intelligent™
Weighing Technology

A Higher Level of Precision…
A Higher Level of Performance

Intell-Weigh ™ Washdown Weighing Indicator

NTEP Approved 10,000 Divisions, COC # 07-110

User Operation Manual

January 2008

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SPECIAL NOTICE

IT may be necessary to open the stainless case of the indicator, for example, to connect the load cell or connect the power cable, or to replace the rechargeable battery.

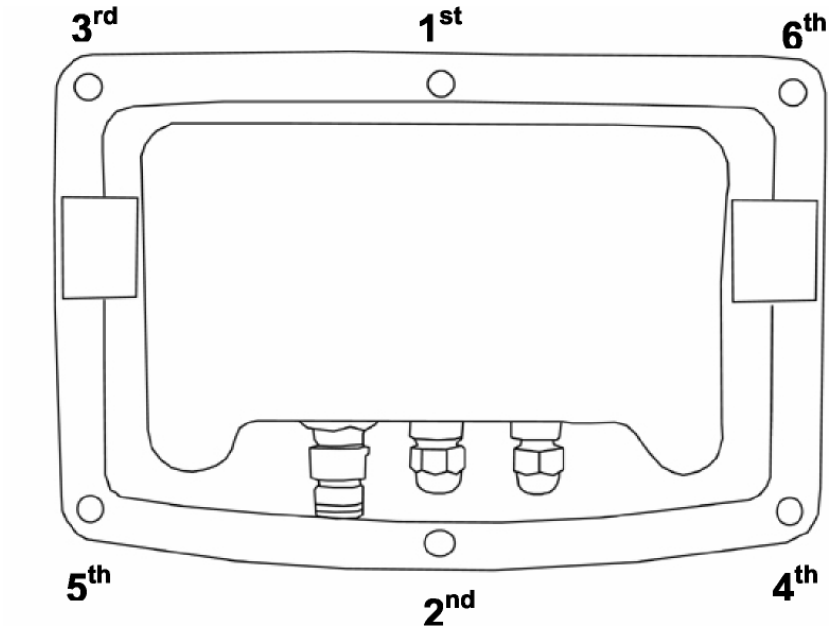
Before opening the stainless case, please make sure the indicator is dry, if necessary the liquid should be wiped off.

This assembly procedure should be accurately followed to ensure washdown performance. We also strongly suggest that these procedures should only be undertaken by suitably trained weighing professionals.

ASSEMBLING PROCEDURE:

After completing the desired steps, screw the case with 9 lbft/12 kgf-cm in the following order. Do not screw tightly before all screws are positioned.

Tightening Order



BEFORE USING THE SCALE

Thank you for purchasing an Intelligent Weighing Technology Electronic Digital Indicator. In order to use the indicator properly, please read this User Manual carefully before use. If you have a problem concerning the indicator, please contact your supplier.

INSTRUCTION FOR USE

1) Please keep the indicator in a cool place. Do not store it at high temperature.
2) Avoid objects impacting with the indicator. Do not drop loads onto the scale or subject the weigh pan to any strong shock loads.
3) The load placed on the weigh pan must not exceed the maximum weighing capacity of the scale.
4) If the indicator is not going to be used for some time, please clean it and store it in a plastic bag in dry conditions. A desiccant sachet may be included to prevent any moisture build up.
5) The indicator is IP67 washdown design. Only cables with 3 to 5.5 mm diameter should be used or it will affect the washdown capabilities of this unit.

PREPARING TO USE THE SCALE

1. Locate the scale on a firm level surface free from vibration for accurate weight readings.
2. Adjust the four levelling feet (if fitted) to set the scale pan level.
3. Avoid operating the scale in direct sunlight or drafts of any kind.
4. If possible avoid connecting the scale to ac power outlet sockets which are adjacent to other appliances to minimise the possibility of interference affecting the performance of the scale.
5. Remove any weight that might be on the weigh pan before the scale is switched on and avoid leaving weight on the pan for long periods of time
6. All goods weighed should be placed in the centre of the weigh pan for accurate weighing. The overall dimensions of the goods being weighed should not exceed the dimension of the weigh pan.
7. Once the scale has been powered on, it will go through an LCD display test and it is ready for use when the display shows zero.
8. The scale requires 15~20 minutes warm up before operation to ensure best accuracy.
9. Please note when the  symbol keeps flashing on the screen, the batteries need to be recharged.

CHAPTER 1 INTRODUCTION

1-1 FEATURES AND SPECIFICATION

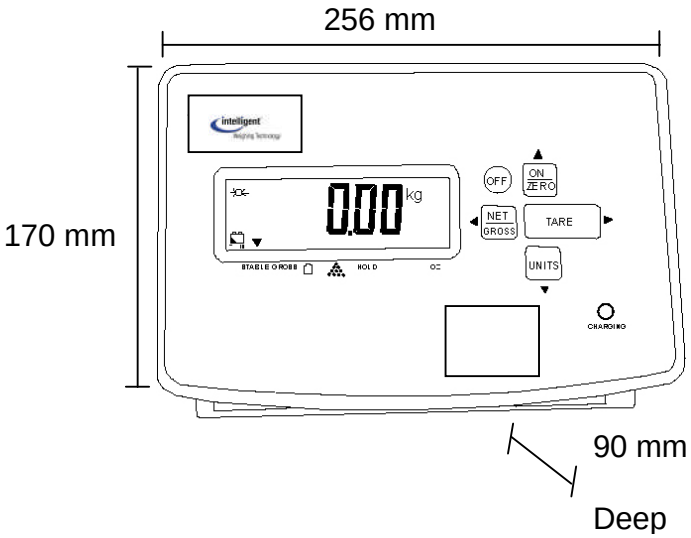
Features:

- NEMA 4X / IP 67 washdown design. (Only the cables with ψ3~ψ5.5mm diameter should be used or will affect the washdown design)
- Up to 10,000 division NTEP or 1/20,000 displayed resolution non NTEP (Internal 1/300,000)
- Large LCD display with LED backlight
- Kilogram (kg) and pound (lb) weighing modes as well as other minor units
- Auto calibration; Tare; Auto-zero tracking; Simple counting; Gross/Net indication
- Hold function; Check mode Lo/Hi/OK; Unit weight average function
- Adjustable gravity value
- Low power indication
- Built-in RS-232 or Serial Printer Output

Specifications:

- Analogue Input and A/D Conversion: Input Sensitivity 0.3μ V/d (Min.)
- Input Signal Range: -1mV~+14mV
- Input Zero Range: -1mV~+5mV
- Load Cell Excitation: 5V DC ± 5% 100mA
- Load Cell Drive Capacity: up to 4 load cells at 350Ω/load cell
- Non-linearity: 0.01% of full scale
- A/D Resolution: 500,000 counts (Max.)

1-2 SCALE APPEARANCE

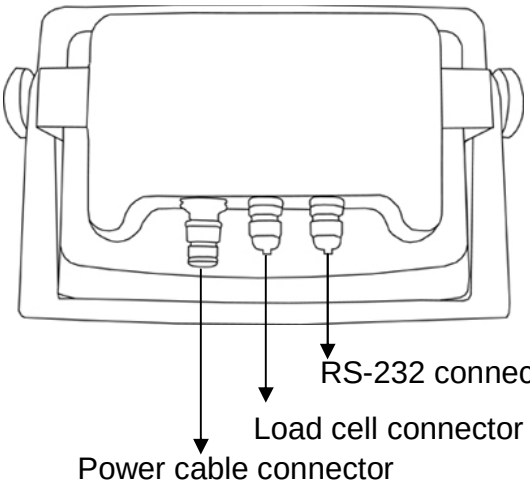


The package includes:

1.Indicator	1 off
2.Power Cable	1 off
3.User Manual	1 off

* Platform is an option depending on the model you purchase.

When you first unseal the product package if you find any of the items above are missing, contact your supplier.



1-3 POWER SUPPLY

POWER SUPPLY SELECTION

1. 6V / 4.5Ah Rechargeable battery
2. AC adaptor DC 9V

(For RS-232 and load cell, only the cables with ψ3~ψ5.5mm caliber could be used or will affect the washdown design)

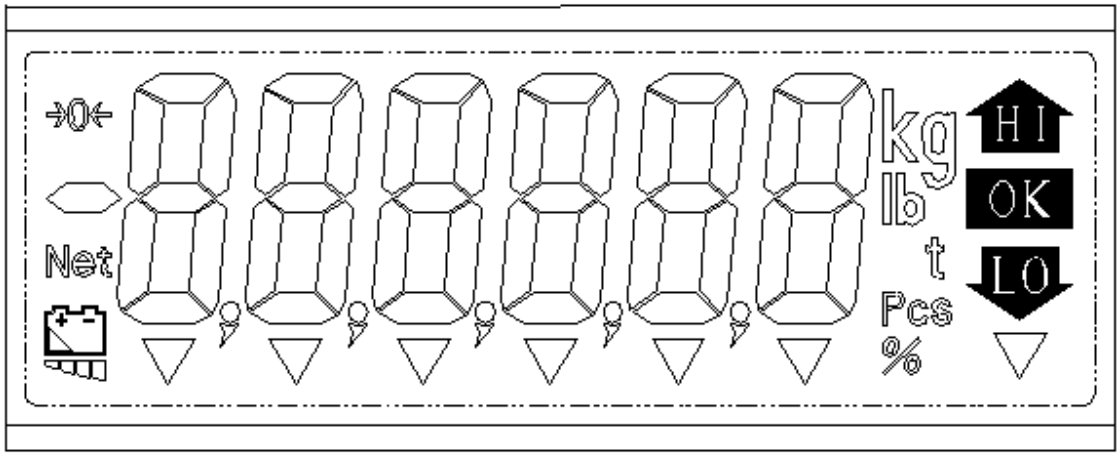
POWER CONSUMPTION

Approximately DC 55 mA (Indicator)
Approximately DC 75 mA (Indicator + Display backlight)

LOW BATTERY WARNING

Please note when the () symbol keeps flashing on the display, the batteries should be recharged.

1-4 DISPLAY



HI : The weight on weigh pan is greater than the high limit

OK : The weight on weigh pan is equal to the OK limit

LO : The weight on weigh pan is lower than the check value

kg : kg units. When “kg” is displayed, it means the weight shown is in kg

lb : Pound units. When “lb” is displayed, it means the weight shown is lb

Pcs : Piece units. When “Pcs” is displayed, it means the scale is in “sampling and counting” mode

→0← : Zero status indication, when displayed the scale is at the centre of its zero band

Net : The display shows the goods weight, not including the weight of any container. This Net status indication is on when the TARE function is used

: Battery status indication. When this symbol is flashing recharge the batteries.

▼1 STABLE : The weight is stable.

▼2 GROSS : The scale is in the gross mode. The display shows the goods and any container weight. This Gross status indication is on when the TARE function is used.

▼3 Pcs : The unit weight is not sufficient. When the icon is on, the counting function is operational but the count may contain errors.

▼4 : The sampling size is not sufficient When the icon is on, the counting function is operational but the count may contain errors.

▼5 Hold : The Hold function is in use.

▼6 : “GN”, “dwt”, or “carat” units. The actual unit depends on the model of the scale.

▼7 Oz : Ounce unit. When “oz” is on, it means the scale is weighing in ounces

1-5 KEYBOARD FUNCTION

ON/ZERO KEY

This key possesses two functions: Power On and Zero function.

OFF KEY

When the scale is switched on, press the **OFF** key, the scale will switch off.

TARE KEY

The tare function will not operate during the following conditions:

(1) When the scale powers on if the weight is negative and after a container is placed on the weigh pan if the weight is still below zero.

(2) The tare value is over the full scale capacity.

UNITS KEY

Press the **UNITS** key to switch weight units; the icons will indicate the active units.

NET/GROSS KEY

In the Tare mode, the screen displays the "TARE" icon; press the **NET/GROSS** key to switch between the "Net value" and the "Gross value".

1-6 OPERATING THE SCALE

POWER ON

When the scale is off, press the **ON/ZERO** key, the scale will switch on.

POWER OFF

When the scale is on, press the **OFF** key, the scale will switch off.

ZERO

When the weigh pan is empty (free of load) and the display is not showing zero, press the **ON/ZERO** key to zero the scale. At zero, the "→0←" indication is on.

- When the weight value is within the zero range, the zero function operates to zero the scale or cancel the tare function.
- Zero range: The OIML & NTEP models have a zero range of ± 2% of Full Scale. The Sri Lanka model has a zero range of ± 4% of Full Scale.

SWITCHING UNITS

Press the **UNITS** key to switch weight units, the icons or arrows will indicate the active units as appropriate. The units available are dependent on the exact scale model.

- After power off, the scale will memorize the active units. When the scale is powered on again, it displays the previously active units.

TARE FUNCTION

(1) Put a container on the weigh pan and after the weight is stable, press the **TARE** key to zero the weight of the container. The screen displays the "Net" icon.

(2) Put the goods in the container, the screen displays the net weight value of the goods.

(3) Remove the full container; the screen displays the negative weight value of the container. At this time pressing the **TARE** key again will cancel the tare and the scale reverts back to zero. The "Net" icon is switched off.

- The tare function can be operated continually to the full weighing capacity of the scale.
- Continual tare operation is adding or removing tare objects on weigh pan and pressing the **TARE** key each time.

NET/GROSS FUNCTION

In the Tare mode, the display shows the "Net" icon, press the **NET/GROSS** key to switch between the "Net value" and the "Gross value".

- When the ▼ GROSS icon is on, the weight value on the display is the total amount of the tare value and net value.
- At the Gross status, only **OFF** and **NET/GROSS** keys are functional.
- **NET/GROSS** key is only used in Tare mode.

SIMPLE COUNTING FUNCTION

(1) Use the UNITS key to enter into the "PCS" mode

(2) Press the NET/GROSS key to select the counting sample size (S = 10, S = 20, S = 50, S = 100, S=200). The LCD shows C 10, C 20, C 50, C 100, C 200 in order.

