FM28

Multi-Function Weighing Indicator

Operation Manual

PLEASE READ THIS MANUAL VERY CAREFULLY BEFORE ATTEMPT TO OPERATE THIS INSTRUMENT

Specifications subject to change without prior notice

V210 November 2014

Content

1. Before Started

1.1 Metrological Legislation

Because of metrological legislation, installation and some metrological parameter settings/changings are limited to be done by authorized personnel only. Do not attempt to change any of the built-in parameters under internal function F60 ~ F99. Contact your dealer for installation and technical assistance.

1.2 Seal & Serial Number

This instrument is legal for trade only when it is sealed (and/or stamped) and bearing a serial number. Do not attempt to break the seal (or stamp) or serial number affixed to this instrument. No warranty service will be provided if the seal (or stamp) or data plate affixed to this instrument is damaged or removed. Contact your dealer for more information and after sales service.

1.3 Warm Up time

- Allow warm up period of not less than 60 seconds before calibration. The higher the setup resolution of the scale, the longer the warm up period is required. In most cases, 120 seconds is a safe warm up period for all applications.
- This warm up period is needed to energy all components to reach a stable status.
- The internal count value is deemed stable when the internal AD count varies less than 3 counts within 2 seconds.
- To read the internal AD count value, enter internal function F1. The internal AD count value of a not yet fully energized PCB will go up continuously.

1.4 Placing the weighing platform

In order to obtain an accurate weighing result, the weighing platform must be placed on a strong and level surface. Avoid using the platform and this instrument (**hereinafter collectively referred as scale**) in environment where excessive wind flow, vibration and extreme temperature change exist.

1.5 General Warning

- The instrument is not an explosion proof device.
- The instrument is not a waterproof device.
- Do not open the instrument, no user serviceable parts inside. Always contact your dealer for service.
- Do not place this instrument in where shock, excessive vibration or extremes of temperature (before or after installation) exist.

1.6 Support & Service

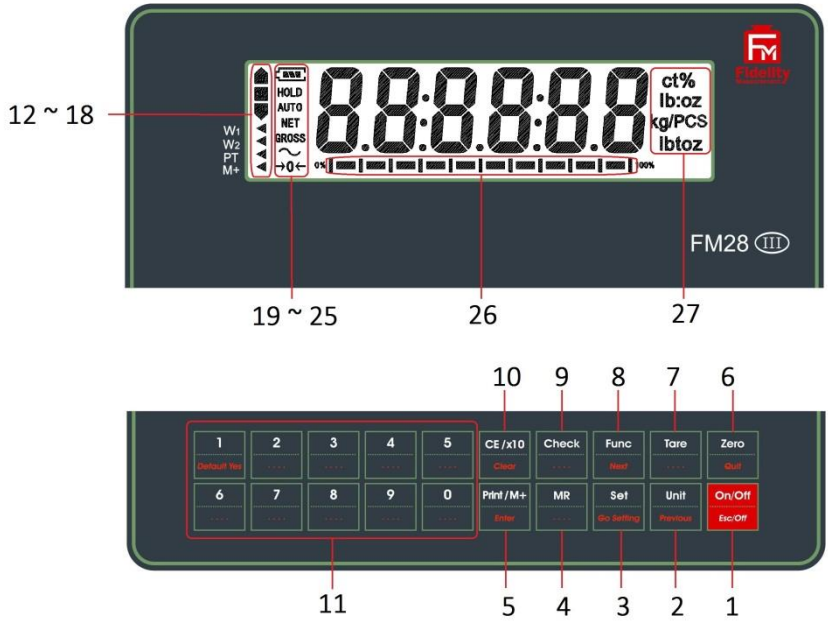
Always contact your dealer for product information, after sales service and questions when in doubt.

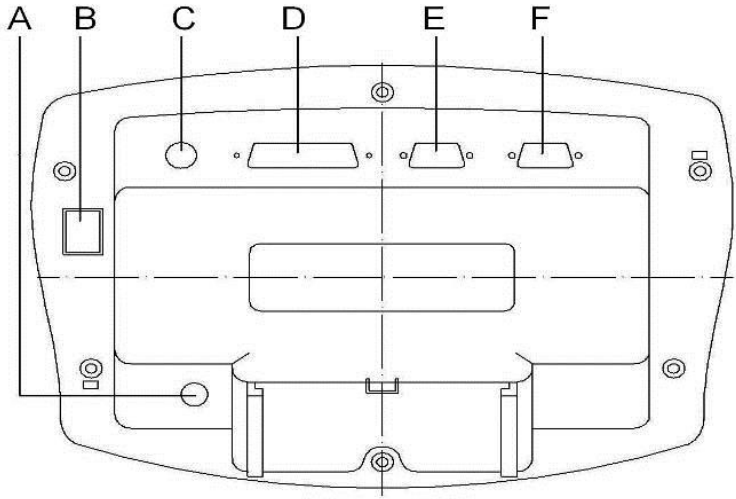
2. Specifications

Capacity & Readability	Free Setting, Single or Dual Weighing Range
Weight Units	• kg, g, lb
Stable Time	• ≦ 0.5sec at 3000d; • ≦1.0 second at 30,000d
Counting Resolution	300,000d
Max. Tare Range	• Single Weighing Range: - Max (Subtractive Tare) • Dual Weighing Range: - Max_1 (Subtractive Tare)
Display	• 6 x 1-inch Wide Angle LCD Numeric Digits • Capacity Tracking Bar to Show Applied & Remaining Capacity
Date Time	Built-in Real Time Clock
Comports & Connections	• 2 x Independent Serial Comports. Comport #1 Supports also TTL Communication • 1 x Control Output Port • Support Connections with: - PC, Receipt Printer,

