

Following shows data communication with peripherals on RS-232C interface.



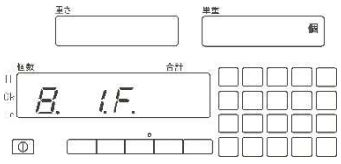
12-3 Output Data

1 **Set to Function Setting Mode.**



Keep pressing [MODE] key, and release key when "Func" is displayed.

2 **Set Communication format.**



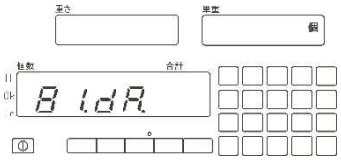
Push [MODE] key several times, and select "B. 1.F.".

Push [TARE] key to select Setting value.

0：Stop Output
1：Numeric 6 digits format
2：Numeric 7 digits format

Push [MODE] key.

3 Set Output Data.



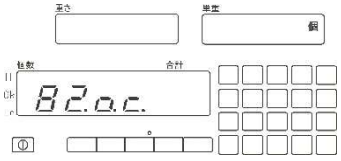
Push [MODE] key several times and select "B 1.dR.".

Push [TARE] key and select setting value.

1：Count Data Output
2：Weight Data Output
3：Unit Weight Data Output
4：Total Data Output
5：Count, Weight & U/W Data Output
6：Count, Weight & Total Data Output
7：Count, Weight & Tare Weight Data Output

Push [MODE] key.

4 Set Output Control.



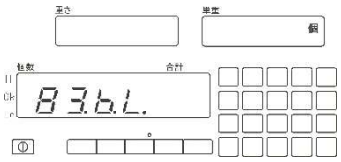
Push [MODE] key several times and select "B2.o.c.".

Push [TARE] key and select setting value.

0：Prohibit Output
1：Continuous Output
2：Continuous Output when stable
(Prohibit Output when unstable)
3：Immediate One time Output upon [OUTPUT] key depression.
4：One Time Output upon stable
(Automatic Output)
5：One Time Output upon stable、prohibit output when unstable
6：One Time Output upon stable、Continuous output when unstable.
7：One Time Output when stable upon [OUTPUT] key depression

Push [MODE] key.

5 Set Baud Rate.



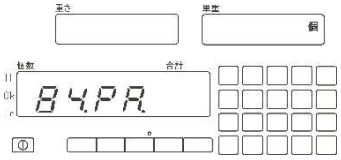
Push [MODE] key several times and select "B3.bL.".

Push [TARE] key and select setting value.

1：1200bps
2：2400bps
3：4800bps
4：9600bps
5：19200bps

Push [MODE] key.

6 **Set Parity.**



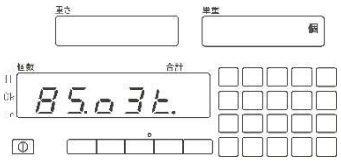
Push [MODE] key several times and select "B4.PR.".

Push [TARE] key and select setting value.

0：None
1：Odd Parity
2：Even Parity

Push [MODE] key.

7 **Set Output Data Interval.**



Push [MODE] key several times and select "B5.o3t.".

Push [TARE] key and select setting value.

0：3 consecutive data output
1：3 data constant interval output

Push [MODE] key.

8 **Determine Setting.**

Push [RE] key.

Reference	
	(1) Setting Output Data Interval in step 7 can be set by selecting "B idR5~7" at Output Data Setting.
	(2) Set the Output data interval at step 7 to "B5.o3t. 0", and when data is unable to receive correctly, set it to "B5.o3t. 1".
	(3) In case communication format at step 2 is set to "B. LF. 1", parity setting at step 6 will not be displayed.

12-3-1 Data Format

・Numeric 6 digits Format

Consists with 14 characters including Terminator（CR=0DH/LF＝0AH）.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
P1	D1	D2	D3	D4	D5	D6	D7	U1	U2	S1	S2	CR	LF

・Numeric 7 digits Format

Consists with 15 character including Terminator（CR=0DH/LF＝0AH）, and able to add Parity Bit.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P1	D1	D2	D3	D4	D5	D6	D7	D8	U1	U2	S1	S2	CR	LF

12-3-2 Meaning of Data

[P1] (1 character)

Represent Data Polarity.

P1	Code	Description
+	2BH	Zero or Positive Data
–	2DH	Negative Data

[D1～D7 (or D8)] (7 or 8 character)

Numeric Data is stored.

D1～D7 (D8)	Code	Description
0- 9	30H- 39H	0- 9 (Numerical)
.	2EH	・Decimal point ・When data do not contain decimal point, it can be ignored. And SP(Null) is output at LSD in thiis case.
SP (Null)	20H	・Null at LD of Numeric Data. ・When data do not contain decimal point, Null is output at LSD.

[U1・U2] (2 characters)

Represent a unit of Numeric Data.

U1	U2	U1 code	U2 code	Meaning	Scale display
SP (Null)	G	20H	47H	gram	g
P	C	50H	43H	# of pcs (pcs)	Pcs

[S1] (1 character)

Represent Judgement result of Limit Function operation.

S1	Code	Description	Remark
L	4CH	Less (LO)	Judgement result
G	47H	Adequate (OK)	
H	48H	More (HI)	
U	55H	U/W value	Data variant
T	54H	Total value	
f	66H	Tare Weight	
p	70H	Lower Limit	
q	71H	Upper Limit	
SP (Null)	20H	No Judgement result / No definition of Data	

[S2] (1 character)

Represent the Status.

S2	Code	Description
S	53H	Data stable
U	55H	Data Unstable
E	45H	When "o-Err" · "u-Err" is displayed.
SP (Null)	20H	No definition of status

Reference	[L], [G], [H] which indicate the discerned result at each functional operation may function only when Limit Function is enabled (「L SEL. 2」) and Count Data Output (「B IdA. 1」) function is set.

12-4 Input Command

Command to control this Product from External peripheral.

2 kinds, one for Tare Deduction Command, and the other is Output Control Command.

12-4-1 Transmission Protocol

① Send Input Command to Scale from external peripheral equipment.
Transmission/Reception are in Full Duplex System so that Sender can send commands regardless the transmission timing of the scale.

② When Scale has executed command successfully, normal Acknowledgement or Result which is requested by command are sent to external peripheral equipment.

- When abnormal termination or command itself is invalid (error), Error response is sent.
- In case normal display status, response shallbe sent within 1 sec after command recetion. In case of Tare Deduction command, response shall be sent after the process completion.
- In case Command is received during Function Setting or Span Adjustment process, Command shall be xecuted after Process completed.

Note	Data may be overwritten. Do not send next Command until sender receives response form this scale after the completion of Imput Command trasnmission.

12-4-2 Command Form

Input Command is consist of "Command Main Body（C1,C2）", "Address Parameter（M1 to M3）", "Numeric Data Parameter（N1 thru N8 or P1, N1 thru N7）", and Terminator（CR, LF：0DH,0AH）.

(1) Unit Weight / Tare Weight Setting

C1	C2	,	M1	M2	M3	,	N1	N2	N3	N4	N5	N6	N7	N8	CR	LF

(2) Upper / Lower Limit Setting

C1	C2	,	M1	M2	M3	,	P1	N1	N2	N3	N4	N5	N6	N7	CR	LF

Reference "Address Parameter（M1 thru M3）" and "Numeric Data Parameter（N1 thru N8 or P1, N1 thru N7）" may not be contained, depend on Command category.

12-4-3 Command Format

(1) Tare Deduction (Zero Adjustment) Command

C1	C2	Code (C1)	Code (C2)	Description	Value	Response
T	SP (Null)	54H	20H	・Tare Deduction ・Zero Adjustment	None	A00：NormalTermination E01：Command Error
Z	(SP)	5AH	20H	・Zero Adjustment	None	A00：NormalTermination E04：Command Error
T	T	54H	54H	・Tare Deduction	None	A00：NormalTermination E01：Command Error

Reference
(1) E01 Command Error occurs at "Weight Value Error", "Out of Zero Adjustment range",and "Out of Tare Deduction range".
(2) E04 Command Error occurs at "Out of Zero Adjustment range".

