



**USA Measurements**

"We Outmeasure the Competition"



# **US-4011 Indicator**

## **User / Technical Manual**

Contents subject to change without notice

Version 1.0



07/2017

## TABLE OF CONTENTS

<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1. Safety Precautions .....	1
1.2. Specification .....	1
<b>2. INSTALLATION .....</b>	<b>3</b>
2.1. Contents .....	3
2.2. Connection types:.....	3
<b>3. OVERVIEW OF CONTROLS AND FUNCTIONS .....</b>	<b>4</b>
3.1. Indicator Display Character Definitions .....	4
3.2. Indicator Display .....	5
<b>4. Operation Menu Structure .....</b>	<b>7</b>
4.1. Enter Setup Mode .....	7
4.2. Main menu: .....	7
4.3. CONFIG Submenu: .....	7
4.4. USER Submenu: .....	10
4.5. CAL Submenu: .....	14
4.6. MISC Submenu: .....	15
4.7. TEST Submenu: .....	15
<b>5. OPERATION:.....</b>	<b>16</b>
5.1. Normal Weighing Mode .....	16
5.2. Count Weighing Mode: .....	18
5.3. Percent Weighing Mode: .....	20
5.4. BMI Working Mode:.....	21
5.5. HOLD Function: .....	21
5.6. Accumulation: .....	23
5.7. Weight Fine-tune: .....	23
<b>6. Calibration: .....</b>	<b>25</b>
<b>7. MISC and TEST operation .....</b>	<b>28</b>
7.1. Display ADC output Code .....	28
7.2. Display and Calibrate Power Voltage .....	28
7.3. Display and Set Time .....	29
7.4. Display and Set Date .....	29
7.5. Display Firmware Version.....	29
7.6. Display Test.....	29
7.7. Keyboard and Buzzer Test .....	29
7.8. Serial Port1/2 (COM1/2) Receiving Test .....	29
7.9. Serial Port1/2(COM1/2) Transmitting Test.....	30
<b>8. Details about Serial Communication: .....</b>	<b>31</b>
<b>9. Connectors and Jumpers: .....</b>	<b>36</b>
<b>10. Meaning of Some Symbols and Troubleshooting: .....</b>	<b>38</b>

# 1. INTRODUCTION

This manual contains installation, operation and maintenance instructions for the US-4011 indicators. Please read this manual completely before installation and operation.

## 1.1. Safety Precautions




For safe and dependable operation of this equipment, please comply with the following safety precautions:

- Verify that the input voltage range printed on the data label matches the local AC power to be used.
- Make sure that the power cord does not pose a potential obstacle or tripping hazard.
- Use only approved accessories and peripherals.
- Operate the equipment only under ambient conditions specified in these instructions.
- Disconnect the equipment from the power supply when cleaning.
- Do not operate the equipment in hazardous or unstable environments.
- Do not immerse the equipment in water or other liquids.
- Service should only be performed by authorized personnel.

**NOTE:** Some functions maybe disabled by manufacture before shipping, if you need these functions or don't want to use some other functions, please contact with manufacture in advance, because of this, some operations or faceplate maybe are a little bit different, and some description sections may be deleted.

## 1.2. Specification

Model	US-4011
Max Display Range	-999,999 to 999,999
Max Display Resolution	1:100,000 (primary unit) 1:125,000 (second unit)
Max Approved Resolution	1/5000 (NTEP/MC), 1/3000 (OIML)
Division	0.0001,0.0002,0.0005-----10,20,50
Calibration Unit	kg or lb
Weighing Unit	kg, lb, lb:oz, g, oz, pcs, %
Display	6-digit, 7-segment, 1" (25mm) LCD with blue backlight
Accuracy	≤0.01%
Power supply	Alkaline Batteries: 4 x "AA" size cells AC Adapter: 6Vdc/500mA, with central positive  USB
Work current	≤15mA (with backlight off, no load cells) ≤30mA (with backlight on, no load cells) ≤50mA (with backlight on and one 350 load cell)
Functions	Normal weighing, Counting, Percent weighing, Check weighing, BMI, Hold, Accumulation
Zero Range	Programmable zero range
Tare Range	Full capacity
Stabilization Time	<3 seconds

Model	US-4011
Keypad	HOLD/SETUP, PRINT/FUNC, ACC/TOTAL/TOTAL, UNIT/DATA, TARE/PRESET, ZERO/ON/OFF
Operating Temperature	15° to 105°F (-10° to 40°C)
Humidity Range	<90% relative humidity, non-condensing
Load Cell Excitation Voltage	5V DC
Load Cell Drive	-3mV/V to 3mV/V
Recommended actual scale interval (d)	>1uV/ display division
Max Load Cell Excitation	60mA (can power 4-350 ohm bridge)
Signal Connection	4 or 6 lead with sense leads
Analog Circuit characters	<ul style="list-style-type: none"> <li>● 24-bit A/D converter;</li> <li>● Conversion Speed: 10Hz or 80Hz;</li> <li>● Input range: -15mV to +15mV;</li> <li>● Output code: 1mV input between S+ and S- of load cell connector will output about 100,000 raw Counts;</li> <li>● With Hardware low pass filter and 2 programmable digital low pass filters</li> </ul>
Interface	<ul style="list-style-type: none"> <li>● Serial port1: Full-duplex RS232</li> <li>● Serial port2: USB (Virtual RS232)</li> <li>● Optional Serial port3: Bluetooth</li> </ul>
Calibration Method	<ul style="list-style-type: none"> <li>● Software calibration with long-term storage in EEPROM;</li> <li>● Provides smooth curve fit through four points;</li> <li>● Calibration can be done under kg or lb weight unit with 10% -100%FS standard weight</li> </ul>
Real Clock	built-in nonvolatile real time & date
Dimensions (L x W x H)	With bracket: 9.8" x 4.9" x 2.8" (250mm x 125mm x70mm) Without bracket: 7.9" x 3.7" x 1.8" (200mm x 95mm x 45mm)
Net weight	0.95kg

## 2. INSTALLATION

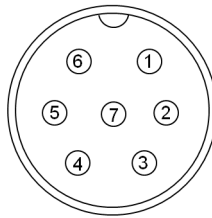
### 2.1. Contents

- Indicator with bracket
- Sealing lead
- AC adapter
- USB communication cable(option)
- User & Technical manual
- Batteries (option)
- RS232 communication cable(option)

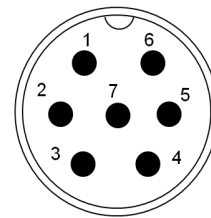
### 2.2. Connection types:

7 pins socket used:

- Pin1: Excitation +
- Pin2: Sense +
- Pin3: Signal +
- Pin4: Excitation –
- Pin5: Sense –
- Pin6: Signal -
- Pin7: Shield







































( 7 holes socket )  
Indicator



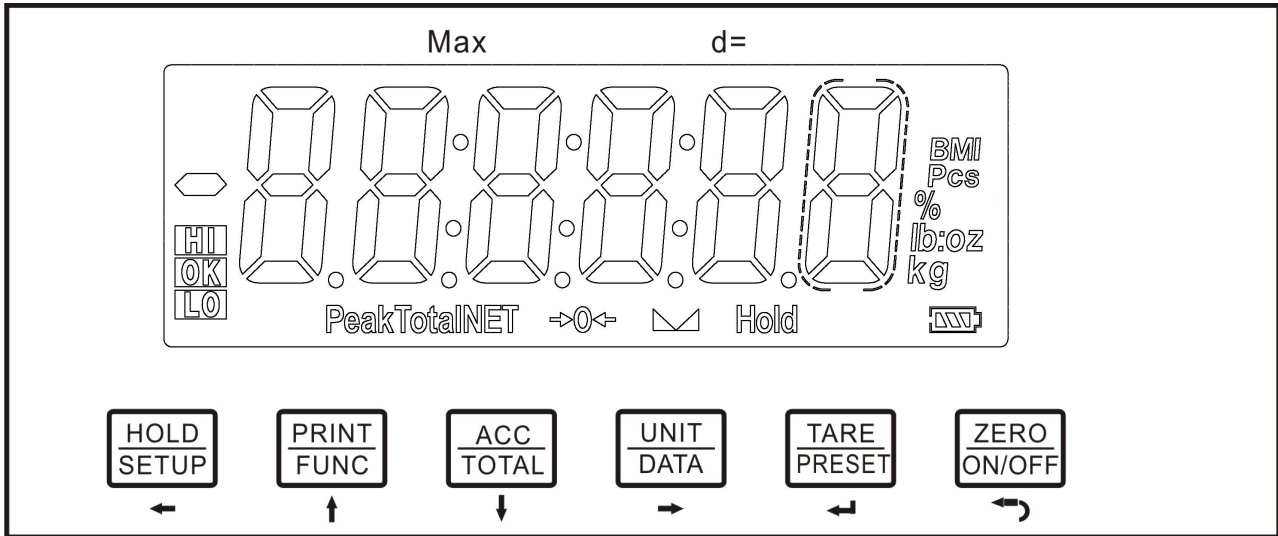
( 7 pins socket )  
Base

### 3. OVERVIEW OF CONTROLS AND FUNCTIONS




#### 3.1. Indicator Display Character Definitions

ASCII	LCD/LED Show	ASCII	LCD/LED Show	ASCII	LCD/LED Show
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	

### 3.2. Indicator Display



#### 3.2.1. Meaning of symbol on faceplate:

-  - Scale is zeroed, gross weight is 0, tare is 0.
-  - Scale is stable.
- **NET** - Display reading is net weight; tare is not 0.
- **Total** - Display data is accumulated total times, weight, pieces, or percentage.
- **Hold** - Scale is in dynamic weighing mode.
  - **Hold** flashes - actual fluctuating weight displayed.
  - **Hold** does not flash - locked weight is displayed.
- **Peak** - Scale is in dynamic weighing mode. Hold type is PEAK-HOLD.
- **BMI** - Scale is working in BMI mode
  
- **lb** - Measure unit is lb or lb:oz
- **oz** - Measure unit is oz or lb:oz
- **kg** - Measure unit is kg
- **g** - Measure unit is g
- **%** - Measure unit is % (in percentage weighing mode).
- **Pcs** - Measure unit is pieces (in counting mode).
-  - Battery level.
  
- **HI** - Data compare (check-weighing) is enabled. Current data (weight, pieces, or percent) is above the specified upper limit.
- **OK** - Data compare is enabled. Current data is between the specified upper and lower limits.
- **LO** - Data compare is enabled. Current data is below the specified lower limit.



### 3.2.2. Summary of Key function

KEY	MODE		DEFINITION
<b>SETUP</b> ←	Weighing, Counting, or Percent mode	<3 seconds	Enters or exits <b>HOLD</b> mode
		>3 seconds	Enters <b>SETUP</b> mode
	Input data mode	<3 seconds	Returns to last sub-menu
		>3 seconds	Inputs decimal point
	Menu selection mode		Returns to last sub-menu
<b>PRINT FUNC</b> ↑	Weighing, Counting, or Percent mode	<3 seconds	Sends output data via the serial port
		>3 seconds	Selects mode: Weighing, Counting, or Percent
	Input data mode		Increases the digit in the flashing data entry position by one
	Menu selection mode		Returns to last item of current sub-menu
<b>ACC TOTAL</b> ↓	Weighing, Counting, or Percent mode	<3 seconds	Adds accumulation values to memory; displays instances and totals
		>3 seconds	Displays accumulation instances and totals
	Input data mode		Decreases the digit in the flashing data entry position by 1
	Menu selection mode		Goes to next item of current sub-menu
<b>UNIT DATA</b> →	Weighing mode	<3 seconds	Changes weighing unit of measure
	Counting or Percent mode	<3 seconds	Enters the submenu to input piece weight for counting or to enter reference weight for percent-weighing
	Weighing, Counting, or Percent mode	>3 seconds	Enters the submenu to input the comparative data range for check-weighing
	Time or Date mode	>3 seconds	Enters time or date setting mode
	Input data mode		Shifts the flashing data entry position from right to left
	Display ADC code		Select displaying code from no-filter, filter1, filter2
	Menu selection mode		Goes to next item of current sub-menu
<b>TARE PRESET</b> ↓	Weighing, Counting, or Percent mode	<3 seconds	Tare the weight
		>3 seconds	Enters pre-determined tare input mode
	Input data mode		Confirms the input data and forwards to next step
	Menu selection mode		Confirms the input data and forwards to next step
<b>ZERO ON/OFF</b> ↵	Power Off		Powers on
	Weighing, Counting, or Percent mode	<3 seconds	Zeros the platform weight
		>3 seconds	Powers off
	Input data mode		Ignores the modification
	Menu selection mode		Exits from current working mode

**Note:** Normally, the second function of one key need pressing it down more than 3s.

## 4. Operation Menu Structure

### 4.1. Enter Setup Mode

- 4.1.1. If need to set configuration parameters, set user parameters, calibrate the scale, set current date or time, test some hardware... It's need to long press **HOLD/SETUP** key to enter setup mode
- 4.1.2. After Entering Setup Mode, the main menu item **CONFIG** will be shown first.
- 4.1.3. In Setup mode, use **← ↑ ↓ → ↵ ↶** keys to select wanted submenu item, and select wanted choice, set wanted number, confirm and save data, or exit this mode.