	LP-50 Label Printer, Remote Display, Relays, PLC and other Peripherals via Hardwire, WIFI, Bluetooth or RF
Load Cell	• Excitation Voltage = 5V DC • Support both 4-wire & 6-wire Load Cells • Maximum Load Cell Connection = 12 x 350Ω Load Cells or 24 x 700Ω Load Cells
A/D &Internal Resolution	• 3,200,000 Counts at15 mV • Minimum input per d = 0.05μV
Power Sources	• Built-in Rechargeable Battery = 6V, 4AH • External Power Adaptor = DC 12V , 1A
Battery Recharging	Intelligent Digital Controlled Progressive Charging System
Built-in 4-Channel Control Relay Outputs	• Each Channel with both Normal Open & Normal Close • Maximum Loading per Relay = DC30V 1A / AC125V 0.5A
Accessories	Built-in 4-Channel Control Relay Board, Rechargeable Battery, Backlight, Pillar Mount Holder (ψ35~38mm), Power Adaptor
Operation Environment	-10 ~ 40°C. Non-condensed. R.H.≦ 85%
Specifications subject to change without notice	

3. Keys, Display & Connections





1. **On/Off Key**

Press this key to turn this instrument on or off.

2. **Unit Key**[1]

Press this key to shift among various weight units (if weight unit conversation is enable).

3. **Set Key**

Press this key: -

- During weighing mode: - to access internal function setting mode (F1~F29) or to prompt/introduce an operation parameter/value to during piece count, percentage, auto tare accumulation and animal weighing mode.
- During power on countdown process: - to access internal function mode (F1~F99)[2].

4. **MR Key**

Press this key to recall total stored transactions.

5. **Print/M+ Key**

Press this key to send print data out and/or[3] accumulate current value to memory.

6. **Zero Key**

Press this key to set weight displayed to zero when an empty scale has drifted away from a true zero reading.

7. **Tare Key**

Press this key to tare off the weight of a container.

8. **Function Key**

Press this key to shift between weighing, piece count, percentage, auto tare

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1 Refer to F9 on how to enable/disable weight units.

2 F60~F99 requests password to access.

3 Refer to F16 and F17 settings for details.

accumulation and animal weighing[4] mode.

9. **Check Function Key**
Press this key to start check function and to enter value for Lo and Hi Limit.

10. **CE/x10 Key**
Press this key: -

- to clear value entered during setting process, or
- to trigger the extended display mode[5]

11. **Numeric Keys**
Numeric keys 0~9.

12.**HI Symbol**
Appears when current value is higher than the HI Limit set.

13.**OK Symbol**
Appears when current value is in between the Lo and HI Limit set.

14. **LO Symbol**
Appears when current value is lower than the LO Limit set.

15. **W_1 Indicator**[6]
(When under dual weighing range mode) Visible when this instrument is operating at the first weighing range (W_1).

16. **W_2 Indicator**[7]
(When under dual weighing range mode) Visible when this instrument is operating in the second weighing range (W_2).

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4 When F11 = ON.

5 When F68 = OIML or NTEP.

6 Not visible when single range is selected.

7 This indicator will not appear when this instrument is in single range mode.

17. **Preset Tare Indicator**
Visible when Preset Tare Function is in effect.

18. **M+ Indicator**
Visible when memory contains of accumulated data.

19. **Battery Power/Level Indicator**
Visible to show:-

- When instrument is powered by built-in rechargeable: - remaining battery of the built-in rechargeable battery,
- When instrument is powered by external power adaptor: - Battery rechargeable recharging status.

20. **Hold Indicator**[8]
(When under animal weighing mode) Visible when displayed weight is a frozen value.

21. **Auto Indicator**
Visible when the instrument is in animal weighing mode.

22. **Net Indicator**
Visible when net result is being displayed.

23. **Gross Indicator**
Visible when gross result is being displayed.

24. **Stable Indicator**
Visible when weight value is stable.

25. **Zero Indicator**
Visible when weight is = zero.

[8] When F11 = on.

26. **Capacity Track Bar**
The ratio (increment = 10%) of applied & remaining weighing capacities are shown here.

27. **Weight Units and Functions**

- kg = kilogram,
- PCS = Pieces (Piece Count Mode in function),
- kg/PCS and g/PCS = Weight per piece (when Piece Count Mode in function),
- lb = pound.

A**. DC Jack Input for Indicator**
External power adaptor is plugged in here. Do not plug in any other power adaptor than the one which comes with this instrument.

B**. Reserved**

C. **Load Cell Connector (7-Pin)**
Signal wires from load cell (or junction box) are connected here.

D**. Control Output Port**
Control output for PLCs and relays.

E**. Comport #2**[9]
Communication comport #2 (serial)

F**. Comport #1**[10]
Communication comport #1 (serial or TTL).

[9] Settings of comport #2 is done through F17.

[10] Settings of comport #1 is done through F16.

4. Getting Started

In order to obtain an accurate weighing result, the weighing platform, (***hereinafter referred as platform***) must be placed on a strong and level surface. Avoid using the platform and this instrument (**hereinafter collectively referred as scale**) in environment where excessive wind flow, vibration and extreme temperature change exist.

General Warning: -

- The instrument is not an explosion proof device.
- The instrument is not a waterproof device.
- Do not open the instrument, no user serviceable parts inside. Always contact your dealer for service.
- Do not place this instrument in where shock, excessive vibration or extremes of temperature (before or after installation) exist.

4.1 Built-In Rechargeable Battery

The instrument is equipped with a built-in rechargeable battery. Before first time use, recharge it for at least 12 hours to ensure the best battery performance.

4.2 Power Adaptor

Always use this power adaptor supplied with this instrument to avoid un-recoverable damages to this instrument.

Notes: -

- ***This instrument will auto power on when an energized power adaptor is plugged in.***
- ***The backlight remains switched on when an energized power adaptor is plugged in.***

4.3 Connect[11] with Weighing Platform or Load Cell Junction Box

Connect this instrument with a weighing platform (load cell) through load cell connector located at the back according to the below pin assignment table.