(2)Output Control Setting

C1	C2	Code (C1)	Code (C2)	Description	Value	Response
O	0	0x4F	0x30	Stop Output	None	A00：Normal Termination E01：Comand Error
O	1	0x4F	0x31	Continuous Output		
O	2	0x4F	0x32	Continuous Output when stable （Stop Output when unstable）		
O	3	0x4F	0x33	Output one time at " Print" key depression. （ regardless stable/unstable）		
O	4	0x4F	0x34	Output one time when stable. After scale goes below zero, next output is made when object is placed and stabled.		
O	5	0x4F	0x35	One-time Output when stable. Stop output when unstable. When scale is stabled again without replacing object on weighing pan，one-time output again.		

O	6	0x4F	0x36	One-time output when stable. Continuous Output when unstable. Output stops at scale stable after one-time output, without replacing object on weighing pan.		
O	7	0x4F	0x37	One-time outputwhen stable at “Print” key.		
O	8	0x4F	0x38	One time immediate		
O	9	0x4F	0x39	One time after stable		

Reference

(1) O0 thru O7 command functions the same as Output Control of Function Setting.
(2) O8 and O9 Command Request Data to Scale.
(3) Once O0 thru O7 Command is executed, the status is kept stored. When Scale isre-activated, it returns back to Function Setting value.
(4) After O8 and O9 Command execution, status returns back to O0 Command execution status.

CAUTION

May damage the equipment.

Disconnect AC Adaptor of Scale first when connecting peripheralequipment.

(3) Data Output Request

C1	C2	Code (C1)	Code (C2)	Description	Address	Value	Response
T	1	54H	31H	Tare Weight Output	None	None	Tare Weight Data
W	1	57H	31H	Weight value Output			Weight Data
C	1	43H	31H	Count value Output			Count Data
C	2	43H	32H	Unit Weight Value Output			Unit Weight Data
C	3	43H	33H	Total value Output			Total Data
L	1	4CH	31H	Lower Limit Output			Lower Limit Data
L	2	4CH	32H	Upper Limit Output			Upper Limit Data

(4) Data Setting

C1	C2	Code (C1)	Code (C2)	Description	Address	Value	Response
T	A	54H	41H	Tare Weight Setting	None	Tare Weight	A00 : Normal Termination E11 : Command error
C	A	43H	41H	Unit Weight Setting		Unit Weight	A00 : Normal Termination E10 : Command error
L	A	4CH	41H	Lower Limit Setting		Lower Limit	A00 : Normal Termination E02 : Command error
L	B	4CH	42H	Upper Limit Setting		Upper Limit	A00 : Normal Termination E02 : Command error

Reference

(1) E11 Command Error occurs when Setting Value exceeds Scale capacity.
(2) E10 Command Error occurs when Setting value is lighter than Countable Unit Weight.
(3) E02 Command Error occurs when value contains decimal point (ex.2.7, 3.8 etc).

(5) Limit Operation Status check

C1	C2	Code (C1)	Code (C2)	Description	Address	Value	Response
L	9	4CH	39H	Check whether Count Limit Function works properly.	None	None	A00：Normal Operation E12：Command Error

Reference	E12 Command Error occurs when "Do not activate Limit Function " or "Irregular Setting for Lower Limit and Upper Limit (ex. L/L > U/L)".

(6) Command related to Memory

C1	C2	Code (C1)	Code (C2)	Description	Address	Value	Response
N	1	4EH	31H	Request Unit weight output to Memory addres.	Address	None	Normal: U/W data E13,E10 : Command Error
N	2	4EH	32H	Request Tare Weight output to Memory address.		None	Normal: Unit Weight Data E13,E11: Command Error
N	A	4EH	41H	Set Unit Weight value to memory address.		Unit Weight	A00：Normal Termination E13,E10 : Command Error
N	B	4EH	42H	Set Tare Weight value to memeory address.		Tare Weight	A00：Normal Termination E13,E11: Command Error

Reference	(1)E13 Error occurs at "Address Error". (2)E10 Command Error occurs at "No Unit Weight Registered" and "Setting value is lighter than Countable Unit Weight value". (3)E11 Command Error occurs at "No Tare Weight Registered" and "Setting value exceed Scale capacity".

13 Troubleshooting

Phenomenon	Cause	Countermeasure
No display lit ON.	No AC Adaptor connected.	Check AC Adaptor connection.
	Battery goes flat. (at Battery Drive option)	Replace with new Battery.
Display indication is unstable.	Receives Wind, Vibration effect.	Check & Review Scale platform with referring to “Precautions”.
	Scale platform is unstable.	
	Weighing pan, Tare container or weighing object touches to something.	
Counting Error appears. Weight indication contains an error.	No Tare deduction or Zero Point Adjustment has conducted.	Verify whether Tare Deduction or Zero Point Adjustment has been done.
		Use “Forced Tare Deduction Function”.
	Foreign material (or another product) is mixed in to weighing object.	Check Weighing object.
	Object weight varies much.	Perform Unit Weight Update operation.
	Other object’s unit weight is stored.	Perform Unit Weight Memorizing operation.
	No Unit Weight Memorize operation for the said object has been conducted.	
	Weighing pan, Tare container or weighing object touches to something.	Check weighing pan and its sorroundings.
	Span has shifted due to long usage.	Conduct Scale Adjustment.
	Mechanical Unit has been damaged.	Contact to your local distributor or directly to Sales Department of Shinko Denshi.
Count number remains unchanged at 0.	No Unit Weight is memorized.	Perform Unit Weight Memorization operation.
	Unit Weight is cleared.	
	Memorized piece weight is less than countable unit weight.	
“- - - - -“ displayed.	Forced Tare Deduction Function is in operation.	Perform Tare Deduction and Zero Adjustment.
		In case this function is unnecessary, stop the function. (Set “ C. t.F.P. 0 “at Function Setting.)
“ o-Err “ displayed. For CUX16KS/ 30KS: [o-Err], [▪▪▪▪▪▪▪▪]	Total weight of container and weighing object exceed scale capacity.	Review container. Weigh Range= Container+ Objectweight
	Weighing object exceed capacity.	Reduce weighing object.

Phenomenon	Cause	Countermeasure
[u-Err] For CUX16KS , 30KS: [u-Err] , [•••••••••]	Weighing pan is removed.	Attach weighing pan properly.
	Foreign object comes in between weighing pan (or Pan Base) and Scale.	Re-attach weighing pan and Pan Base properly.
" b-Err Displayed.	Effected by wind or electric noise.	Disconnect Scale from power supply, and after while, turn Scale ON again.
		Relocate scale to the place where thereis no electrostatic or electrical noise.
		Contact to your local distributor or directly to Sales Department of Shinko Denshi.
	Electronics part of Scale defected.	Disconnect Scale from power supply, and after while, turn Scale ON again.
		Contact to your local distributor or directly to Sales Department of Shinko Denshi.
[1-Err]	External Weight used at Span adjustment goes way under 50% of scale capacity.	Perform Span Adjustment with using more than 50% of scale capacity external weights.
[2-Err]	Display error at Span Adjustment byexternal weight exceeds more than 1.0%.	Check the used external weights mass.
	Failure has occurred in mechanical unit.	Contact the purchased sales office or Sales Department of Shinko Denshi.
Only for CUX16K to 150K [E1-Err]	CUX16K to CUX150K Connecting cable is disconnected between Weigh unit and display unit.	Connect cable firmly.
Unable to do RS-232C Input/Output with external peripherals. Character curruption in the received data.	Do not correspond in communication protocol (baud rate, parity, etc) with Scale andexternal peripherals.	Match communication protocol between Scale and external peripherals.
	RS Cable not connected.	In order to prevent disconnection from connector, connect cable firmly.
	Wrong RS cable is connected.	Use cable which connect each otherTRD and RXD of the Scale and External peripherals' connector terminal. (When connecting Scale to PC, use cross cable.)
[ZERO] key doesn't work.	Weight of Object exceed Zero adjustable range (less 1.5% from capacity).	Use [TARE] key.
[LMT] key doesn't work.	Limit Function is set OFF.	Change Function Setting to " 1 SEL. 2 ".

