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Stainless Steel Veterinary Scale
1,000 lb x 0.2 lb
Models: 412581

Stainless Steel Veterinary Scale

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1. INTRODUCTION

<u>General and Safety Information</u>

- Risk of Electrical Shock: Disconnect all power sources before making cable connections to the floor scale platform or indicator.
- For use in dry environments only.

- The floor scale platform is very heavy. Use appropriate lift equipment.
- Scale platform must be installed on a foundation capable of safely supporting the weight of the floor scale plus the weight of the maximum load.
- Do not operate in hazardous areas.

- Read and understand all operating instructions before using this product. Keep this manual for future reference.
- Record the weight shortly after placing a load on the platform. After extended periods, the load cell's output signal may result in a less accurate reading.
- Avoid extended exposure to extreme heat or cold. Optimum operation is at normal room temperature. See operating temperature range in the specifications table. Allow the scale to acclimate to room temperature before using.
- Allow sufficient warm up time. Turn the scale on and allow up to 2 minutes for internal components to stabilize before weighing.
- Electronic scales are precision instruments. Do not operate near cell phones, radios, computers or other electronic devices that emit radio frequencies that may cause unstable readings.
- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.
- Avoid using in heavy vibration or heavy airflow conditions. This also applies when the floor scale is integrated into conveying systems.

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Specifications

Model	412581
Max Capacity	1000lb (500kg)
Readability	0.2lb (0.1kg)
Display Resolution	1:5000
Min Recommended Weight	4lb / 2kg
Construction	Mild steel base, Alum. housing indicator
Weighing Units	lb / kg
Calibration unit	lb / kg
Display	6-digit, 7-segment, 1" (25mm) LCD with backlight
Zero Range	Programmable zero range
Tare Range	Full capacity
Stabilization Time	<3 seconds
Operating Temperature	15° to 105°F (-10° to 40°C)
Humidity Range	<90% relative humidity, non-condensing
Power supply	Alkaline Batteries: 4 x "AA" size cells AC Adapter: 9Vdc/600mA, with central positive
Interface	RS232 (COM1) and USB (COM2)
Feet	4 x fixed bolt design, adjustable height
Safe Max Overload	150% of capacity

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2. INSTALLATION

Contents

- Scale
- AC100-240V/DC9V 600mA adapter
- Indicator
- Manual

Unpacking and Installation

- Place the scale platform on a hard floor and level the feet.

- Connect the indicator to the platform.

- Install the batteries or plug in the adapter to the display indicator. Now the scale is ready for use.

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3. OVERVIEW OF CONTROLS AND FUNCTIONS

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	

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Indicator Display
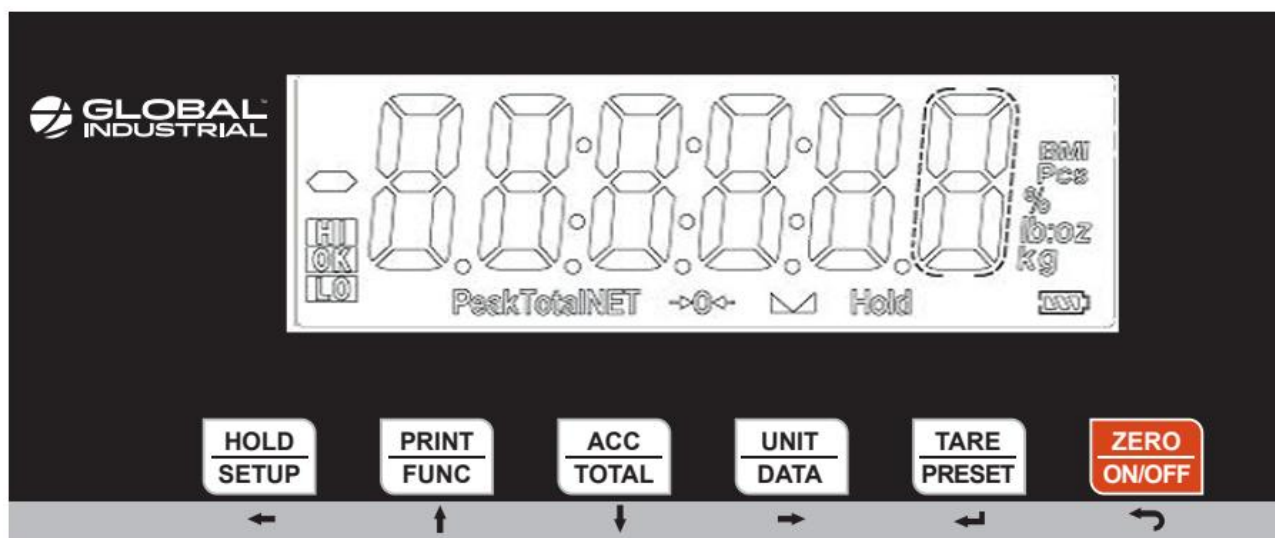
- →0← - Scale is zeroed, gross weight is 0, tare is 0.
- ▶◢ - Scale is stable.
- **NET** - Display reading is net weight; tare is <u>not</u> 0.
- **Total** - Display data is accumulated total times, weight, pieces, or percentage.
- **Hold** - Scale is in dynamic weighing mode.
    - **Hold** flashes - actual fluctuating weight displayed.
    - **Hold** does not flash - locked weight is displayed.
- **Peak** - Scale is in dynamic weighing mode. Hold type is PEAK-HOLD.

- **lb** - Measure unit is lb or lb:oz
- **oz** - Measure unit is oz or lb:oz
- **kg** - Measure unit is kg
- **%** - 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.

(part of the functions are closed, and the corresponding annunciator will not be displayed)

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Function Keys

KEY	MODE		DEFINITION
HOLD SETUP ←	Weighing, Counting, or Percent mode	<3 seconds	Enters or exits **HOLD** mode
		>3 seconds	Enters **SETUP** mode
	Input data mode	<3 seconds	Returns to last sub-menu
		>3 seconds	Inputs decimal point
	Menu selection mode		Returns to last sub-menu
PRINT FUNC ↑	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
ACC TOTAL ↓	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
UNIT DATA →	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
	Menu selection mode		Goes to next item of current sub-menu
TARE PRESET ↵	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
ZERO ON/OFF ↩	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: The second function of a key needs to be pressed down for more than 3 seconds to get activated.