Note: - If a 4-wire load cell or junction box is used, short-circuit pin 1&2 and pin 3&4. Otherwise, this instrument will not work.

4.3.1 Load Cell Connector Pin Assignment

Load Cell Connector Pin #	Assignment
1	Excitation +ve
2	Sense +ve
3	Excitation -ve
4	Sense -ve
5	Signal +ve
6	Signal -ve
7	Ground

4.4 Comports on Instrument

There are 2 built-in comports on this instrument: -

- Comport #1 can be used for serial or TTL communication depends on the jumper setting of the Serial/TTL selection jumper.
- Comport #2 supports only serial communication.

Both comports support bi-directional communication when set as PC and CMD modes. Refer to **5.5** for setting details.

[11] Turn this instrument off and unplug power adaptor before making any connection or disconnection.

Pin assignment of comports on instrument

Comport#1 (male)	Comport#2 (female)
2 = RXD	2 = TXD
3 = TXD	3 = RXD
5 = GND	5 = GND

Notes:-

- Comport #1 is assigned as DTE and has a male connector.
- Comport #2 is assigned as DCE and has a female connector.

4.5 Serial and TTL Communication

Both comports support serial communication, follow the below table for pin assignment between this instrument and a computer or serial printer.

Only comport #1 can be used for TTL communication. To enable TTL communication, the Serial/TTL selection jumper should be set to TTL enable. Contract your dealer when in doubt.

4.6 Control Output Port

Control Output Port Pin Assignment

Pin No. on Control Output Port	Description[12]
1	Control Output #4, Normal Open
2	Control Output #4, Common
3	Control Output #4, Normal Close
4	Control Output #3, Normal Open

[12] When this instrument is in check function mode: -
Output #1 = Buzzer Output
Output #2 = LO Output
Output #3 = OK Output
Output #4 = HI Output

5	Control Output #3, Common
6	Control Output #3, Normal Close
8	Control Output #2, Normal Open
9	Control Output #2, Common
10	Control Output #2, Normal Close
11	Control Output #1, Normal Open
12	Control Output #1, Common
13	Control Output #1, Normal Close

Notes: -

a. When control output is used, always plug in the power adaptor which comes with this instrument. Otherwise, no control output will be sent.
b. The common of each control output are independent.
c. Maximum external DC input voltage = 24V.
d. Maximum current per each output = 200mA.

5. Initial Setup

There are 2 groups of internal function: -

- Group #1: - F1~F29 are accessible without restriction,
- Group #2: - F60~F99 are restricted functions which may request a password or hardware key to access. These functions are usually for dealer and authorized personnel only. Do not change any settings of these functions to avoid operation errors.

Below paragraphs describe those settings related to F1~F29. Contact your dealer for F60~F99 settings.

5.1 Internal Functions & Settings

Application parameters can be checked and set through internal function. Set all preferred operation parameters according to **5.4.**

5.2 How to Enter & Select Internal Function

Follow the below procedures for internal function setup: -

1. At weighing function[13], press **[Set]**,
2. Displays **F1**,
3. This instrument is now in internal function mode.

5.3 Key Function under Internal Function Mode

Key	Function in Setup & Calibration
[On/Off]	Quit without saving and power off.
Unit]	Goto previous page.
[Set]	To enter internal function number F1~F29 during weighing mode.
[Print/M+]	Enter, save and return
[Zero]	Quit without saving
[Tare]	Set F1 value being shown to zero and to display the net span gain of additional load applied.
[Func]	Goto next page.
[CE/x10]	Clear

5.4 Internal Function Table

Refer to the below tables for internal function number, parameter and setting notes.

Function No.	**Description**	**Parameters / *Note*** ***Underlined = Default Setting***
F1	Internal Analogue to Digital (ad)	***Press [Print/M+] to set offset value to zero when unloaded. Then add load on the platform to observe the span value of load***

[13] Internal function must be entered when in weighing mode.

	Value.	***applied.*** ***When ad value >999999, display flashes to denote AD value being displayed is 1/10 of the actual AD value (the last digit is hidden). Actual AD value is = 10 times as what is being displayed.*** ***Each 0.1 mV is roughly equal to about 108000 counts.***							
F2	All Segment Check	***All display segments will be lit on.*** ***Use this function to check if there are any missing segments.***							
F3	Capacity, Division & Default Weight Unit	***Display basic metrology characteristics (capacity, division and weight unit) set: -*** • ***Value displayed when in single range mode = Max + 1d,*** • ***Values displayed when in dual range mode = Max_1 + d_1 (W_1) & Max_2+d_2 (W_2).***							
F4	Date Format & Date	***DD/MM/YY***	YY/MM/DD	MM/DD/ YY					
	To change date, enter a new value through numeric keys then press [Print/M+].								
F5	Time	HH/MM/SS ***To change time, enter a new value through numeric keys then press [Print/M+].***							
F6	Set F7~F28 to Default	***NO***	YES						
	If YES is selected, press [1] when SURE is displayed or any other key to quit without saving.								
F7	Auto Power Off Time (Minute)	OFF	1	3	***5***	10	20		
F8	Backlight Brightness	1	2	3	4	***5***	6	7	8	9