Phenomenon	Cause	Countermeasure
[ADD] key doesn't work.	After addition, add again without removing objects from platter. Attempted addition with minus counting status.	Place next object on Platter and conduct next addition after removing previously added objects from platter. (When Tare deduction has been conducted after adding, next addition can be done without removing object from Platter.)
[UNIT.W. SET] key doesn't work.	Setting value which is less than Countable Unit Weight.	Set value which is more than Countable Unit Weight value.
[R.M.] or [No.] key doesn't work.	Attempt to enter 0 or addresses exceeding over 300.	Memory registration only take address 1 through 300.
[TARE PRESET] key doesn't work.	Tare weight which is exceeded scale capacity is input.	Set Tare weight within the range ofscale capacity.
[TARE] key doesn't work.	Attempt to enter Tare Weight exceeding capacity.	Set Tare Weight less than capacity range.

ANNEX

ANNEX 1-1 Basic Specifications

Model Name	CUX60	CUX150	CUX300
Capacity (Max.)	60g	150g	300g
Readability (d)	0.001g	0.002g	0.005g
Weighing Range	0 - 60.000g	0 - 150.000g	0 - 300.000g
Fine Graduation Mode Readability	0.0002g	0.0005g	0.001g
Fine Graduation Mode Weighing Range	0 - 60.000g	0 - 150.0000g	0 - 300.000g
AISCS Countable Unit Weight	0.001g	0.0025g	0.005g
Minimum countable unit weight	0.0001g	0.00025g	0.0005g
Max. count	600,000 pcs (Add mode: 9,999,999 pcs)		
Weighing Pan size(mm)	Φ118	Φ118	Φ140

Model Name	CUX600	CUX1500	CUX3000	CUX6000	CUX12K
Capacity (Max.)	600g	1500g	3000g	6000g	12kg
Readability (d)	0.01g	0.05g	0.05g	0.1g	1g
Weighing Range	0 - 60.00g	0 - 1500.00g	0 - 3000.00g	0 - 6000.0g	0 - 12000g
Fine Graduation Mode Readability	0.002g	0.01g	0.01g	0.02g	0.1g
Fine Graduation Mode Weighing Range	0 - 600.000g	0 - 1500.00g	0 - 3000.00g	0 - 6000.00g	0 - 12000.0g
AISCS Countable Unit Weight	0.01g	0.025g	0.05g	0.1g	0.2g
Minimum countable unit weight	0.001g	0.0025g	0.005g	0.01g	0.02g
Max. count	600,000 pcs (Add mode: 9,999,999 pcs)				
Weighing Pan size(mm)	φ140	234 x 204	234 x 204	234 x 204	234 x 204

Model Name	CUX16K	CUX30K	CUX60K	CUX150K
Capacity (Max.)	16kg	30kg	60kg	150kg
Readability (d)	0.002kg	0.005kg	0.01kg	0.02kg
Weighing Range	0 - 16.000g	0 - 30.000g	0 - 60.00g	0 - 150.00g
AISCS Countable Unit Weight	0.0016kg	0.003kg	0.006kg	0.015kg
Minimum countable unit weight	0.00016kg	0.0003kg	0.0006kg	0.0015kg
Max. count	100,000 pcs (Add mode: 9,999,999 pcs)			
Weighing Pan size(mm)	330 x 310	330 x 310	380 x 530	380 x 530

Model Name	CUX16KS	CUX30KS
Capacity (Max.)	16000g	30000g
Readability (d)	0.5g	1g
Weighing Range	0 - 16000.0g	0 - 30000g
Fine Graduation Mode Readability	0.05g	0.1g
Fine Graduation Mode Weighing Range	0 - 16000.00g	0 - 30000.0g
AISCS Countable Unit Weight	0.5g	1g
Minimum countable unit weight	0.05g	0.1g
Max. count	320,000 pcs (Add mode:9,999,999 pcs)	300,000 pcs (Add mode:9,999,999 pcs)
Weighing Pan size(mm)	360 x 320	360 x 320

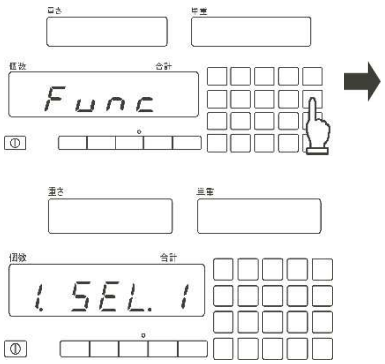
Annex 1-2 Common Specifications

Item	Description
Weight Measurment Method	CUX60-12K: Tuning Fork Vibration Method CUX16K-150K: Strain Gauge Method
Scale Category	Piece Counting Scale
Functions	Limit Function（Upper/Lower Limit Setting: 3 level discrimination）
Display	LCD display（with back-light）7 segments Count LCD Max. 8 digits (Height: 16.5 mmh) Weight LCD Max. 7 digits (Height: 12.5 mmh) Unit Weight LCD Max. 7 digits (Heroight: 12.5 mmh)
Zero Adjustment / Tare Deduction	Zero Adjustment: Zero Adjustment by [ZERO] key. Tare Deduction: One touch Tare deduction by [TARE] key. Keyboard tare deduction by [TARE PRESET] key
Zero Tracking	Able to stop by setting.
Overload indication	+9 digits over Scale capacity: "o - Err" is displayed.
Output	RS-232C Compliant Output (with External Tare Deduction Port) Shinko Denshi Standard Format
Span Adjustment	Span Adjustment by external weights (Use weight is 50% or over to scale capacity.)
Power Supply	Dedicated AC Adapter Input：100-240VAC, 50-60Hz Output：5.95VDC 1A
Main Body weight (NET)	CUX60-300: approx. 4.5kg　CUX600: approx. 3.5kg CUX1500-12K: approx. 3.9kg　CUX16K/30K: approx. 9.2kg CUX60K/150K: approx. 12.9kg　CUX16KS/30KS: approx. 19.7kg
Package Weight (GROSS)	CUX60-300: approx. 6.5kg　CUX600: approx. 5.1kg CUX1500-12K: approx. 5.5kg　CUX16K/30K: approx. 12.9kg CUX60K/150K: approx. 22.7kg　CUX16KS/30KS: approx. 25.0kg
Package Dimension (W mm × D mm × H mm)	CUX60-300: 410 x 570 x 250　CUX600-12K: 480 x 403 x 250 CUX16K/30K: 380 x 530 x 350　CUX60 /150K: 410 x 800 x 360 CUX16KS/30KS: 500 x 540 x 380
Ambient Temperature/Humidity	Temperature: 0℃ to +40℃ Humidity: 80%RH or less (No condensation)
Option	(1) Battery Drive (2) Relay contact (3) Separate Type（CUX16K-150K,CUX16KS/30KS） (4) Consolidated Type（CUX16KS/30KS） **Remark**: Unable to implement (1) & (2) at same time.

Annex 2 Setting of Zero Tracking Function

Setting to the zero-tracking function makes it possible to automatically correct the zero-point fluctuation caused by the temperature fluctuation, etc. when“0” is indicated, through which the “0” indication is maintained.

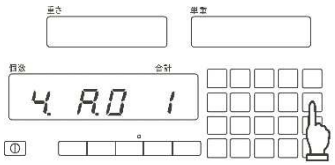
1 **Set to Function Setting mode.**



Keep pressing [MODE] key for 3 to 4 seconds, then release key when
"Func" is displayed.

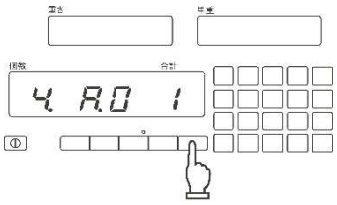
"1. SEL. 1" is displayed.

2 **Select Setting Item.**



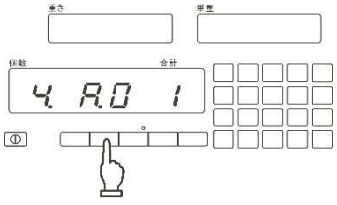
Push [MODE] key several times to select "4. A.0".

3 **Select setting value.**



Push [TARE] key and select:
"4. A.0 0": Stop
"4. A.0 1": Activate

4 **Determine setting value.**



Push [RE] key.

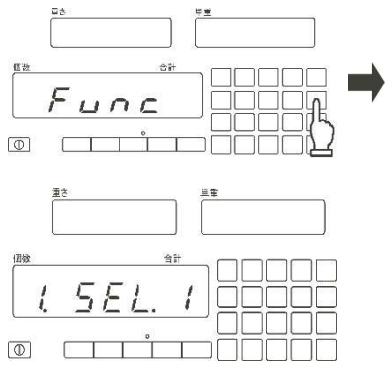
Annex 3 Setting of Fine Graduation mode

Reference	Unable to set on CUX16K-150K

In case object is too light weight or unit weight variation seems to large, it can be measured accurately when Scale is set to Fine Graduation mode.