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4. <u>Operation Menu Structure</u>

<u>Enter Setup Mode</u>

1. To configuration parameters, set user parameters, calibrate the scale, set current date or time, test some hardware, hold down the SETUP key for more than 3 seconds to enter into setup mode.
2. After entering the setup mode, the main menu item **CONFIG** will be shown.
3. In Setup mode, use ← ↑ ↓ key to select the main menu item, then press the TARE/PRESET key to enter the item; use ← ↑ ↓ → ↵ ↳ key to select the submenu item, to select a choice, to set a number, to confirm and save data, and/or to exit this mode.

<u>Main menu</u>

| CoNFiG | ⇄ | USEr | ⇄ | CAL | ⇄ | n̄iSC | ⇄ | tESt |

DO NOT enter CONFIG menu if necessary.
CONFIG settings should only be performed by qualified technicians.

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USER Submenu:

USER				
Sub-Menu1	**Sub-Menu2**	**Option**	**Remark**	**Setting**
rESEt	*No* / *YES*	*No*	Reset user parameters to factory setting	*No*
Com1	*bAUd.rt*	*1200* *2400* *4800* *9600* *19200* *38400*	Selection of com1's **baud rate**	*9600*
	bYt.Fmt	*8N1* *7o1* *7E1* *7o2* *7E2*	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*
	oUt.mod	*NoNE* *CoNt* *PriNt* *Cmd* *PrtCmd* *StAbLE*	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.	*PrtCmd*
	LAYoUt	*mULtPL* *SiNGLE* *EH-SCP* *SCP-12*	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);	*mULtPL*
oUt1	*SCAL.id*	*YES* / *No*	**Yes/No**=enable/disable output scale's ID number, Prompt is "SCALE ID"	*No*
	Gross	*YES* / *No*	**Yes/No**=enable/disable output gross weight. Prompt is "GROSS"	*No*
	tArE	*YES* / *No*	**Yes/No**=enable/disable output tare weight. Prompt is "TARE"	*No*
	NEt	*YES* / *No*	**Yes/No**=enable/disable output net weight. Prompt is "NET"	*YES*
	PErCNt	*YES* / *No*	**Yes/No**=enable/disable output weight percentage. Prompt is "PERCENTAGE"	*No*

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Sub-Menu1	Sub-Menu2	Option	Remark	Setting
oUt 1	UPCt.Wt	YES / No	**Yes/No**=enable/disable output weight of 1% percentage. Prompt is "1% REF WT"	No
	CoUNt	YES / No	**Yes/No**=enable/disable output counts. Prompt is "QUANTITY"	No
	PCWt	YES / No	**Yes/No**=enable/disable output piece weight. Prompt is "PIECE WT"	No
	bmi	YES / No	**Yes/No**=enable/disable output height and BMI. Prompt is "HEIGHT" and "BMI"	No
	ACCUmU	YES / No	**Yes/No**=enable/disable output accumulation times and total. Prompt is "ACC. N" and "TOTAL"	No
	dAtE	YES / No	**Yes/No**=enable/disable output date. Prompt is "DATE"	No
	timE	YES / No	**Yes/No**=enable/disable output time. Prompt is "TIME"	No
	Ad.CodE	YES / No	**Yes/No**=enable/disable output ADC's code. Prompt is "A/D CODE"	No
	bAt.uoL	YES / No	**Yes/No**=enable/disable output voltage of battery. Prompt is "VOLTAGE"	No
	StAtUS	YES / No	**Yes/No**=enable/disable output scale's status. Prompt is "STATUS"	No
	b.LiNE	NoNE / LiNE1 / LiNE2 / LiNE3 / LiNE4	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
Com2	bAUd.rt	1200 / 2400 / 4800 / 9600 / 19200 / 38400	selection of com2's **baud rate**	9600
	bYt.Fmt	8N1 / 7o1 / 7E1 / 7o2 / 7E2	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;	8N1
	oUt.mod	NoNE / CoNt / PriNt / Cmd / Prt.Cmd / StAbLE	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

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Sub-Menu1	Sub-Menu2	Option	Remark	Setting
ℼ℧ℒℰℿℲ	ℒ𝖠Ⴤ𝗈Uℇ	ℼU℄ℇℙℒ	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）;	ℼU℄ℇℙℒ
		5ⵑℿℾℒℇ		
		ℇℍ-5ℇℙ		
		5ℇℙ- ╏2		
𝗈Uℇ2	5ℇ𝖠ℒ.ⵑd	ℽℇ5	**Yes/No**=enable/disable output scale's ID number, Prompt is "SCALE ID"	ℿ𝗈
		ℿ𝗈		
	ℾℾ𝗈55	ℽℇ5	**Yes/No**=enable/disable output gross weight. Prompt is "GROSS"	ℿ𝗈
		ℿ𝗈		
	ℇ𝖠ℾℇ	ℽℇ5	**Yes/No**=enable/disable output tare weight. Prompt is "TARE"	ℿ𝗈
		ℿ𝗈		
	ℿℇℇ	ℽℇ5	**Yes/No**=enable/disable output net weight. Prompt is "NET"	ℽℇ5
		ℿ𝗈		
	ℙℇℾℂℿℇ	ℽℇ5	**Yes/No**=enable/disable output weight percentage. Prompt is "PERCENTAGE"	ℿ𝗈
		ℿ𝗈		
	Uℙℂℇ⧽	ℽℇ5	**Yes/No**=enable/disable output weight of 1% percentage. Prompt is "1% REF WT"	ℿ𝗈
		ℿ𝗈		
	ℂ𝗈Uℿℇ	ℽℇ5	**Yes/No**=enable/disable output counts. Prompt is "QUANTITY"	ℿ𝗈
		ℿ𝗈		
	ℙ⧽ℇ	ℽℇ5	**Yes/No**=enable/disable output piece weight. Prompt is "PIECE WT"	ℿ𝗈
		ℿ𝗈		
	ℽℼⵑ	ℽℇ5	**Yes/No**=enable/disable output height and BMI. Prompt is "HEIGHT" and "BMI"	ℿ𝗈
		ℿ𝗈		
	𝖠ℂℂUℼU	ℽℇ5	**Yes/No**=enable/disable output accumulation times and total. Prompt is "ACC. N" and "TOTAL"	ℿ𝗈
		ℿ𝗈		
	d𝖠ℇℇ	ℽℇ5	**Yes/No**=enable/disable output date. Prompt is "DATE"	ℿ𝗈
		ℿ𝗈		
	ℇⵑℼℇ	ℽℇ5	**Yes/No**=enable/disable output time. Prompt is "TIME"	ℿ𝗈
		ℿ𝗈		
	𝖠d.ℂ𝗈dℇ	ℽℇ5	**Yes/No**=enable/disable output ADC's code. Prompt is "A/D CODE"	ℿ𝗈
		ℿ𝗈		
	ℓ𝖠ℇ.⧽𝗈ℒ	ℽℇ5	**Yes/No**=enable/disable output voltage of battery. Prompt is "VOLTAGE"	ℿ𝗈
		ℿ𝗈		
	5ℇ𝖠ℇU5	ℽℇ5	**Yes/No**=enable/disable output scale's status. Prompt is "STATUS"	ℿ𝗈
		ℿ𝗈		
	ℓ.ℒⵑℿℇ	ℿ𝗈ℿℇ	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.	ℒⵑℿℇ ╏
		ℒⵑℿℇ ╏		
		ℒⵑℿℇ2		
		ℒⵑℿℇ3		
		ℒⵑℿℇ4		