	1 = Minimum; 9 = maximum. Backlight will be turned to minimum when: - • ***Battery is low disregarding setting entered.*** • ***If weight value remains unchanged for 5 seconds.***						
F9	Weight Unit Enable / Disable	kg (Off/***On***)		g (***Off***/On)		lb (***Off***/On)	
F10	Filter Strength	1 ~ 9 in 9 steps					
	Select: - • ***1 for bad working environment where vibration, wind flow… etc affect stable reading,*** • ***3 ~ 5 for normal environment,*** • ***9 for very good working environment where wind and vibration have no effect to stable reading.***						
F11	Animal Function	***OFF***			ON		
F12	Auto Tare Function	***OFF***			ON		
	Note 1: - If F63 = ON, set F12 to OFF. Otherwise, preset tare (F63) will not operate						
F13	Repetitive Tare Function	***OFF***			ON		
	If F12 = ON, Repeated tare will not function						
F14	Keypad Buzzer	OFF			***ON***		
F15	Check Result Buzzer	OFF	***IN***	OUT	Hi	Lo	
	• ***oFF = Buzzer disabled,*** • ***IN = Buzzer activated when reading is within range.*** • ***ouT = Buzzer activated when reading is out of range.*** • ***Hi = Buzzer activated when reading more than Hi limit.*** • ***Lo = Buzzer activated when reading lower than Lo limit.***						
F16	Comport #1 Settings	Auto 1	Auto 2	Auto 3	Manual	***P***	CMD

<table>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td>C</td><td></td></tr>
<tr><td></td><td colspan="7">Refer to F17 for details.</td></tr>
<tr><td>F17</td><td>Comport #2 Settings</td><td>Auto 1</td><td>Auto 2</td><td>Auto 3</td><td>Manual</td><td>P C</td><td>CMD</td></tr>
<tr><td></td><td colspan="7">

Auto 1 = auto print when weight is stable.
Auto 2 = the highest stable weight value (of a weighing process) will be automatically printed when all loads are removed (and gross weight returns to zero or minus).
Auto 3 = the last stable weight value (of a weighing process) will be automatically printed when all loads are removed (and gross weight returns to zero or minus).
Manual = Manual output to printer or computer.
PC = Continuous output.
CMD = Command / information request mode.

Notes: -

If Auto 1 ~ Auto 3 is selected, set F12 to off.
Refer to operation manual for detailed setup information.
Instrument should be re-started (by power off then power on again) after F16 and/or F17 setting is changed under normal operation status.
Only one port can be set as Manual. If both Comport 1 and Comport #2 are set as Manual, only comport #1 function will function correctly.
Only one port can be set as CMD. If both Comport 1 and Comport #2 are set as CMD, only comport #1 function will function correctly.

</td></tr>
<tr><td>F18</td><td colspan="7">Reserved.</td></tr>
<tr><td>F19</td><td>Product Code</td><td colspan="2">H Code</td><td colspan="2">M Code</td><td colspan="2">L Code</td></tr>
<tr><td></td><td colspan="7">

Product code by keyboard accepts numeric numbers and space only. Maximum length = 18 digits.

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</table>

	• Enter Product code starting from H code, then M cord and finally L Cord. • Product code does not support Lab 1 print format. Use Lab 2 print format or LP-50 to print product code. • If a product code entered, this product code will be included when print data (Lab 2 format) is sent out automatically.				
F20	Keyboard Lock	***OFF*** (Disable)	ON (Enable)		
	When keyboard lock is = **ON**, only Zero, Tare, Set & On/Off key will be accessible during operation status.				
F21	Weight Function Output Print Format	***STD***	CUSTOM		
	When setting = CUSTOM, maximum lines = 30.				
F22	Counting Function Output Print Format	***STD***	CUSTOM		
	When setting = CUSTOM, maximum lines = 30.				
F23	Percentage Function Output Print Format	***STD***	CUSTOM		
	When setting = CUSTOM, maximum lines = 30.				
F24	Animal Functions Output Print Format	***STD***	CUSTOM		
	When setting = CUSTOM, maximum lines = 10.				
F25	Check Modes	***Mode 1***	Mode 2	Mode 3	Mode 4
	• ***Mode 1 = Standard static/Dynamic Weight Check Mode.*** • ***Mode 2 = Inflow/Outflow Control Logic Mode.*** • ***Mode 3 =Constant Feeding Mode.***				

	• ***Mode 4 = Constant Dispensing Mode*** ***Note: - if Mode 1 is selected, set also F26.***	
F26	Near Zero Value	***000000***
	Near Zero value is useful for dynamic weight check applications to bypass faulty LO alarm during uploading and unloading. ***Note 1: - This function is only accessible when F25 = Mode 1.*** ***Note 2: - Enter the near zero value here by numeric keys.*** ***Note 3: - Near zero weight value can be = any value between 20e and LO limit.*** ***Note 4: - Any near zero value which less than 20e will be ignored. Instrument will deem 20e as minimum near zero weight value.*** ***Note 5: - The HI LO comparison remains non-activated when weight reading is less than the near zero value entered.***	
F27	Reserved. No function now.	
F28	Reserved. No function now.	
F29	Read Calibration and parameter set counts. • ***O (Parameter set count): - shows total times the important parameters (F80~F88) has been altered.*** • ***C (Calibration count): - shows total times this instrument has been calibrated.***	

5.5 Setting Comport #1 and Comport #2

There are 2 built-in comports on this instrument. Default setting for both comports = serial. In case of TTL output is required for comport #1, refer to **4.5** for setting details.

Following the below procedures to setup comports.

1. Goto F16 or F17.
- F16 is used to configure comport #1,
- F17 is used to configure comport #2,

2. Press **[Func]** or **[Unit]** to shift among parameters PC, CMD, Auto1,

Auto 2, Auto 3 and Manual.

Notes: -

a. PC and CMD are data string related modes.
b. Auto 1, Auto 2, Auto 3 and Manual are printer related modes.
c. If both ports are set to data string related modes, **[Print/M+]** key is used as M+ (memory accumulation) and can only be activated when value is stable and ≥ 20d.
d. Only one comport can be set as printer related mode. If both ports are set as printer related mode, only comport #1 will send print data.

3. Select the preferred parameter then press **[Print/M+]** to save.
4. At this point: -

- If PC is selected, refer to **5.5.1** for setting details.
- If CMD is selected, refer to **5.5.2** for setting details.
- If Manual is selected, refer to **5.5.3** for setting details.
- If Auto 1~3 is selected, refer to **5.5.4** for setting details.