Because of fine resolution scale is affected easily by wind or vibration, due to much finer graduation than normal graduation, use scale at location where less or no winds or vibration effect.

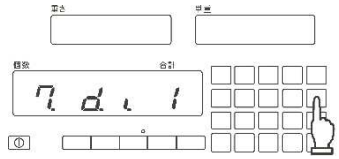
1 Set to Function Setting mode.



Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

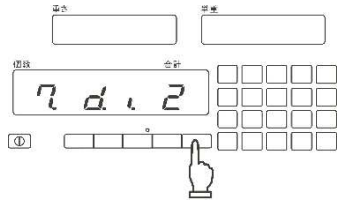
"1. SEL. 1" is displayed.

2 Select Setting Item.



Push [MODE] key several times to select "7. d. i".

3 Select setting value.



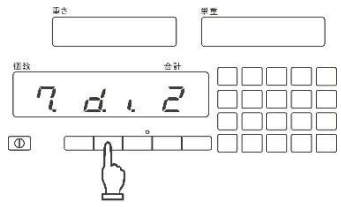
Push [TARE] key and select:

"7. d. i 1": Stop Fine Graduation mode

"7. d. i 2": Activate Fine Graduation mode

Refer to Annex 1-1 "Basic specifications" for readability detail for each model.

4 Determine setting value.



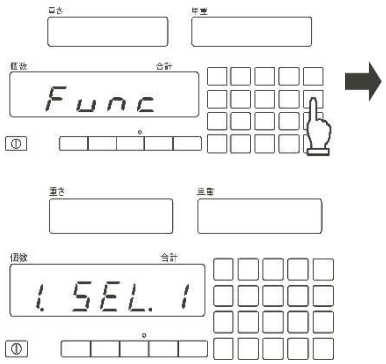
Push [RE] key.

Annex 4 Setting of Auto Power Off Function

Reference	Function available only at battery operated.

When battery operated, main power is automatically shut down 3 minutes after scale is stable with no weighing/counting.

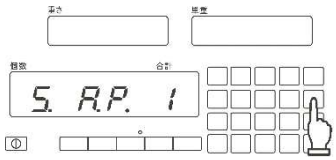
1 Set to Function Setting mode.



Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

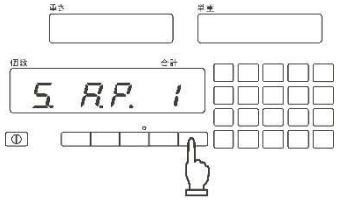
"1. SEL. 1" is displayed.

2 Select Setting Item.



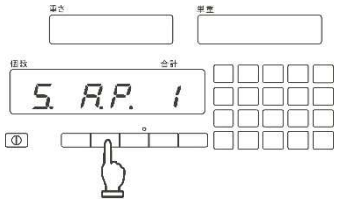
Push [MODE] key several times to select "S. AP.".

3 Select setting value.



Push [TARE] key and select
"S. AP. 0": Continuous ON
"S. AP. 1":
Power is OFF 3 minutes after scale is stable and no operation.

4 Determine setting value.

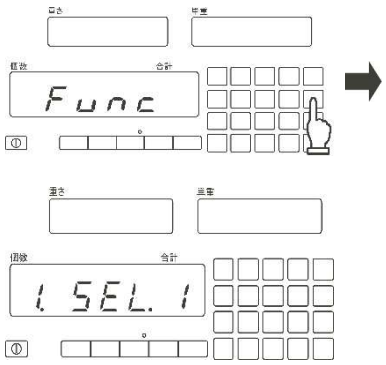


Push [RE] key.

Annex 5 Setting of Backlight Function

Able to set Backlight ON/OFF for each LCD. In case when Scale is used with Battery Drive option, Battery Life can be extended by turning backlight OFF.

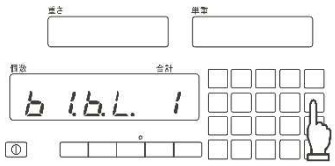
1 Set to Function Setting mode.



Keep pressing [MODE] key for 3 to 4 seconds, then release key when
"Func" is displayed.

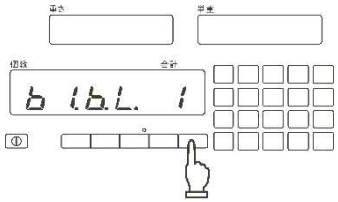
"1. SEL. 1" is displayed.

2 Select Setting Item.



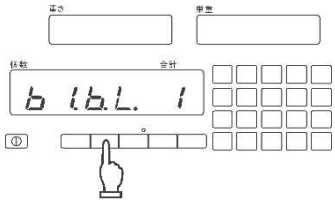
Push [MODE] key several times to select "b 1bL.".
Setting item for each LCD are as follows.
"b 1bL. 0" : setting for Count LCD.
"b2bL. 0" : setting for Weight LCD.
"b3bL. 0" : setting for U/W LCD.

3 Select setting value.



Push [TARE] key and select:
"b 1bL. 0": setting for light OFF
"b 1bL. 1": setting for light ON

4 Determine setting value.

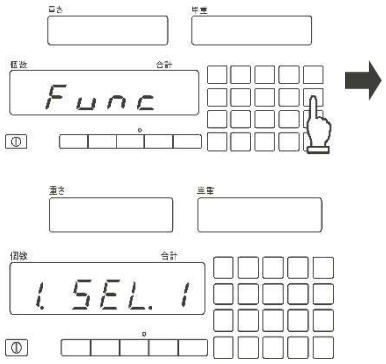


Push [RE] key.
Similarly, Weight LCD and Unit Weight LCD are set.

Annex 6 Setting of Auto Backlight Off Function

Back Light goes off one minutes after scale is stable and no operation.

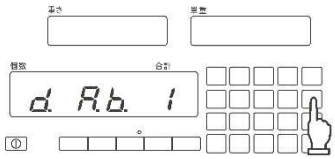
1 **Set to Function Setting mode.**



Keep pressing [MODE] key for 3 to 4 seconds, then release key when "Func" is displayed.

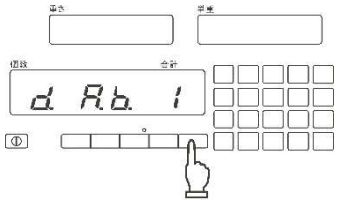
"1. SEL. 1" is displayed.

2 **Select Setting Item.**



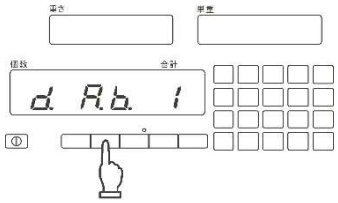
Push [MODE] key several times to select "d. Rb.".

3 **Select setting value.**



Push [TARE] key and select
"d. Rb. 0": Stop (Backlight is always-ON)
"d. Rb. 1": Activate

4 **Determine setting value.**



Push [RE] key.

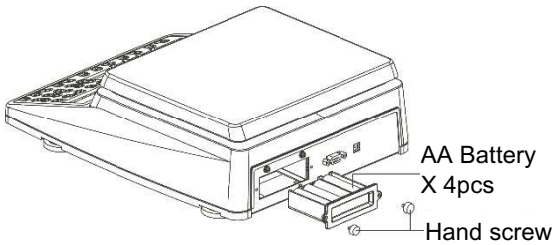
Annex 7 Operate with Battery (Option)

With attaching optional battery, scalecan be operated by battery in addition to AC adaptor. In this section, how to attach battery option and basic scale operation are explained.

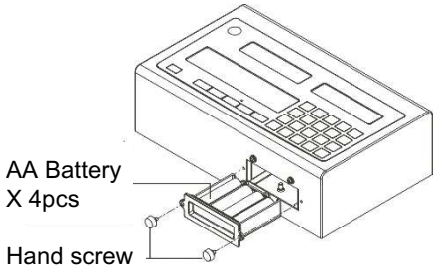
CAUTION	May have a risk for injury, burn, and damage of scale caused by battery heat up, leakage, or burst. Pay attention to the direction of battery.