(3) Put the samples on the weigh pan and press the UNITS key, the screen displays "------". After the sampling process is complete, put the goods on the weigh pan and the screen shows the quantity of the items.

- The sample weight should be heavier then the minimum capacity of the scale (20d), If not the arrow pointing to the icon will be activated.
- The weight of a sample should be heavier than the 0.2d (d=division), or the arrow pointing to the Pcs icon will be on.
- When the icon or Pcs are indicated the scale is still operational but the count may contain errors.
- To power off in this mode, the scale will memorize the "Pcs" unit. When the scale is powered on again, it directly enters the simple counting mode.
- While the "Auto unit weight average" function is available in the Advanced Function, the goods on the weigh pan are 5pcs greater than the sample size and less than double the sample size, the scale will automatically re-sample the unit weight.

CHAPTER 2 ADVANCED FUNCTIONS

2-1 ADVANCED FUNCTION SETTING TABLE

Below is an overview of the advanced functions. For detailed settings refer to the following sections.

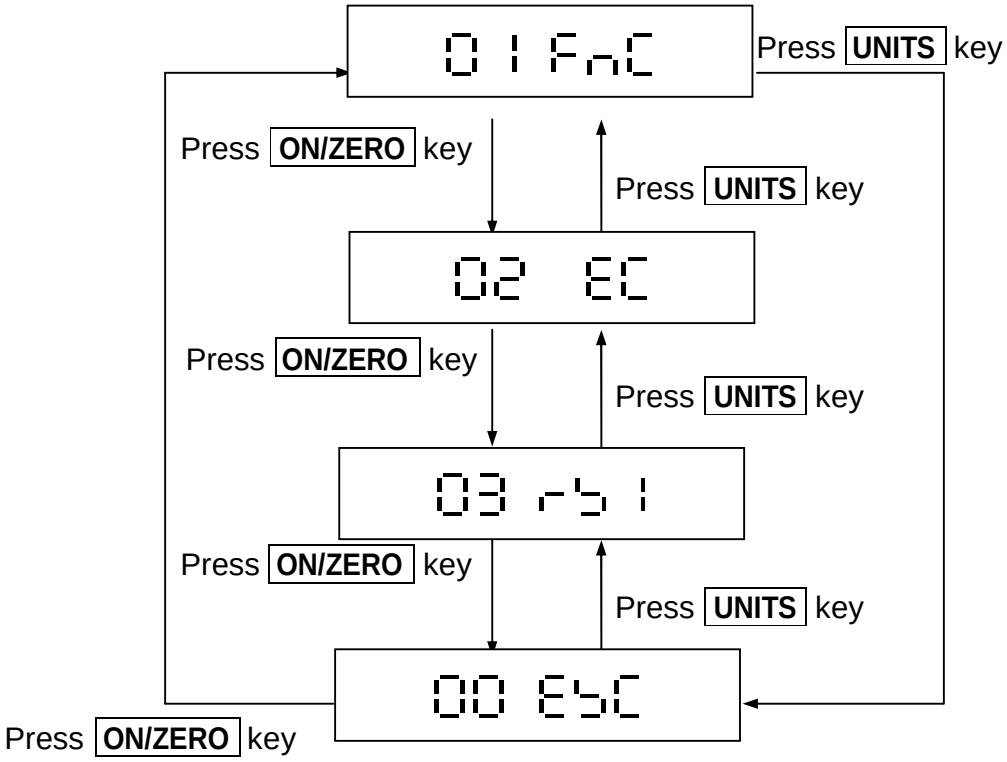
DISPLAY	LEVEL 1 FUNCTION	DISPLAY	LEVEL 2 FUNCTIONS
00 ESC	Exit the **ADVANCED FUNCTION** Setting Mode	---	---
01 FnC	General Function Setting Mode	FnC 00	Return to the **ADVANCED FUNCTION** setting menu
		FnC 01	Auto backlight function setting
		FnC 02	Auto power-off timer setting
		FnC 03	Hi/Lo/OK function setting
		FnC 04	Restore to the default setting
		FnC 05	Noise filter setting
		FnC 06	Hold function setting
		FnC 07	Auto unit weight averaging setting
		FnC 08	Target Band
		FnC 09	ZERO Band
		FnC 10	ZERO Record
02 EC	External Weight Calibration	---	---
03 rS1	RS232 Bi-direction Function Setting	rS100	Exit the RS232 serial interface setting mode

		rS 101	Baud rate setting
		rS 102	Communication protocol setting
		rS 103	Output format setting
		rS 104	Continuous transmission setting
		rS 105	Selection of continuous transmission rate
		rS 106	Auto transmission at Zero
		rS 107	Resetting auto transmission
		rS 108	Output condition setting
		rS 109	RS232 General or Simple Mode Output 6, 7 Digits

2-2 ADVANCED FUNCTION SETTING WORKFLOW

In the weighing mode, press the **NET/GROSS** and **ON/ZERO** keys at the same time to enter the **Advanced Function** setting mode. The LCD shows

Overall workflow of the Advanced Function setting mode:



⇒ General Function Setting Mode

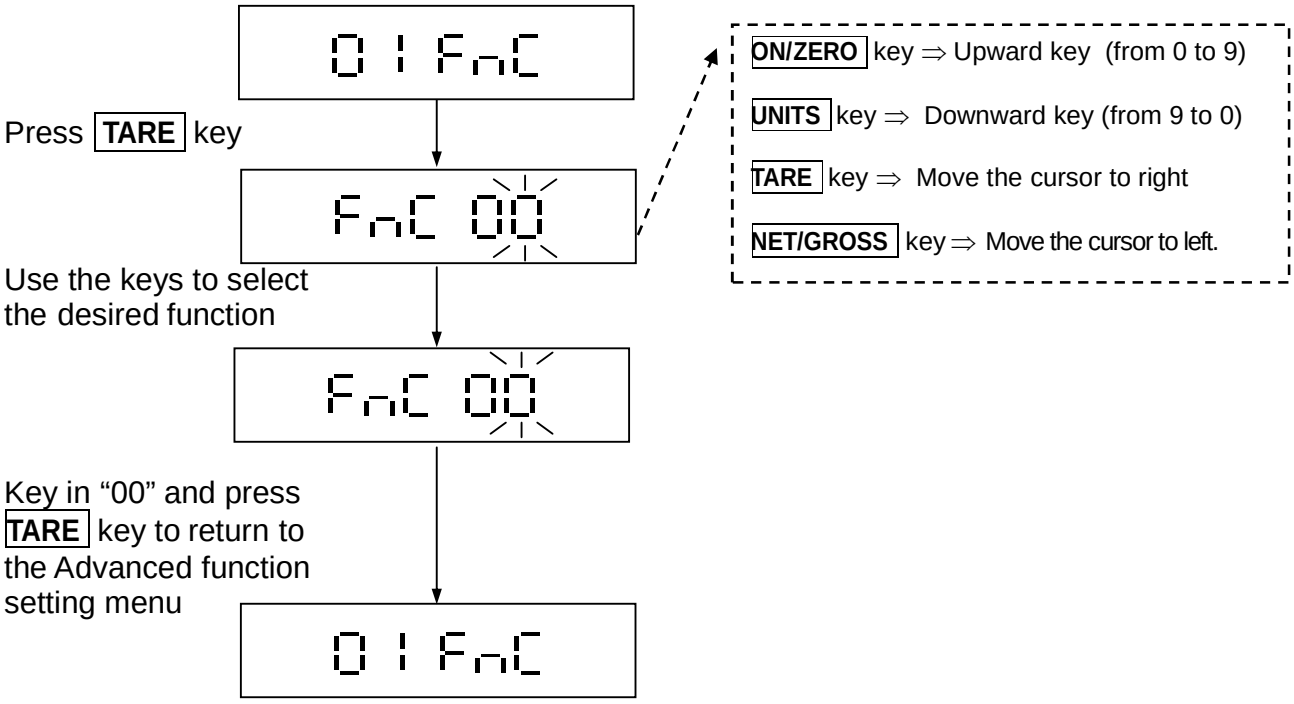
⇒ External Weight Calibration

⇒ RS232 Bi-direction Function Setting

⇒ Exit the Advanced Function Setting Mode

Refer to the following sections for the detailed operation procedures of each function setting.

2-3 GENERAL FUNCTION SETTING 01 FnC

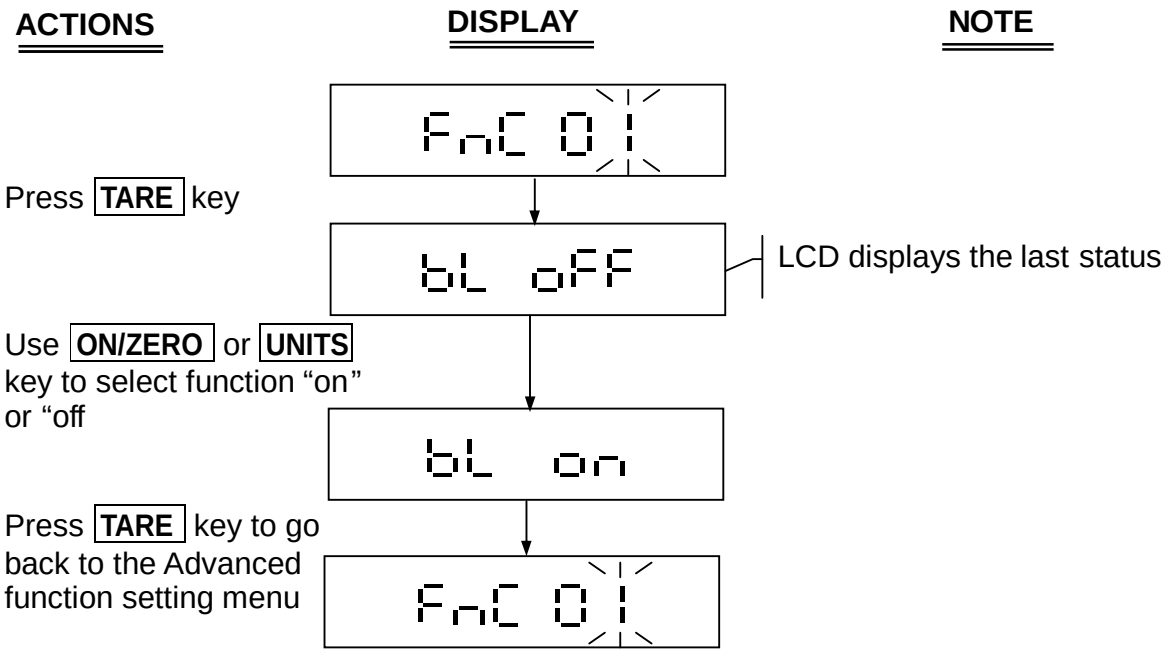


FnC 00	⇒ Return to the Advanced Function Setting Mode Menu
FnC 01	⇒ Auto Backlight Function Settings
FnC 02	⇒ Auto Power-off Timer Settings
FnC 03	⇒ Hi/Lo/OK Settings
FnC 04	⇒ Restore the Default Settings
FnC 05	⇒ Noise Filter Settings
FnC 06	⇒ Hold Function Settings
FnC 07	⇒ Auto Unit Weight Averaging Setting
FnC 08	⇒ Target Band
FnC 09	⇒ ZERO Band
FnC 10	⇒ ZERO Record

FnC 08、FnC 09 **for Philippine non-approval only**

2-3-1 Auto Backlight Function Setting FnC 01

Select FnC 01 in the General Function setting mode 01 FnC to change the backlight function setting.



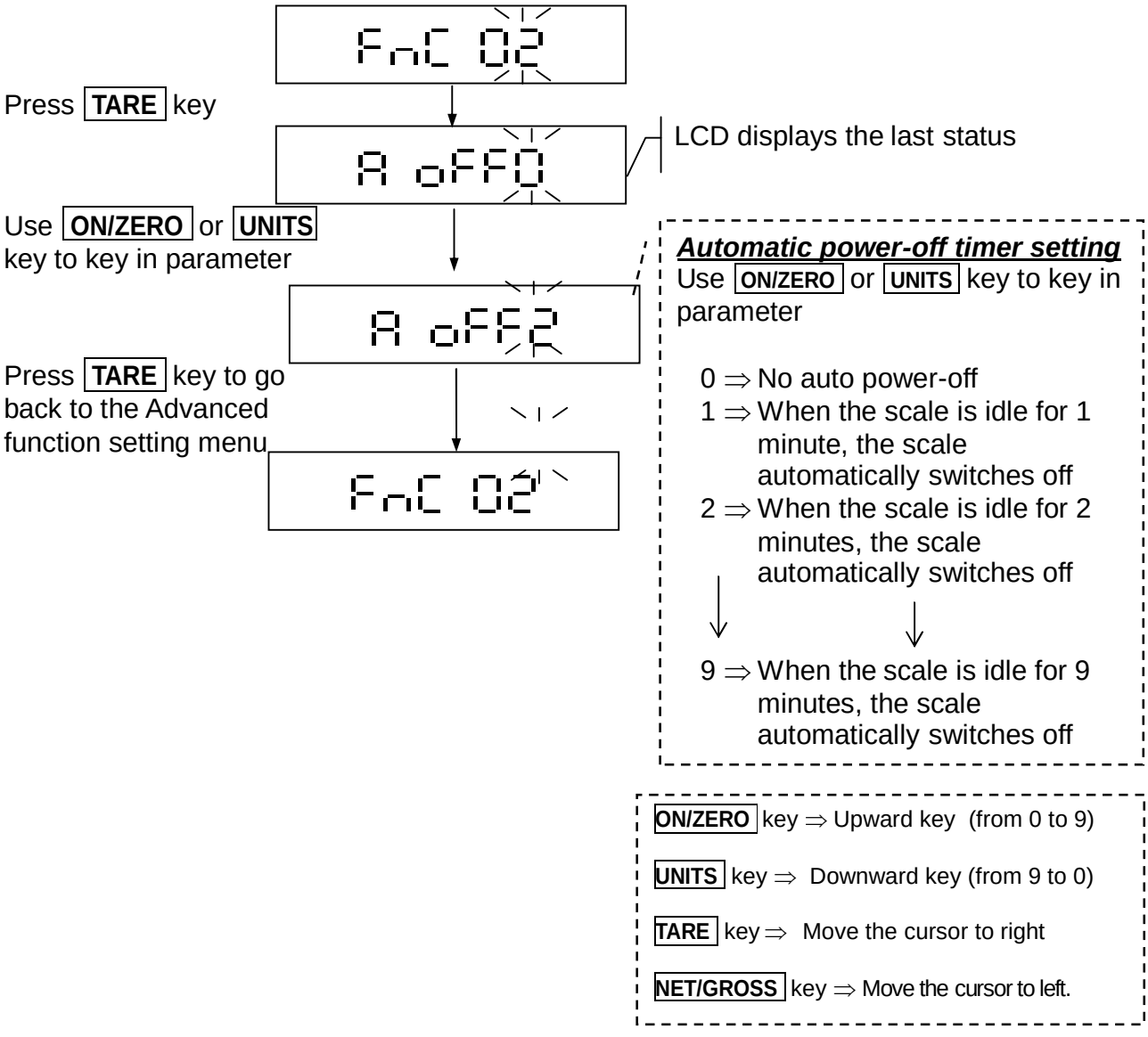
Auto backlight function

When the weight is over 10d, the display backlight will be on. After the weight is stable for 10 seconds or when the scale returns to zero, the display backlight switches off.