5.5.1 When comport is set as PC

1. Instrument displays baud rate. 8 parameters (1200~115200) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
2. Instrument displays Parity. 3 parameters (None, odd, even) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
3. Instrument displays Data length. 2 parameters (7, 8) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
4. Instrument displays output protocol type. 9 parameters (Prot 1~9) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
5. Instrument displays time interval (in second) between each output. 4 parameters (0, 0.5, 1, 1.5) are available. 0 = continuous output. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save.
6. At this point, comport setup is completed.

5.5.2 When comport is set as CMD[14]

1. Instrument displays baud rate. 8 parameters (1200~115200) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
2. Instrument displays Parity. 3 parameters (None, odd, even) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
3. Instrument displays Data length. 2 parameters (7, 8) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
4. At this point, comport setup is completed.

5.5.3 When comport is set as Manual

1. Instrument displays baud rate. 8 parameters (1200~115200) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
2. Instrument displays Parity. 3 parameters (None, odd, even) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
3. Instrument displays Data length. 2 parameters (7, 8) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
4. Instrument displays Auto Accumulation. 2 parameters (on, off) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,

- On = when pressing **[Print/M+]** during normal operation, the instrument do print and M+ at the same time,
- Off = when pressing **[Print/M+]** during normal operation, the instrument do print only.

5. Instrument displays Check control. 2 parameters (on, off) are available. By default, print data will only be transmitted under all auto print modes. Press **[Set]** to save,
    - On = (When check function is in effect) Only OK value (value which

[14] Refer to **Appendix C & D** for command details and format.

is within Lo and Hi Limits) will be transmitted,

- Off = (When check function is in effect) Check requirement is disable.

6. Instrument displays Stability control. 2 parameters (Yes, no) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,

- Yes = **[Print/M+]** (during normal operation) will only function when the weight is stable.
- No = **[Print/M+]** (during normal operation) will always function disregarding the stable condition of the weight when **[Print/M+]** is pressed.

7. Instrument displays minimum output weight. 21 parameters (0d~20d) are available. Instrument will not generate any output if the actual weight is less than the parameter weight selected. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
8. Instrument displays output format. 3 parameters (Lab1, Lab2 and LP-50). Instrument will not generate any output if the actual weight is less than the parameter weight selected. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,

- Lab1 = Output in Landscape direction. If Lab 1 is selected, refer to **5.5.3.1** for other settings.
- Lab2 = Output in Portrait Direction. If Lab 2 is selected, refer to **5.5.3.2** for other settings.
- LP-50 = Output to LP-50 or compatible label printer. If LP-50 is selected, refer to **5.5.3.3** for other settings.

5.5.3.1 Other settings if Lab1 is selected

a. Instrument displays Line number. Line number is the number of lines in between which the report heading is repeated. Line number should be from 01~99. Input the desired number through numeric keys then press **[Print/M+]** to save,
b. At this point, comport setup is completed.

5.5.3.2 Other settings if Lab2 is selected

a. Instrument displays number of copy to generate each time. 8 parameters (1~8) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
b. At this point, comport setup is completed.

5.5.3.3 Other settings if LP-50 is selected

a. Instrument displays number of copy to generate each time. 8 parameters (1~8) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
b. Instrument displays file to print in label format group 1. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
c. Instrument displays file to print in label format group 2. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
d. At this point, comport setup is completed.

5.5.4 When comport is set as Auto (Auto 1~3)

1. Instrument displays baud rate. 8 parameters (1200~115200) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
2. Instrument displays Parity. 3 parameters (None, odd, even) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
3. Instrument displays Data length. 2 parameters (7, 8) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
4. Instrument displays Auto Accumulation. 2 parameters (on, off) are available. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,

- On = Auto memory accumulation enable. Instrument will accumulate the printed value to memory,
- Off = Auto memory accumulation disable.

5. Instrument displays Check control. 2 parameters (on, off) are available. By default, print data will only be transmitted under all auto print modes. Press **[Print/M+]** to save,
- On = (When check function is in effect) Only OK value (value which is within Lo and Hi Limits) will be transmitted,
- Off = (When check function is in effect) Check requirement is disable.

6. Instrument displays Stability control. 2 parameters (Yes, no) are available. ***By default, only stable value will be transmitted under all auto print modes***. Press **[Print/M+]** to save,
7. Instrument displays minimum output weight. 21 parameters (0d~20d) are available. ***By default, only stable value which is ≥ 20e under all auto print modes***. Press **[Print/M+]** to save,
8. Instrument displays output format. 3 parameters (Lab1, Lab2 and LP-50). Instrument will not generate any output if the actual weight is less than the parameter weight selected. Press **[Func]** or **[Unit]** until the preferred parameter appears then press **[Print/M+]** to save,
- Lab1 = Output in Landscape direction. If Lab 1 is selected, refer to **5.5.3.1** for other settings.
- Lab2 = Output in Portrait Direction. If Lab 2 is selected, refer to **5.5.3.2** for other settings.
- LP-50 = Output to LP-50 or compatible label printer. If LP-50 is selected, refer to paragraph **5.5.3.3** for other settings.

9. At this point, comport setup is completed.

6. Basic Operations

6.1 Power On and Power off

To power on and off, press and hold **[On/Off]** for 0.5 second.

After powered on, instrument will be displayed: -

1. Display software number and revision,
2. Display all display segments,
3. Display the calibration count value,
4. Display the parameter set count value,

5. This instrument is now ready for operation.

At this point, instrument is in weighing mode and is ready for operation.

6.2 Warm up Time & set weight to Zero when unload

It is important to allow the instrument enough warm up time. This is especially important when this instrument is running at high resolution (e.g. equal to higher than 6000d). Refer to **1.3** for detailed.