1 Removal and attachment of Battery Case.

(CUX60-300, CUX600-12K)



(CUX16K-150K, CUX16KS/30KS)



(1) Unscrew the Hand-Turning Screw to remove Battery Case.

(2) Place 4 pcs of AA battery in Battery Case.

(3) Insert Battery Case with AA battery inside, to Scale main body.

(4) Tighten Hand-Turning Screw to fix Battery Case.

" " mark is indicated in Count LCD display when Scale is battery drive. Remaining Battry capacity is indicated as below

Display	Description
	Remaining battery capacity is enough.
(flushing)	Battery goes flat. Replace with new battery.

Reference

Rough indication of battery operation period

CUX60~ 300	CUX600~ 12K	CUX16K~ 150K	CUX16KS~ 30KS
Approx..90hours	Approx.90 hours	Approx.65 hours	Approx. 90 hours
Condition：Dry battery: 4 pcs, Backlight:OFF, External Input/Output: Stop			

Annex 8 Connect Printer

Here explains the connection to Shinko "CSP-160II" printer. Perform below mentioned procedure with referring to this document and attached Operation Manual.

1 Set Printer

Set below setting when printer is used under scale control.

Printer	Printer Setting
CSP-160II	DIP switch No.3: ON (Print control: from scale) Set all other DIP switch: OFF.

2 Connect printer with scale.

Connect printer attached cable to RS-232C connector (Male) on scale.

3 Turn power on both scale and printer.

4 Set scale communication setting as below referring to "12 -3 Output Data"

Function Name	Function	Setting value
Communication Format	8. iF.	「 1 」 or 「 2 」
Output Data	8 idA	「 1 」 to 「 7 」
Output Control	82.oc.	「 3 」 or 「 7 」
Baud Rate	83.bL.	「 1 」
Parity	84.PA	「 0 」
Output Data	85.o3t.	「 0 」

5 Printing

OUTPUT

Press [OUTPUT] key.

Printing start

Annex 9 External Tare Deduction by Transister Switch

Description about external Tare Deduction Function using commonly available PLC: Transister Output Unit.

External Tare Deduction Input Terminal contains Power Supply inside of Scale, so that select "sink output" for Transister Output Unit.

Connection example between External Tare Deduction Terminal and Transister Output Unit.

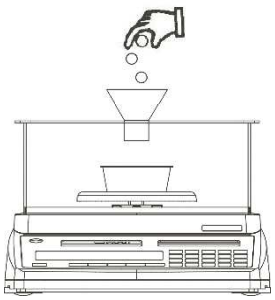
Scale side	PLC side
Terminal #9: EXT. TARE	Transister Output terminal
Terminal #5: Signal Ground	Tgransister Output Terminal COM

Transister Output Unit in commonly used PLC has a specification of Withstand Voltage= 24V, Drive currentat few 100mA. Thus, this specification would not be a problem. Butbe ensured with reading PLC Users Manual.

Annex 10 Count micro piece

When counting micro piece by CUX60, accurate counting can be done with using "Tare" and "Funnel".

1 Count micro piece

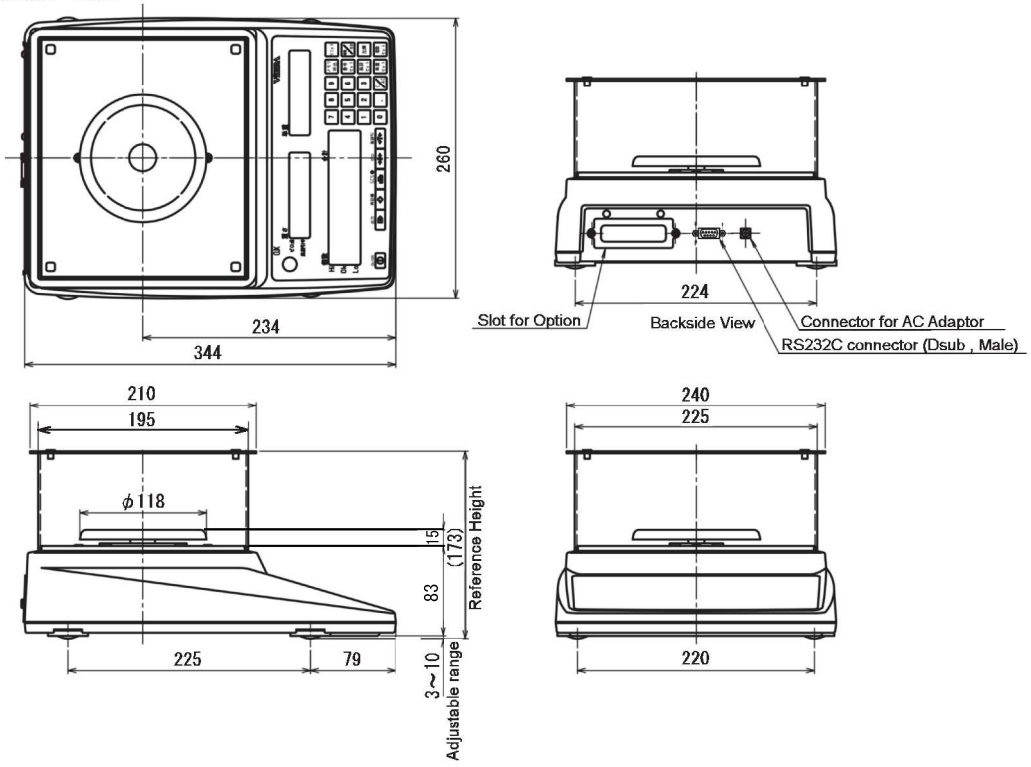


CAUTION	May damage scale or weighing object. (1) Do not use when counting fragile sample. (2) Do not use when counting heavy weight sample (approx. over 6g)

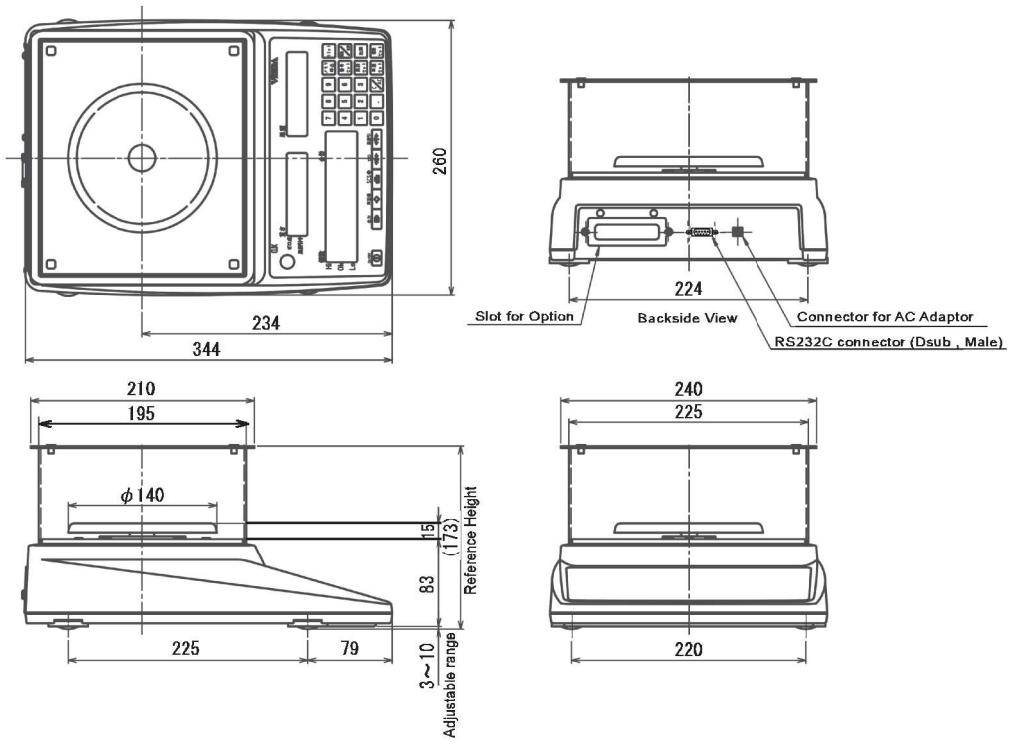
Reference	(1)With pressing [OUTPUT] key, [HOLd] is indicated in Weight LCD, and Count LCD is locked. Pressing [OUTPUT] key again, count LCD indication lock is released. (2)When NON UNI or EXCESS occur several times, [RGR In] is displayed in weight LCD, andcounting operation is interrupted. Press [OUTPUT] key and start the counting operation from the beginning.