### 4.2. Main menu:



### 4.3. CONFIG Submenu:

CONFIG					
SubMenu1	SubMenu2	Option	Default	Remark	Final set
<b>CFG.ON</b> <b>CFG.OFF</b>			<b>ON</b>	Seal switch is on or off	
<b>RESET</b>		<b>NO</b> <b>YES</b>	<b>NO</b>	Reset configure parameters to factory setting	
<b>REGULA</b>		<b>NONE</b> <b>USA</b> <b>CANADA</b> <b>EUROPE</b>	<b>NONE</b>	Select the standard that the scale will comply with: <b>USA,CANADA, EUROPE</b>	
<b>PRIM.N</b>		<b>100-100000</b>	<b>3000</b>	The division number under primary unit, if (REGULAR) ≠ none, the max is 10,000	
<b>PRIM.D</b>		<b>0.0001</b> <b>0.0002</b> <b>0.0005</b> <b>0.001</b> <b>0.002</b> <b>0.005</b> <b>0.01</b> <b>0.02</b> <b>0.05</b> <b>0.1</b> <b>0.2</b> <b>0.5</b> <b>1</b> <b>2</b> <b>5</b> <b>10</b> <b>20</b> <b>50</b>	<b>1</b>	The division value under primary unit; the division value under second unit is automatically determined by indicator according to the division value under primary unit.	
<b>PRIM.Ut</b>		<b>KG</b> <b>LB</b>	<b>KG</b>	Select the primary unit from kg or lb; defaulted calibration standard weight unit is the primary unit.	<b>KG</b>

SubMenu1	SubMenu2	Option	Default	Remark	Final set		
SECND.N		100-125000	3000	The division number under second unit, the max is 1.25*(PRIM.N). if(REGULAR)≠none, the max is 10,000			
10N.DSP		NO YES	NO	Display weight at 10 times division number under primary unit. if (REGULAR)=none, no this item	NO		
MOTION		1-255	4	Check motion window: 1-255=±0.25d *(1-255), if (REGULAR)≠none, the max is 12	4		
OVER.LD		0-100	0	Over load display limitation: 0=FS+9d; 1-100=101%FS -200%FS, if (REGULAR)≠none, the max is 10	0		
AD.FROM		ADC COM3	ADC	Data of ADC comes from: ADC=local A/D chip on PCB; COM3=COM3 interface;	ADC		
AD.H.SPD		NO YES	NO	Speed of A/D convert: NO=10Hz; YES=80Hz; if AD.FROM=COM3,this item will not be shown	NO		
UNITS	KG	YES	YES	Units that can be used by UNIT key select: YES=enable this unit to be used; NO=disable this unit to be used;  Refer to table5-1 and table5-2. For legal-for-trade application, lb:oz is not allowed.	YES		
		NO			YES		
	LB	YES	NO		NO		
		NO	NO		NO		
	LB OZ	YES	NO		NO		
		NO	NO		NO		
G	YES	NO	NO				
	NO	NO	NO				
ZRO.PNT	IZSM	0-100	10	Initial zero(power on zero) point range: 0=no limitation; 1-100= (calibration zero point) ±1%FS ~(calibration zero point) ±100%FS, If (REGULAR)≠none, the max is 10  Choose which weight as current initial zero point when current weight is in IZSM range: WEIGHT= current weight ; CAL.ZRO= calibration zero; LAST.Z.T=switch-off zero and tare If (REGULAR)≠none, the value is fixed on WEIGHT  Choose which weight as current initial zero point when current weight is over IZSM range: DSP.OVR=display initial zero is over; WEIGHT= current weight; CAL.ZRO= calibration zero; LAST.Z.T=switch-off zero and tare If (REGULAR)≠none, the value is fixed on DSP.OVR	10		
					IN.IZSM	WEIGHT	N.A
							CAL.ZRO
	LAST.Z.T	N.A					
	OV.IZSM	DSP.OVR	WEIGHT		DSP.OVR	N.A	
						CAL.ZRO	N.A
LAST.Z.T				N.A			
LAST.Z.T				N.A			

	<b>SAZSM</b>	<b>0-100</b>	<b>2</b>	Zero key range: 0=no limitation; 1-100= (initial zero point) $\pm 1\%FS \sim$ (initial zero point) $\pm 100\%FS$ , if (REGULAR) $\neq$ none, the max is 2	<b>2</b>
SubMenu1	SubMenu2	Option	Default	Remark	Final set
<b>ZRO.PNT</b>	<b>AZSM</b>	<b>0-100</b>	<b>8</b>	Zero tracking window: 0=0d, no tracking; 1-100= $\pm(0.2+0.05*(1-100))d /s$ , if (REGULAR) $\neq$ none, the max is 10	<b>8</b>
<b>FILTER</b>	<b>FLT1.TH</b>	<b>0-255</b>	<b>40</b>	Enter digital filter1 threshold: 0=no filter1; 1-254=filter1 be used only when vibration in $\pm 0.25d*(1-254)$ ; 255= filter1 be always used	<b>40</b>
	<b>FLT1.ST</b>	<b>1-64</b>	<b>8</b>	Digital filter1 intensity: 1-64 ADC's data will be averaged	<b>8</b>
	<b>FLT2.TH</b>	<b>0-255</b>	<b>8</b>	Enter digital filter2 threshold: 0=no filter2; 1-254=filter2 be used only when vibration in $\pm 0.25d*(1-254)$ ; 255= filter2 be always used	<b>8</b>
	<b>FLT2.ST</b>	<b>0-255</b>	<b>240</b>	Digital filter2 intensity: 0-255=weak to strong	<b>240</b>
<b>FUNC</b>	<b>HOLD</b>	<b>YES</b>	<b>YES</b>	Yes/No=enable/disable hold function;	<b>no</b>
		<b>NO</b>			
	<b>COUNT</b>	<b>YES</b>	<b>YES</b>	Yes/No=enable/disable counting function.	<b>no</b>
		<b>NO</b>			
	<b>PERCNT</b>	<b>NO</b>	<b>100.0%</b>	Percent weighing function is enable or disable: NO=disable; 100%=enable and display format is 100% ; 100.0%=enable and display format is 100.0%; 100.00%=enable and display format is 100.00%;	<b>100.0%</b>
		<b>100%</b>			
		<b>100.0%</b>			
		<b>100.00%</b>			
	<b>BMI</b>	<b>YES</b>	<b>NO</b>	Yes/No=enable/disable BMI function,	<b>NO</b>
		<b>NO</b>			
<b>COMPAR</b>	<b>YES</b>	<b>YES</b>	Yes/No=enable/disable data comparison function;	<b>YES</b>	
	<b>NO</b>				
<b>ACCUMU</b>	<b>NO</b>	<b>MANUAL</b>	Accumulation Mode selection: NO=no accumulation function; MANUAL=add up current number to accumulation memory after TATOL key is pressed; AUTO=automatically add up current number to accumulation memory after scale is stable and weight is over (NLD.RNG)	<b>MANUAL</b>	
	<b>MANUAL</b>				
	<b>AUTO</b>				
<b>GEO.CAL</b>	<b>YES</b>	<b>YES</b>	Yes/No=enable/disable Geographical Adjustment Factor	<b>YES</b>	
	<b>NO</b>				
<b>WT.ADJ</b>	<b>YES</b>	<b>N.A</b>	Yes/No=enable/disable weight fine-tuning using keypad in weighing mode, if (REGULAR) $\neq$ none, this item is N.A.	<b>N.A</b>	
	<b>NO</b>				

\* The setting will be limited by choice of REGUALA

#### 4.4. USER Submenu:

USER					
SubMenu1	SubMenu2	Option	Default	Remark	Final set
RESET	NO	NO	NO	Reset user parameters to factory setting	NO
	YES				
COM1	BAUD.RT	1200	9600	Selection of com1's baud rate	9600
		2400			
		4800			
		9600			
		19200			
		38400			
	BYT.FMT	8N1	8N1	Selection of com1's byte format: 8N1=8 data bits, No parity check bit, 1 stop bit; 7O1=7 data bits, 1 Odd parity check bit, 1 stop bit; 7E1=7 data bits, 1 Even parity check bit, 1 stop bit; 7O2=7 data bits, 1 Odd parity check bit, 2 stop bit; 7E2=7 data bits, 1 Even parity check bit, 2 stop bit;	8N1
		7O1			
		7E1			
		7O2			
		7E2			
	OUT.MOD	NONE	PRTCMD	Selection com1 output mode: NONE =No communication; CONT=continuously output; PRINT=output after PRINT key pressed; CMD=output after a request command is received; PRT.CMD= output after PRINT key pressed or request command received; STABLE=output after scale is stable; Note: use PRINT or CMD to output data, the scale must be stable.	CONT
		CONT			
		PRINT			
		CMD			
		PRTCMD			
STABLE					
LAYOUT	MULTPL	MULTPL	Com1 output content and format set: MULTPL= the following selected item in OUT1 will be output use defined format; SINGLE= only displayed content and current status will be output, it's compatible with NCI-SCP01; EH-SCP= Command –response mode; SCP-12= only displayed content and current status will be output, it's compatible with NCI-SCP12(NCI3835);	SINGLE	
	SINGLE				
	EH-SCP				
	SCP-12				
OUT1	SCAL.ID	YES	NO	Yes/No=enable/disable output scale's ID number, Prompt is "SCALE ID"	NO
		NO			
	GROSS	YES	NO	Yes/No=enable/disable output gross weight. Prompt is "GROSS"	NO
		NO			
	TARE	YES	NO	Yes/No=enable/disable output tare weight. Prompt is "TARE"	NO
		NO			
	NET	YES	YES	Yes/No=enable/disable output net weight. Prompt is "NET"	YES
		NO			
	PERCNT	YES	NO	Yes/No=enable/disable output weight percentage. Prompt is "PERCENTAGE"	NO
		NO			
	UPCTWT	YES	NO	Yes/No=enable/disable output weight of 1% percentage. Prompt is "1% REF WT"	NO
		NO			
COUNT	YES	NO	Yes/No=enable/disable output counts. Prompt is "QUANTITY"	NO	
	NO				

SubMenu1	SubMenu2	Option	Default	Remark	Final set
OUT1	PCWT	YES	NO	Yes/No=enable/disable output piece weight. Prompt is "PIECE WT"	NO
		NO			
	BMI	YES	NO	Yes/No=enable/disable output height and BMI. Prompt is "HEIGHT" and "BMI"	NO
		NO			
	ACCUMU	YES	NO	Yes/No=enable/disable output accumulation times and total. Prompt is "ACC. N" and "TOTAL"	NO
		NO			
	DATE	YES	NO	Yes/No=enable/disable output date. Prompt is "DATE"	NO
		NO			
	TIME	YES	NO	Yes/No=enable/disable output time. Prompt is "TIME"	NO
		NO			
	AD.CODE	YES	NO	Yes/No=enable/disable output ADC's code. Prompt is "A/D CODE"	NO
		NO			
BAT.VOL	YES	NO	Yes/No=enable/disable output voltage of battery. Prompt is "VOLTAGE"	NO	
	NO				
STATUS	YES	NO	Yes/No=enable/disable output scale's status. Prompt is "STATUS"	NO	
	NO				
B.LINE	NONE	LINE1	How many blank lines after strings output: NONE=no blank line; LINE1/2/3/4=there're 1, 2,3 or 4 blank lines after strings, used for paper feed forward 1/2/3/4 lines.	LINE1	
	LINE1				
	LINE2				
	LINE3				
	LINE4				
COM2	BAUD.RT	1200	9600	selection of com2's baud rate	4800
		2400			
		4800			
		9600			
		19200			
		38400			
BYT.FMT	8N1	8N1	selection of com2's byte format: 8N1=8 data bits, No parity check bit, 1 stop bit; 7O1=7 data bits, 1 Odd parity check bit, 1 stop bit; 7E1=7 data bits, 1 Even parity check bit, 1 stop bit; 7O2=7 data bits, 1 Odd parity check bit, 1 stop bit; 7E2=7 data bits, 1 Even parity check bit, 2 stop bit;	7E1	
	7O1				
	7E1				
	7O2				
	7E2				
OUT.MOD	NONE	PRT.CMD	Selection com2 output mode: NONE = No communication ; CONT=continuously output; PRINT=output after PRINT key pressed; CMD=output after a request command is received; PRT.CMD= output after PRINT key pressed or request command received; STABLE=output after scale is stable; Note: use PRINT or CMD to output data, the scale must be stable.	PRT.CMD	
	CONT				
	PRINT				
	CMD				
	PRT.CMD				
	STABLE				
LAYOUT	MULTPL	MULTPL	Com2 output content and format set: MULTPL= the following selected item in OUT2 will be output use defined format; SINGLE= only displayed content and current status will be output, it's compatible with NCI-SCP01; EH-SCP= Command –response mode; SCP-12= only displayed content and current status will be output, it's compatible with NCI-SCP12 (NCI3835) ;	SCP-12	
	SINGLE				
	EH-SCP				
	SCP-12				