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Sub-Menu1	Sub-Menu2	Option	Remark	Setting
bEEP	KEY	YES / No	Yes/No=enable/disable beep after a key pressed down	YES
	ConPAr	NoNE / L.Lo⁹ / ιN.Lōt / o.HιGH / oUt.Lōt	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	ιN.Lōt
Hold	HLd.ōod	NoNE / PS.PEAK / NG.PEAK / toGGLE / AōErAG / 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
	AōG.tιō	1-60	average data time for HOLD mode:1-60s	3
	Stb.tιō	3*AōG.tιō - 255	Waiting time for scale stable in HOLD mode: 3*(AVG.TIM) – 255s	9
	HLd.tιō	0-65535	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	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

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Sub-Menu1	Sub-Menu2	Option	Remark	Setting
oEHEr	NLd.rNG	1-255	1-255=the range of weight is **1-255**d; 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
oEHEr	Cnd.srC	NoNE / Con.1 / Con.2 / Con.1.2	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;	Con 1.2
	A.oFF.E	0-255	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.nd	oFF / dSP.E in / AC.E inE	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
	LCd.bLE	0-255	LCD backlight set: **0**=always off; **1**=always on; **2**=press down ZERO+UNIT 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.CSE	CSE 1-8	LCD **contraction level** selection	CSE8
	SCAL.id	000000-999999	scale's ID number: **000000-999999**	123456

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5. OPERATIONS

Change working mode
Press and hold the **PRINT/FUNC** key, then use ↑ ↓ ↵ key to choose and confirm to enter into weighing mode or counting mode.

Normal Weighing Mode
1. Power on the scale by pressing the **ZERO/ON/OFF** key.
2. If the display stabilizes but doesn't show zero, press the **ZERO/ON/OFF** key to set new zero point.
3. Place objects on the scale platform and read the weight on the indicator.
   Note: Objects should be placed at the center of the platform. Corner or side loading heavy objects may risk overloading an individual load cell and damage the scale.
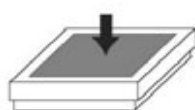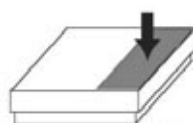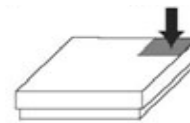
Yes	**No**	**No**

4. To change the weight unit of measure, press the **UNIT/DATA** key.
   Note: under certain conditions, g and lb:oz are not available. In trade applications, lb:oz should be prohibited. Please refer the following **tables (5-1 and 5-2).**
5. To send data to another device via the serial port, press the **PRINT/FUNC** key.
6. Power off the scale by pressing and holding the **ZERO/ON/OFF** key for 4 seconds.

Table5-1: 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
0.0001kg	0.0001kg	0.1g	0.0002lb	0.005oz	Not available
0.001kg	0.001kg	1g	0.002lb	0.05oz	Not available
0.01kg	0.01kg	10g	0.02lb	0.5oz	0.5oz
0.1kg	0.1kg	100g	0.2lb	5oz	Not available
1kg	1kg	Not available	2lb	50oz	Not available
10kg	10kg	Not available	20 lb	Not available	Not available
0.0002kg	0.0002kg	0.2g	0.0005 lb	0.01oz	Not available
0.002kg	0.002kg	2g	0.005 lb	0.1oz	0.1 oz
0.02kg	0.02kg	20g	0.05 lb	1oz	1 oz
0.2kg	0.2kg	200g	0.5 lb	10oz	Not available
2kg	2kg	Not available	5 lb	Not available	Not available
20kg	20kg	Not available	50 lb	Not available	Not available
0.0005kg	0.0005kg	0.5g	0.001 lb	0.02oz	Not available
0.005kg	0.005kg	5g	0.01 lb	0.2oz	0.2 oz
0.05kg	0.05kg	50g	0.1 lb	2oz	2oz
0.5kg	0.5kg	500g	1 lb	20oz	Not available
5kg	5kg	Not available	10 lb	Not available	Not available
50kg	50kg	Not available	Not available	Not available	Not available