2-3-2 Auto Power-off Timer Setting FnC 02

Select FnC 02 in the General Function setting mode 01 FnC to change the automatic power-off timer setting.

ACTIONS | **DISPLAY** | **NOTE**



Automatic power-off function

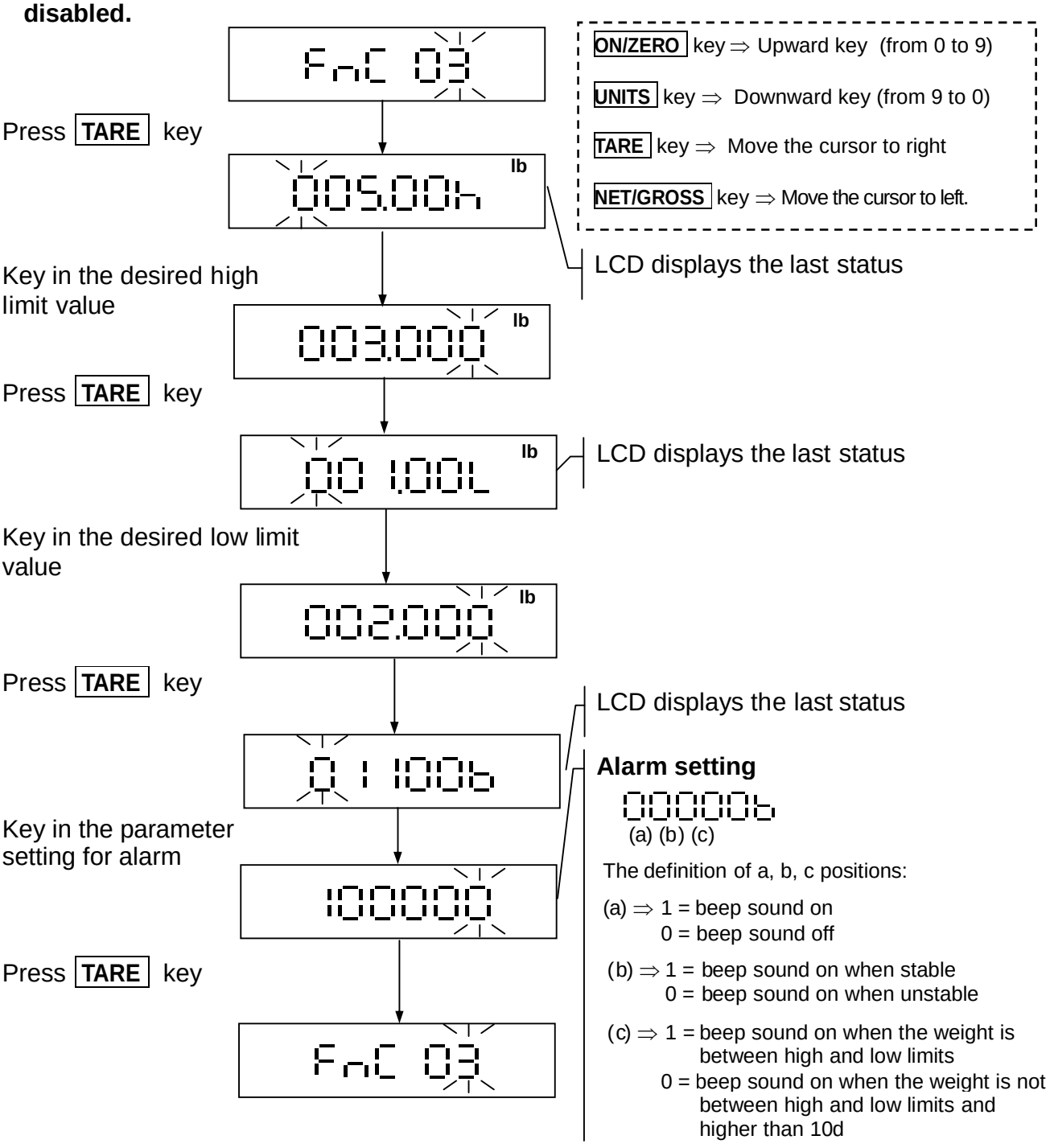
When the weight on weigh pan is less than 10d or keeps idle for the set time, the scale will automatically switch off.

2-3-3 Hi/Lo/OK Function Setting FnC 03

Select FnC 03 in the General Function setting mode 01 FnC to set the Hi/Lo/OK function. This function is available in all unit modes. In one specific unit mode, enter FnC 03 to set the Hi/Lo/OK values.

ACTIONS **DISPLAY** **NOTE**

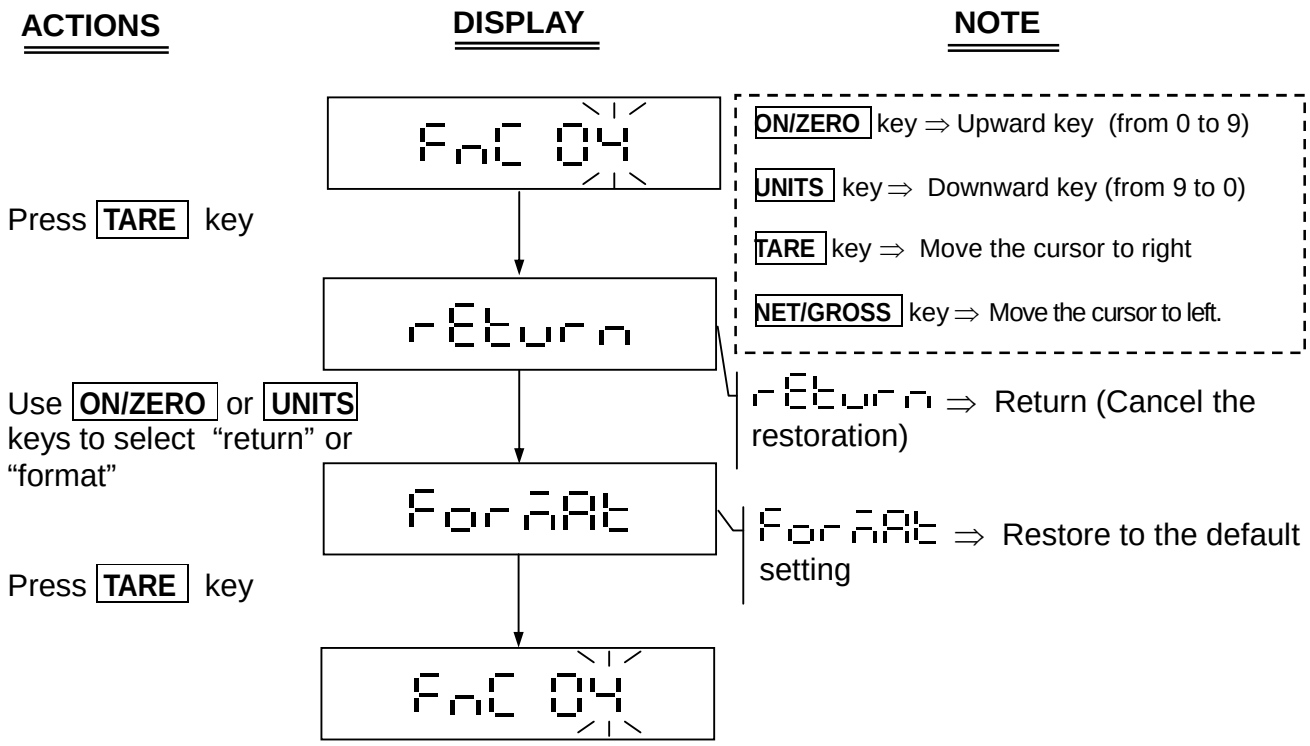
When the high limit and low limit are both set as "0", the Hi/Lo/OK function is disabled.



2-3-4 Restore to the Default Setting FnC 04

This function is available for non-approval model only

Select FnC 04 in the General Function setting mode 01 FnC to restore to the default setting.



The default setting includes the following:

1) **External weight calibration**
2) **HI/LO/OK setting value**
3) **Noise filter setting (External)**
4) **Sampling setting for the counting function**

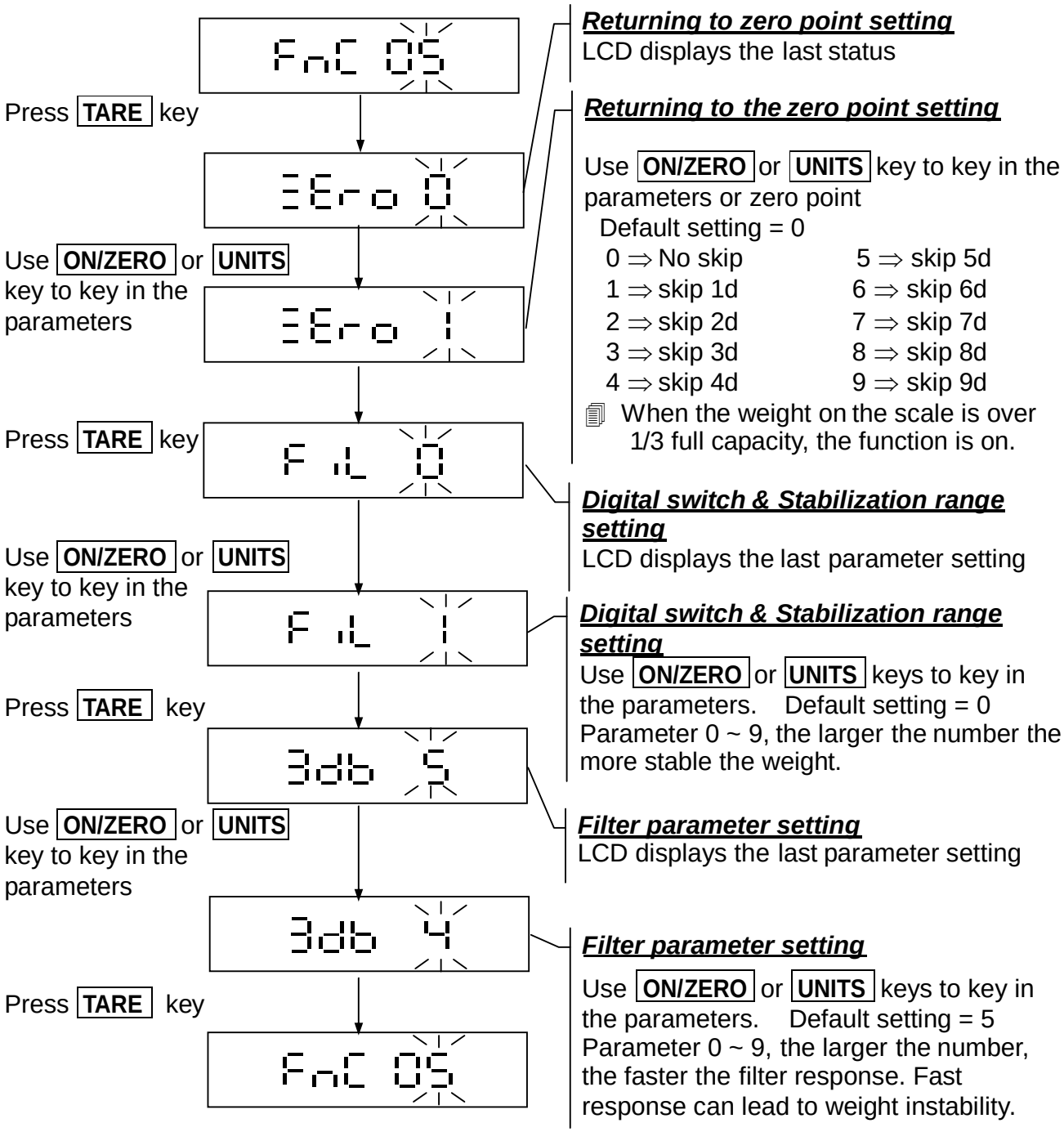
2-3-5 Noise Filter Setting FnC 05

Select FnC 05 in the General Function setting mode 01 FnC to set the noise filter setting.

This function is available for non-approval model only

ACTIONS **DISPLAY** **NOTE**

When modifying FnC 05, the parameters of CFn 01 remain un-altered.