SubMenu1	SubMenu2	Option	Default	Remark	Final set
OUT2	SCAL.ID	YES	NO	Yes/No=enable/disable output scale's ID number, Prompt is "SCALE ID"	NO
		NO			
	GROSS	YES	NO	Yes/No=enable/disable output gross weight. Prompt is "GROSS"	NO
		NO			
	TARE	YES	NO	Yes/No=enable/disable output tare weight. Prompt is "TARE"	NO
		NO			
	NET	YES	YES	Yes/No=enable/disable output net weight. Prompt is "NET"	YES
		NO			
	PERCNT	YES	NO	Yes/No=enable/disable output weight percentage. Prompt is "PERCENTAGE"	NO
		NO			
	UPCTW	YES	NO	Yes/No=enable/disable output weight of 1% percentage. Prompt is "1% REF WT"	NO
		NO			
	COUNT	YES	NO	Yes/No=enable/disable output counts. Prompt is "QUANTITY"	NO
		NO			
	PWT	YES	NO	Yes/No=enable/disable output piece weight. Prompt is "PIECE WT"	NO
		NO			
	BMI	YES	NO	Yes/No=enable/disable output height and BMI. Prompt is "HEIGHT" and "BMI"	NO
		NO			
	ACCUMU	YES	NO	Yes/No=enable/disable output accumulation times and total. Prompt is "ACC. N" and "TOTAL"	NO
		NO			
DATE	YES	NO	Yes/No=enable/disable output date. Prompt is "DATE"	NO	
	NO				
TIME	YES	NO	Yes/No=enable/disable output time. Prompt is "TIME"	NO	
	NO				
AD.CODE	YES	NO	Yes/No=enable/disable output ADC's code. Prompt is "A/D CODE"	NO	
	NO				
BAT.VOL	YES	NO	Yes/No=enable/disable output voltage of battery. Prompt is "VOLTAGE"	NO	
	NO				
STATUS	YES	NO	Yes/No=enable/disable output scale's status. Prompt is "STATUS"	NO	
	NO				
B.LINE	NONE	LINE1	How many blank lines after strings output: NONE=no blank line,; LINE1/2/3/4=there're 1, 2,3 or 4 blank lines after strings, used for paper feed forward 1/2/3/4 lines.	LINE1	
	LINE1				
	LINE2				
	LINE3				
	LINE4				
KEY	YES	YES	Yes/No=enable/disable beep after a key pressed down	YES	
	NO				
BEEP	COMPAR	NONE	IN.LMT	NONE=not beep; L.Low=beep when lower than low limitation; IN.LMT=beep when in range of low and high limitation; O.HIGH=beep when over high limitation; OUT.LMT=beep when lower than low limitation or higher than high limitation	IN.LMT
		L.LOW			
		IN.LMT			
		O.HIGH			
		OUT.LMT			

SubMenu1	SubMenu2	Option	Default	Remark	Final set
HOLD	HLD.MOD	NONE	AUTO	HOLD Mode: NONE=no hold function ; PS.PEAK=Positive Peak number Hold mode: scale will display and refresh the positive peak value from last zero setting; NG.PEAK=Negative PEAK number Hold mode. it's Similar with PS.PEAK, but negative number is used; TOGGLE=Press HOLD key to enter HOLD mode, if weight is over (NLD.RNG) and stable, the data will be frozen until press HOLD key again to exit; AVERAG=Average HOLD mode: in this mode, if weight is over (NLD.RNG), and its variation is less than (HLD.RNG), the average data in (AVG.TIM) will be frozen. Press HOLD key or (HLD.TIM) time elapsed to exit this mode; AUTO=Auto hold mode: it's similar with AVERAG mode, but if the one held load is removed, and a new load that is over (NLD.RNG) put on scale, the new load will be automatically frozen.	AUTO
		PS.PEAK			
		NG.PEAK			
		TOGGLE			
		AVERAG			
		AUTO			
AVG.TIM	1-60	3	average data time for HOLD mode:1-60s	3	
STB.TIM	3*AVG.TI M - 255	9	Waiting time for scale stable in HOLD mode: 3*(AVG.TIM) – 255s	9	
HLD.TIM	0- 65535	0	Data HOLD time: 0=data will be frozen until HOLD key pressed; 1-65535=data frozen time is 1-65535s, after the time elapses, scale will exit HOLD mode	0	
HLD.RNG	0-255	5	Vibration range of data that can be averaged and held in HOLD mode: 0=any data can be averaged; 1-255= only the data which vibration is in 1-255d can be averaged and held;	5	
OTHER	NLD.RNG	1-255	10	1-255=the range of weight is 1-255d; when current weight is less than this value, the scale can be regarded as empty , or the load on scale is removed. It must be bigger than (CONFI.MOTION).	10
	CMD.SRC	NONE	COM1.2	Source of the executed command selection: NONE=no any command will be executed; COM.1/.2= command from COM1/2 will be executed; COM.1.2= command from COM1,COM2 will be executed;	COM1.2
		COM.1			
		COM.2			
		COM.1.2			
A.OFF.T	0-255	5	Auto off time: 0=not auto power off; 1-255=auto power off after 1-255 minutes, in this period, no operation or no weight changing	5	
OFF.MD	OFF	OFF	Auto off mode: OFF=turn off instrument; DSP.TIM= display time; AC.TIME=turn off when only battery is used, display time when AC adaptor is used. If set to DSP.TM or AC.TIME, will continuously output time.	OFF	
	DSP.TIM				
	AC.TIME				



SubMenu1	SubMenu2	Option	Default	Remark	Final set
OTHER	LCD.BLT	0-255	30	LCD backlight set: 0=always off; 1=always on; 2=press down <b>ZERO/ON/OFF</b> + <b>UNIT/DATA</b> keys together more than 3s to turn on or turn off; 3-255=auto on when key operation or weight changing, auto off after 3-255s elapsed.	30
	LCD.CST	CST1-8	CST8	LCD contraction level selection	CST8
	SCAL.ID	000000-999999	123456	scale's ID number: 000000-999999	123456

#### 4.5. CAL Submenu:

CAL			
SUBMENU1	SUBMENU2	OPTION	REMARK
CAL.ON	CAL.OFF		Seal switch is on or off
ZERO			Only do zero point calibration, then go to <b>CAL.END</b> to end
LINE	CAL.P0		Linear calibration point0: do zero point calibration, this point can't be omitted.
	CAL.P1		Linear calibration point1: do first weight point calibration, this point can't be omitted and standard weight must be over 10%FS.
	END.Y	YES	End calibration?
		NO	YES=go to <b>CAL.END</b> to end; NO=go to do next point calibration
	CAL.P2		Linear calibration point2: do second weight point calibration, standard weight must be over 10%FS and be larger than it in <b>CAL.P1</b> , this point can be omitted.
	END.Y	YES	End calibration?
NO		YES=go to <b>CAL.END</b> to end; NO=go to do next point calibration	
GEO	CODE	00-70	Selection of Geographical Position Code 00-70
	GRAVT	9.76183 -9.99999	Input Gravity of User Location by keyboard
INPUT			Input or view calibration parameters value
CAL.END			Calibration end and restart

#### NOTE:

The details can be referred in section "6.CALIBRATION".

#### 4.6. MISC Submenu:

MISC	
SUBMENU1	REMARK
<b>CODE</b>	Display ADC's code, this code can be after no-filter, filter1 or filter2; details refer to section7
<b>VOL</b>	Display voltage; calibrate voltage; details refer to section7
<b>DATE</b>	Display date and set date; details refer to section7
<b>TIME</b>	Display time and set time; details refer to section7
<b>VER</b>	Display firmware version; details refer to section7

#### 4.7. TEST Submenu:

TEST	
SUBMENU1	REMARK
<b>DSP.TST</b>	Test LCD or LED; details refer to section7
<b>COM1.RD</b>	Test COM1 receiving; details refer to section7
<b>COM1.TD</b>	Test COM1 transmitting; details refer to section7
<b>COM2.RD</b>	Test COM2 receiving; details refer to section7
<b>COM2.TD</b>	Test COM2 transmitting; details refer to section7
<b>KEY.TST</b>	Test keys and buzzer; details refer to section7

## 5. OPERATION:

### 5.1. Normal Weighing Mode

**NOTE:** During key operation, please note to use the second function of one key need pressing the key over 3 seconds;

To input data or select menu, use ← ↑ ↓ → ↶ ↷ keys to process.

#### 5.1.1. Power on/off indicator:

**Power on:** when indicator is off, short press **ZERO/ON/OFF** key to turn on;

**Power off:** when indicator is on, long press **ZERO/ON/OFF** key to turn off.

#### 5.1.2. ZERO:

When the reading is stable and within the zero range, press **ZERO/ON/OFF** key to set new zero point. Please refer the ZERO and TARE limitations in 5.1.6 section.

#### 5.1.3. TARE:

When the gross weight is big than zero, and the scale is stable, press **TARE/PRESET** key, the indicator will show net weight of zero, the **NET** annunciator will be lighted. Please refer the ZERO and TARE limitations in 5.1.6 section.

#### 5.1.4. Preset tare weight:

Long press **TARE/PRESET** key, Pr.Tare will show, and the "TARE" annunciator flashes, it means it is in preset TARE weight mode, use ← ↑ ↓ → ↶ keys to input tare weight, and its unit is same as the unit that it used before, there's no limitation to preset tare weight, but it should bigger than zero. After input a tare weight, **NET** annunciator will be lighted.

**Note:** this indicator can only save one tare weight; the new tare weight will automatically replace the old one. Also, please refer the ZERO and TARE limitations in 5.1.6 section

#### 5.1.5. Clear tare weight:

Remove any weight on platform, wait till the scale is stable, short press **TARE/PRESET** key, please refer the ZERO and TARE limitations in 5.9section.

#### 5.1.6. Limitation to ZERO and TARE operation under different conditions:

Standard	Weight on platform	Data in TARE memory unit	Key function	
			Tare key	Zero key
USA	≤0	no	No action	Zero
		yes	Clear the tared weight	
	>0	No	Tare	
		Yes		
Canada	≤0	no	No action	Zero
		Yes	Clear the tared weight	
	>0	No	Tare	
		Yes	No action	
Europe	≤0	No	No action	Zero
		Yes	Clear the tared weight	zero and clear the tared weight
	>0	No	Tare	zero
		Yes		zero and clear the tared weight
None (same with Europe)	≤0	No	No action	Zero
		yes	Clear the tared weight	zero and clear the tared weight
	>0	No	Tare	zero
		yes		zero and clear the tared weight

**NOTE:** (1) ZERO only be active when scale is stable and weight is in SAZSM setting range.

(2) TARE only be active when scale is stable

- (3) Clear TARE weight or ZERO scale, make indicator to enter displaying GROSS mode
- (4) TARE weight, make indicator to enter displaying NET mode

### 5.1.7. Change Weight UNIT:

Short press **UNIT/DATA** key to select kg, lb, lb:oz, g, oz unit, note: under some condition, g and lb:oz is not available.

Please refer the following tables:

Table1: use Kg as primary unit:

Calibration division value	Display division value in different weight unit that can be used				
	kg	g	lb	oz	lb:oz
<i>0.0001kg</i>	0.0001kg	0.1g	0.0002lb	0.005oz	Not available
<i>0.001kg</i>	0.001kg	1g	0.002lb	0.05oz	Not available
<i>0.01kg</i>	0.01kg	10g	0.02lb	0.5oz	0.5oz
<i>0.1kg</i>	0.1kg	100g	0.2lb	5oz	Not available
<i>1kg</i>	1kg	Not available	2lb	50oz	Not available
<i>10kg</i>	10kg	Not available	20 lb	Not available	Not available
<i>0.0002kg</i>	0.0002kg	0.2g	0.0005 lb	0.01oz	Not available
<i>0.002kg</i>	0.002kg	2g	0.005 lb	0.1oz	0.1 oz
<i>0.02kg</i>	0.02kg	20g	0.05 lb	1oz	1 oz
<i>0.2kg</i>	0.2kg	200g	0.5 lb	10oz	Not available
<i>2kg</i>	2kg	Not available	5 lb	Not available	Not available
<i>20kg</i>	20kg	Not available	50 lb	Not available	Not available
<i>0.0005kg</i>	0.0005kg	0.5g	0.001 lb	0.02oz	Not available
<i>0.005kg</i>	0.005kg	5g	0.01 lb	0.2oz	0.2 oz
<i>0.05kg</i>	0.05kg	50g	0.1 lb	2oz	2oz
<i>0.5kg</i>	0.5kg	500g	1 lb	20oz	Not available
<i>5kg</i>	5kg	Not available	10 lb	Not available	Not available
<i>50kg</i>	50kg	Not available	Not available	Not available	Not available

Table2: use LB as primary unit:

Calibration division value	Display division value in different weight unit that can be used				
	kg	g	lb	oz	lb:oz
<i>0.0001lb</i>	Not available	Not available	0.0001lb	0.002oz	Not available
<i>0.001 lb</i>	0.0005 kg	0.5g	0.001 lb	0.02oz	Not available
<i>0.01 lb</i>	0.005 kg	5g	0.01 lb	0.2oz	0.2 oz
<i>0.1 lb</i>	0.05 kg	50g	0.1 lb	2oz	2 oz
<i>1 lb</i>	0.5 kg	500g	1 lb	20oz	Not available
<i>10 lb</i>	5 kg	Not available	10 lb	Not available	Not available
<i>0.0002 lb</i>	0.0001 kg	0.1g	0.0002 lb	0.005 oz	Not available
<i>0.002 lb</i>	0.001 kg	1g	0.002 lb	0.05 oz	Not available
<i>0.02 lb</i>	0.01 kg	10g	0.02 lb	0.5 oz	0.5 oz
<i>0.2 lb</i>	0.1 kg	100g	0.2 lb	5 oz	Not available
<i>2 lb</i>	1 kg	Not available	2 lb	50 oz	Not available
<i>20 lb</i>	10 kg	Not available	20 lb	Not available	Not available
<i>0.0005 lb</i>	0.0002 kg	0.2g	0.0005 lb	0.01 oz	Not available
<i>0.005 lb</i>	0.002 kg	2g	0.005 lb	0.1 oz	0.1 oz
<i>0.05 lb</i>	0.02 kg	20g	0.05 lb	1 oz	1 oz
<i>0.5 lb</i>	0.2 kg	200g	0.5 lb	10 oz	Not available
<i>5 lb</i>	2 kg	Not available	5 lb	Not available	Not available
<i>50 lb</i>	20 kg	Not available	50 lb	Not available	Not available

### 5.1.8. Check Weight in weighing mode:

- (1) To make weight compare function be available, **CONFIG-FUNC-COMPAR** item should set to **YES**, and high and low limitation of weight should be set correctly according to following steps:
  - (2) In weighing mode, Press down **UNIT/DATA** key more than 3s to input compare data of high and low. When **UNIT.KG** is shown, use **PRINT/FUNC** or **ACC/TOTAL** key to select the unit of weight, use **TARE/PRESET** key to confirm and go to next. Press **ZERO/ON/OFF** key to exit and back to weighing mode.
  - (3) After **HIGH** being shown, **000000** will be displayed, use **↑ ↓ →** keys to input high weight number and press **TARE/PRESET** key to confirm. Annunciator of **Hi** will be shown in this step. Press **ZERO/ON/OFF** key to exit and back to weighing mode.
  - (4) After **Low** being shown, **000000** will be displayed, use **↑ ↓ →** keys to input low weight number and press **TARE/PRESET** key to confirm. Annunciator of **Lo** will be shown in this step. Press **ZERO/ON/OFF** key to exit and back to weighing mode.
- NOTE:** If High number is 0 or is equal or less than low number, the comparison will be disabled, and the input data has no limitation.
- (5) After a reasonable limitation is set and compare is be active, one of annunciators **HI, OK, LO** will be lighted, and the beeper will sound according to its setting in **USER-BEEP**.