Annex 11 External Dimension

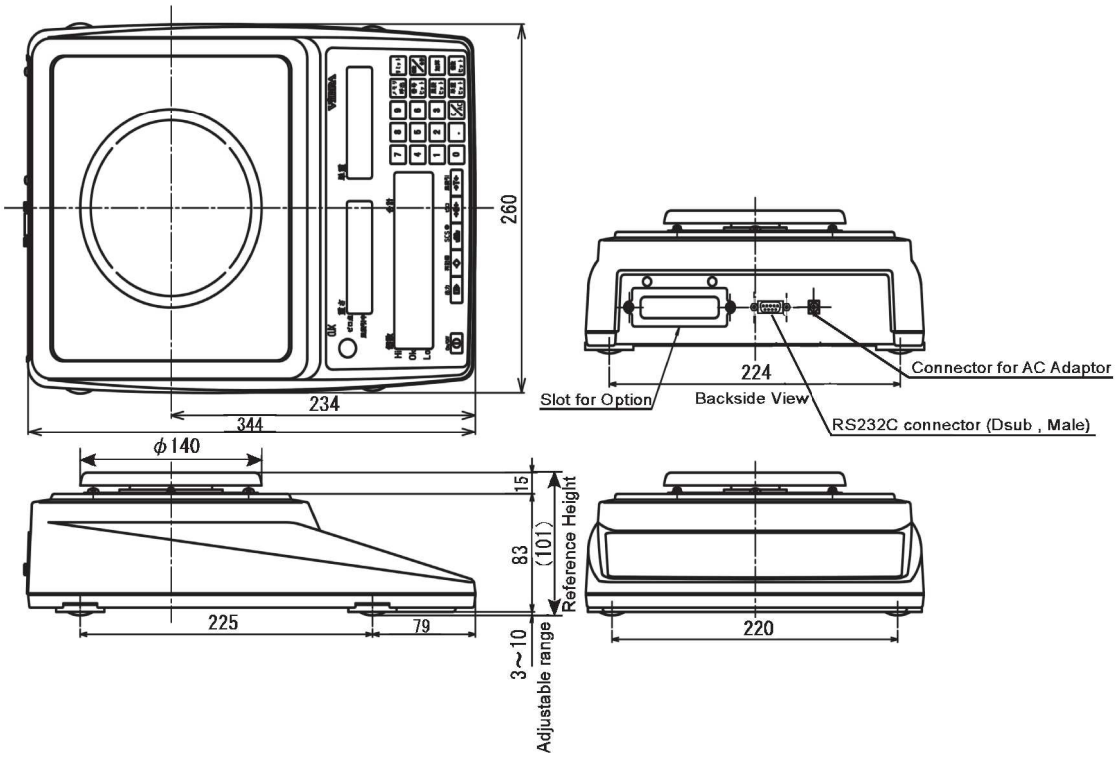
■CUX60 150



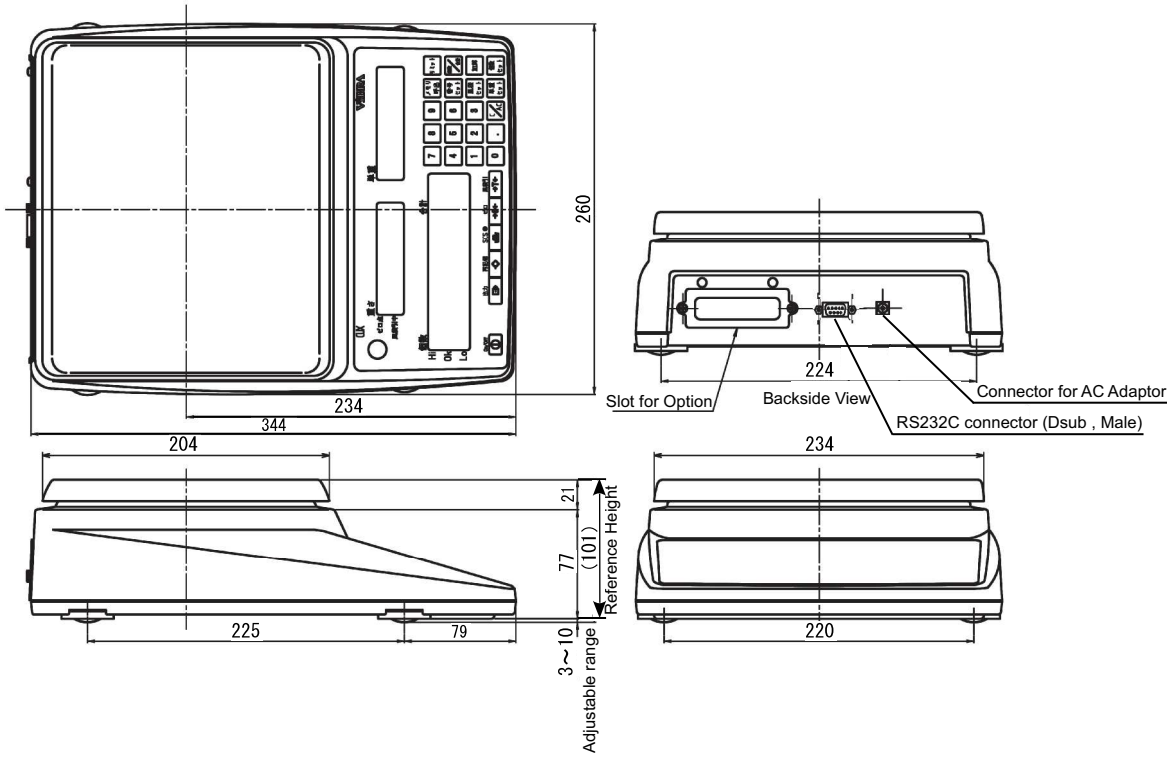
■CUX 300



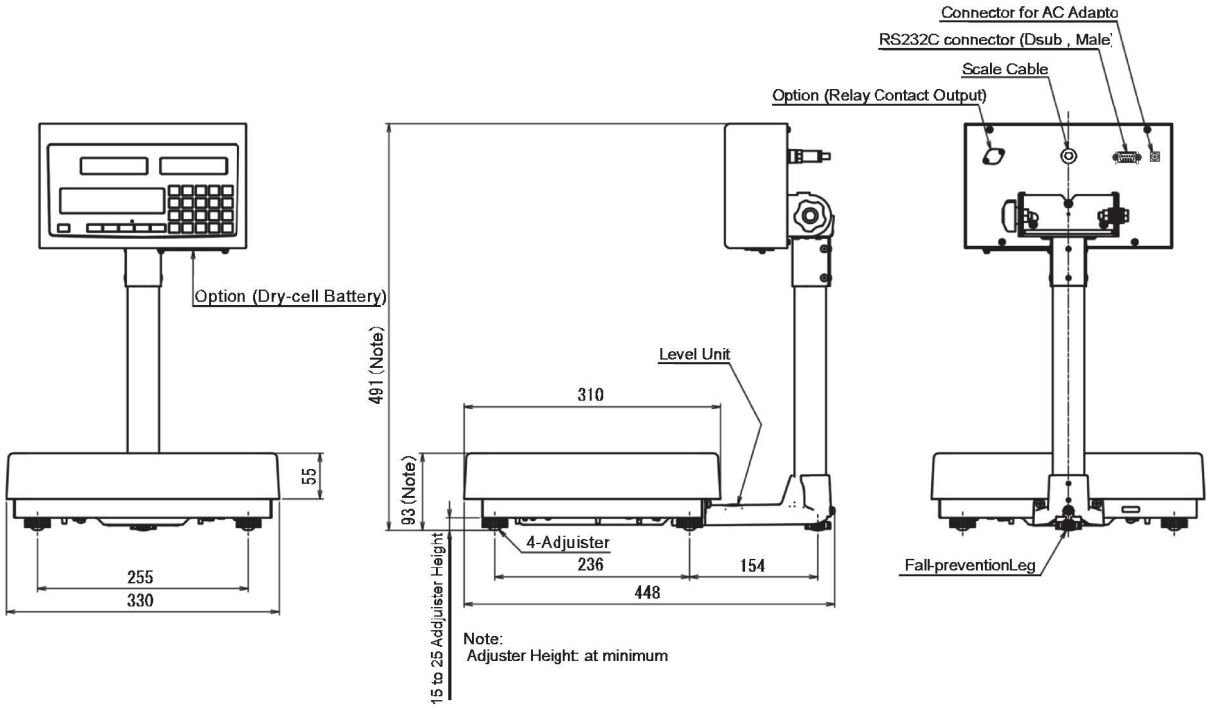
■CUX600



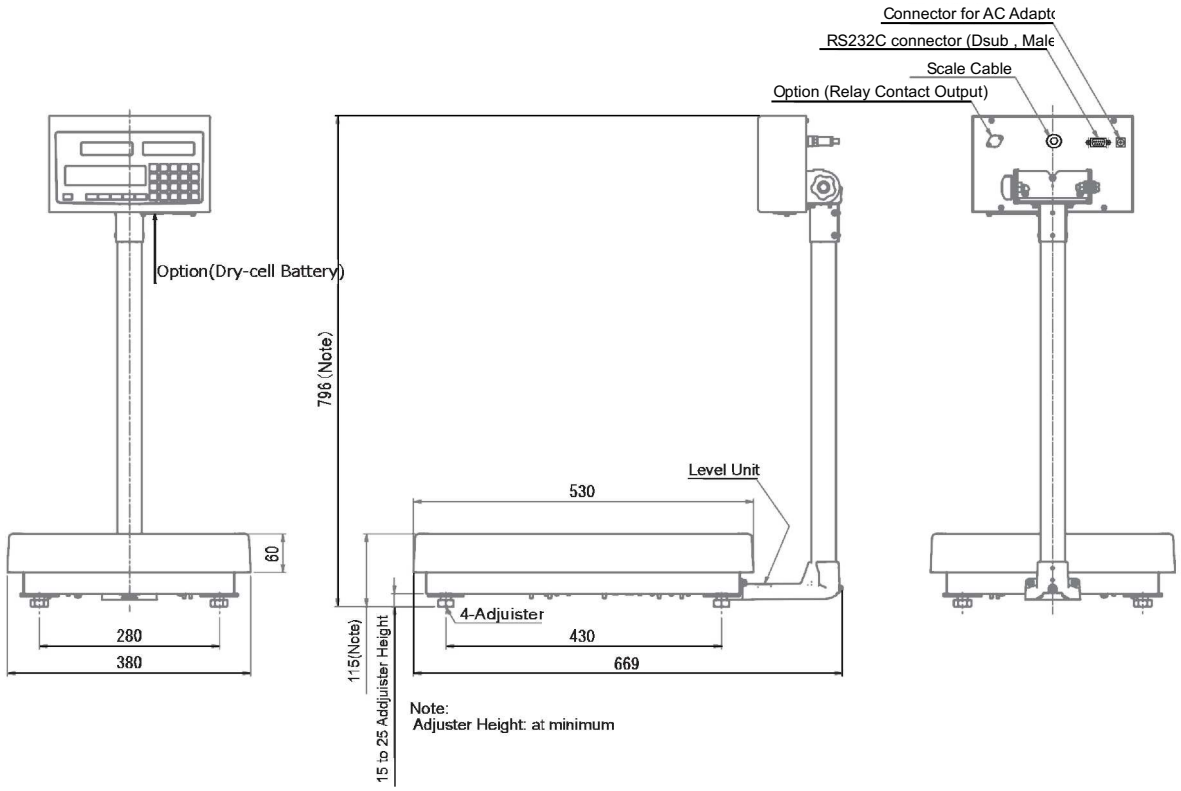