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Table5-2: 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**
0.0001lb	Not available	Not available	0.0001lb	0.002oz	Not available
0.001 lb	0.0005 kg	0.5g	0.001 lb	0.02oz	Not available
0.01 lb	0.005 kg	5g	0.01 lb	0.2oz	0.2 oz
0.1 lb	0.05 kg	50g	0.1 lb	2oz	2 oz
1 lb	0.5 kg	500g	1 lb	20oz	Not available
10 lb	5 kg	Not available	10 lb	Not available	Not available
0.0002 lb	0.0001 kg	0.1g	0.0002 lb	0.005 oz	Not available
0.002 lb	0.001 kg	1g	0.002 lb	0.05 oz	Not available
0.02 lb	0.01 kg	10g	0.02 lb	0.5 oz	0.5 oz
0.2 lb	0.1 kg	100g	0.2 lb	5 oz	Not available
2 lb	1 kg	Not available	2 lb	50 oz	Not available
20 lb	10 kg	Not available	20 lb	Not available	Not available
0.0005 lb	0.0002 kg	0.2g	0.0005 lb	0.01 oz	Not available
0.005 lb	0.002 kg	2g	0.005 lb	0.1 oz	0.1 oz
0.05 lb	0.02 kg	20g	0.05 lb	1 oz	1 oz
0.5 lb	0.2 kg	200g	0.5 lb	10 oz	Not available
5 lb	2 kg	Not available	5 lb	Not available	Not available
50 lb	20 kg	Not available	50 lb	Not available	Not available

ZERO

If the display does not show 0, and there is no an object on the platform, press the ZERO/ON/OFF key to zero the reading.

Zero range: ±2% * full Capacity.

The zero function is unavailable when the displayed reading is out of the zero range and the indicator will show the error message **0‾‾‾** or **0₋₋₋**, meaning the scale is over or under zero range

Setting a Tare Weight

1. Zero the scale as described above.
2. Place an empty container on the platform, press the TARE/PRESET key. The display will return to zero, eliminating the weight of the container. "**NET**" will be lit on the display.
3. Place the material or object to be weighed in the container. The net weight will be displayed.
4. To exit tare mode, remove all weight from the scale. The display will show a negative weight. Press the TARE/PRESET key to return the display to zero.

Setting a Pre-Determined Tare Weight

1. Zero the scale as described above.
2. Press and hold the TARE/PRESET key until **"Pr.Tare"** is displayed, then the tare weight will be displayed. The first digit and **NET** will flash in the display.
3. Input the tare weight using the ↑ ↓ → keys. After inputting the tare weight, press the TARE/PRESET key to confirm. "**NET**" will be lit in the display.

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Note: Tare weight must be greater than zero and no more than the scale's maximum capacity.

4. Place the material or object to be weighed onto the scale platform. The net weight will be displayed.
5. To exit tare mode, remove all weight from the scale. The display will show a negative weight. Press the **TARE/PRESET** key to return the display to zero.

Note: The indicator can only save one tare weight. Entering a new tare weight will automatically replace the old one.
Pre-Determined tare weight will be lost after the scale is powered off.

Check Weighing (Data Compare) in Normal Weighing Mode

The check weighing or data compare function allows the user to input a pre-set range, and the display will indicate whether the weighed value is within that range, and indicate if it is too high or too low.

1. Press and hold the **UNIT/DATA** key for 4 seconds to input the comparative data range.
2. "**UNIT.LB**" or "**UNIT.KG**" will be displayed first. Use the **UNIT/DATA** keys to select the comparison unit of measure. Press the **TARE/PRESET** key to confirm.
3. After **HIGH** is shown quickly, the last **Hi** limit value will be displayed (the default value is **000000**). **HI** on the display will be lit. Use the ↑ ↓ → keys to input the upper limit of the range and press the **TARE/PRESET** key to confirm and move to the next step.
4. **Low** will be displayed quickly, the last **Lo** limit value will be displayed (the default value is **000000**). **LO** on the display will be lit. Use the ↑ ↓ → keys to input the lower limit of the range and press the **TARE/PRESET** key to confirm. Press **ZERO/ON/OFF** key to exit and go back to the normal weighing mode.
NOTE: If the upper limit is 0, or if it is less than the lower limit, check weighing mode will automatically be exited.
5. After an acceptable range has been set, check weighing may begin. If the weighed value is within the specified range, **OK** will be displayed on the indicator and an audible beep will sound. If the value is outside the specified range, **HI** or **LO** will be displayed with no audible beep.
6. To turn check weighing off, follow the above instructions and change the upper limit to zero.

Accumulation Mode

The accumulation function allows storage of weighed values and the summation of those values. This function can accumulate weights, piece counts, and percentages in normal weighing mode, counting mode, and percent weighing mode respectively.

1. With a load on the scale, press the **ACC/TOTAL** key to add the displayed value to the accumulated total. The indicator will first display the times of accumulation (e.g. if this is the 5th accumulated value, it will display **ACC.005**), and then display the accumulated sum total thus far, then it will display the load weight.
Note: Only loads exceeding the minimum weight (default of 10d, where d = the scale's

readability, see **specifications**) can be accumulated. This setting (**USER-OTHER-NLD.RNG)** can be modified from its default within **User Setup** mode, but changes will impact other functions such as **HOLD**.

2. Remove the load and place another load to continue accumulating, press and release **ACC/TOTAL** to add the new value.
   Note: To avoid duplicating a value for a same load, the accumulation function requires the original load to be removed before a new value can be accumulated.
3. To view the total accumulated data at any time, press and hold the **ACC/TOTAL** key for 4 seconds. It will alternatively display the accumulation times and the accumulated sum total thus far (weight or quantity), until the **ACC/TOTAL** key is pressed again. Accumulated times and total values can be displayed or sent to another device via the serial port by pressing and releasing the **PRINT/FUNC** key.
4. To clear and reset the accumulated data, press and release the **ZERO/ON/OFF** key while total accumulated data and the accumulated sum total are alternatively displayed.

Note: When the **HOLD** function is enabled and working in **PEAK HOLD** mode, the Accumulation function will automatically be disabled.

Counting Mode

The counting function calculates and displays the piece quantity of the load that has been weighed.