### 5.1.9. Accumulation:

Press **ACC/TOTAL** key to add displayed number to accumulation memories, and accumulation times will also add up 1. And then to display accumulation result.

### 5.1.10. Output data:

When reading is stable, press **PRINT/FUNC** key.

### 5.1.11. Change working mode:

Long press **PRINT/FUNC** key, then use **↑ ↓ ←** keys to choose and confirm to enter into weighing mode, counting mode, percentage working mode or BMI working mode.

### 5.1.12. Enter to or exit from HOLD mode:

Press **SETUP** key.

### 5.1.13. Enter Setup Mode:

- (1) If need to set configuration parameters, set user parameters, calibrate the scale, set current date or time, test some hardware... It's need to long press **SETUP** key to enter setup mode
- (2) After Entering Setup Mode, the main menu item **CONFIG** will be shown first.
- (3) In Setup mode, use **← ↑ ↓ → ← ↶** keys to select wanted submenu and wanted menu item, select wanted choice, set wanted number, confirm and save data, or exit this mode. Please refer the "4.Operation Menu Structure".

## 5.2. Count Weighing Mode:

- 5.2.1. In this mode, scale will weigh goods weight on scale, calculate and display its counts after the piece weight of goods is obtained.
- 5.2.2. To make counting function be available, **CONFIG-FUNC-COUNT** item should be set to **YES** in **CONFIG** menu.
- 5.2.3. To enter counting working mode, in normal weighing or percent-weighing mode, long press **PRINT/FUNC** key, **WEIGH** or **PERCEN** or **BMI** will be shown, use **ACC/TOTAL** or **PRINT/FUNC** key to select **COUNT**, then press **TARE/PRESET** key to confirm go to parts counting mode. Before new piece weight is got, the last piece weight will be used.
- 5.2.4. In counting working mode, the function of **ZERO, ON/OFF, TARE, PRESET TARE, ACC, PRINT, HOLD, SETUP** are

available.

5.2.5. There're two ways to obtain the piece weight:

- (1) Input piece weight directly, refer operations of step 5.2.5.1
- (2) Weigh samples weight which quantity is known, refer operation of step 5.2.5.2

5.2.5.1. Input piece weight from keypad: in counting mode, press **UNIT/DATA** key, when **InP.PWt** is shown, press **TARE/PRESET** key to enter input piece weight mode.

- a. When **UNIT.KG** is shown, use **PRINT/FUNC** or **ACC/TOTAL** key to select the unit of piece weight, use **TARE/PRESET** key to confirm and go to next. Press **ZERO/ON/OFF** key to exit getting piece weight mode and back to counting mode.
- b. When last stored piece weight is shown, use **↑ ↓ →** keys to input new piece weight, press **SETUP** key more than 3s to input decimal point. Press **TARE/PRESET** key to confirm and save it, then go back to counting mode. If the input piece weight is less than 0.5d, the indicator will display **PWt.Er** and go back to counting mode.

5.2.5.2 Obtain piece weight by weighing samples weight which quantity is known: in counting mode, press **UNIT/DATA** key, When **InP.PWt** is shown, use **PRINT/FUNC** or **ACC/TOTAL** key to select **SPL.PWt**, press **TARE/PRESET** key to weigh samples (which quantity is known) weight, calculate piece weight. Press **ZERO/ON/OFF** key to exit getting piece weight mode and back to counting mode.

- a. When **SPL.Lo** is shown, move away any sample on scale and press **TARE/PRESET** key to confirm, before scale is stable, **SPL.Lo** will be flashed. After it is stable, it will go to next step. Press **ZERO/ON/OFF** key to exit getting piece weight mode and back to counting mode.
- b. When **SPL.Hi** is shown, put samples (its quantity is known) onto the scale, Press **TARE/PRESET** key to confirm reading weight. Before scale is stable, **SPL.Hi** will be flashed. After it is stable, it will go to next step. Press **ZERO/ON/OFF** key to exit getting piece weight mode and back to counting mode.
- c. After **INP.PCS** being shown, **000001** will be displayed, use **↑ ↓ →** keys to input the quantity of samples and Press **TARE/PRESET** key to confirm. If the calculated piece weight is less than 0.5d, the indicator will display **PWt.Er** and go back to counting mode, otherwise, after the reasonable piece weight being got, the scale will go back to counting mode. The gotten piece weight can be saved after the power off and can be used next time.

5.2.6. Check Counts (counts compare) in Counting mode:

- (1) To make counts compare function be available, **CONFIG-FUNC-COMPAR** item should set to **YES**, and high and low limitation of pieces should be set correctly according to following steps:
- (2) In counting working mode, Press down **UNIT/DATA** key more than 3s to input compare data of high and low.
- (3) After **HIGH** being shown, last upper limitation will be displayed, use **↑ ↓ →** keys to input high quantity number and press **TARE/PRESET** key to confirm. Annunciator of **Hi** will be shown in this step. Press **ZERO/ON/OFF** key to exit getting piece weight mode and back to counting mode.
- (4) After **Low** being shown, last lower limitation will be displayed, use **↑ ↓ →** keys to input low quantity number and press **TARE/PRESET** key to confirm. Annunciator of **Lo** will be shown in this step. Press **ZERO/ON/OFF** key to exit getting piece weight mode and back to counting mode.

**NOTE:** If High number is 0 or is equal or less than low number, the comparison will be disabled.

- (5) After a reasonable limitation is set and compare is be active, one of annunciators **HI**, **OK**, **LO** will be lighted, and the beeper will sound according to its setting in **USER-BEEP**.

### 5.3. Percent Weighing Mode:

- 5.3.1. In this mode, scale will weigh goods weight on it, calculate and display its percentage after the unit-percentage-weight of goods is obtained. (NOTE: If **100% display format** is set to **100%**, **100.0%** or **100.00%** in **CONFIG-FUNC-PERCEN** menu item, then, the unit-percentage-weight is the weight of **1%**, **0.1%** or **0.01%**)
- 5.3.2. To make percent weighing function be available, **CONFIG-FUNC-PERCEN** menu item shouldn't be set to **NO**.
- 5.3.3. To enter percent weighing mode, in normal weighing or counting mode, long press **PRINT/FUNC** key, **WEIGH or COUNT or BMI** will be shown, use **ACC/TOTAL** or **PRINT/FUNC** key to select **PERCEN**, then press **TARE/PRESET** to confirm go to percent weighing mode. Before new unit-percentage-weight is got, the last unit-percentage-weight will be used.
- 5.3.4. In percent weighing mode, the function of **ZERO, ON/OFF, TARE, PRESET TARE, ACC, PRINT, HOLD, SETUP** are available.
- 5.3.5. To obtain the unit-percentage-weight, there're two ways :
- (1) Input weight and its percentage, then scale calculates the unit-percentage-weight, refer operations of step 5.3.5.1
  - (2) Weigh samples weight which percentage is known, refer operation of step 5.3.5.2
- 5.3.5.1 Input weight and its percentage from keypad, and calculate unit-percentage-weight: in percent weighing mode, press **UNIT/DATA** key, When **InP.Pct** is shown, press **TARE/PRESET** key to enter this mode:
- a. Before input weight, use **PRINT/FUNC** or **ACC/TOTAL** key to select the percentage from 1%, 2%, 5%, 10%, 20%, 50% and 100%, this percentage is corresponding to the weight you will input in following steps
  - b. When **UNIT.KG** is shown, use **PRINT/FUNC** or **ACC/TOTAL** key to select the unit of input weight, use **TARE/PRESET** key to confirm and go to next. Press **ZERO/ON/OFF** key to exit and back to percent weighing mode.
  - c. When last stored unit-percentage-weight data is shown, use **↑ ↓ →** keys to input new unit-percentage-weight, press **SETUP** key more than 3s to input decimal point. Press **TARE/PRESET** key to confirm and save it, then go back to percent weighing mode. If the calculated unit-percentage-weight is less than 0.5d, the indicator will display **Pct.Er** and go back to percent weighing mode.
- 5.3.5.2 Obtain unit-percentage-weight by weighing samples weight which percentage is known: in percent weighing mode, press **UNIT/DATA** key, When **InP.Pct** is shown, use **PRINT/FUNC** or **ACC/TOTAL** key to select **SPL.Pct**, press **TARE/PRESET** key to weigh samples (which percentage is known) weight, calculate piece weight. Press **ZERO/ON/OFF** key to exit and back to percent weighing mode.
- a. When **SPL.Lo** is shown, move away any sample on scale and press **TARE/PRESET** key to confirm, before scale is stable, **SPL.Lo** will be flashed. After it is stable, it will go to next step. Press **ZERO/ON/OFF** key to exit and back to percent weighing mode.
  - b. When **SPL.Hi** is shown, put samples (its percentage is known) onto the scale, Press **TARE/PRESET** key to confirm reading weight. Before scale is stable, **SPL.Hi** will be flashed. After it is stable, it will go to next step. Press **ZERO/ON/OFF** key to exit and back to percent weighing mode.
  - c. After **INP.PCT** being shown, **000000**(position of decimal point is determined by **CONFIG-FUNC -PERCEN** setting) will be displayed, use **↑ ↓ →** keys to input the percentage of samples and Press **TARE/PRESET** key to confirm. If the calculated unit-percentage-weight is less than 0.5d, the indicator will display **Pct.Er** and go back to percent weighing mode, otherwise, after the reasonable unit-percentage-weight being got, the scale will go back to percent weighing mode. The gotten unit-percentage-weight can be saved after the power off and can

be used next time.

5.3.6. Check Percent (percentage compare) in Percent weighing mode:

- (1) To make percentage compare function be available, **CONFIG-FUNC-COMPAR** menu item should set to **YES**, and high and low limitation of percentage should be set correctly according to following steps:
  - (2) In percent weighing mode, Press down **UNIT/DATA** key more than 3s to input compare data of high and low.
  - (3) After **HIGH** being shown, **000000** will be displayed, use **↑ ↓ →** keys to input high percentage number and press **TARE/PRESET** key to confirm. Annunciator of **Hi** will be shown in this step. Press **ZERO/ON/OFF** key to exit and back to percent weighing mode.
  - (4) After **Low** being shown, **000000** will be displayed, use **↑ ↓ →** keys to input low percentage number and press **TARE/PRESET** key to confirm. Annunciator of **Lo** will be shown in this step. Press **ZERO/ON/OFF** key to exit and back to counting mode.
- NOTE:** If High number is 0 or is equal or less than low number, the comparison will be disabled.
- (5) After a reasonable limitation is set and compare is be active, one of annunciators **HI, OK, LO** will be lighted, and the beeper will sound according to its setting in **USER-BEEP**.

## 5.4. BMI Working Mode (CLOSED):

- 5.4.1. To make BMI working Mode be available, **CONFIG-FUNC-BMI** menu item should be set to **YES** and factory setting should be also enable this function.
- 5.4.2. To enter BMI Working mode:
  - 5.4.2.1. When **CONFIG-FUNC-ACCUMU=Yes**: If In normal weighing mode, percent weighing mode, or counting mode, long press **PRINT/FUNC** key, one of **WEIGH OR COUNT OR PERCEN** will be shown, use **ACC/TOTAL** or **PRINT/FUNC** key to select **BMI**, then press **TARE/PRESET** to confirm go to BMI mode.
  - 5.4.2.2. When **CONFIG-FUNC-ACCUMU=NO**: press **ACC/TOTAL (BMI)** key, go to BMI mode.
- 5.4.3. After scale go to this mode, "**CM.xxx**" (means: last input height is xxx cm) or "**IN.xx.x**" (means: last input height is xx.x inch) will be displayed, and to wait for input height: (1)to change height unit to cm or inch by pressing **UNIT/DATA** key; (2) to change height number by using **PRINT/FUNC, ACC/TOTAL(BMI)** keys; (3)Press and hold down **PRINT/FUNC** or **ACC/TOTAL(BMI)** key will increase or decrease number fast, (4) Press **TARE/PRESET** key to confirm the input. Press **ZERO/ON/OFF** key to exit input data mode and back to BMI working mode. The range of height is 50-250cm(19.7-98.4inch) and default is 170cm(66.9inch)
- 5.4.4. In this mode, when BMI number is shown (BMI annunciator is on also), or weight number is shown (BMI and kg or lb annunciators are on), Press **ACC/TOTAL** key to select weight or BMI number to be displayed, when weight is displayed, the weight unit can be selected by pressing **UNIT/DATA** key, and BMI and weight unit will be displayed at same time.
- 5.4.5. In this mode, when current net weight is less than **NLD.RNG**, the indicator will go to display weight number if **CONFIG-FUNC-ACCUMU=No**; or the indicator will back to original working mode if **CONFIG-FUNC-ACCUMU=Yes**.