Returning to zero point setting
LCD displays the last status

Returning to the zero point setting

Use ON/ZERO or UNITS key to key in the parameters or zero point
Default setting = 0

0 ⇒ No skip	5 ⇒ skip 5d
1 ⇒ skip 1d	6 ⇒ skip 6d
2 ⇒ skip 2d	7 ⇒ skip 7d
3 ⇒ skip 3d	8 ⇒ skip 8d
4 ⇒ skip 4d	9 ⇒ skip 9d

When the weight on the scale is over 1/3 full capacity, the function is on.

Digital switch & Stabilization range setting
LCD displays the last parameter setting

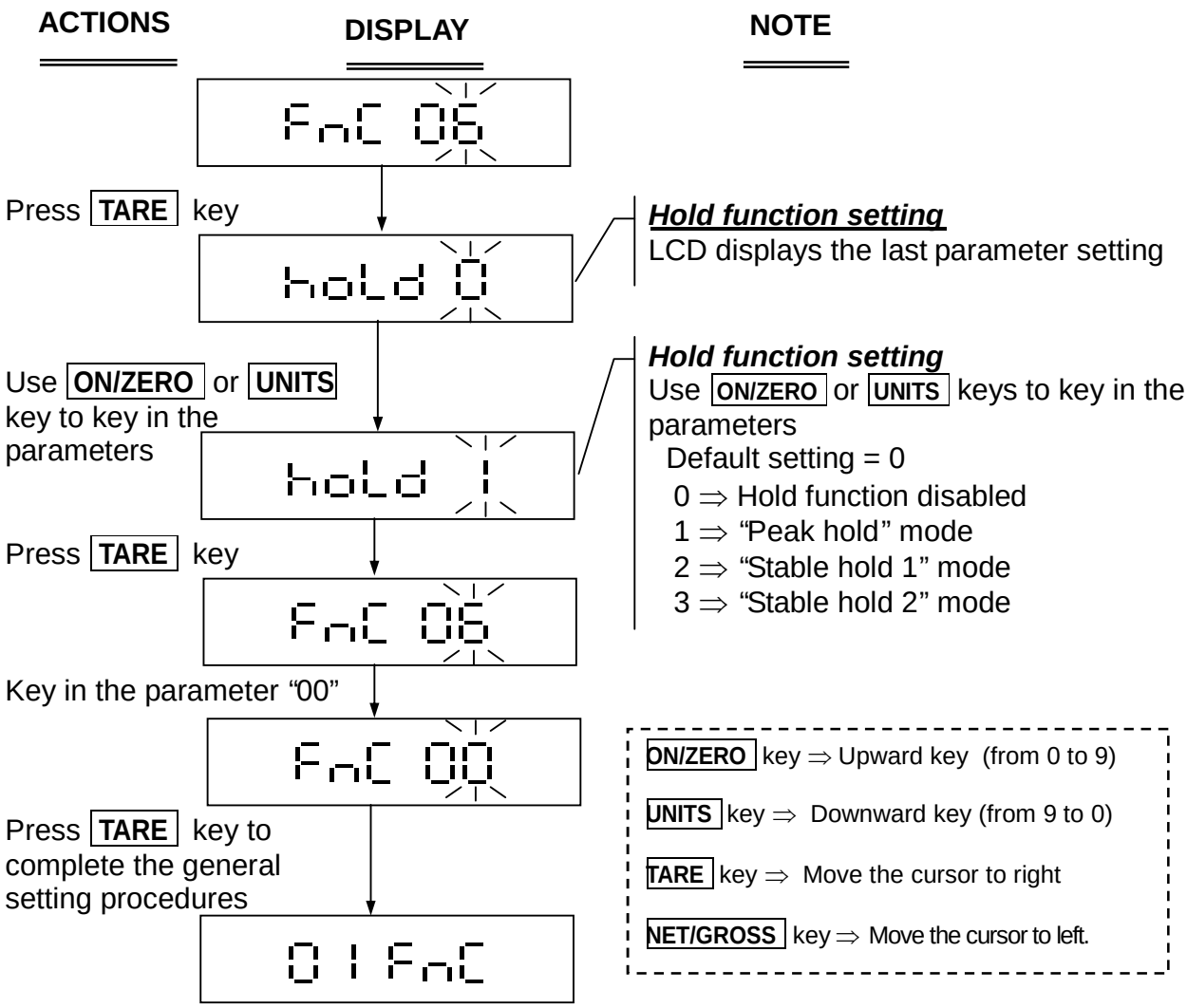
Digital switch & Stabilization range setting
Use ON/ZERO or UNITS keys to key in the parameters. Default setting = 0
Parameter 0 ~ 9, the larger the number the more stable the weight.

Filter parameter setting
LCD displays the last parameter setting

Filter parameter setting
Use ON/ZERO or UNITS keys to key in the parameters. Default setting = 5
Parameter 0 ~ 9, the larger the number, the faster the filter response. Fast response can lead to weight instability.

2-3-6 Hold Function Setting FnC 06

This function is available for non-NTEP model only



hold 0 = Hold function disabled

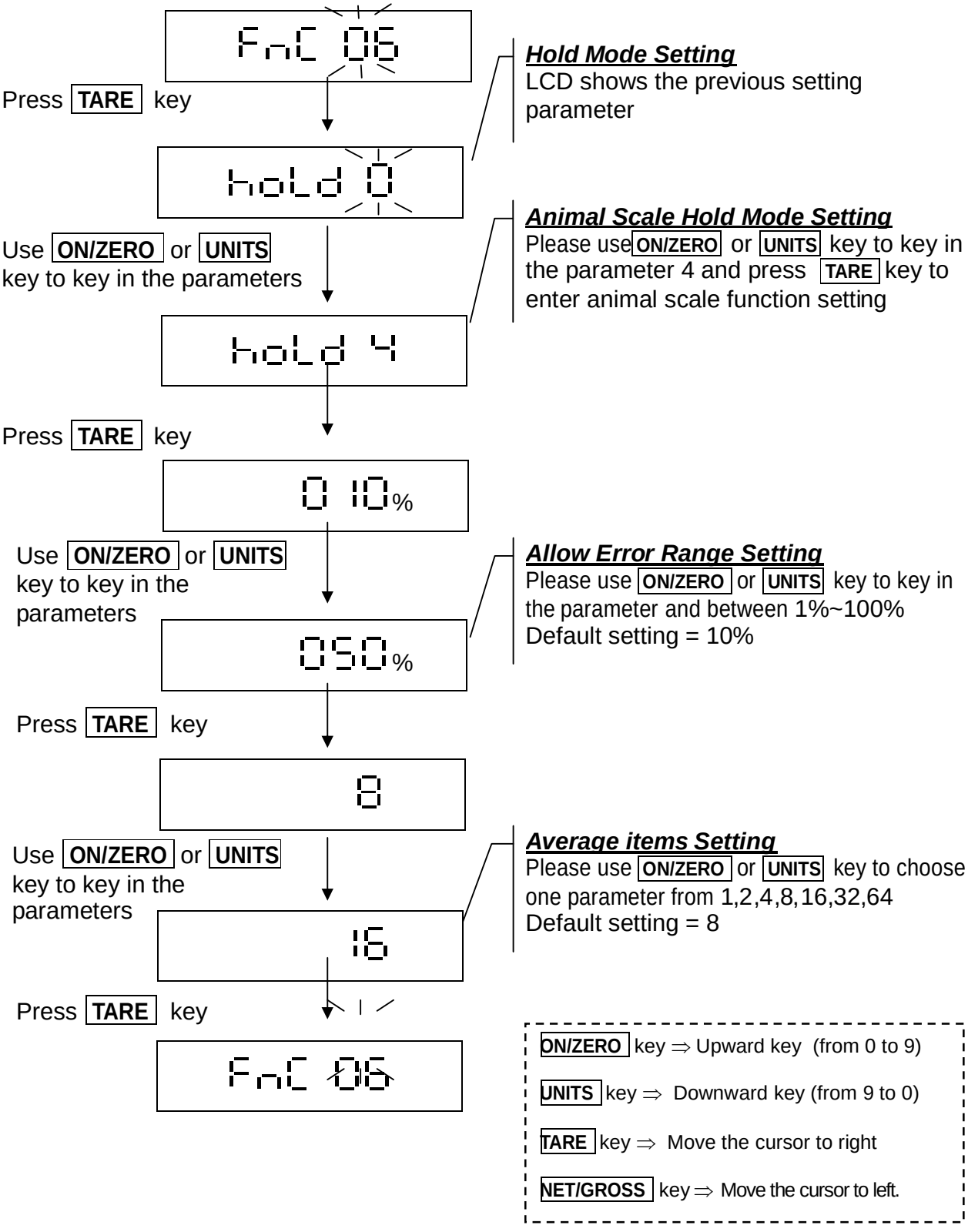
hold 1 = "Peak hold" mode
Keep displaying the maximum weight when the weight is continually changing to exit this mode, press any key.

hold 2 = "Stable hold 1" mode
When the weight is stable, the LCD shows the current weight value. To exit this mode, press any key.

hold 3 = "Stable hold 2" mode
When the weight is stable, the LCD shows the current weight value. When the weight returns to zero (<10d), the hold mode is cancelled automatically.

hold 4 = "Animal scale hold" mode
The scale returns to zero and shows " - - - - - - ". When the animal is on the scale and stable, the LCD shows the weight value and hold. When the animal is removed, the scale returns to zero and shows " - - - - - - ", (value < 10e), the scale will cancel the hold mode automatically. If the weight value is unstable, the scale will show the average value in 10 secs and hold it.

Animal scale hold mode hold 4

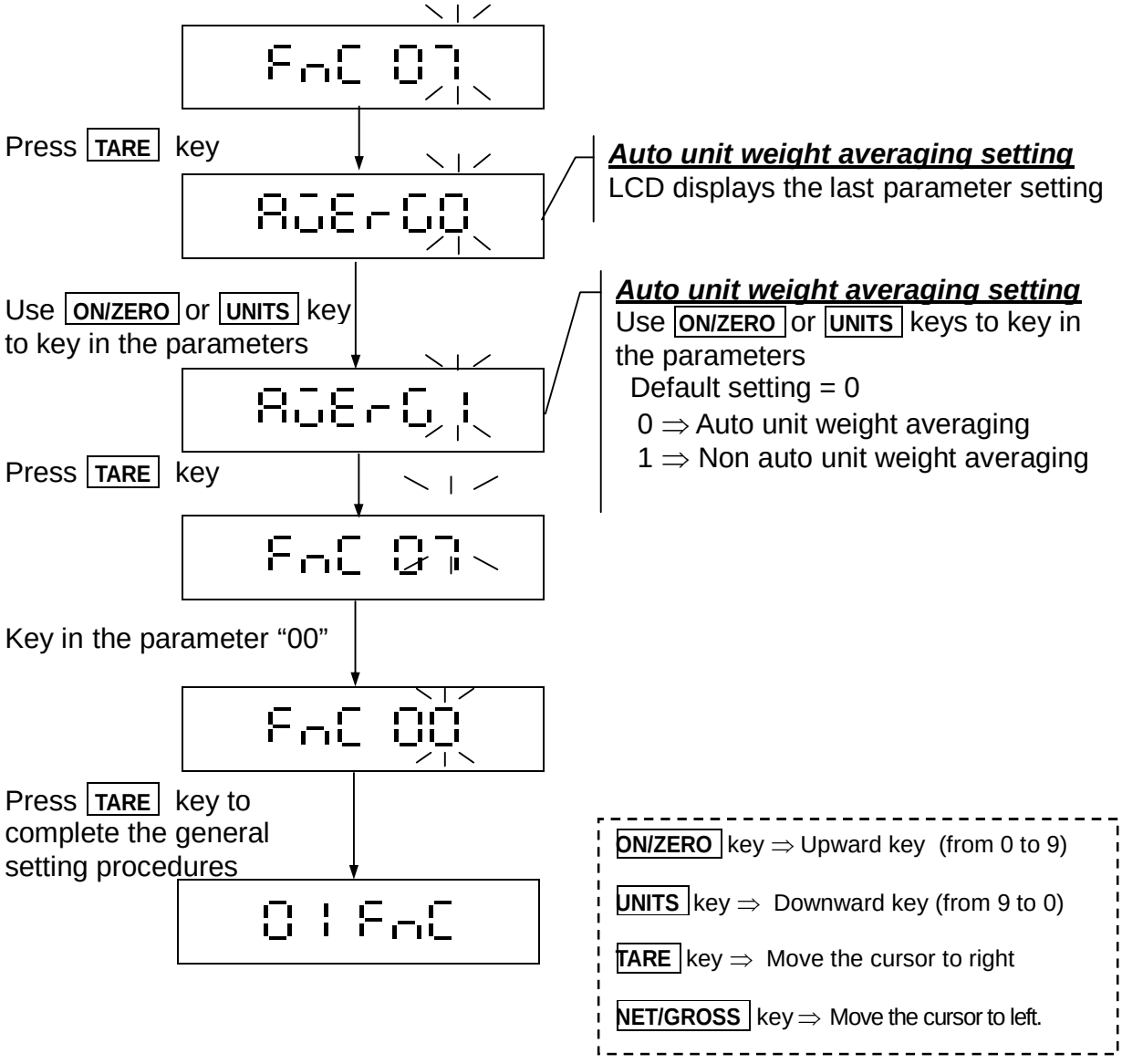


2-3-7 Auto Unit Weight Averaging Setting FnC 07

- **This function is designed for calculating the precise unit weight when sampling in few quantity.**