1. From normal weighing mode or percent-weighing mode, press and hold the **PRINT/FUNC** key for 4 seconds. Use the ↑ ↓ keys to select **COUNT**, then press the **TARE/PRESET** key to confirm and enter counting mode.
   Note: In counting mode, the **ZERO, TARE, PRINT, HOLD, PRESET TARE, ACC, SETUP,** and **ON/OFF** functions are all available.
2. There are two ways to input the piece weight.
   a. To input a known piece weight directly:
      i. Press the **UNIT/DATA** key. When **InP.PWt** is shown, press the **TARE/PRESET** key to enter "Input Piece Weight" mode.
         Note: At any time you can press **ZERO/ON/OFF** to exit "Input Piece Weight" and return to counting mode.
      ii. When $UΠιЕ.РG$ is shown, use the ↑ ↓ keys to select the piece weight unit of measure, and then use the **TARE/PRESET** key to confirm.
      iii. The previously entered piece weight will be shown (the default value is 000000). Use the ↑ ↓ → keys to input a new piece weight, then press and hold the **SETUP** key for 4 seconds to input the decimal point. Press the **TARE/PRESET** key to confirm and return to counting mode.
         Note: If the input piece weight is less than 0.5d (where d = the scale's readability, see specifications), the indicator will display $PчЕ.Еr$ and will automatically return to counting mode.
   b. To input the piece weight by weighing a sample of a known quantity:
      i. Press the **UNIT/DATA** key. When $ιΠР.РчЕ$ is shown, use ↑ ↓ keys to

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select ЅᲞᏞ.ᏢᏧᏖ. Press the TARE/PRESET key to enter "Get Piece Weight" mode.

Note: At any time you can press ZERO/ON/OFF to exit "Get Piece Weight" and return to counting mode.

ii. When ЅᏢᏞ.ᏞᲿ is displayed, remove any load from the platform and press the TARE/PRESET key to confirm. If the scale hasn't stabilized, ЅᏢᏞ.ᏞᲿ will flash. After it has stabilized, it will go to the next step.

iii. When ЅᏢᏞ.Ꮋᛁ is shown, place a sample of a known quantity object onto the scale platform and press the TARE/PRESET key. If the scale hasn't stabilized, ЅᏢᏞ.Ꮋᛁ will flash.

iv. If the scale has stabilized, ᛁᏁᏢ.ᏢᏟЅ will be shown quickly, then the previously entered piece weight will be displayed (the default value is ᏜᏜᏜᏜᏜᏜ, and the position of decimal point is determined by **CONFIG-FUNC-PERCEN** setting). Use the ↑ ↓ → keys to input the sample quantity and press the TARE/PRESET key to confirm.

Note: If the input piece weight is less than 0.5d (where d = the scale's readability, see specifications), the indicator will display ᏢᏬᏖ.ᎬᏒ and will automatically return to counting mode.

v. Once an acceptable piece weight has been entered, the scale will return to counting mode.

Note: The piece weight that has been entered will be saved, even after powering off. The indicator can only save one piece weight.
Entering a new piece weight will automatically replace the old one.

Check Counts (counts compare) in Counting mode

The Check Counts function allows the user to input a pre-set range, and the display will indicate whether the weighed value is within that range, or indicate if it is too high or too low.

1. Press and hold the UNIT/DATA key for 4 seconds to input the comparative data range.
2. ᎻᛁᏀᎻ will be shown and **000000** will be displayed. The **HI** announciator on the display will be lit. Use the ↑ ↓ → keys to input the upper limit of the range (weight, piece quantity, or percentage depending on initial mode) and press the TARE/PRESET key to confirm and move to the next step.
3. ᏞᲿᏬ will be shown and ᏜᏜᏜᏜᏜᏜ will be displayed. The **LO** announciator on the display will be lit. Use the ↑ ↓ → keys to input the lower limit of the range and press the TARE/PRESET key to confirm.
NOTE: If the upper limit is 0, or if it is less than or equal to the lower limit, check weighing mode will automatically be exited.
4. After an acceptable range has been set, check weighing may begin. If the weighed value is within the specified range, **OK** announciator on the display will be lit and an audible beep will be sound. If the value is outside the specified range, **HI** or **LO** announciator on the display will be lit with no audible beep. Audible beep parameters can be changed from their defaults in **User Setup** mode.

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HOLD Function

NOTE: In trade application, HOLD function should be prohibited!

1. **HOLD** function can be used to freeze the display number. In this mode, scale can catch a dynamic number, hold a stable number, or average an unstable number, then HOLD (freeze) this number temporary for the user to watch or record. This function can be used in normal weighing mode, counting mode and percent weighing mode. After entering **HOLD** mode, the speed of A/D converter can be increased to 80Hz (if **USER-HOLD-AD.H.SPD** is set to **YES**) from the original 10Hz for some dynamic weighing applications. With the hold function, it is possible to weigh restless weighing samples such as live animals or moving objects. The indicator provides a special mode setting to accommodate sample's movements.

2. For the **HOLD** function to be active, the **CONFIG-FUNC-HOLD** menu item must be set to **YES**; menu items of **USER-HOLD-HLD.MOD** /-**AVG.TIM** /-**HLD.TIM** /-**STB.TIM**, **USER-OTHER-NLD.RNG** need be set to reasonable values.

    To increase the speed for sampling of weight, set **USER-HOLD-AD.H.SPD** menu item to **YES**.

    To enter **HOLD** working mode, press the SETUP key when scale is in normal weighing mode, counting mode or percent weighing mode.

3. There are several **HOLD** modes use to freeze display data:
    a. Positive Peak Number HOLD mode
    b. Negative Peak Number HOLD mode
    c. Toggle HOLD mode
    d. Average HOLD mode
    e. Auto HOLD mode

    The following information contains details for these HOLD modes:

    a. **Positive Peak HOLD**:
    When **USER-HOLD-HLD.MOD** is set to **PS.PEAK**, the hold mode is positive peak hold mode. When the 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, the scale will always catch and refresh with the largest positive number. To exit **HOLD** mode, press the SETUP key.

    b. **Negative Peak HOLD**:
    When **USER-HOLD-HLD.MOD** is set to **NG.PEAK**, the hold mode is negative peak hold mode. When the 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, the scale will always catch and refresh with the largest negative number. To exit **HOLD** mode, press the SETUP key.

    c. **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, the scale will freeze and display number if the scale is stable. Only the weight that is over **USER-OTHER-NLD.RNG (**zero 'dead' band) can be held. To exit **HOLD** mode, press the SETUP key. If the length of time that the scale is unstable for more than **USER-HOLD-STB.TIM**, **STB.ER** will be shown, press the TARE/PRESET key to start averaging again, or press the SETUP key to exit.

    d. **Average HOLD**:
    When **USER-HOLD-HLD.MOD** is set to **AVERAG**, the hold mode is average hold mode. After entering this working mode, the scale will freeze and display number if the scale is stable. If the scale is not stable, but the variation is less than **USER-HOLD-HLD.RNG,** the 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