## 5.5. HOLD Function:

- 5.5.1. **HOLD** function can be used to freeze display number. In this mode, scale can catch a dynamic number, hold a stable number, or average a unstable number, then HOLD(freeze) this number temporary for user to watch or record. This function can be used in normal weighing mode, counting mode and percent weighing mode. The speed of A/D converter is increased to 80Hz (if **CONFIG-AD.H.SPD** is set to **YES**) from original 10Hz for some



dynamic weighing applications. With the hold function, it is possible to weigh restless weighing samples such as live animals, moving objects. The indicator provides special mode settings to accommodate sample's movements.

5.5.2. To make **HOLD** function be active, the **CONFIG-FUNC-HOLD** menu item must be set to **YES**; menu items of **USER-HOLD-HLD.MOD** **/-AVG.TIM** **/-HLD.TIM** **/-DYN.RNG** **/-STB.TIM**, **USER-OTHER -NLD.RNG** need be set to reasonable value. To speedup sampling of weight, set **CONFIG-AD.H.SPD** menu item to **YES**. Please note: lower speed will get more stable data, but some instant weight information may be lost. To enter **HOLD** working mode, press down **SETUP** key when scale works in normal weighing mode, counting mode or percent weighing mode.

5.5.3. There're several **HOLD** mode to freeze display data:

- (1) Positive Peak Number HOLD mode
- (2) Negative Peak Number HOLD mode
- (3) Toggle HOLD mode
- (4) Average HOLD mode
- (5) Auto HOLD mode

The following are details of these HOLD modes:

**5.5.4. Positive Peak HOLD:**

When **USER-HOLD-HLD.MOD** is set to **PS.PEAK**, the hold mode is positive peak hold mode. When scale first enters this working mode, it will display the largest positive number that is from the time of zero-point set. After entering this working mode, scale will always catches and refresh positive larger number and display it. To exit **HOLD** mode, press **SETUP** key again.

**5.5.5. Negative Peak HOLD:**

When **USER-HOLD-HLD.MOD** is set to **NG.PEAK**, the hold mode is negative peak hold mode. When scale first enters this working mode, it will display the largest negative number that is from the time of zero-point set. After entering this working mode, scale will always catches negative larger number and display it. To exit **HOLD** mode, press **SETUP** key again.

**5.5.6. Toggle HOLD:**

When **USER-HOLD-HLD.MOD** is set to **TOGGLE**, the hold mode is toggle hold mode ---a manual Hold function. After entering this working mode, scale will freeze and display number if scale is stable. Only the weight that is over **USER-OTHER-NLD.RNG** (zero 'dead' band ) can be held. To exit **HOLD** mode, press **SETUP** key again. If the time of scale being unstable is more than **USER-HOLD-STB.TIM**, **STB.ER** will be shown, press **TARE/PRESET** key to start averaging again, or press **SETUP** key to exit.

**5.5.7. Average HOLD:**

When **USER-HOLD-HLD.MOD** is set to **AVERAG**, the hold mode is average hold mode. After entering this working mode, scale will freeze and display number if scale is stable. If scale is not stable, but the variation is less than **USER-HOLD-DYN.RNG**, scale will average data in **USER-HOLD-AVG.TIM**, then freeze and display the number. Only the weight that is over **USER-OTHER-NLD.RNG** can be frozen. Scale will exit **HOLD** mode according to the setting of **USER-HOLD-HLD.TIM**. If the time of scale variation being over **USER-OTHER-NLD.RNG** is more than **USER-HOLD-STB.TIM**, **STB.ER** will be shown, press **↑ ↓ → ←** to start averaging again, or press **SETUP** key to exit.

**5.5.8. Auto HOLD:**

When **USER-HOLD-HLD.MOD** is set to **AUTO**, the hold mode is auto hold mode--- different subjects can be weighed one after another without pressing any buttons. After entering this working mode, scale will freeze and display number if scale is stable. If scale is not stable, but the variation is less than **USER-HOLD-DYN.RNG**, scale

will average data in **USER-HOLD-AVG.TIM**, then freeze and display the number. Only the weight that is over **USER-OTHER-NLD.RNG** can be frozen. If the held weight is moved away, and a new load put on the scale, scale will automatically hold new number of load. Scale will exit HOLD mode according to the setting of **USER-HOLD-HLD.TIM**. If the time of scale variation being over **USER-OTHER-NLD.RNG** is more than **USER-HOLD-STB.TIM**, **STB.ER** will be shown, press **TARE/PRESET** to start averaging again, or press **HOLD/SETUP** key to exit.

5.5.9. In Positive or Negative Peak HOLD mode, the **PEAK** and **HOLD** annunciator will be lighted, in other HOLD mode, HOLD annunciator will be lighted. When HOLD annunciator flash, the displayed number is live, When HOLD annunciator become steady, the displayed number is frozen.

## 5.6. Accumulation:

- 5.6.1. Accumulation function can be used in normal weighing mode, counting mode and percent weighing mode, When this function is enabled, you can accumulate current net weight, piece, and percentage. Note, only the load on scale is larger than **USER-OTHER-NLD.RNG**, the displayed positive number can be added up. The accumulation times and total can be displayed or printed.
- 5.6.2. To make data accumulation function be available, **CONFIG-FUNC-ACCUMU** menu item should set to **MANUAL** or **AUTO**, Following are details.
- 5.6.3. When **CONFIG-FUNC-ACCUMU** is set to **MANUAL**, the stable and positive displayed net weight (must be larger than **USER-OTHER-NLD.RNG**), piece or percentage can be accumulated by long pressing **ACC/TOTAL** key, and indicator will display accumulation times first, and then display total of number. To avoid repeating accumulation for same load, one load only can be accumulated once. So, before a new load put onto the scale, the original load should be removed and let load on scale be smaller than **USER-OTHER-NLD.RNG**.
- 5.6.4. When **CONFIG-FUNC-ACCUMU** is set to **AUTO**, the stable and positive displayed net weight (must be larger than **USER-OTHER-NLD.RNG**), piece or percentage can be accumulated automatically, and indicator will display accumulation times first, and then display total of number. To avoid repeating accumulation for same load, one load only can be accumulated once. So, before a new load put onto the scale, the original load should be removed and let load on scale be smaller than **USER-OTHER-NLD.RNG**.
- 5.6.5. To view total, when display number is zero, long pressing **ACC/TOTAL** key, It will alternatively display the accumulation times and the accumulated sum total thus far (weight or quantity), until the **ACC/TOTAL** key being pressed again. NOTE : When HOLD function is enable, and scale is working in **PEAK HOLD** mode(**CONFIG-HOLD=YES**, **USER-HOLD-HLD.MOD=PS.PEAK/NG.PEAK**), Accumulation function will be automatically disabled!!!

## 5.7. Weight Fine-tune (CLOSED):

With this function, the user can adjust displayed weight a little, and no need standard weight and this can only be done in weighing mode. But please note:

- (1) The scale must have been calibrated before this
- (2) The range of adjustment is "(current displayed weight) x (0.9-1.1)". it means the range is about  $\pm 10\%$
- (3) The "**CONFIG-FUNC-WT.ADJ=YES**" must be set.
- (4) *Only an authorized manufacturer's representative or certified verification personnel may make these changes. Changing this value alters the calibration values !!!*

5.7.1. To enter this mode, turn on indicator, after indicator displaying 0 weight, put a load (suppose: its correct weight is 1230.0lb) onto scale, then indicator will display the load's weight, say "1234.5 lb". Press down **TARE/PRESET**

and **ZERO/ON/OFF** at same time until first digit flashes, this means indicator has entered into "weight fine-tune" mode.

5.7.2. Use **↑ ↓ →** to input correct weight (1230.0). After confirmed by **TARE/PRESET**, the active correct weight will be displayed and no any digit will be flashed. After this, displayed weight will be adjusted by this ratio (1230.0/1234.5) and this ratio will keep active until next modification on it.

5.7.3. To remove effect of this ratio, there're two ways: "5.6.3.1 way" and "5.6.3.2 way"

5.6.3.1 Do standard calibration, like in "6.CALIBRATION"

5.6.3.2 Move away weight on scale, Press **ZERO/ON/OFF** to make 0 displayed, Put a load onto scale, a number will be displayed, suppose it's 1230.0lb ; Press down **TARE/PRESET** and **ZERO/ON/OFF** at same time until first digit flashes, this means indicator has entered into "weight fine-tune" mode. Press **SETUP** key, the displayed weight will be restored to 1234.5, and then press **TARE/PRESET** to confirm and exit to normal weighing mode.

## 6. Calibration:

### Note:

- (1) Before calibrate the scale, you should prepare a standard weight (more than 10% of FS weight) for calibration.
  - (2) In following steps, to press **ZERO/ON/OFF** will show "EXIT?", and press **ZERO/ON/OFF** again or press **TARE/PRESET** will exit calibration,
- 6.1. Go to setup mode, select "CAL", then press **TARE/PRESET** to confirm to enter calibration mode.
  - 6.2. After entering this mode, the number of this indicator has been calibrated will be shown first, this number will be increased one after every calibration and calibration data saved, and this counter can't be modified or erased by any other ways, it counts from **0000** to **9999**, when it reaches **9999**, it starts over at **0000**. After the counter number being displayed, it will show "CAL.OFF" or "CAL.ON" according to the status of the sealed calibration switch is **OFF** or **ON**. If the switch is OFF, the following steps can be done, but the result will not be saved. Press **TARE/PRESET** key to go to next step.
  - 6.3. When "ZERO" is shown, use **PRINT/FUNC** or **ACC/TOTAL** key to select do zero point calibration (refer step6.4) or do linearity calibration (refer step6.5), do Geographical calibration (refer step 6.6) or Input/view calibration parameters value (refer step 6.7).
  - 6.4. When **ZERO** is selected, remove all weight on scale and then press **TARE/PRESET** key to confirm, the **ZERO** will flash when in catching zero point state. After getting reasonable data, it automatically goes to step6.8
  - 6.5. When **LINE** is selected, press **TARE/PRESET** key to confirm to enter linearity calibration.
    - 6.5.1 0% weight will be displayed after **CAL.P0** being shown, remove all weight on scale and then press **TARE/PRESET** to confirm to calibrate the zero point; the zero weight will flash in catching zero point state. After getting the reasonable zero-point data, the zero weight will become steady and then go to next step.
    - 6.5.2 When first default standard weight is displayed after **CAL.P1** being shown. It will be calibrated on standard weight for first point. Put corresponding weight (more than 10%FS weight) onto scale. The default standard weight is 100%FS. Use **↑ ↓ →** keys to input the value of the loaded weight. Press **TARE/PRESET** key to confirm, then, the indicator will flash the input standard weight. When this weight number becomes steady, it means the stable and reasonable data corresponding to the standard weight has been gotten. Then, the indicator will automatically go to next step. If this point can't be calibrated correctly (maybe the weight load onto scale is too small, maybe the input data is incorrect...), it will display "CAL.Er" and return back to step6.5.1 for re-calibration.
    - 6.5.3 When **End.y** is shown and **y** is flashing, it's waiting command to exit calibration or go on next calibration. Use **PRINT/FUNC** or **ACC/TOTAL** key to select **yes** or **no**, use **TARE/PRESET** to confirm. If **yes** is selected, it will go to step6.8 to end calibration; if **no** is selected, it will go to next step.
    - 6.5.4 When 100%FS weight is displayed after **CAL.P2** being shown. It will be calibrated on standard weight for second point. Put corresponding weight (more than 10%FS weight, and larger than the weight used on **CAL.P1**) onto scale. Next operation is same as what in step6.5.2
    - 6.5.5 When **End.y** is shown and **y** is flashing, Use **PRINT/FUNC** or **ACC/TOTAL** key to select **yes** or **no**, use **TARE/PRESET** to confirm. Similar with doing in step6.5.3
    - 6.5.6 When third standard weight displayed after **CAL.P3** being shown. It will be calibrated on standard weight for

third point. Put corresponding weight (more than 10%FS weight, and larger than the weight used on **CAL.P2**) onto scale. Next operation is same as what in step6.5.2.

6.5.7 When the stable and reasonable data corresponding to the standard weight has been gotten. The indicator will automatically go to Step6.8. Otherwise it will display "**CAL.ER**" and return back.

6.6. When **GEO** is selected, press **TARE/PRESET** key to confirm to enter Geographical Adjustment

**Please pay attention to the following matters before performing GEO calibration:**

- (1) Make sure the preset gravity of the scale is same as the local gravity before performing linearity calibration;
- (2) If the preset gravity of the scale is different with the local gravity, please follow below steps to set it according to the local gravity.
- (3) If the scale would be used at a different site, GEO calibration need to be conducted. It will eliminate the weighing error caused by the gravity difference. No linearity calibration is needed.

6.6.1. When "**CODE**" is shown, use **PRINT/FUNC** or **ACC/TOTAL** key to select geographical position code (refer step6.6.2) or input user local gravity value directly (refer step6.6.3).

6.6.2. When **CODE** is selected, select the position code of scale being used (00-70) according to the elevation and latitude from Table6-1 by using **↑ ↓ →** keys. Press **TARE/PRESET** key to confirm.

6.6.3. When **GRAVT** is selected, Use **↑ ↓ →** keys to input the gravity value of the position that scale is used (**9.76183-9.99999**). Press **TARE/PRESET** key to confirm.

**NOTE: Only an authorized manufacturer's representative or certified verification personnel may make these changes. Changing the geographical setting alters the calibration values !!!**

6.7. When **INPUT** is selected, press **TARE/PRESET** key to confirm to enter Input calibration parameters value that were got before, or view current calibration parameters value.