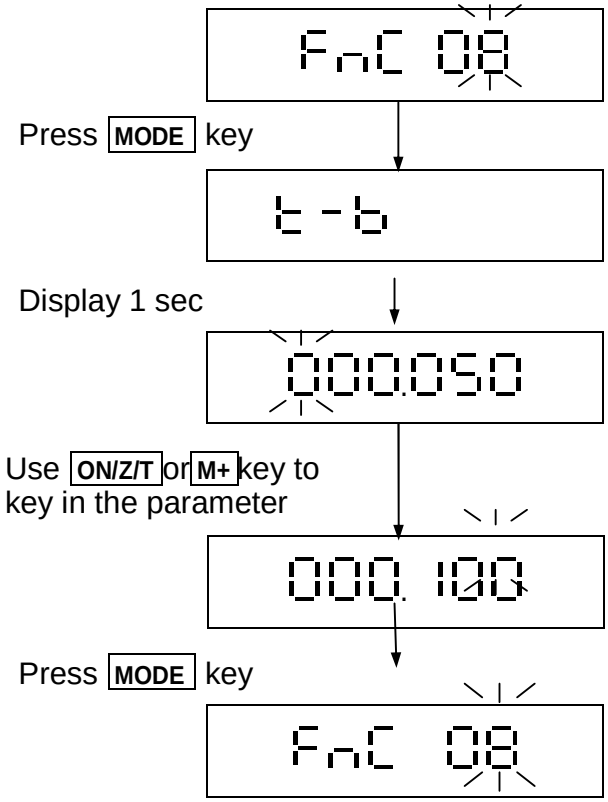
- **This function works under below 2 conditions simultaneously:**

1. **weight of adding goods must be 5pcs greater than existing unit weight**
2. **weight of adding goods must be less than existing total weight**



2-3-8 Target Band FnC 08

(This Function is available for Philippines non-approved model only)



ON/ZERO key ⇒ Upward key (from 0 to 9)

UNITS key ⇒ Downward key (from 9 to 0)

TARE key ⇒ Move the cursor to right

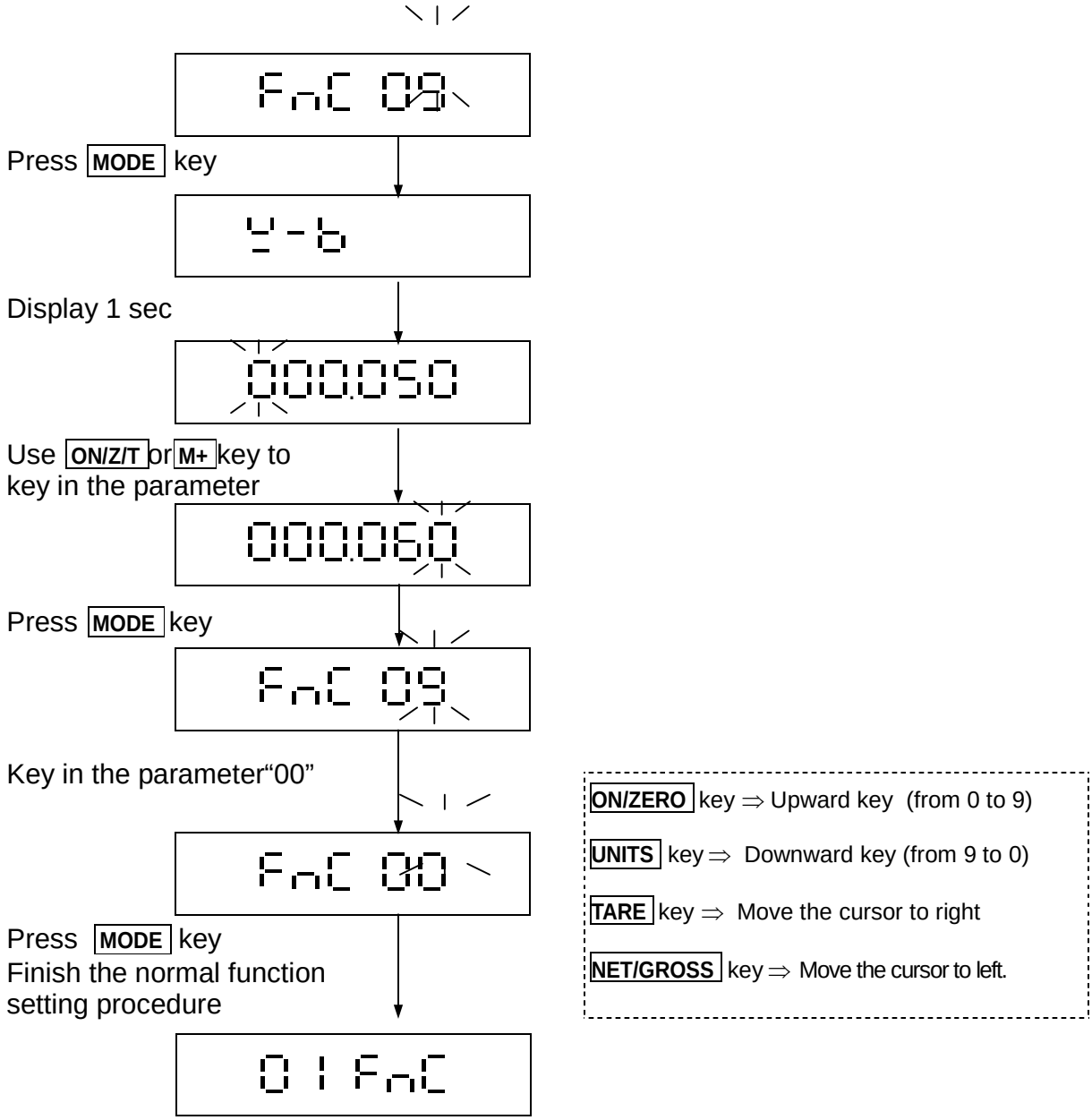
NET/GROSS key ⇒ Move the cursor to left.

2-3-9 ZERO Band FnC 09

(This Function is available for Philippine non-approved model only)

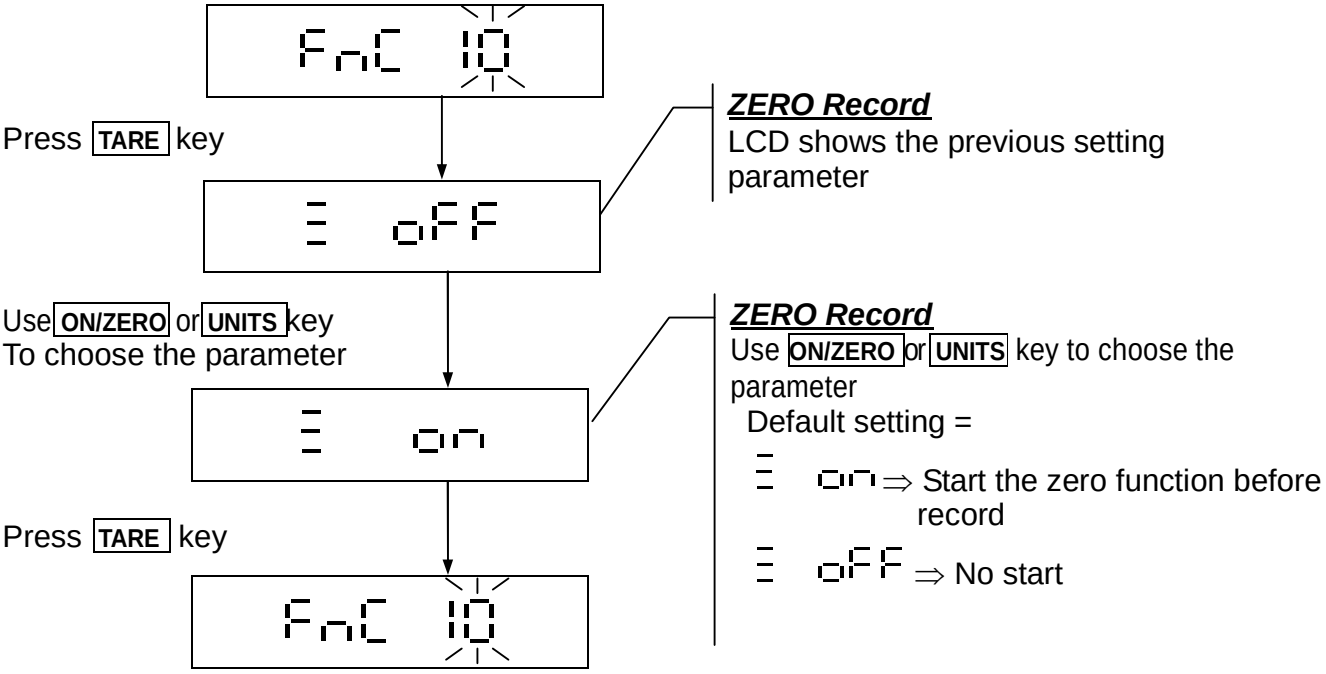
When the weight value is less than this setting value, accumulation function is not available.

On the hold status and remove the body, if the weight value is less than this setting value, the scale can cancel the hold status automatically, and can proceed the next accumulation.



2-3-10 ZERO Record FnC 10

This function is available for non-approval model only



2-4 WEIGHT CALIBRATION

Please refer to Dealer Set-Up. Weight calibration is not available on the NTEP version.

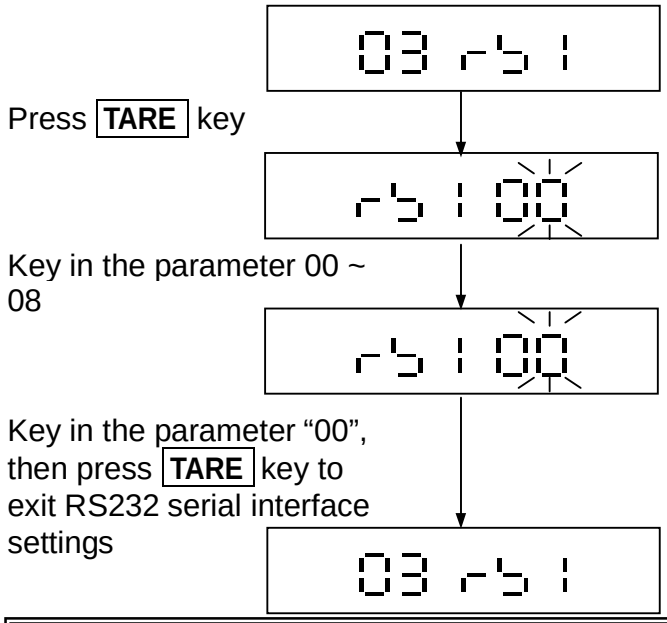
2-5 RS232 SERIAL INTERFACE SETTINGS

03 rS1

In the weighing mode, press the **NET/GROSS** and ON/ZERO keys at the same time to enter the **Advanced Function** setting mode. The LCD shows 01 FnC and use the NET/GROSS or UNITS key to select 03 rS1 to enter the RS232 serial interface setting mode.

RS232 serial interface settings span rS101~rS109, 9 settings.

ACTIONS **DISPLAY** **NOTE**



ON/ZERO key ⇒ Upward key (from 0 to 9)

UNITS key ⇒ Downward key (from 9 to 0)

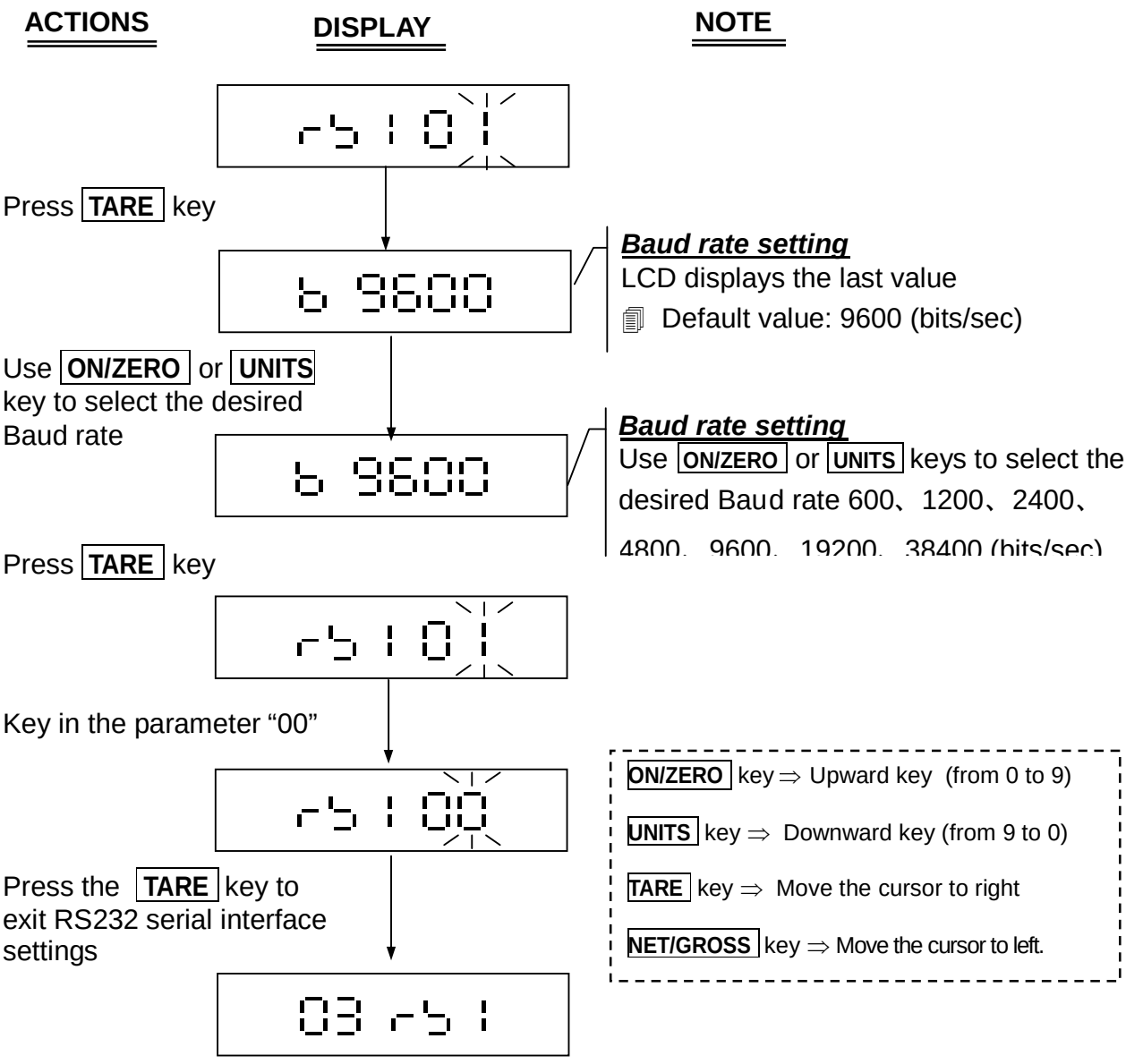
TARE key ⇒ Move the cursor to right

NET/GROSS key ⇒ Move the cursor to left.