If zero result is not obtained when unloaded, press **[Zero]** to set displayed result to zero.

6.3 Select the Preferred Function Mode

This instrument supports the below function modes. Abbreviation of each function mode is bracketed.

a. Weighing (**Weigh**),
b. Piece Count (**Count**),
c. Percentage (**Percnt**),
d. Auto Tare Accumulation (**At**),
e. Animal weighing (**Ani**)[15], and

Press **[Func]** until the abbreviation of the desired function mode appears then press **[Print/M+]** to enter.

Check Mode for above function modes (except animal weighing). Refer to **13.1** on how to enter hi and lo limits.

6.4 About Weight Unit Conversion

This instrument support conversion among kg, g and lb. The desired weight units should enable in F9.

6.4.1 Conversion between Metric Weight Units (kg and g)

When 3 or 4 decimal place (0.000 or 0.0000) is selected in F81, reading in g is possible during normal operation by pressing **[Unit]** disregarding to the setting of **F9**.

[15] When F11 = on

The weight unit employed before power off will be employed when powered on again.

6.4.2 Conversion between Metric (kg and/or g) & Imperial[16] (lb) weight units (F9)

This instrument supports conversion among kg, g and lb. To enable this conversion function, set F9 = ON. Press **[Unit]** to shift among various weight units.

The weight unit employed before power off will be employed when powered on again.

6.5 Tare Function & Modes

Tare function is used to cancel the weight of a box or a container in order to get the net weight result.

6.5.1 Manual tare[17] mode

When a container is used, follow the below steps to tare off the weight of it and to get a net weight result.

1. Remove all loads from platform,
2. Make sure that the **Zero Indicator** is on. If not, press **[Zero]**,
3. Place container on platform,
4. Press **[Tare]** ,
5. **Net Indicator** appears to indicator tare is in effect and weight displayed display is net weight.
6. To cancel tare effect, remove all loads from platform and press **[Tare]**,
7. **Net Indicator** disappears. **Gross Indicator** appears to indicator tare effect has been removed and weight displayed display is gross weight.

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[16] To comply with the laws of certain countries and approval requirements, the imperial weight unit may be disabled. Contact your dealer for more information.

[17] Maximum tare (subtractive) = -Max for single range mode or $-Max_1$ for dual weighing range mode.

6.5.2 Auto tare[18] (F12) mode

If this mode is enabled, this instrument will assume the first stable weight applied is a container and will tare off the weight of it automatically.
When container is removed and gross weight result = zero, tare effect will be cancelled automatically.

6.5.3 Repeated tare (F13)[19] mode

When F13 is set to OFF, this instrument does not permit multiple tare operation. Tare effect can only be cancelled when container is removed and gross weight = zero.

When F13 is set to ON, this instrument will permit multiple tare operation provided that both of the below requirements are met: -

a. The tare operation does not permit a reduction of the value of the tare;
b. The tare effect can only be cancelled when there is no load on the platform.

6.5.4 Preset tare (F63)[20] mode

A pre-determined tare weight value can be entered via keyboard. To enable this mode, set F63 to ON, then set also F12 to OFF.
During normal operation, press **0** then followed by the pre-determined tare weight through numeric keys and press **[Print/M+]** to enter.
After the pre-determined tare value has been entered, the **Preset Tare Indicator** appears to indicate preset tare function is in effect.
To cancel preset tare effect, remove all loads from platform then press **[Tare]**.

Notes: -

a. The pre-determined tare weight entered will be rounded to the nearest division of the instrument. This does not affect the accuracy of the subsequent weighing and operation.
b. Manual tare is possible when preset tare is in function.

---

[18] Set F12 = ON to enable Auto Tare Function

[19] Set F13 = ON to enable Repeated Tare Function.

[20] Set F63 = ON to enable Preset Tare Function. Some countries may not consider preset tare function as a legal for trade function. Contact your dealer for more information.

c. Preset Tare function is also governed by Repeated Tare (F13).

6.6 Memory Accumulation Function[21]

There are 2 memory accumulation modes: -

a. Automatic memory accumulation mode, and
b. Manual memory accumulation mode.

6.6.1 Automatic memory accumulation mode[22]

Memory accumulation function is activated when: -

a. When Auto 1, Auto 2, Auto 3 or Manual modes is selected in F16 and/or F17, and
b. When parameter of Auto Accumulation is set = on for the above modes.

Under the automatic memory accumulation mode, corresponding result[23] will be accumulated automatically.

6.6.2 Manual memory accumulation mode[24]

Manual accumulation function is activated when PC or CMD modes is selected for both F16 and/or F17.

Under the manual memory accumulation mode, corresponding result[25] will be accumulated by pressing **[Print/M+]**.

6.6.3 When data is accumulate to Memory[26] [27] [28]

1. When a result is accumulated to memory, this instrument displays "**n____x**". **M+ Indicator** appears to indicate that memory contains

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[21] Only weight result will be accumulated.

[22] Refer to **5.5.4** for setting details.

[23] Refer to F16 and F17 of **5.4** for the definition of Auto 1~3.

[24] Refer to **5.5** for setting details.

[25] Refer to F16 and F17 of **5.4** for the definition of Auto 1~3.

[26] Memory Accumulation Function accumulated weight results only.

[27] When F16 and F17 is set to mode Auto1~3, unstable result or result which is less than 20d (or 20d1 for dual range) will not be accumulated to memory.

[28] All data stored will be erased when this instrument is powered off or when weight unit is changed or changing to another operation mode.

stored data. “x” means the total number of transactions accumulated to memory,

2. This instrument returns to normal display status after 2 seconds.

6.6.4 Memory Recall and Clearance

1. Press **[MR]** to recall total accumulated weight from memory,
2. After **[MR]** is pressed, instrument flashes between “**A____Y”** (**Y** means the number of transactions accumulated) and total accumulated result,
3. At this point: -
   - Press **[Zero]** to quit, or
   - Press **[CE/x10]** to clear memory After **[CE/x10]** is pressed, instrument display **Clear** and **M+ Indicator** disappear to indicate no data is stored in memory.