6.7.1. All parameters about calibration are divided to 18 pages to be displayed on LCD by "**nn:xxxx**" format ("**nn**" is a decimal number of page, "**xxxx**" is an hexadecimal value of parameter, e.g. **02:85E2**).

- 01-02 pages: zero code;
- 03-04 pages: standard weight of CAL.P1;
- 05-06 pages: codes of CAL.P1;
- 07-08 pages: standard weight of CAL.P2;
- 09-10 pages: codes of CAL.P2;
- 11-12 pages: full capacity net code;
- 13-14 pages: the coefficient of weight fine-tune;
- 15-16 pages: gravity value of calibration location;
- 17-18 pages: gravity value of the location that the scale is used at.

6.7.2. When no digit blink on LCD, that means calibration parameters value are being viewed, and use **UNIT/DATA** key to view next page; use **ZERO/ON/OFF** key to exit.

6.7.3. When parameters value are being viewed, use **UNIT/DATA** key to prepare to modify, When first digit is blinked, that means the value is being modified, and you can use **UNIT/DATA** key to make next digit flash (if current flashing position is the last one, next page value will be shown), use **↑ ↓ →** keys to input number, use **TARE/PRESET** key to confirm.

6.7.4. In this mode, press down **PRINT/FUNC** key more than three seconds. These parameters will be sent out from **COM1**, the print out format is <LF>nn:xxxx<CR>, there are totally eighteen lines.

6.8. After the indicator gets all need data, it will calculate and store all calibration parameters into EEPROM, display **CAL.End**. At last, it will re-start and go back to original mode.

TABLE6-1: Location Code for different elevation and latitude

elevation(km) latitude(°)	0	0.2	0.4	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.2	2.4	2.6	2.8	3	3.2	3.4	3.6	3.8	4	4.2	4.4	4.6	4.8	5	5.2	5.4	5.6	5.8	6	
0	19	18	17	17	16	15	15	14	14	13	12	12	11	10	10	9	9	8	7	7	6	6	5	4	4	4	3	2	2	1	1	0
3	19	18	17	17	16	16	15	14	14	13	12	12	11	11	10	9	9	8	8	7	6	6	5	4	4	4	3	2	2	1	1	0
6	19	18	18	17	17	16	15	15	14	14	13	12	12	11	10	10	9	9	8	7	7	6	6	5	4	4	4	3	2	2	1	1
9	20	19	19	18	17	17	16	15	15	14	14	13	12	12	11	11	10	9	9	8	7	7	6	6	5	4	4	3	2	2	1	1
12	21	20	20	19	18	18	17	16	16	15	15	14	13	13	12	11	11	10	10	9	8	8	7	7	6	5	4	3	2	2	1	1
15	22	21	21	20	20	19	18	18	17	16	16	15	15	14	13	13	12	11	11	10	10	9	8	8	7	6	5	4	3	3	2	2
18	23	23	22	22	21	20	20	19	19	18	17	17	16	15	15	14	13	12	12	11	11	10	10	9	8	7	6	5	4	4	3	3
21	25	25	24	23	23	22	21	21	20	20	19	18	18	17	16	16	15	14	13	13	12	12	11	11	10	9	8	7	6	6	5	5
24	27	26	26	25	25	24	23	23	22	21	21	20	20	19	18	18	17	16	15	15	14	14	13	13	12	11	10	10	9	9	8	8
27	29	29	28	27	27	26	25	25	24	24	23	22	22	21	21	20	19	19	18	17	17	16	16	15	14	14	13	12	12	11	11	11
30	31	31	30	30	29	28	28	27	26	26	25	25	24	23	23	22	22	21	20	20	19	18	18	17	17	16	15	15	14	14	13	13
33	34	33	33	32	31	31	30	30	29	28	28	27	26	26	25	25	24	23	23	22	21	21	20	20	19	19	18	17	17	16	15	15
36	36	36	35	34	34	33	33	32	31	31	30	30	29	28	28	27	26	26	25	25	24	27	26	25	24	23	22	21	20	19	18	18
39	39	38	38	37	36	36	35	35	34	33	33	32	32	31	30	30	29	28	28	27	27	26	25	24	23	22	21	20	19	18	18	18
42	42	41	40	40	39	39	38	37	37	36	35	35	34	34	33	32	32	31	31	30	29	29	28	27	27	26	26	25	24	23	23	23
45	44	44	43	42	42	41	41	40	39	39	38	38	37	36	36	35	34	34	33	33	32	31	31	30	30	29	28	28	27	26	26	26
48	47	46	46	45	45	44	43	43	42	41	41	40	40	39	38	38	37	37	36	35	35	34	33	33	32	32	31	30	30	29	29	29
51	50	49	48	48	47	47	46	45	45	44	44	43	42	42	41	40	40	39	39	38	37	37	36	36	35	34	34	33	32	32	31	31
54	52	52	51	50	50	49	49	48	47	47	46	46	45	44	44	43	42	42	41	41	40	39	39	38	38	37	36	36	35	34	34	34
57	55	54	54	53	52	52	51	51	50	49	49	48	47	47	46	46	45	44	44	43	43	42	41	41	40	39	39	38	38	37	36	36
60	57	57	56	55	55	54	54	53	52	52	51	51	50	49	49	48	47	47	46	46	45	44	44	43	42	42	41	41	40	39	39	39
63	60	59	58	58	57	56	56	55	55	54	53	53	52	52	51	50	50	49	48	48	47	47	46	45	45	44	44	43	42	42	41	41
66	62	61	60	60	59	59	58	57	57	56	56	55	54	54	53	52	52	51	51	50	49	49	48	47	47	46	46	45	44	44	43	43
69	64	63	62	62	61	61	60	59	59	58	57	57	56	56	55	54	54	53	53	52	51	51	50	49	49	48	48	47	46	46	45	45
72	65	65	64	63	63	62	62	61	60	60	59	59	58	57	57	56	56	55	54	54	53	52	52	51	51	50	49	49	48	47	47	47
75	67	66	66	65	64	64	63	62	62	61	61	60	59	59	58	58	57	56	56	55	54	54	53	53	52	51	51	50	50	49	49	48
78	68	67	67	66	66	65	64	64	63	62	62	61	61	60	59	59	58	58	57	56	56	55	54	54	53	53	52	51	51	50	50	50
81	69	68	68	67	67	66	65	65	64	63	63	62	62	61	60	60	59	59	58	57	57	56	55	55	54	54	53	52	52	51	51	51
84	70	69	68	68	67	67	66	65	65	64	64	63	62	62	61	60	60	59	59	58	57	57	56	56	55	54	54	53	52	52	51	51
87	70	70	69	68	68	67	66	66	65	65	64	63	63	62	62	61	60	60	59	58	58	57	57	56	55	54	54	53	53	52	52	52
90	70	70	69	68	68	67	67	66	65	65	64	64	63	62	62	61	60	60	59	59	58	57	57	56	55	54	54	53	53	52	52	52

## 7. MISC and TEST operation

### 7.1. Display ADC output Code

7.1.1. In this mode, you can examine the stability of weighing system, the increment value of ADC output code corresponding to the loaded weight.

**Note:**

- (1) The increment of ADC code for FS weight must be larger or equal to 10 times of selected display division; otherwise, the calibration cannot be properly completed. e.g. The display division is 0.1kg. Load 100kg standard weight on the platform, the increment of ADC code should be at least more than  $10 \times 100\text{kg} / 0.1\text{kg} = 10 \times 1000 = 10000$ . In this case, the scale can be calibrated. Otherwise, smaller division needs to be Chosen.
  - (2) The variation of ADC code should be small; otherwise, the calibration cannot properly complete also.
- 7.1.2. To go to this working mode, press down **HOLD/SETUP** until **CONFIG** is shown, using **↑ ↓ ←** keys to go to **MISC-Code** item, press **TARE/PRESET** to enter this mode and display ADC output raw code.
- 7.1.3. In this mode, first press **TARE/PRESET** key can set current code as a reference zero, and then to display net code, press **TARE/PRESET** again to clear this reference and display gross code. In display net code mode, press **ACC/TOTAL** key to select net or gross code to display, not clear the reference code.
- 7.1.4. In this mode, press **UNIT/DATA** key to select displaying code that has been filtered by no-filter, filter1 or filter1 and filter2, and corresponding annunciator **Lo, OK, HI** will be lighted.
- 7.1.5. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode

### 7.2. Display and Calibrate Power Voltage

7.2.1. In this mode, you can examine the voltage of battery, or you can examine the voltage that regulated out from AC adaptor when no battery is used, you also can calibrate the displayed voltage and set the voltage value of low battery point.

**Note:**

- (1) The end customer normally no need to set the value of low battery, calibrate the displayed voltage, these have been done in factory.
  - (2) The normal displaying voltage is 4.0V-7.0V
- 7.2.2. To go to this working mode, press down **HOLD/SETUP** until **CONFIG** is shown, using **↑ ↓ ←** keys to to go to **MISC-VoL** item, press **TARE/PRESET** to enter this mode and display battery voltage.
- 7.2.3. If the voltage is sure not correct, to calibrate the voltage according to following steps:
- 7.2.3.1. Prepare a DC power supply which output voltage can be adjusted from 5V to 8V, output current must be larger than 0.5A. Power off the indicator, move away AC adaptor, Connect this DC power to battery connector on main board, adjust voltage to about 5V, power on the indicator, enter battery voltage display mode by the way of step 7.2.2.
  - 7.2.3.2. Press down **UNIT/DATA** until **CAL.5V** is shown, adjust voltage to 5V, press **TARE/PRESET** key to confirm 5V calibration.
  - 7.2.3.3. When **CAL.6V** is shown, adjust voltage to 6V, press **TARE/PRESET** key to confirm 6V calibration. When **CV.End** is shown, that means the voltage calibration is completed and then exit to display voltage.
- 7.2.4. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode.

### 7.3. Display and Set Time

- 7.3.1. After entering **SETUP** mode (by press down **HOLD/SETUP** key more than 3s), using **↑ ↓ ←** keys to select **MISC-TIME** item, press **TARE/PRESET** to display current time.
- 7.3.2. Time display Format is: xx:xx:xx(hh-mm-ss) , 24h format.
- 7.3.3. Press down **UNIT/DATA** more than 3s to enter modification time mode. Using **↑ ↓ → ←** keys to modify current time. If time of no operation is more than 5s, it will automatically exit modification mode.
- 7.3.4. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode

### 7.4. Display and Set Date

- 7.4.1. After entering **SETUP** mode (by press down **HOLD/SETUP** key more than 3s), using **↑ ↓ ←** keys to select **MISC-DATE** item, press **TARE/PRESET** to display current time.
- 7.4.2. Date display Format is: xx.xx.xx(yy-mm-dd).
- 7.4.3. Press down **UNIT/DATA** more than 3s to enter modification date mode. Using **↑ ↓ → ←** keys to modify current date. If time of no operation is more than 5s, it will automatically exit modification mode.
- 7.4.4. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode

### 7.5. Display Firmware Version

- 7.5.1. Press down **HOLD/SETUP** key until **CONFIG** is shown, using **↑ ↓ ←** keys to select **MISC-VER** item, press **TARE/PRESET** to display current Version.
- 7.5.2. Firmware Version display Format is: **vxx.yy**, xx is hardware version, yy is software version
- 7.5.3. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode

### 7.6. Display Test

- 7.6.1. Press down **HOLD/SETUP** key until **CONFIG** is shown, using **↑ ↓ ←** keys to select **TEST-DSP.TST** item, press **TARE/PRESET** to enter test display mode and all segments will be lighted first.
- 7.6.2. In this mode, every pressing of **ACC/TOTAL** key will light next segment, every pressing of **UNIT/DATA** key will light next digit, press **PRINT/FUNC** key will automatically light all segments and all digits.
- 7.6.3. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode.

### 7.7. Keyboard and Buzzer Test

- 7.7.1. Press down **HOLD/SETUP** key until **CONFIG** is shown, using **↑ ↓ ←** keys to select **TEST-key.tst** item, press **TARE/PRESET** to enter test keypad mode, and **key. --** will be displayed.
- 7.7.2. In this mode, press a key, the value of this key will be displayed on -- position and buzzer will beep whatever **USER-BEEP-KEY** item is set.
- 7.7.3. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode

### 7.8. Serial Port1/2 (COM1/2) Receiving Test

- 7.8.1. Before test the receiving function of **COM1** or **COM2**, a cable is need to connect a PC and this indicator, and a software be similar with Super Terminal of Windows is also need to run on PC to send bytes to this indicator.



Please note: baud rate is selected by USER-COM1/2-BAUDRT, 8N1 byte format is fixed, Hex data (0x00 – 0xff) are used.

- 7.8.2. Press down **HOLD/SETUP** key until **CONFIG** is shown, using **↑ ↓ ←** keys to select **TEST-COM1.RD** or **TEST-COM2.RD** item, press **TARE/PRESET** to enter test COM1/2 receiving function, and **rd1.--** or **rd2.--** will be displayed first.
- 7.8.3. In this mode, received hex data (0x00 – 0xff) will be displayed on -- position.
- 7.8.4. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode

## 7.9. Serial Port1/2(COM1/2) Transmitting Test

- 7.9.1. Before test the transmitting function of **COM1** or **COM2**, a cable is need to connect a PC and this instrument , and a software be similar with Super Terminal of Windows is also need to run on PC to receive bytes from this instrument. Please note: baud rate is selected by USER-COM1/2-BAUDRT, 8N1 byte format is fixed, Hex data (0x00 – 0xff) are used.
- 7.9.2. Press down **HOLD/SETUP** key until **CONFIG** is shown, using **↑ ↓ ←** keys to select **TEST-COM1.TD** or **TEST-COM2.TD** item, press **TARE/PRESET** to enter test COM1/2 transmitting function, and **td1.--** or **td2.--** will be displayed first.
- 7.9.3. In this mode, transmitted hex data (0x00 – 0xff) will be displayed on -- position, and **↑ ↓ → ←** keys can be used to modify transmitted data.
- 7.9.4. Press **HOLD/SETUP** key to return to last menu item, press **ZERO/ON/OFF** key to prepare to exit this mode.