rS100 ⇒ **Exit the RS232 serial interface setting mode**
rS101 ⇒ **Baud rate setting**
rS102 ⇒ **Communication protocol setting**
rS103 ⇒ **Output format setting**
rS104 ⇒ **Continuous transmission setting**
rS105 ⇒ **Selection of continuous transmission rate**
rS106 ⇒ **Auto transmission at Zero**
rS107 ⇒ **Resetting auto transmission**
rS108 ⇒ **Output condition setting**
rS109 ⇒ **RS232 general or simple mode output 6, 7 digits**

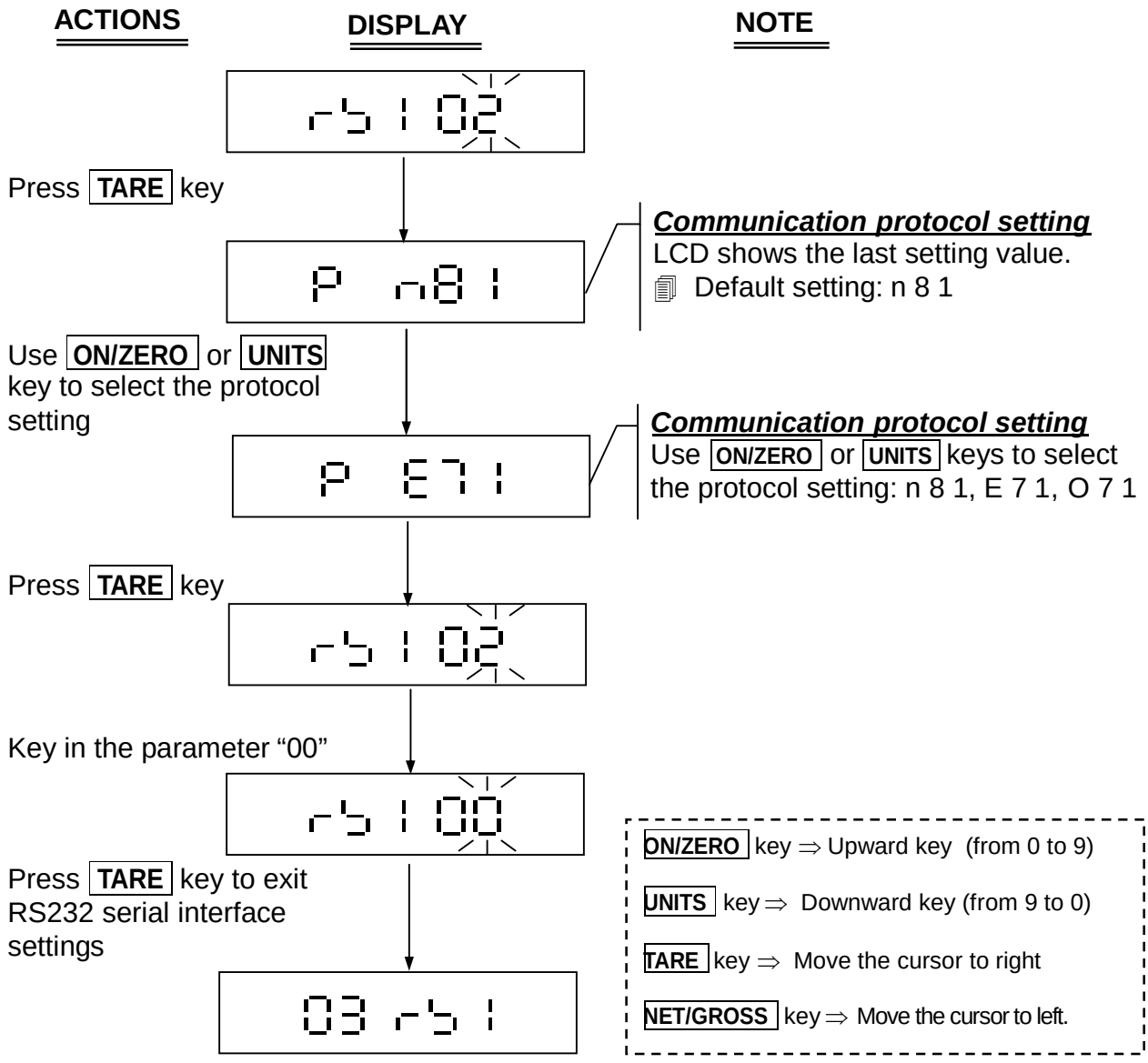
2-5-1 Baud Rate Setting r5 101

Select r5 101 in the RS232 serial interface setting mode 03 r5 1 to set the Baud Rate.



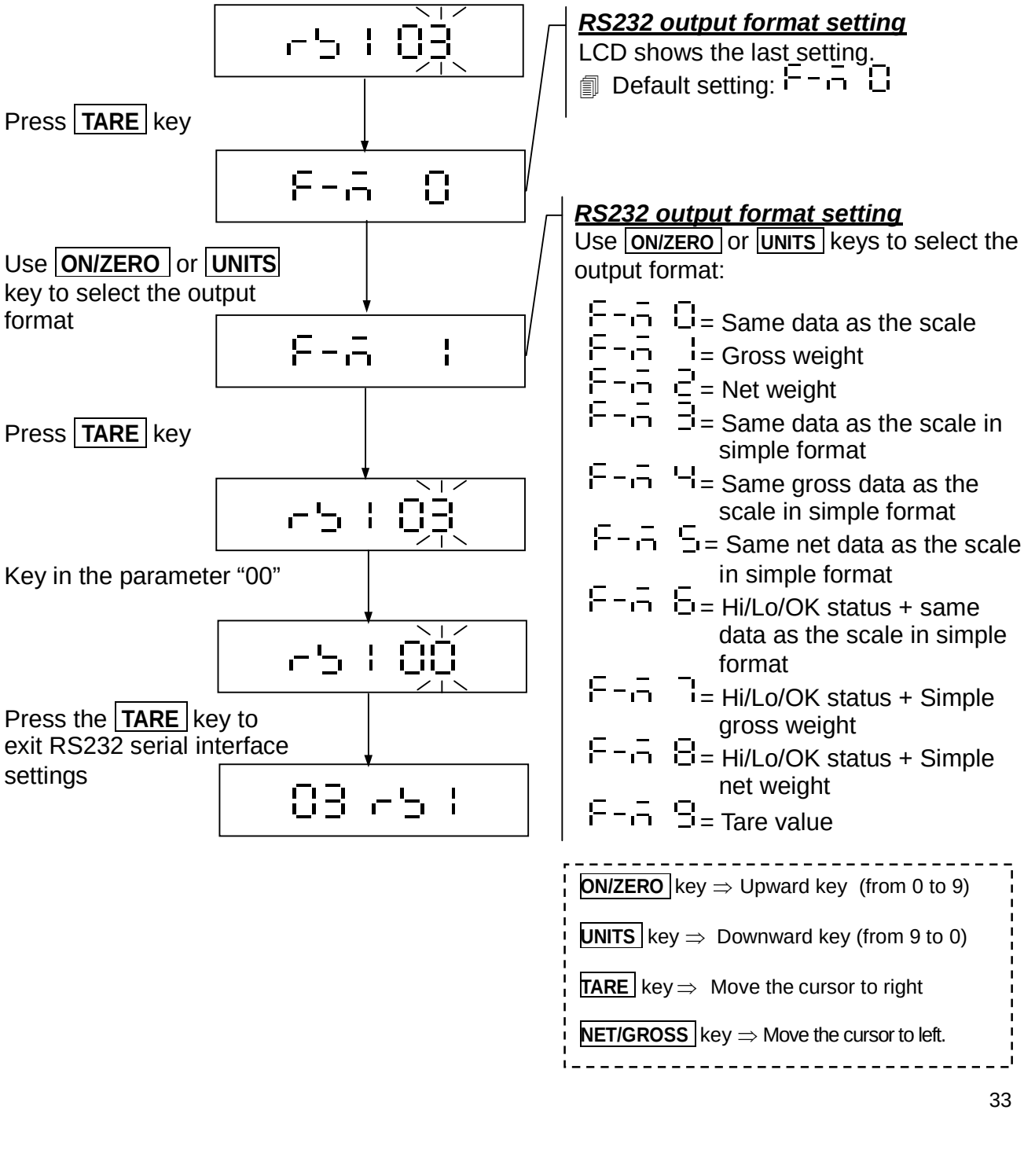
2-5-2 Communication Protocol Setting rs1 02

Select rs1 02 in the RS232 serial interface setting mode 03 rs1 to set the Communication Protocol.



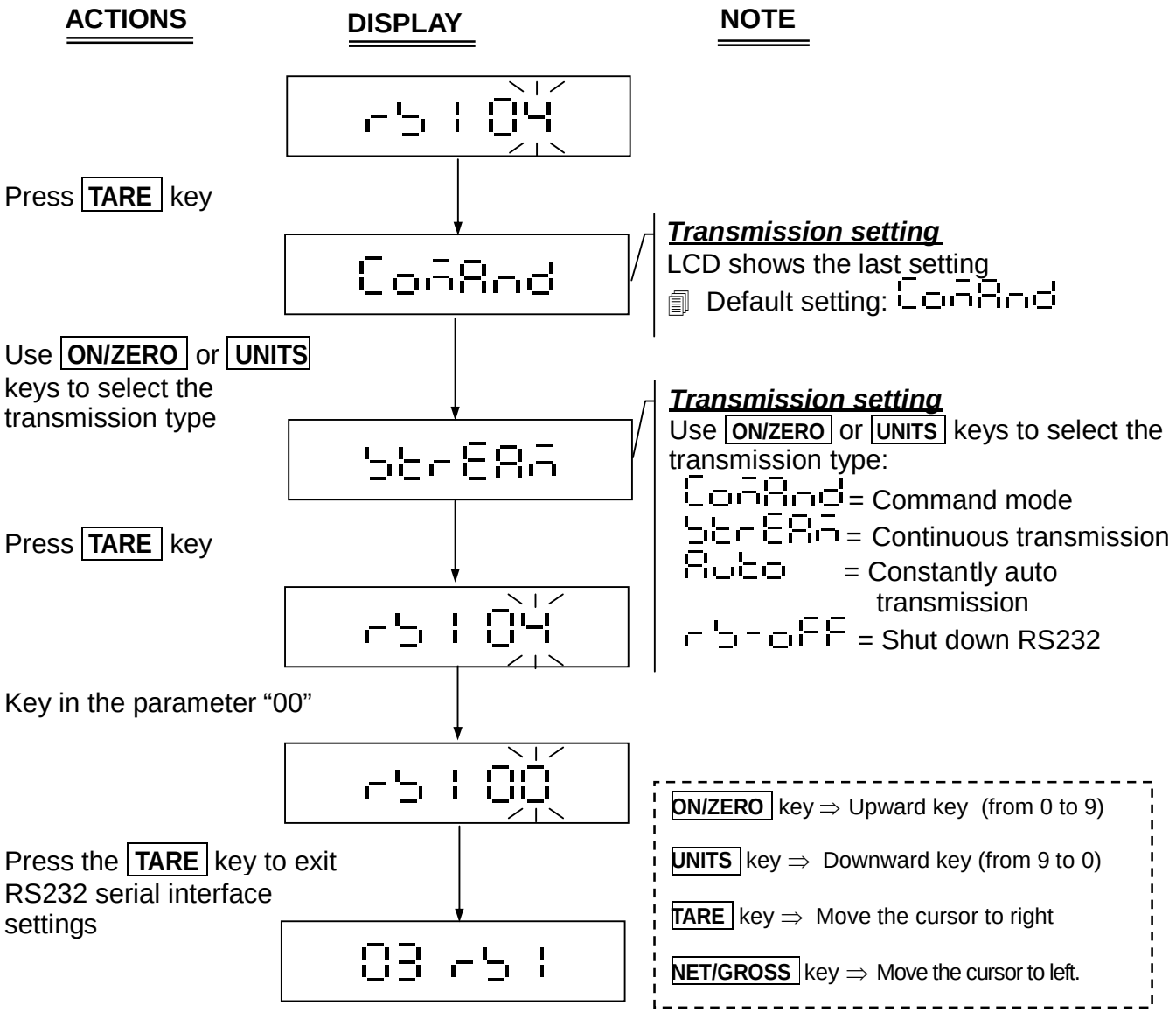
2-5-3 Output Format Setting rs1 03

Select rs1 03 in the RS232 serial interface setting mode 03 rs1 to set the Output Format.