6.6.5 Extended display mode[29]

Press **[CE/x10]** to change temporary (for 5 seconds) the displayed resolution 10 times higher. This function is useful to read the exact weight result. Display keeps flashing when instrument is displaying the extended result.

6.7 Product Code

This instrument supports product code entry. Maximum code length = 18 digits.

6.7.1To enter a product code

1. Goto F19.
2. Instrument display **H code** followed by 6 digits. Enter the first 6 digits of the product code here, then press **[Print/M+]** to confirm.
3. Instrument display **M code** followed by 6 digits. Enter the 7^{th} ~ 12^{th} digits of the product code here, then press **[Print/M+]** to confirm.
4. Instrument display **L code** followed by 6 digits. Enter the last 6 digits of the product code here, then press **[Print/M+]** to confirm.
5. Instrument display F19.
6. To go to other internal function, press **[Unit]** or **[Func]** or press **[Zero]**

[29] When F68 = OIML or NTEP.

to quite to operation status.

Notes: -

- If product code is less than 18 digits, apply 0 in front.
- Preset Tare & Product Code Data Indicator will light on.

6.7.2 To clear a product code entered

To clear a product code entered, press **[CE/x10]** on above procedures **b**, **c** and **d** on paragraph **6.7.1**.

6.7.3 To print the product code entered

Once a product code is entered, it will be printed automatically through the comport which is set as Auto 1 ~ 3 or Manual. No other setting is required.

Note: - Print format LAB 1 does not support product code.

6.8 Keyboard Lock

When keyboard lock is enabled, only **[On/Off]**, **[Zero]**, **[Tare]** and **[Set]** key can function. Refer to F20 on **5.4** for keyboard lock settings.

7. Weighing Mode (Weigh)

1. If zero weight cannot be obtained when unloaded, press **[Zero]**. After **[Zero]** is pressed, the **Zero Indicator** will appear.
2. Always place an object onto platform gently. Excessive force applied to platform may cause damages to the weight sensor,
3. The weight of the object is displayed automatically,
4. It is a good practice to remove all loads from platform after weighing. It will prolong the life of the weight sensor.

8. Piece Count Mode (Count)

1. Refer to **6.4** on how to select the desired weight unit,
2. If a container is used, place it onto the platform and press **[Tare]**,
3. Apply samples with the known quantity (sample size) on platform,
4. Press **[Set]** then enter through numeric keys the above sample size

and press **[Printer/M+]**,

5. This instrument will calculate, store the average piece weight and confirm with 2 beeps. The quantity applied to platform is then displayed.
6. Add to or remove from the platform, the corresponding quantity will be displayed automatically.

Note: - To count different articles, press **[Set]** and repeat procedures listed above.

8.1 Shift among Quantity, Average Piece Weight and Weight Info

1. Press **[Unit]** to shift among quantity, average piece weight and weight info,
2. Quantity Display format = numeric numbers & PCS (e.g**1000 PCS**) ,
3. Average piece weight display format = numeric numbers & weight unit & / & PCS (e.g. **499.960g/PCS**) ,
4. Weight display format (when Piece Count Function is in effect) = numeric numbers & weight unit & PCS (e.g. **500 kg PCS**).

8.2 To Quit Piece Count Mode[30]

Refer to **6.3** on how to quit to other function mode.

9. Percentage Mode[31] (PErCnt)

1. Refer to **6.4** on how to select the desired weight unit,
2. If a container is used, place it onto the platform and press **[Tare]**,
3. At this point: -

- If actual reference weight is available, load it onto the platform, then press **[Set]**.
- If actual reference mass is not available, press **[Set]** and then enter reference mass value through numeric keys and press **[Print/M+]** to confirm.

4. This instrument is now ready for percentage calculation.
5. Add to or remove from the platform, the corresponding percentage

[30] After quit, the average piece weight stored will be erased.

[31] Percentage Function does not support memory accumulation (M+) function.

value will be displayed automatically.

Note: - If new reference mass is used, repeat all above procedures.

9.1 Shift Between Current Percentage Value & Reference Mass Value

1. Press **[Unit]** during operation to shift between current percentage value and reference mass value.
2. Reference mass value display format (when Percentage Function is in effect) = numeric numbers & weight unit & % (e.g. **3.000kg %**).

9.2 To Quit Percentage Mode

Refer to **6.3** on how to quit to other function mode.

10. Add-Tare-Memory (ATM) & Remove-Tare-Memory (RTM) (At)

10.1 Description of ATM & RTM Mode

Under these modes, the instrument will store then tare off a positive (ATM) and negative load (RTM) applied. Thus, the weighing of all newly added/removed loads will always start from zero.

10.2 Settings before entering these modes

Before entering this function mode, set either comport 1 or comport 2 to **Auto 1**. Refer to **5.5.4** on comport settings even though there is no external peripheral connected to the comport set.

Below are recommended setting parameters.

a. Baud rate setting

- If an external peripheral is used, always use the highest available baud rate of it. The highest baud rate this instrument can support is 115200. Baud rate of the peripheral has to be set accordingly.
- If there is external peripheral is used, set baud rate of this comport to 115200.

b. Parity setting: -

- Set according to the external peripheral connected.

- Select any if there is no external peripheral is connected.

c. Data length setting

- Set according to the external peripheral connected.
- Select any if there is no external peripheral is connected.

d. Auto Accumulation setting: - Select any. Instrument will deem Yes as default value for this mode.

e. Check control setting

- On = only weights within Hi and Lo Limits will be processed.
- Off = check control disable. Select this for RTM mode.

f. Stability control setting: - Select any. Instrument will deem Yes as default value for this mode.

g. Minimum output setting: - Select any. Instrument will deem 20d as default value for this mode.

h. Output format setting: -

- Set according to the external peripheral connected.
- Select any if there is no external peripheral is connected.

i. At this point, comport setup is completed for this mode.

j. Set Auto Tare (**F12**) = On.

k. Select Near Zero Value (**F26**) depends on above Check control setting.