## 8. Details about Serial Communication:

- 8.1. COM1 is RS232, communication wires come from RS232 connector, and TXD0, RXD0 and GND are used. Please refer to section 10 connector details
- 8.2. COM2 is USB used as a virtual RS232, communication wires come from USB connector, and TXD1, RXD1 and GND are used, Please refer to section 10 for connector details.
- 8.3. The baud rate and byte format is set by **USER-COM1/2-BAUD.RT** and **USER-COM1/2-BYT.FMT**. Responses to serial commands will be immediate, or within one weight measure cycle of the scale. One second should be adequate for use as a time-out value by remote (controlling) device.
- 8.4. The length of each item in a transition string:
- 8.4.1. Reading data --- 6bytes  
Data polarity ----1byte: "-" for negative, and followed by the first digit; " " for positive.  
Decimal point ---1byte: "."  
Measure unit ----1-5bytes:" lb", " kg", "lb:oz", "pcs", "%", Units are always lower case, left aligned  
Current status-- 4bytes
- 8.4.2. If the weight is overcapacity, the scale will return eight "^" characters (the field of polarity, decimal point, weight data is filled by "^").
- 8.4.3. If the weight is under capacity, it will return eight "\_" characters (the field of polarity, decimal point, and weight data is filled by "\_").
- 8.4.4. If the zero point is error, it will return eight "-" characters (the field of polarity, decimal point, and weight data is filled by "-").
- 8.4.5. Useless leading 0 before digits is suppressed. Reading weight is right aligned.
- 8.5. Key to symbols used
- |  |  |
|--|--|
| <LF>   | Line Feed character (hex 0AH)                      |
| <CR>   | Carriage Return character (hex 0DH)                |
| <ETX>  | End of Text character (hex 03H)                    |
| <SP>   | Space (hex 20H)                                    |
| H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub>                | Four current status bytes                          |
| <P>  | Polarity character: "—" or " "                     |
| W <sub>1</sub> ---W <sub>6</sub>   | Reading data, 1-6 bytes (six digits)               |
| <DP>   | Decimal point                                      |
| U <sub>1</sub> U <sub>2</sub> U <sub>3</sub> U <sub>4</sub> U <sub>5</sub> | Measure units, kg, lb, lb:oz , % or pcs; 2-5 bytes |
| <Add>  | Address of scale; 2 bytes (00-99)                  |
| <Prompt>   | Prompt characters of output content; max. 11bytes  |

### The bit definition of H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub>:

Bit	Byte 1 (H1)	Byte 2 (H2)	Byte 3 (H3)	Byte 4 (H4)
0	0=stable	0= not under capacity	00=compare disable	00=normal weighing
	1= not stable	1= under capacity	01=lower limit	01=count weighing
1	0= not at zero point	0= not over capacity	10=ok	10=percent weighing
	1= at zero point	1= over capacity	11=upper limit	11=other mode
2	0=RAM ok	0=ROM ok	0= gross weight	0=not in HOLD
	1= RAM error	1=ROM error	1= net weight	1=in HOLD
3	0= eeprom OK	0=calibration ok	0=initial zero ok	0=battery ok
	1= eeprom error	1=calibration error	1=initial zero error	1=low battery
4	always 1	always 1	always 1	always 1
5	always 1	always 1	always 1	always 1
6	always 0	always 1	always 1	always 0
7	parity	Parity	Parity	Parity

8.6. Communication Details when **USER-COM1/2-LAYOUT** is set to **SINGLE**:

8.6.1. Commands and response

8.6.1.1. Command: **W<CR>** (57h 0dh), request current reading

Response:

- ① <LF> ^ ^ ^ ^ ^ ^ ^ ^ U<sub>1</sub>U<sub>2</sub> U<sub>3</sub>U<sub>4</sub>U<sub>5</sub><CR><LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub><CR><ETX>---over capacity
- ② <LF> \_ \_ \_ \_ \_ \_ \_ \_ U<sub>1</sub>U<sub>2</sub> U<sub>3</sub> U<sub>4</sub>U<sub>5</sub><CR><LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub><CR><ETX>---under capacity
- ③ <LF> - - - - - - - - U<sub>1</sub>U<sub>2</sub> U<sub>3</sub> U<sub>4</sub>U<sub>5</sub><CR><LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub><CR><ETX>---zero-point error

**Note:** U<sub>1</sub>U<sub>2</sub> U<sub>3</sub> U<sub>4</sub>U<sub>5</sub> is 1,2,3 or 5 bytes according to current unit: %, kg, lb, pcs, lb:oz

- ④ <LF><P>W<sub>1</sub>W<sub>2</sub>W<sub>3</sub>W<sub>4</sub>W<sub>5</sub><DP>W<sub>6</sub> U<sub>1</sub>U<sub>2</sub> U<sub>3</sub> U<sub>4</sub>U<sub>5</sub><CR><LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub> <CR><ETX>---normal data

**Note:** (1) The decimal point position is determined by **CONFIG-PRIM.D**

(2) If current unit is "lb:oz", the format will be similar with following:

- <LF><P>W<sub>1</sub>W<sub>2</sub>W<sub>3</sub>lb<SP>W<sub>4</sub>W<sub>5</sub><DP>W<sub>6</sub>oz<CR><LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub> <CR><ETX>

8.6.1.2. Command: **S<CR>** (53h 0dh) , request current status

Response: <LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub><CR><ETX>

8.6.1.3. Command: **Z<CR>** (5ah 0dh)

Response: Zero function is activated (simulate **ZERO/ON/OFF** key) and it returns to current scale status.

<LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub>H<sub>4</sub><CR><ETX>

If ZERO function cannot be activated, it will return to current scale status.

8.6.1.4. Command: **T<CR>** (54h 0dh)

Response: TARE function is activated (simulate **TARE/PRESET** key), and then returns scale status.

<LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub> <CR><ETX>

If TARE function cannot be activated, it will return to current scale status.

8.6.1.5. Command: **U<CR>** (55h 0dh)

Response: Changes units of measure (simulate **UNIT/DATA** key) and return scale status with **new** units.

The new measure unit should be allowed to use

<LF> U<sub>1</sub>U<sub>2</sub> U<sub>3</sub> U<sub>4</sub>U<sub>5</sub><CR><LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub><CR><ETX>

8.6.1.6. Command: **L<CR>** (4ch 0dh)

Response: If Hold function can be activated, it will enable/disable hold function (simulate **HOLD/SETUP** key), and returns scale status.

<LF> H<sub>1</sub>H<sub>2</sub>H<sub>3</sub>H<sub>4</sub><CR><ETX>

8.6.1.7. Command: **X<CR>** (58h 0dh)

Response: power off the scale, just like press down the **ZERO/ON/OFF** key to turn off the scale.

8.6.1.8. Command: all others

Response: Unrecognized command

<LF>? <CR><ETX>

8.6.2. Summary of Command and Response:

Command		Response
ASCII	HEX	
<b>W&lt;CR&gt;</b>	57 0d	Read scale weight: ① <LF> ^ ^ ^ ^ ^ ^ ^ ^ U <sub>1</sub> U <sub>2</sub> U <sub>3</sub> U <sub>4</sub> U <sub>5</sub> <CR><LF> H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX>---over capacity ② <LF> _ _ _ _ _ _ _ _ U <sub>1</sub> U <sub>2</sub> U <sub>3</sub> U <sub>4</sub> U <sub>5</sub> <CR><LF> H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX>---under capacity ③ <LF> - - - - - - - - U <sub>1</sub> U <sub>2</sub> U <sub>3</sub> U <sub>4</sub> U <sub>5</sub> <CR><LF> H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX>---zero-point error ④ <LF><p>W <sub>1</sub> W <sub>2</sub> W <sub>3</sub> W <sub>4</sub> W <sub>5</sub> <dp>W <sub>6</sub> U <sub>1</sub> U <sub>2</sub> U <sub>3</sub> U <sub>4</sub> U <sub>5</sub> <CR><LF>H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX>---normal data
<b>S&lt;CR&gt;</b>	53 0d	<LF> H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX>; read scale status
<b>Z&lt;CR&gt;</b>	5a 0d	<LF> H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX> ; simulate ZERO/ON/OFF key

Command		Response
ASCII	HEX	
T<CR>	54 0d	<LF> H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX> ; simulate TARE/PRESET key
U<CR>	55 0d	<LF> U <sub>1</sub> U <sub>2</sub> U <sub>3</sub> U <sub>4</sub> U <sub>5</sub> <CR><LF> H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX>; simulate UNIT/DATA key
L<CR>	4c 0d	<LF> H <sub>1</sub> H <sub>2</sub> H <sub>3</sub> H <sub>4</sub> <CR><ETX>; simulate HOLD key
X<CR>	58 0d	power off the scale, simulate OFF key
others		<LF>? <CR><ETX>

8.7. Communication Details when **USER-COM1/2-LAYOUT** is set to **MULTIPLE**:

8.7.1. Output string frame:

<LF><Prompt><p>W<sub>1</sub>W<sub>2</sub>W<sub>3</sub>W<sub>4</sub>W<sub>5</sub><Dp>W<sub>6</sub> U<sub>1</sub>U<sub>2</sub> U<sub>3</sub> U<sub>4</sub>U<sub>5</sub><CR>  
 ..... ---- Line number and content are determined by setting of **USER-OUT1/2-xxxx**  
 <LF><Prompt>H<sub>1</sub>H<sub>2</sub>H<sub>3</sub> H<sub>4</sub><CR> ---- **USER-OUT1/2-STATUS** is set to **YES**  
 .....  
 <LF>

- (1)The decimal point position is determined by **CONFIG-PRIM.D**
- (2)The unit position and bytes is determined by which current unit is used.
- (3)The details of <Prompt> refer to the content in 4.4 **USER Submenu**.
- (4)In hold mode, if ADC conversion speed is set high speed (80Hz), and **USER-COM1/2-LAYOUT** is set to **MULTIPLE**, and many contents are selected to output, the output contents from COM1 or COM2 may not catch up with the data processed in indicator, So, if you want to watch "real time" data, you need to select fewer output contents and set higher baud rate.

..... ---The number of blank lines is determined by **USER-OUT1/2-LINE** setting  
 <ETX> --- Last byte of string frame

8.7.2. Examples of some layout when **USER-OUT1/2-xxxx** is set to **YES**:

**In weighing mode:**

SCALE ID: 123456  
 GROSS: 123lb 4.56oz  
 TARE: 11lb 2.22oz  
 NET: 112lb 2.34oz  
 ACC. N: 8  
 TOTAL: 789lb 15.2oz  
 DATE: 2011-06-12  
 TIME: 12:34:56  
 A/D CODE: 1234567  
 VOLTAGE: 6.7V  
 STATUS: bpq2

**In counting mode:**

SCALE ID: 123456  
 GROSS: 1234.55kg  
 TARE: 12.15kg  
 NET: 1222.40kg  
 QUANTITY: 24448pcs  
 PIECE WT: 0.05kg  
 ACC. N: 10  
 TOTAL: 23456pcs  
 DATE: 2011-06-12  
 TIME: 12:34:56  
 A/D CODE: 1234345  
 VOLTAGE: 6.7V  
 STATUS: bpq2

**In percent weighing mode:**

SCALE ID: 123456  
 GROSS: 12345lb  
 TARE: 10lb  
 NET: 12335lb  
 PERCENTAGE: 91.4%  
 1% REF. WT: 135lb  
 ACC. N: 3  
 TOTAL: 271.6%  
 DATE: 2011-06-12  
 TIME: 12:34:56  
 A/D CODE: 1231234  
 VOLTAGE: 6.7V  
 STATUS: bpq2

**In BMI mode:**

SCALE ID: 123456  
 GROSS: 110.0kg  
 TARE: 10.0kg  
 NET: 100.0kg  
 HEIGHT: 170cm  
 BMI: 34.6  
 DATE: 2011-06-12  
 TIME: 12:34:56  
 A/D CODE: 1231234  
 VOLTAGE: 6.7V  
 STATUS: bpq2

**8.8. Communication Details when `USER-COM1/2-LAYOUT` is set to `EH-SCP`:**

8.8.1. This protocol of serial communication is similar to TOLEDO PS60 protocol. The baud rate and data format is set by User menu.

8.8.2. Output status bit meaning:

Bit	Status Byte
0	0=Stable weight data
	1=Scale in motion
1	0= Within weighing range
	1= Over capacity
2	0=Within weighing range
	1= Under zero
3	0= Within range
	1= Outside zero capture range
4	0= Not at center of zero
	1= Center of zero
5	always 1
6	always 1
7	parity

8.8.3. Summary of Command and Response:

Command		Response
ASCII	HEX	
<b>W</b>	57	Read scale weight: (1) normal data <STX> W <sub>1</sub> W <sub>2</sub> <dp>W <sub>3</sub> W <sub>4</sub> W <sub>5</sub> <CR> (2) if current weight is invalid <STX>?<Status Byte><CR>
<b>Z</b>	5a	Simulate ZERO/ON/OFF key: <STX>?<Status Byte><CR>
<b>L</b>	4c	Switch to and send standard weight. Same as W above
<b>K</b>	4b	Switch to and send metric weight. Same as W above
others		Un-known commands: <STX>?<Status Byte><CR>

8.9. Communication Details when **USER-COM1/2-LAYOUT** is set to **SCP-12**:

8.9.1. This protocol of serial communication is similar to with NCI3835 protocol. The baud rate and data format is set by User menu.