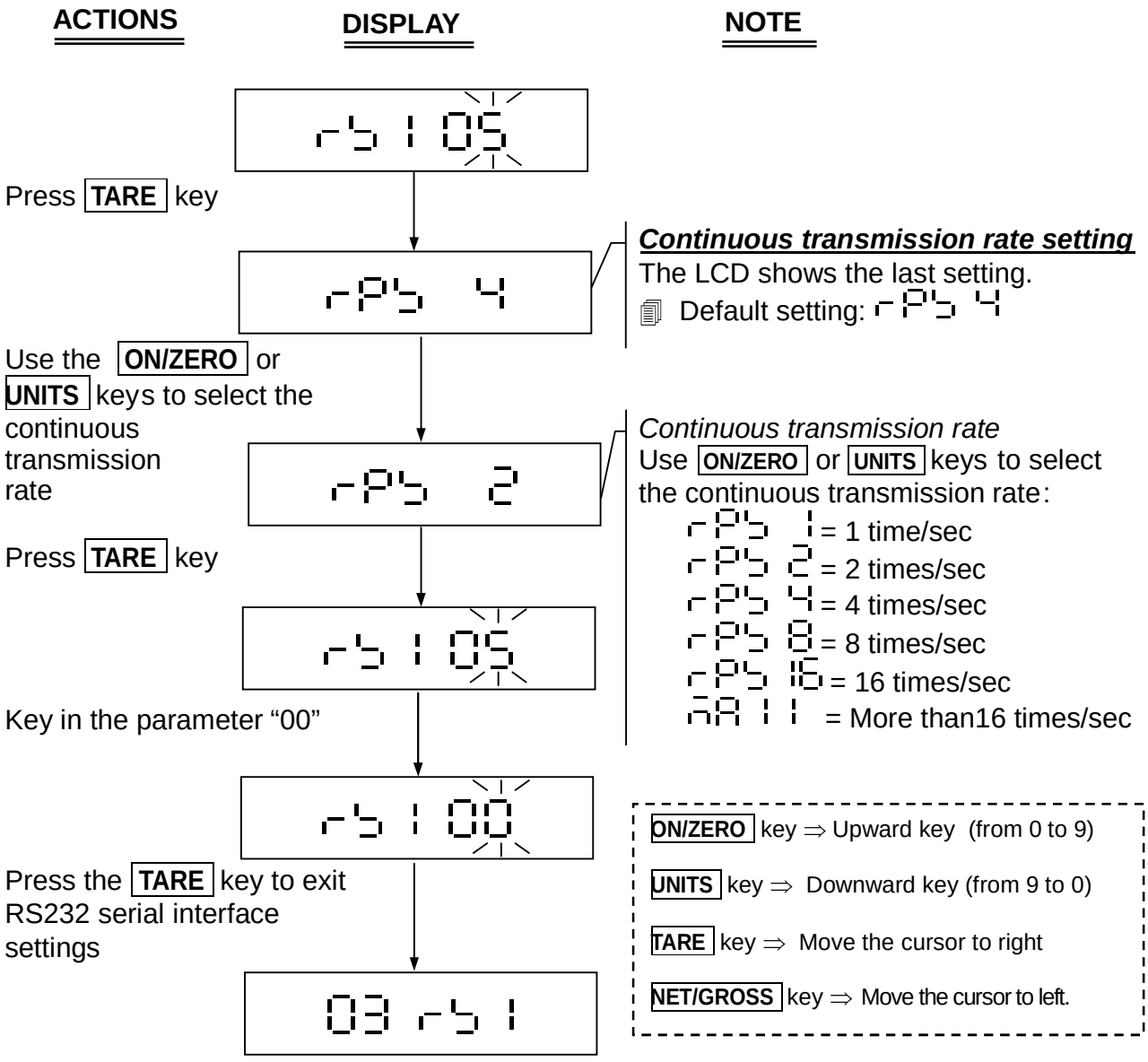
2-5-4 Continuous Transmission Setting rS 1 04

Select rS 1 04 in the RS232 serial interface setting mode 03 rS 1 to set the Continuous Transmission Setting.



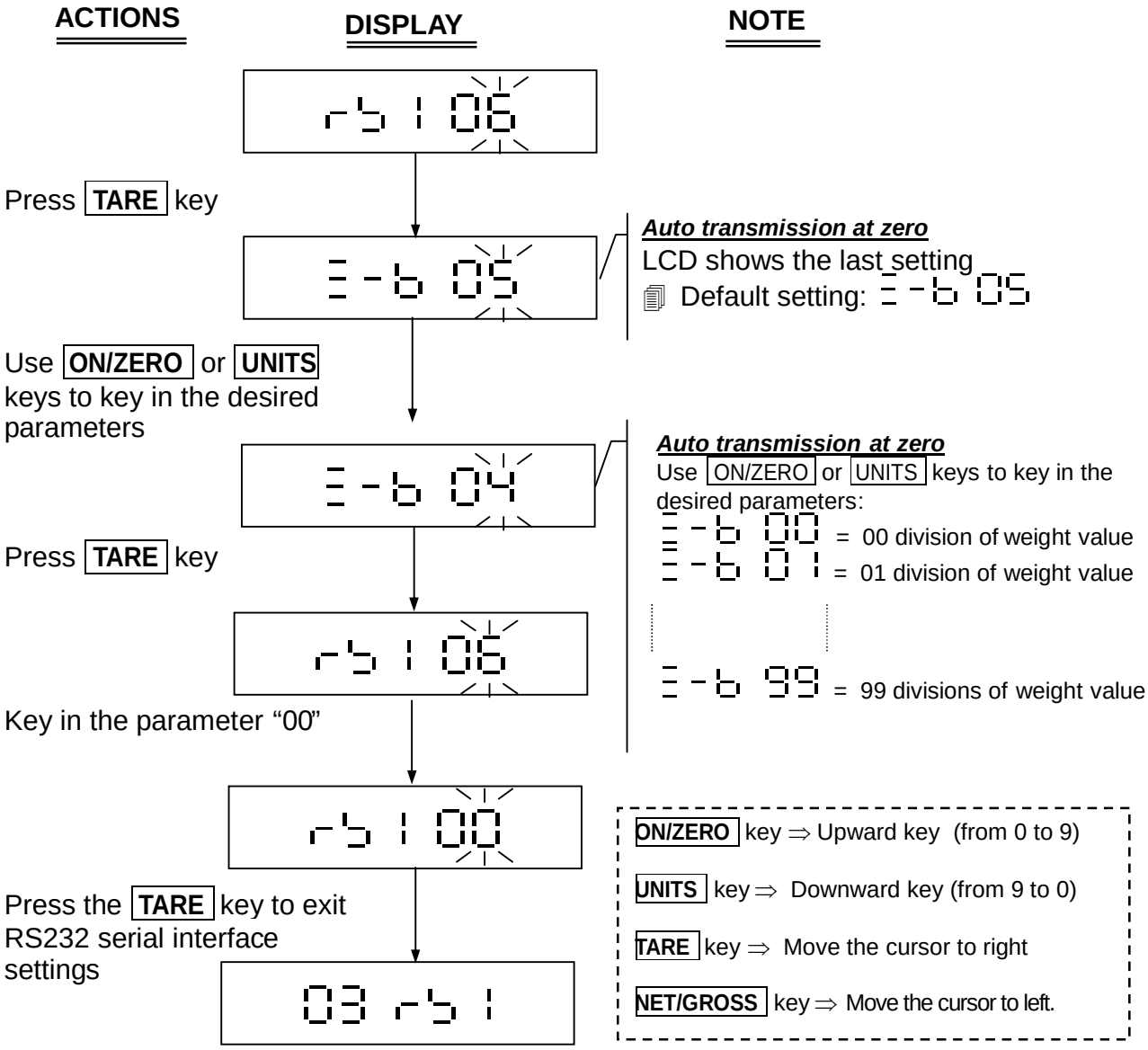
2-5-5 Selection of the Continuous Transmission Rate
rs1 05

Select rs1 05 in the RS232 serial interface setting mode 03 rs1 to set the Continuous Transmission Rate.



2-5-6 Auto Transmission at Zero rs1 06

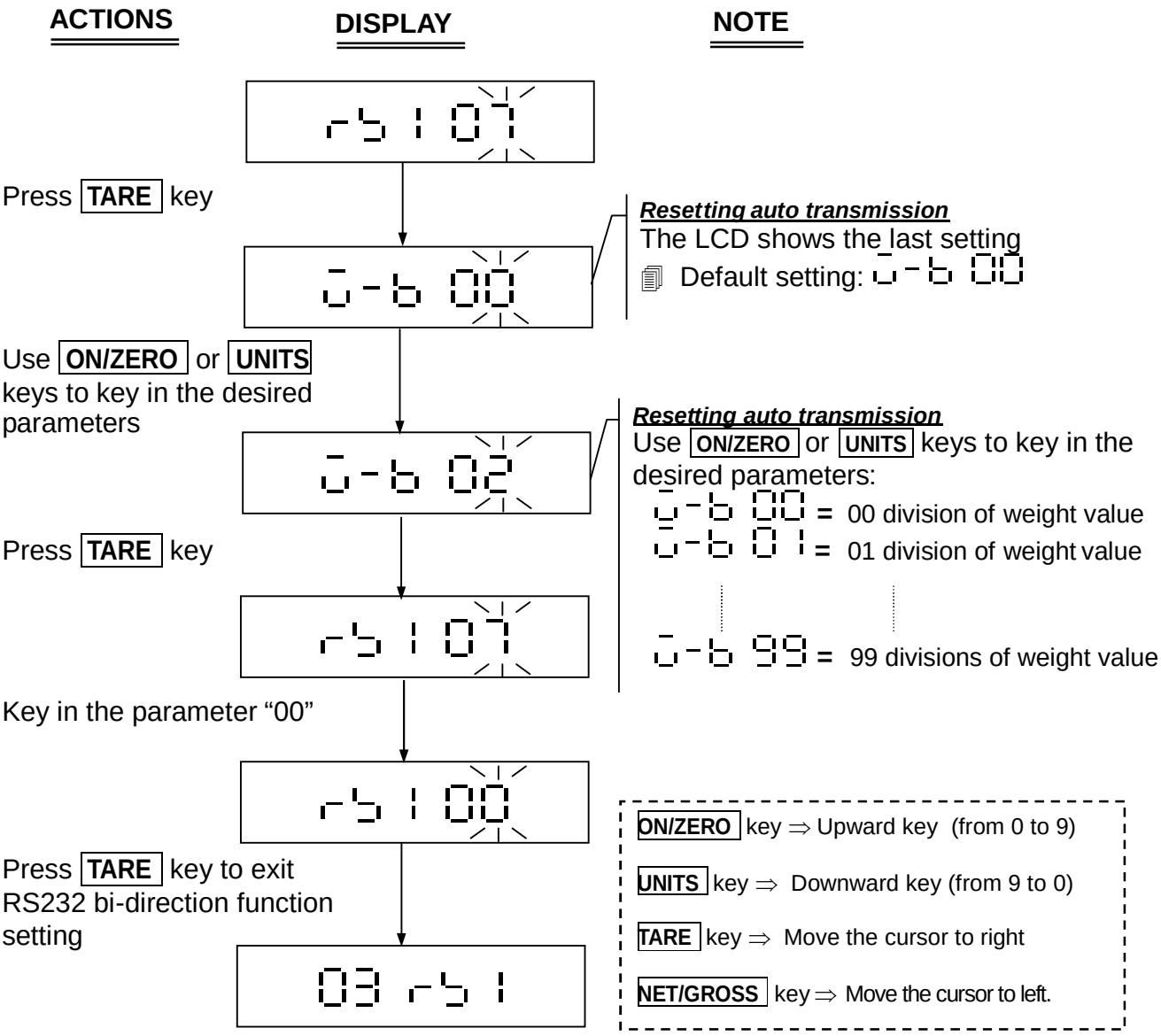
Select rs1 06 in the RS232 serial interface setting mode 03 rs1 to set the Auto Transmission at Zero.



When the parameter is set as E-b 00, the "Auto transmission" function is not available. It is because when the zero is stable, the transmission becomes "Continuous Transmission".

2-5-7 Resetting Auto Transmission r5 107

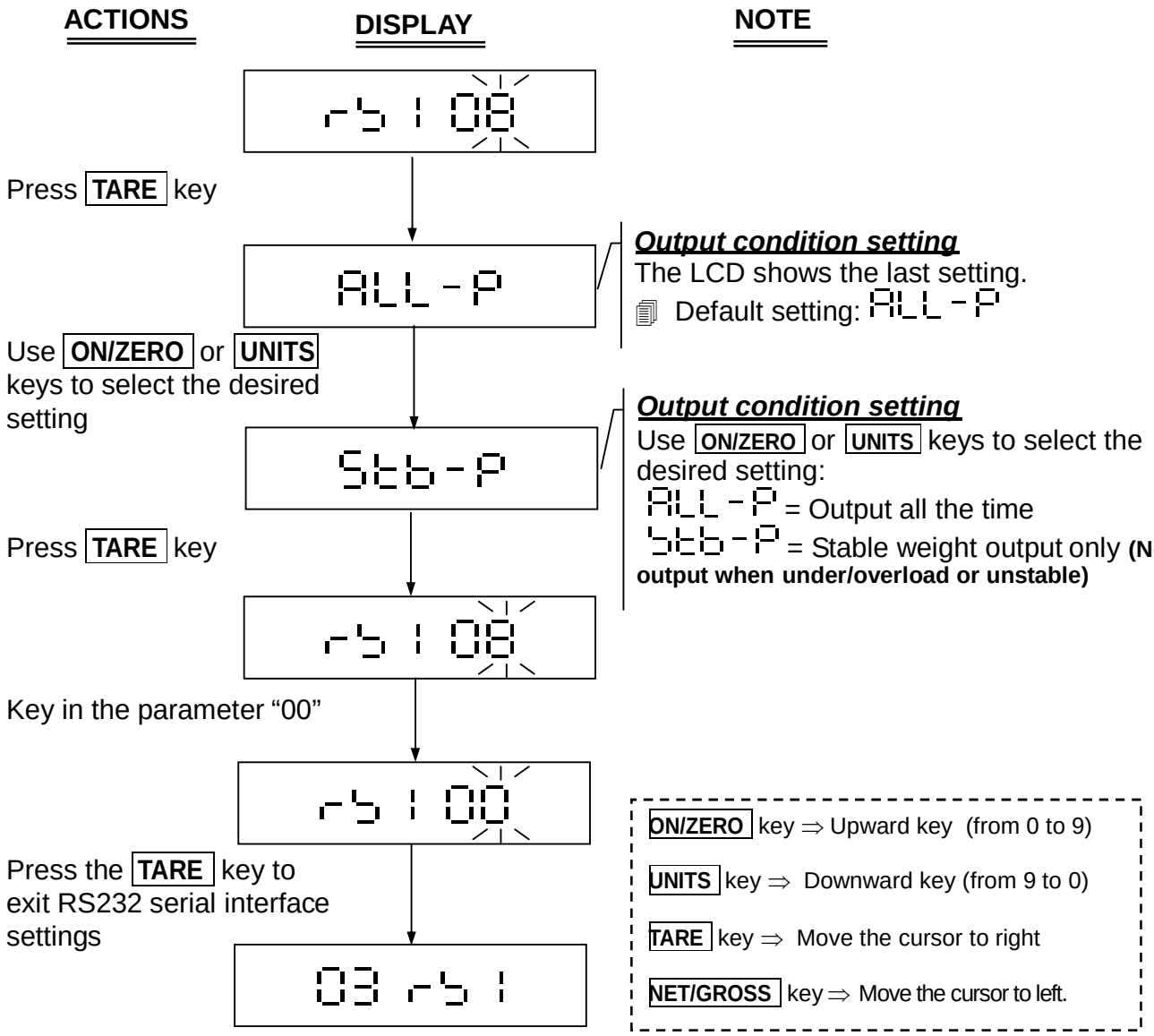
Select r5 107 in the RS232 serial interface setting mode 03 r51 to Resetting Auto Transmission.