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mode according to the setting of **USER-HOLD-HLD.TIM**. If the time of scale variation is over **USER-OTHER-NLD.RNG** or is more than **USER-HOLD-STB.TIM**, ꮪㅏᏏ.Ɛɾ will be shown, press **TARE/PRESET**,**UNIT/DATA**,**ACC/TOTAL** or **PRINT/FUNC** to start averaging again, or press **SETUP** key to exit.

e. **Auto HOLD:(Default setting)**
When **USER-HOLD-HLD.MOD** is set to **AUTO**, the hold mode is autohold mode: different subjects can be weighed one after another without pressing any buttons. After entering this working mode, the scale will freeze and display number if the scale is stable. If the scale is not stable, but the variation is less than **USER-HOLD-HLD.RNG,** the 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 removed, and a new load is placed on the scale, the scale will automatically hold the new number of the load. Scale will exit **HOLD** mode according to the setting of **USER-HOLD-HLD.TIM**. If the time of scale variation is over **USER-OTHER-NLD.RNG** or is more than **USER-HOLD-STB.TIM**, ꮪㅏᏏ.Ɛɾ will be shown, press **TARE/PRESET** to start averaging again, or press **SETUP** key to exit.

4. In Positive or Negative Peak HOLD mode, the **PEAK** and **HOLD** announciator will be lit, and for other HOLD modes, the **HOLD** announciator will be lit. When **HOLD** announciator is flashing, the displayed number is live. When **HOLD** announciator becomes steady, the displayed number is frozen.

Details about Serial Communication

1. COM1 is RS232, communication wires come from RS232 connector, and **TXD0**, **RXD0** and **GND** are used. Please refer to section 9 for connector details.
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 9 for connector details.
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.
4. The length of each item in a transition string:
   a. Reading data --- 6bytes
   Data polarity ----1byte: "-" for negative, and followed 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
   b. If the weight is overcapacity, the scale will display "‾‾‾‾"return eight "^" characters (the field of polarity, decimal point, weight data is filled by "^").
   c. If the weight is under capacity, it will display "_____"return eight "_" characters (the field of polarity, decimal point, and weight data is filled by "_").
   d. If the zero point is resulting in an error, it will display xxxx return eight "-" characters (the field of polarity, decimal point, and weight data is filled by "-").
   e. Useless leading 0 before digits is suppressed. Reading weight is right aligned.

5. Key to symbols used

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<LF>	Line Feed character (hex 0AH)
<CR>	Carriage Return character (hex 0DH)
<ETX>	End of Text character (hex 03H)
<SP>	Space (hex 20H)
$H_1H_2H_3 H_4$	Four current status bytes
<P>	Polarity character: "$-$" or " "
W_1---W_6	Reading data, 1-6 bytes (six digits)
<DP>	Decimal point
$U_1U_2 U_3U_4U_5$	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 $H_1H_2H_3 H_4$:

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

6. Communication Details when **USER-COM1/2-LAYOUT** is set to ʃ ı∏ᏟᏞᎬ:

  a. Commands and response

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

   Response:

   ① <LF>^^^^^^^^$U_1U_2 U_3U_4U_5$<CR><LF> $H_1H_2H_3 H_4$<CR><ETX>---over capacity

   ② <LF>_ _ _ _ _ _ _ _ U1U2 U3 U4U5<CR><LF> H1H2H3 H4<CR><ETX>---under capacity

   ③ <LF> - - - - - - - - $U_1U_2 U_3 U_4U_5$<CR><LF> $H_1H_2H_3 H_4$<CR><ETX>---zero-point error

   Note: $U_1U_2 U_3 U_4U_5$ is 1,2,3 or 5 bytes according to current unit: %, kg, lb, pcs, lb:oz

   ④ <LF><P>$W_1W_2W_3W_4W_5$<DP>$W_6 U_1U_2 U_3 U_4U_5$<CR><LF> $H_1H_2H_3 H_4$<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>$W_1W_2W_3$**lb<SP>**W_4W_5<DP>W_6**oz**<CR><LF> $H_1H_2H_3H_4$<CR><ETX>

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

   Response: <LF> $H_1H_2H_3 H_4$<CR><ETX>

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

   Response: Zero function is activated (simulate **ZERO** key) and it returns to current

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scale status.

<LF> $H_1H_2H_3H_4$<CR><ETX>

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

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

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

<LF> $H_1H_2H_3 H_4$<CR><ETX>

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

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

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

The new measure unit should be allowed to use

<LF> $U_1U_2 U_3 U_4U_5$<CR><LF> $H_1H_2H_3 H_4$<CR><ETX>

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

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

<LF> $H_1H_2H_3H_4$<CR><ETX>

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

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

viii. Command: all others

Response: Unrecognized command

<LF>? <CR><ETX>

b. Summary of Command and Response:

Command		Response
ASCII	**HEX**	
W<CR>	57 0d	Read scale weight: ①<LF>^^^^^^^^$U_1U_2 U_3U_4U_5$<CR><LF> $H_1H_2H_3 H_4$<CR><ETX>---over capacity ②<LF>_____$U_1U_2U_3U_4U_5$<CR><LF> $H_1H_2H_3 H_4$<CR><ETX>---under capacity ③<LF>-------- $U_1U_2 U_3 U_4U_5$<CR><LF> $H_1H_2H_3 H_4$<CR><ETX>---zero-point error ④<LF><p>$W_1W_2W_3W_4W_5$<dp>$W_6U_1U_2U_3U_4U_5$<CR><LF>$H_1H_2H_3H_4$<CR><ETX>---normal data
S<CR>	53 0d	<LF> $H_1H_2H_3H_4$<CR><ETX>; read scale status
Z<CR>	5a 0d	<LF> $H_1H_2H_3H_4$<CR><ETX> ; simulate ZERO key
T<CR>	54 0d	<LF> $H_1H_2H_3H_4$<CR><ETX> ; simulate TARE key
U<CR>	55 0d	<LF> $U_1U_2 U_3 U_4U_5$<CR><LF> $H_1H_2H_3H_4$<CR><ETX>; simulate UNIT key
L<CR>	4c 0d	<LF> $H_1H_2H_3H_4$<CR><ETX>; simulate HOLD key
X<CR>	58 0d	power off the scale, simulate OFF key
others		<LF>? <CR><ETX>

7. Communication Details when **USER-COM1/2-LAYOUT** is set to ก ูL t PL :

a. Output string frame:

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$<LF><Prompt><p>W_1W_2W_3W_4W_5<Dp>W_6 U_1U_2 U_3 U_4U_5<CR>$

……   --- Line number and content are determined by setting of

USER-OUT1/2-xxxx

$<LF><Prompt>H_1H_2H_3 H_4<CR>$ --- **USER-OUT1/2-STATUS** is set to ꓬΕꟻ

……

$<LF>$

(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 **USER Submenu**.