■CUX1500-12K



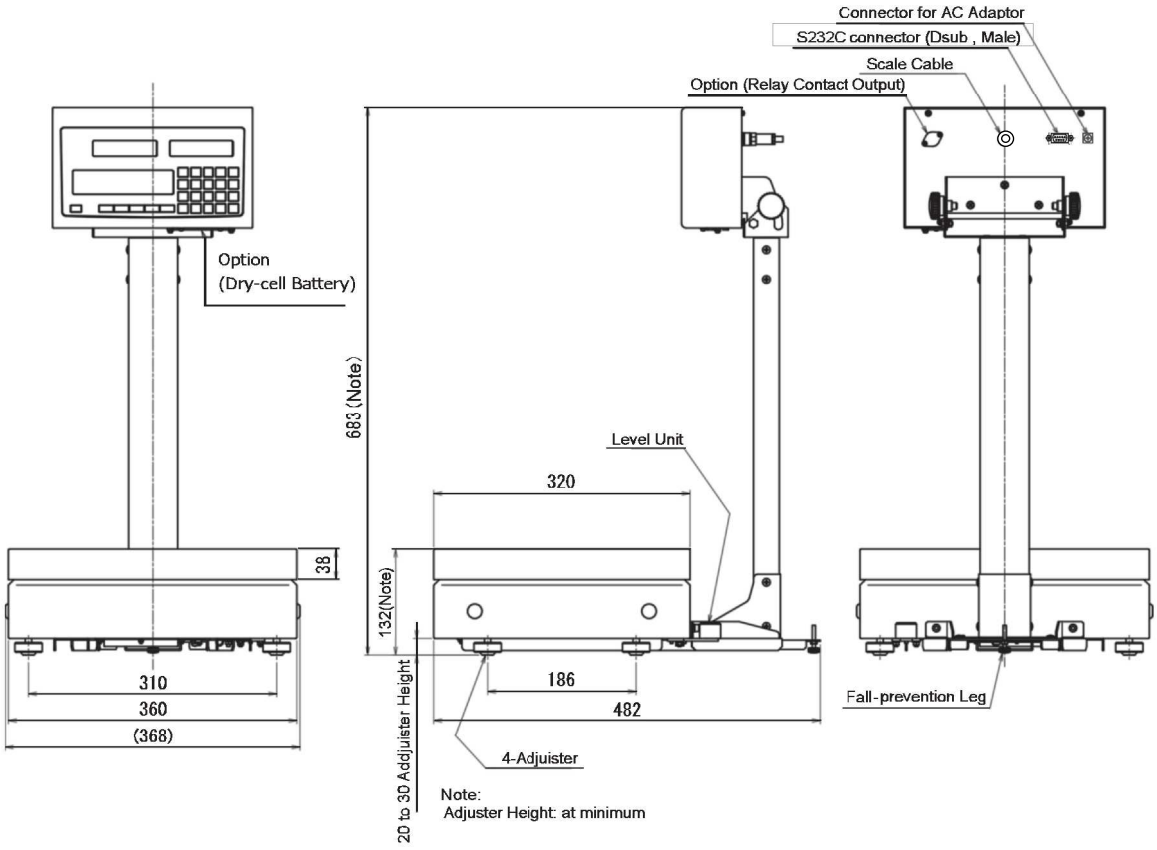
■CUX16K/30K



■CUX60K/150K

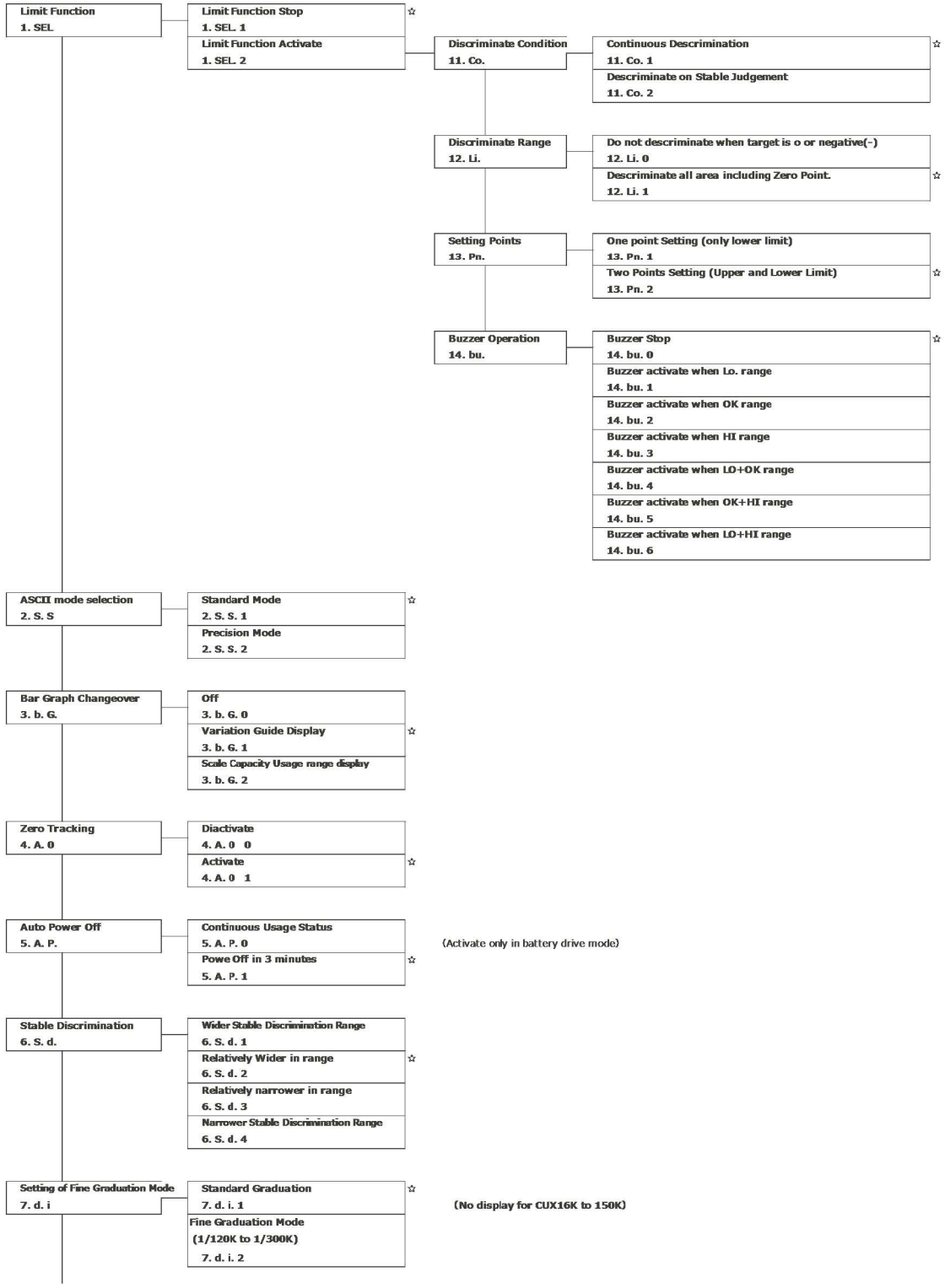


■CUX16KS/30KS

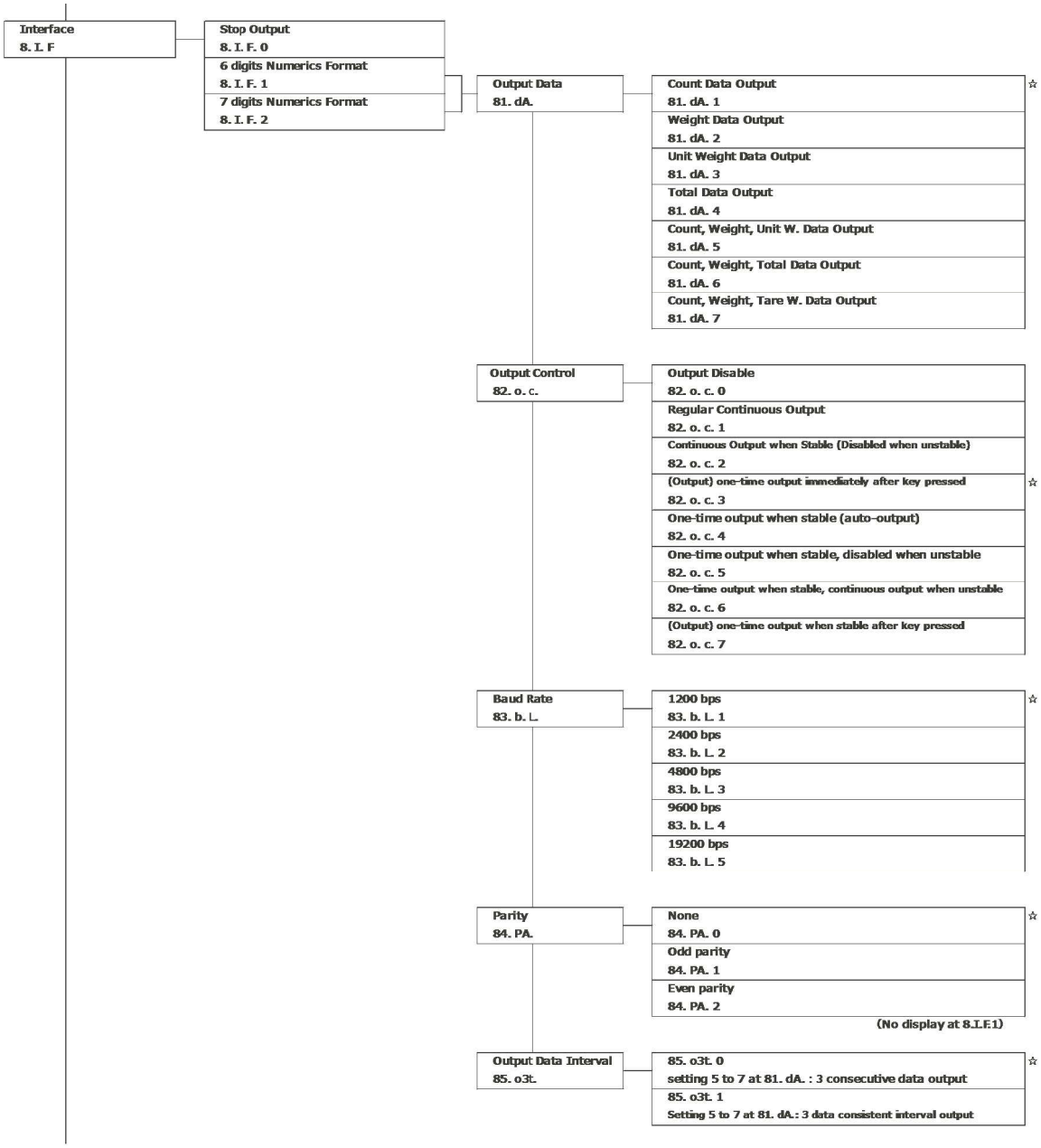