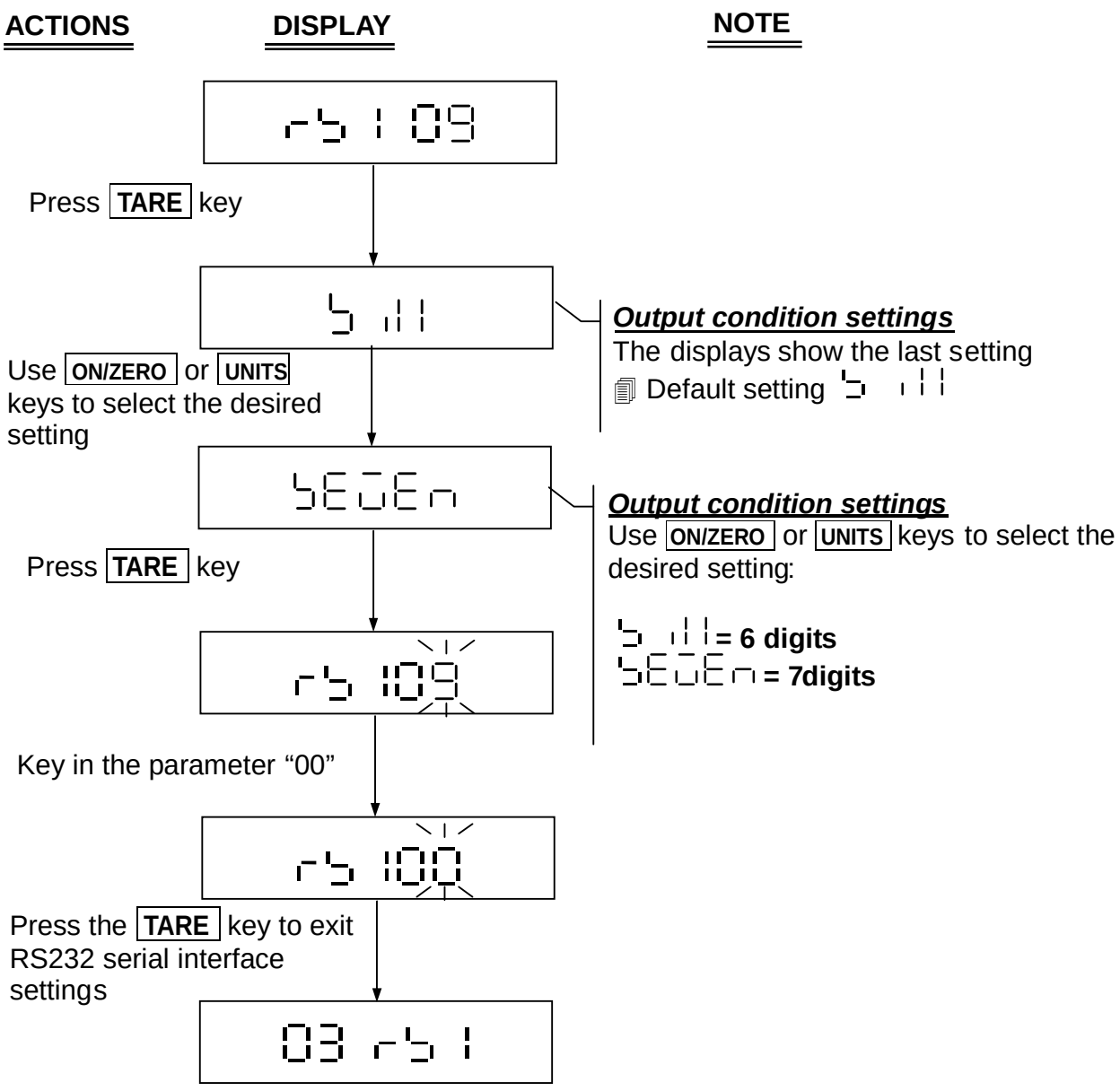
When the parameter is set as U-b 00 , the “Auto transmission” function is not available. It is because when the zero is stable, the transmission becomes “Continuous Transmission”.

2-5-8 Output Condition Setting r5 1 08

Select r5 1 07 in the RS232 serial interface setting mode 03 r5 1 to Reset of Auto Transmission.



2-5-9 RS232 General or Simple Mode Output 6, 7 Digits



Please refer to Page 40 for RS232 output format

ON/ZERO key ⇒ Upward key (from 0 to 9)

UNITS key ⇒ Downward key (from 9 to 0)

TARE key ⇒ Move the cursor to right

NET/GROSS key ⇒ Move the cursor to left.

Command mode

Command Format A

Host | Command |

Slave | Command |

MZ	Zero	SO	Command mode
MT	Tare	UA	Switch to the first unit
MG	Gross weight	UB	Switch to the second unit
MN	Net weight	UC	Switch to the third unit
CT	Clear TARE value	UD	Switch to the forth unit
SC	Continuous transmission	UE	Switch to the fifth unit
SA	Auto transmit	UF	Switch to the sixth unit
%	Stop continuous transmission and enter the command mode		

Note: UA ~ UF settings are dependent the model of the scale

Command Format B

Host | Command |

Slave | Data |

RW	Read current weight	RH	Read Gross (simple)
RG	Read Gross weight	RI	Read Net (simple)
RN	Read Net weight	RJ	Read comparison situation + current display of weight (simple)
RT	Read TARE	RK	Read comparison situation + Gross (simple)
RB	Read current display of weight (simple)	RL	Read comparison situation + Net (simple)

Note: a. add % before the command to read continuously
b. add # before the command to transmit a stable value

Read weight comparison setting value RS○○□□

○○: Groups(00 ~ 09) □□: Setting Items

HI	**Show "HI" presetting value**
LO	**Show "LO" presetting value**

Note: ○○(Group) is various depended on different models
00 ⇒ The first group
01 ⇒ The second group
02 ⇒ The third group

EX: RS02LO < CR > < LF > Show "LO" presetting value

ANS: RS02LOXXXXXX < CR > < LF >

Command Format C

Host | Command+ Data |

Slave | Command+ Data |

Write weight comparison setting value WS○○□□XXXXXX

○○: Groups (00 ~ 09) □□: Setting Items XXXXXX: Setting Value

HI	**Write "HI" setting value**
LO	**Write "LO" setting value**

Note: ○○ (Group) is various depended on different models

00 ⇒ The first group

01 ⇒ The second group

02 ⇒ The third group

EX: WS00HI001000 **<** CR **>** **<** LF **>** Write "HI" setting value

ANS: WS00HI001000 **<** CR **>** **<** LF **>**

Command Format D

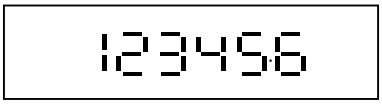
Host | Data |

Slave

Value (e.g. Price)						**Position of decimal point**	**CR**	**LF**
1	**2**	**3**	**4**	**5**	**6**	**1**		

When the PW receives this data format, it will transfer the data and display it on its LCD.

⇩

Note: The weight value is  function is effective, when the over 0.

- Error messages:
  E1: Wrong command
  E2: Command format error (Wrong parameters)
  E3: Command not recognised

Output data format

A. 7 digits (Exclude 1 digit decimal point)

Weight format

Gross	S	T	,	G	S	,	+	0	1	2	3	4	5	6	7	SP	SP	o	z	CR	LF
Net	S	T	,	N	T	,	+	1	.	2	3	.	4	5	6	t	l	.	g		
Tare	S	T	,	T	R	,	+	0	1	2	.	3	4	5	6	SP	SP	k	g		
Plus OL	O	L	,	G	S	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Minus OL	O	L	,	G	S	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Unstable	U	S	,	G	S	,	+	0	1	2	3	4	.	5	6	SP	SP	l	b		

Simple format

G/N	+	1	.	2	3	.	4	5	6	CR	LF
G/N	+	0	1	2	3	4	5	.	6		
G/N	+	0	1	2	.	3	4	5	6		
Plus OL	+	SP	SP	SP	SP	SP	SP	SP	SP		
Minus OL	-	SP	SP	SP	SP	SP	SP	SP	SP		

Comparison status + Simple format

Byte0	Byte1	Byte2	+/-	1	.	2	3	.	4	5	6	CR	LF

Byte0 : HI 30H/31H ; Byte1 : OK 30H/31H ;

Byte2 : LO 30H/31H ;

B. 6 digits (Exclude 1 digit decimal point)

Weight format

Gross	S	T	,	G	S	,	+	1	2	3	4	5	6	7	SP	SP	o	z	CR	LF
Net	S	T	,	N	T	,	+	.	2	3	.	4	5	6	t	l	.	g		
Tare	S	T	,	T	R	,	+	1	2	.	3	4	5	6	SP	SP	k	g		
Plus OL	O	L	,	G	S	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Minus OL	O	L	,	G	S	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Unstable	U	S	,	G	S	,	+	1	2	3	4	.	5	6	SP	SP	l	b		

Simple format

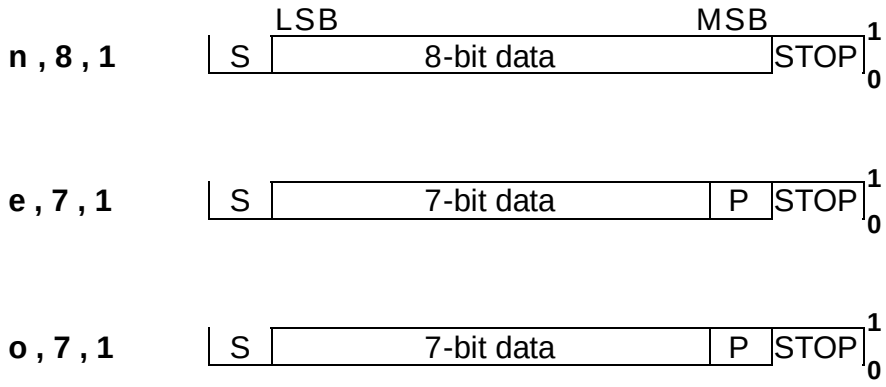
G/N	+	.	2	3	.	4	5	6	CR	LF
G/N	+	1	2	3	4	5	.	6		
G/N	+	1	2	.	3	4	5	6		
Plus OL	+	SP	SP	SP	SP	SP	SP	SP		
Minus OL	-	SP	SP	SP	SP	SP	SP	SP		

Comparison status + Simple format

Byte0	Byte1	Byte2	+/-	.	2	3	.	4	5	6	CR	LF

Byte0 : HI 30H/31H; Byte1 : OK 30H/31H Byte2 : LO 30H/31H

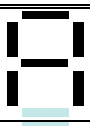
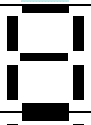
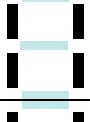
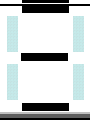
Serial Data Transfer/Receive Format



Note:

S : Start bit
STOP: Stop bit
P : Parity bit

APPENDIX 1
7 SEGMENT DISPLAY CHARACTERS

Digit	7 segments letter	Alphabet	7 segments letter	Alphabet	7 segments letter
0		A		N	
1		B		O	
2		C		P	
3		D		Q	
4		E		R	
5		F		S	
6		G		T	
7		H		U	
8		I		V	
9		J		W	
		K		X	
		L		Y	
		M		Z	

APPENDIX 2 ASCII CODE TABLE

Symbol	ASC II Code	Symbol	ASC II Code	Symbol	ASC II Code
A	41H	a	61H	0	30H
B	42H	b	62H	1	31H
C	43H	c	63H	2	32H
D	44H	d	64H	3	33H
E	45H	e	65H	4	34H
F	46H	f	66H	5	35H
G	47H	g	67H	6	36H
H	48H	h	68H	7	37H
I	49H	i	69H	8	38H
J	4AH	j	6AH	9	39H
K	4BH	k	6BH	↵	0DH
L	4CH	l	6CH		
M	4DH	m	6DH		
N	4EH	n	6EH		
O	4FH	o	6FH		
P	50H	p	70H		
Q	51H	q	71H		
R	52H	r	72H		
S	53H	s	73H		
T	54H	t	74H		
U	55H	u	75H		
V	56H	v	76H		
W	57H	w	77H		
X	58H	x	78H		
Y	59H	y	79H		
Z	5AH	z	7AH		

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