(4) In hold mode, if ADC conversion speed is set high speed (80Hz), and **USER-COM1/2-LAYOUT** is set to **MULTPL**, and many contents are selected to output, the output contents from COM1 or COM2 may not catch up with the data processed in indicator. If you want to watch "real time" data, select fewer output contents and set higher baud rate for C<CR>   --- **USER-OUT1/2-LINE** is set to **LINE1/2/3/4**

……   ---The number of blank lines is determined by **USER-OUT1/2-LINE** setting

<ETX>--- Last byte of string frame

b. Layout examples when **USER-OUT1/2-xxxx** is set to ꓬΕꟻ:

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. Communication Details when **USER-COM1/2-LAYOUT** is set to ΕH-ꟻℂP:

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

b. Output status bit meaning:

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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

c. Summary of Command and Response:

Command		Response
ASCII	HEX	
W	57	Read scale weight: ①normal data <STX> $W_1 W_2$ <dp> $W_3 W_4 W_5$ <CR> ②if current weight is invalid <STX>?<Status Byte><CR>
Z	5a	Simulate ZERO key: <STX>?<Status Byte><CR> ;
L	4c	Switch to and send standard weight. Same as W above
K	4b	Switch to and send metric weight. Same as W above
others		Un-known commands: <STX>?<Status Byte><CR>

9. Communication Details when **USER-COM1/2-LAYOUT** is set to Ьᒪᑭ- I2:

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

b. 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

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c. Key to symbols used:

        \<ETX\> End of TeXt character   (03 hexadecimal).

        \<LF\>   Line Feed character   (0A hex).

        \<CR\>   Carriage Return character   (0D hex).

        Xxxxxx 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 9.b)

        UU   Units of measure   (LB, KG or OZ all upper case).

d. Summary of Command and Response:

Command		Response
ASCII	HEX	
W\<CR\>	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\>
S\<CR\>	53 0D	Read scale status : \<LF\>hh\<CR\>\<ETX\>
Z\<CR\>	5A 0D	Simulate ZERO key: no response from scale.
others		Un-known commands: \<LF\>?\<CR\>

e. **If your indicator is needed to work with UPS worldship, please 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.

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6. <u>Calibration</u>
<u>Note:</u>
① Before calibrating the scale, please prepare a standard weight (more than 10% of FS weight) for calibration.

② In the following steps, pressing **ZERO/ON/OFF** will show "$Ell\ iE?$", and pressing **ZERO/ON/OFF** again or pressing **TARE/PRESET** will exit the calibration

1. Go to setup mode, select "CHL", then press **TARE/PRESET** to confirm to enter calibration mode.

2. After entering this mode, the number of times that the indicator has been calibrated will be shown first, this number will be increased after every calibration and the calibration data will be saved. This counter cannot be modified or erased by any other way, it counts from0000 to 9999, when it reaches 9999, it will start over at 0000. After the counter number is displayed, it will show "$CHL.oFF$" or "$CHL.oN$" according to the status of the sealed calibration switch is OFF or ON. <u>If the switch is OFF, the following steps can be completed, but the result will not be saved.</u> Press **TARE/PRESET** key to continue.

3. When "ΞEro" is shown, use ↑ ↓ key to select ΞEro to perform zero point calibration (refer to step 4), **LINE** to perform linearity calibration (refer to step 5), GEo to do Geographical calibration (refer to step 6) or **INPUT** to Input/view calibration parameters value (refer to step 7).

● **<u>ZERO Calibration</u>**
4. When ΞEro is selected, remove all weight from the scale and press the **TARE/PRESET** key to confirm, the ΞEro will flash when it is in the catching zero point state. After receiving reasonable data, it will automatically continue to step 8.

● **<u>Linearity Calibration</u>**
5. When $L\ iNE$ is selected, press **TARE/PRESET** key to enter linearity calibration.
   a. 0% weight will be displayed after $CHL.PO$ is shown, remove all weight from the scale and then press **TARE/PRESET** to confirm to calibrate the zero point; the zero weight will flash in catching zero point state. After calculating the reasonable zero-point data, the zero weight will become steady
   b. When the first default standard weight is displayed after $CHL.P\ l$ is shown, it will be calibrated on standard weight for the first point. Place the corresponding weight (more than 10%FS weight) onto the scale. The default standard weight is 100%FS. Use ↑ ↓ → keys to input the value of the loaded weight. Before entering this value, you can press and hold the **UNIT/DATA** key to change the unit of measure to kg or lb. Press the **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 received. After this, the indicator will automatically continue to the next step. If this point can not be calibrated correctly (E.g. the weight load on the scale is too small, the input data is incorrect…), it will display "$CHL.Er$" and return to **step a** for re-calibration.
   c. When$ENd.Y$is shown and **y** is flashing, enter a command to exit calibration or go on

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to the next calibration. Use ↑ ↓ key to select YES or No, use **TARE/PRESET** to confirm**.** If YES is selected, you will be directed go to step8 to end calibration; if No is selected, continue to the next step.

d. When 100%FS weight is displayed after $CAL.P2$ is shown, it will be calibrated on standard weight for the second point. Place corresponding weight (more than 10%FS weight, and larger than the weight used on $CAL.P1$) onto scale. The next operation steps are the same as explained in **step b.**

e. When $ENd.Y$ is shown and Y is flashing, Use ↑ ↓ key to select YES or No, use **TARE/PRESET** to confirm**.** Refer to **step c** for more details.

f. When the third standard weight displayed after $CAL.P3$ is shown, it will be calibrated on standard weight for the third point. Place corresponding weight (more than 10%FS weight, and larger than the weight used on $CAL.P2$) onto the scale. The next operation steps are the same as explained in step b.

g. When the stable and reasonable data corresponding to the standard weight has been received, the indicator will automatically go to Step8. Otherwise, it will display "$CAL.Er$" and return to the previous steps.