8.9.2. Output status bit meaning:

Bit	Status Byte1	Status Byte2
0	0=Scale in motion	1 = Under capacity
	1=Stable	0 = Not under capacity
1	0= Scale at zero	1 = Over capacity
	1= Not at zero	0 = Not over capacity
2	0=RAM error	1 = ROM error
	1= RAM okay	0 = ROM okay
3	0= EEPROM error	1 = Faulty calibration
	1= EEPROM okay	0 = Calibration okay
4	Always 1	Always 1
5	always 1	always 1
6	always 0	always 0
7	parity	parity

8.9.3. Key to symbols used:

<ETX>	End of Text character (03 hexadecimal).
<LF>	Line Feed character (0A hex).
<CR>	Carriage Return character (0D hex).
xxxxx	Weight characters from display including minus sign and out-of-range characters.
p	Polarity character (ie '-' for negative, space for positive)
hh	Two status bytes. (see 8.9.2)
UU	Units of measure (LB, KG or OZ all upper case).

8.9.4. Summary of Command and Response:

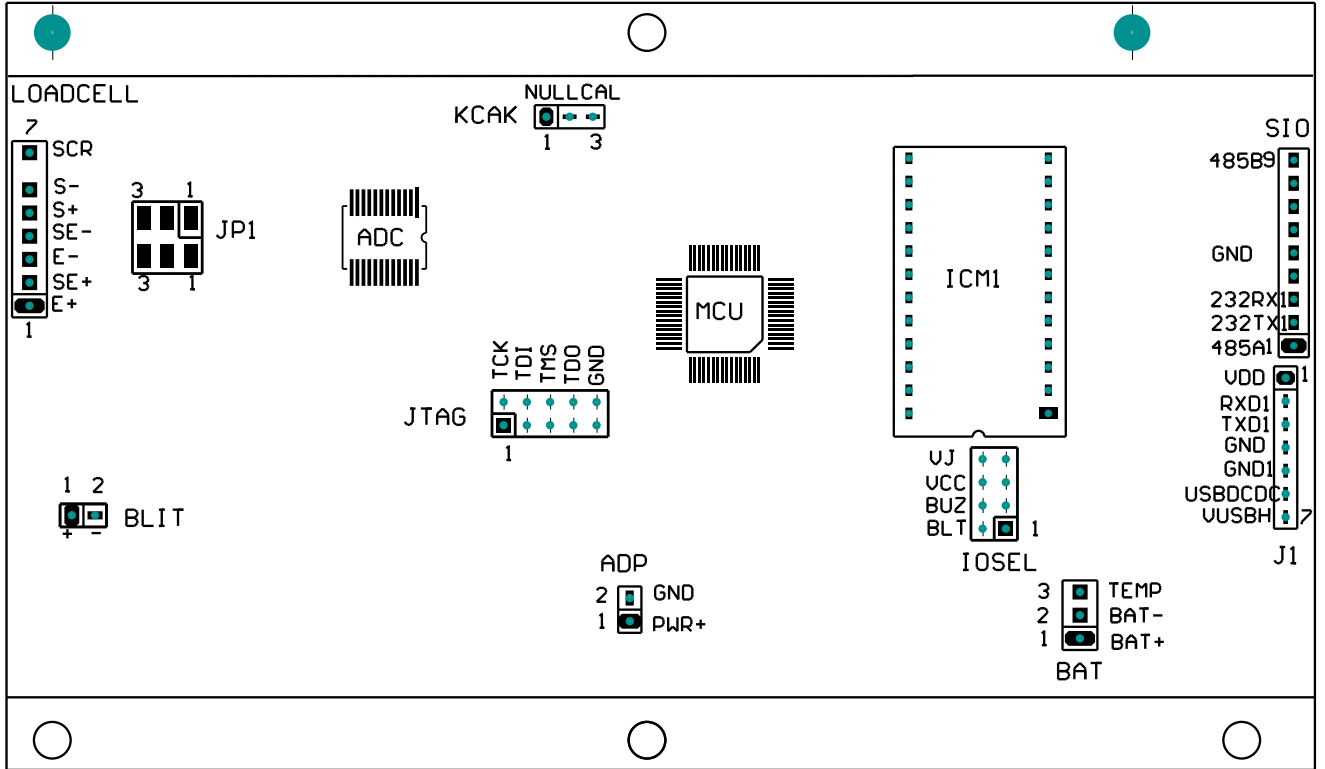
Command		Response
ASCII	HEX	
<b>W&lt;CR&gt;</b>	57 0D	Returns decimal lb, kg or oz weight, units and status. <LF>pxxx.xxUU<CR>hh<ETX> Returns ounces weight with units plus scale status. <LF>p00xxxxxOZ<CR>hh<ETX> Scale status only if initial zero error. <LF>hh<CR><ETX>
<b>S&lt;CR&gt;</b>	53 0D	Read scale status : <LF>hh<CR><ETX>
<b>Z&lt;CR&gt;</b>	5A 0D	Simulate ZERO/ON/OFF key: no response from scale.
others		Un-known commands: <LF>?<CR>

8.9.5. If your indicator need work with UPS worldship, you can try following settings:

- (1) **USER-COM1(or 2)-BAUD.RT=4800**
- (2) **USER-COM1(or 2)-BYT.FMT=7E1**
- (3) **USER-COM1(or 2)-LAYOUT=SCP-12**
- (4) Set scale port to NCI3835 in UPS worldship.

## 9. Connectors and Jumpers:

### 9.1. Overview of Connectors or jumpers on PCB



### 9.2. Load Cell Connector

PIN #	DEFINITION	IN/OUT/POWER	ELECTRICAL LEVEL
1	Excitation +	Power output	5±0.3 Vdc (≤0.12A)
2	Sense +	Power input	5±0.3 Vdc
3	Excitation-	Power ground	0Vdc
4	Sense -	Power input	≤0.5 Vdc
5	Signal +	Signal Input	2.5±0.3 Vdc
6	Signal -	Signal Input	2.5±0.3 Vdc
7	Shield	-	-

### 9.3. ADP---adapter power input connector

PIN #	DEFINITION	IN/OUT/POWER	ELECTRICAL LEVEL
1	Adapter input voltage +	Power input	7-9Vdc (I≥0.5A)
2	Adapter input voltage – (GND)	Power ground	0Vdc

### 9.4. BAT---Battery power input Connector

PIN #	DEFINITION	IN/OUT/POWER	ELECTRICAL LEVEL
1	Battery input voltage +	Power input	4-6.8Vdc
2	Battery input voltage – (GND)	Power ground	0Vdc
3	Temperature sensor on Battery input	Power ground	

## 9.5. SIO---Serial Input Output Connector

PIN #	DEFINITION	IN/OUT/POWER	ELECTRICAL LEVEL
1	RS485 signal A (if RS485 installed)	Input/output	0-5Vdc
2	RS232 Transmit on COM1	Output	-12 to +12Vdc
3	RS232 Receive on COM1	Input	-12 to +12Vdc
4			
5	GND	Power ground	0Vdc
6			
7			
8			
9	RS485 signal B (if RS485 installed)	Input/output	0-5Vdc

## 9.6. J1---USB Connector for virtual RS232 #1 and USB power supply

PIN #	DEFINITION	IN/OUT/POWER	ELECTRICAL LEVEL
1	VDD	Power output	5±0.3 Vdc
2	RXD Receive on COM2	Input	0-5Vdc
3	TXD Transmit on COM2	Output	0-5Vdc
4	GND of VDD	Power ground	0Vdc
5	GND1 of VUSBH	Power ground	0Vdc
6	USB Power DC/DC select	Output	0-5Vdc
7	USB Power DC/DC output	output	6±0.3 Vdc

## 9.7. KCAK Jumper set:

CONNECTED PINS	FUNCTION
1-2	Calibration Disabled
2-3	Calibration Enabled

## 9.8. JP1 Jumper:

CONNECTED PINS	FUNCTION
1-2	Two shorter on pin1-2: 4 wires Load cell is used
2-3	Two shorter on pin2-3: 6 wires load cell is used

## 9.9. ICM1 Socket: used for USB interface

## 9.10. JTAG and IOSEL used by Manufacture



## 10. Meaning of Some Symbols and Troubleshooting:

### 10.1. Meaning of Symbols:

<b>0</b> -----	Zero is over the setting range
<b>0</b> _____	Zero point is below the setting range
<b>Ad</b> -----	Signal to ADC is over max. range
<b>Ad</b> _____	Signal to ADC is below min. range
-----	Weight is over upper limitation, or display data is over limitation
_____	Weight is below lower limitation
<b>EEP.E1</b>	CONFIG or CAL parameters are not correctly set
<b>EEP.E2</b>	USER parameter is not correctly set
<b>Lo.bAt</b>	Battery voltage is lower than setting.
<b>CAP.- - -</b>	Next displaying content is Capacity
<b>CAP.ER</b>	Parameters about Capacity is not correct
<b>CAL.Px</b>	Calibration on point(x)
<b>CAL.OFF</b>	Calibration Seal Switch is on OFF position
<b>CAL.ON</b>	Calibration Seal Switch is on ON position
<b>CAL.Er</b>	Calibration error, maybe input data or loaded weight is incorrect, unstable, un-linear
<b>CAL.End</b>	Calibration is end
<b>OFF</b>	Power OFF the indicator
<b>STB.ER</b>	Unstable time is lager than setting of USER-HOLD-STB.TIM
<b>AcC.xxx</b>	Accumulation times is xxx
<b>PR.TARE</b>	To Preset TARE weight
<b>COMP</b>	To go to input COMPARE data mode
<b>HIGH</b>	To input HIGH limitation data of Comparison
<b>LOW</b>	To input LOW limitation data of Comparison
<b>SPL.Lo</b>	Sample load weight of low point.
<b>SPL.HI</b>	Sample load weight of high point.
<b>SPL.PWT</b>	Sample goods weight to calculate piece weight
<b>INP.PCS</b>	input pieces number of weighted goods
<b>UNIT.KG</b>	Unit kg is selected
<b>UNIT.LB</b>	Unit lb is selected
<b>PWT.ER</b>	Piece weight is error, it's too small (<0.5d).
<b>SPL.PCT</b>	Sample goods weight to calculate
<b>INP.PCT</b>	input percentage of weighted goods
<b>PCT.ER</b>	<u>Unit-Percentage -Weight</u> is too small (<0.5d).
<b>CACU.ER</b>	Internal calculation overflows

## 10.2. Troubleshooting

SYMPTOM	PROBABLE CAUSE	REMEDY
Ad----- Ad-----	Load cell wires to indicator are incorrectly connected, or shorted, or opened; or ADC, load cell are damaged	Make sure wires are ok and correctly connected. Replace load cell or ADC chip, Service required.
0-----	Weight reading exceeds Power On Zero limit.	Make sure scale platform is empty. Perform zero calibration.
0-----	Weight reading below Power On Zero limit.	Install platform on scale. Perform zero calibration.
-----	Weight reading exceeds Overload limit, or The weight value cannot be displayed in the current unit of measure because it exceeds 6 digits..	Reduce load on scale until weight value can be displayed. Use a more appropriate unit of measure. Re-set some parameters of <b>CONFIG</b> or <b>UAER</b> .
-----	Weight reading below Under load limit.	Install platform on scale. Perform zero calibration
<b>EEP.E1</b>	CONFIG or CAL parameters are not correctly set	Re-set items in CONFIG, do calibration
<b>EEP.E2</b>	USER parameter is not correctly set	Re-set items in USER
<b>CAP.ER</b>	Capacity parameters are not correct	Set PRIM.N/PRIM.d/SECND.n to correct number, make sure capacity not more than 6 digit
<b>CAL.ER</b>	Calibration error, maybe input data or loaded weight is too small, too big, unstable, un-linear	Input correct data, load correct weight onto platform, Service required
<b>PWT.ER</b>	Piece weight is error, it's too small (<0.5d), The weight on the platform is too small to define a valid reference weight.	Use a greater weight for the sample.
<b>PCT.ER</b>	<u>Unit-Percentage -Weight</u> is error, it's too small (the weight of 1%, 0.1%, or 0.01% determined by <b>CONFIG-FUNC-PERCNT</b> is less than 0.5d)	Use a greater weight for the sample.
<b>CACU.ER</b>	Internal calculation overflow	Adjust the value of the PWT or PCT
<b>STB.ER</b>	USER-HOLD-STB.TIM is too short, USER-HOLD-HLD.RNG is too small, other failure	Set USER-HOLD-STB.TIM longer, or set USER-HOLD-HLD.RNG bigger. Service required
<b>Not turn on.</b>	Power cord not plugged in or properly connected. Power outlet not supplying electricity. Battery discharged. Other failure.	Check power cord connections. Make sure power cord is plugged into the power outlet. Check power source. Replace batteries. Service required.
<b>Cannot zero the display or will not zero when turned on.</b>	Load on scale exceeds allowable limits. Load on scale is not stable. Load cell damage.	Remove load on scale. Wait for load to become stable. Service required.
<b>Cannot display weight in desired weighing unit.</b>	Unit not set to enable, or $d \geq 5oz$ , when unit is lb:oz	Enable unit in CONFIG-UNITS
<b>Battery symbol is empty or Lo.bAt is shown</b>	Batteries are discharged.	Charge batteries