Annex 12 Function Setting List

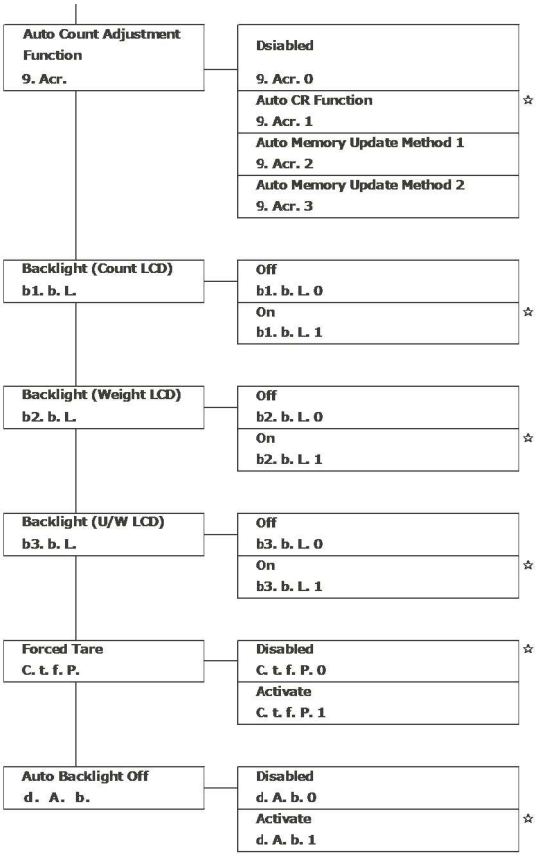
☆ : Setting at Factory



☆ : Initial default values



☆ : Initial default values



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