- ## GEO Calibration

6. When GEo is selected, press **TARE/PRESET** key to confirm to enter Geographical Adjustment.
   When "$CodE$" is shown, use ↑ ↓ keys to select geographical position code or input the local gravity value directly.

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

   b. When $GrAut$ is selected, use ↑ ↓ → keys to input the gravity value of the position that the 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 !!!***

TABLE6-1: Location Code for different elevation and latitude

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

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7. MISC

View or Set Date

1. After entering **SETUP** mode (by pressing and holding the SETUP key for more than 4 seconds), using ← ↑ ↓ ↵ keys to select n̄ιƅC-dAtE item, then press TARE/PRESET to display current time.
2. Date display Format is: xx.xx.xx (yy-mm-dd)
3. Press and hold the UNIT/DATA key for more than 4 seconds to enter modification date mode. Using ↑ ↓ → ↵ keys to modify current date. If inactivity exceeds 5 seconds, it will automatically exit modification mode.
4. Press the SETUP key to return to the last menu item, press the ZERO/ON/OFF key to exit.

View or Set Time

1. After entering **SETUP** mode (by pressing and holding the SETUP key for more than 4 seconds , using ← ↑ ↓ ↵ keys to select n̄ιƅC-tιn̄E item, then press TARE/PRESET to display current time.
2. Time display Format is: xx:xx:xx (hh-mm-ss) , 24h format
3. Press and hold the UNIT/DATA key for more than 4 seconds to enter modification time mode. Using ↑ ↓ → ↵ keys to modify current time. If inactivity exceeds 5 seconds, it will automatically exit modification mode.
4. Press the SETUP key to return to the last menu item, press the ZERO/ON/OFF key to exit.

8. Definitions

Symbol Definitions

CAP.--- - Next displaying content is capacity

CAL.oП - Calibration seal switch is on ON position

CAL.Px - Calibration on point(x)

CAL.ENd - Calibration is end

Con̄P - To go to input COMPARE data mode

HιGH - To input HIGH limitation data of comparison

Lou - To input LOW limitation data of comparison

Pr.tArE - To preset TARE weight

ƅPL.Lo - Sample load weight of low point

ƅPL.Hι - Sample load weight of high point

ƅPL.Put - Sample goods weight to calculate piece weight

ιПP.PCƅ - Input pieces number of weighted goods

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5PL.PCt - Sample goods weight to calculate unit percent weight

.nP.PCt - Input percentage of weighted goods

ACC. xxx - Accumulation times is xxx

9. <u>Troubleshooting</u>

SYMPTOM	PROBABLE CAUSE	REMEDY
Does not turn on.	1. AC adapter is not connected securely 2. Low battery 3. Indicator is damaged	1. Re-plug the AC adapter or rotate the plug to securely connect it to the scal 2. Replace the batteries 3. Replace with a new indicator and perform calibration
Ad------- Ad_____	1. The cable from platform to indicator is not correctly connected, or disconnected, or short circuit 2. Indicator is damaged 3. Load cell cable is broken 4. Load cell is damaged	1. Replace a new indicator and perform calibration. 2. Return the scale for repair.
0-------	1. Weight reading exceeds Power On Zero limit. 2. Indication is out of key zero range.	1. Ensure scale platform is empty 2. Perform zero calibration. 3. Reduce the weight on the platform, until the indication is within the key zero range
0_____	Weight reading below Power On Zero limit	1. Install platform on the scale 2. Check whether an object stuck between the load cell and scale base, if yes, remove the object 3. Perform zero calibration
--- --- --- ---	1. Weight reading exceeds Overload limit; 2. The weight value cannot be displayed in the current unit of measure because it exceeds 6 digits	1. Reduce load on scale until the weight value is displayed 2. Use a more appropriate unit of measure
--- --- --- ---	Weight reading below Under load limit.	1. Install platform on scale 2. Perform zero calibration
EEP.E 1	1. **CONFIG** parameters are not correctly set 2. **CAL** parameters are not correctly set	1. Re-set **CONFIG** parameters per the Technical Manual. 2. Do calibration
EEP.E2	**USER** parameters are not correctly set	Re-set **USER** parameters as per technical manual instructed.
CAL.Er	1. Input data or loaded weight is too small, too big 2. Weight signal is unstable, un-linear	1. Input correct data, load correct weight onto platform. 2. Return the scale for repair
5tb.Er	When in **HOLD** mode, weighing object cannot become stable in 9 seconds, and the weight variation is more than 5d	1. Stabilize the object in short time. 2. Set a larger HOLD parameter "**HLD-RNG"**

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SYMPTOM	PROBABLE CAUSE	REMEDY
Cannot zero the display	1. Load on scale exceeds allowable limits.（2%FS） 2. Load on the scale is unstable	1. Remove load on scale. 2. Wait for load to become stable. then press the **ZERO/ON/OFF** key to zero the display
$P\underline{u}t.Er$	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.
1. Max. CAPACITY is not same as marked on overlay 2. Any function invalid 3. Any measuring units missed	CONFIG parameters are not correctly set	Re-set CONFIG parameters per the Technical Manual
Incorrect counting result or percent weighing result when using SPL to enter a piece weight or unit-percent weight	1. Sampling quantity is too small 2. Calculated piece weight or unit-percent weight is a little different from the real value	Increase the sampling quantity.
Weighing is not accurate	1. An object is stuck between the load cell and scale base. 2. Load cell received a heavy impact 3. The scale is in a location far from Chicago	1. Remove the object. 2. Perform Linearity calibration 3. Perform GEO calibration
Battery symbol is empty or $Lo.bAt$ is shown	Low battery	Replace the batteries

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10. Replacement part

Part Number	Description
318529	AC adapter - 9V 600mA
412587	Display Indicator