- If check control = On, set near zero value according to application requirement.
- If check control = Off, set near zero value to zero.

10.3 Start using ATM & RTM Mode

1. Refer to **6.4** on how to select the desired weight unit,
2. Select the preferred parameter for auto accumulation target then press **[Print/M+]**.

- Gross = Gross weight will be accumulated.
- Net = Net weight will be accumulated.

3. Enter time delay through numeric keys then press **[Print/M+]** to enter. 00 = maximum speed. Delay time value is the time interval (00 ~ 99 second): -

- Between a valid stable weight result is obtained and before it is

accumulated to memory.

- Display time of total accumulated weight result (after all loadings are removed) and before it is clear from print out memory.

4. If Check control setting on **10.2** is = On, enter Lo and Hi Limit value now. Refer to **13.1** on how to set Lo and Hi Limits.
5. Apply container on platform. Instrument will tare off the weight of the container.
6. Apply or removed load on or from platform. The weight result is displayed for the time interval set forth by above point **2**. Then instrument will accumulate the weight result in memory then clear it from the display. Notes: -

- Both positive and negative weight will be accumulated to memory.
- Positive weight will be added to the accumulated memory.
- Negative weight will be deducted from the accumulated memory.

7. Apply or remove another load on or from platform. The weight result is displayed for the time interval set forth by above point **2**. Then instrument will accumulate the weight result in memory then clear it from the display.
8. Repeat point **6** and **7** until all weighing sequence is completed.
9. Removed all loads from platform. The accumulated result is then displayed for the time interval set forth by above point **2**. Recall this accumulated result by pressing **[Print/M+]** before a new weighing sequence starts.

10.4 To Quit At Mode

Refer to **6.3** on how to quit to other function mode.

11. Peak Hold Mode (PEA)

Under this mode, the instrument will display the highest load/force applied. This mode is usually used in tension or compression tests.

Notes: -

Peak hold mode does not support: -

- Memory accumulation, weight unit conversation, weight check function.

- Peak hold mode does not support negative values measuring. In case of compression application, reverse load cell signal +ve with signal -ve. Contact your dealer for support.

11.1 Procedures: -

1. Set F12 to Off.
2. Refer to **6.3** on how to enter Peak Hold mode.
3. Refer to **6.4** on how to select the desired weight unit,
4. Refer to **11.2** for comport settings
5. Complete all necessary test setup. If mounting/support accessories are used, apply all of them
6. Press **[Tare]** to cancel the effect of any extra loads.
7. Start peak measuring process, the highest weight value will be displayed.
8. To print the highest value, press **[Print/M+]**.
9. To display current value (e.g. after a tension force has been decreased), press **[CE/x10]**.

11.2 Comport Setting for Peak Hold Mode

Refer to **5.5** on comport settings. Auto 1 ~ 3 for comport 1 and #2 are **not** suggested. If a printer is used, set the connected comport to Manual and the other comport to any data string related modes.

During comport setting procedures, following the below recommendation for parameters selection.

a. Baud rate setting
- If an external peripheral is used, always use the highest available baud rate of it. The highest baud rate this instrument can support is 115200. Baud rate of the peripheral has to be set accordingly.
- If there is external peripheral is used, set baud rate of this comport to 115200.

b. Parity setting: -
- Set according to the external peripheral connected.
- Select any if there is no external peripheral is connected.

c. Data length setting

- Set according to the external peripheral connected.
- Select any if there is no external peripheral is connected.

d. Auto Accumulation setting: - Select any. Instrument will deem No as default value for this mode.
e. Check control setting: - Select Off.
f. Stability control setting: - Select any. Instrument will deem No as default value for this mode.
g. Minimum output setting: - Select any. Instrument will deem 0d as default value for this mode.
h. Output format setting: -

- Set according to the external peripheral connected.
- Select any if there is no external peripheral is connected.

i. At this point, comport setup is completed for this mode.

Start peak testing procedures. The highest weight value of the same test process will be displayed. The check current weight value, press **[CE/x10]**.

Press **[CE/x10]** before starting a new test.

11.3 To Quit Peak Hold Mode

Refer to **6.3** on how to quit to other function mode.

12. Animal Weighing Mode[32] [33] [34]

1. Refer to **6.4** on how to select the desired weight unit,
2. If a container is used, place it onto the platform and press [Tare],
3. Press **[Set]** to select the preferred filter value by pressing **[Func]** or **[Unit]** key, 3 filter parameters are available: -
   - FLt 1 = Fast (Displayed average weight is calculated based on the last 4 internal readings),

[32] To enable animal weighing mode, set F11 = ON

[33] Weight reading of Animal weighing mode cannot be accumulated.

[34] Animal Weighing function will not operate when weight is less than 20d (or $20d_1$ for dual range).

- FLt 2 = Normal ((Displayed average weight is calculated based on the last 8 internal readings),
- FLt 3 = Slow (Displayed average weight is calculated based on the last 12 internal readings)

4. Press **[Print/M+]** to save and set weight release variation value.
5. Press **[Func] or [Unit]** key to select the preferred weight release variation value. 5 parameters are available: -
   - rE oFF = auto release disabled,
   - rE 2 = auto release when weight varies ≥2% of rate capacity (or W1 for dual range),
   - rE 5 = auto release when weight varies ≥5% of rate capacity (or W1 for dual range),
   - rE 10 = auto release when weight varies ≥10% of rate capacity (or W1 for dual range),
   - rE 20 = auto release when weight varies ≥20% of rate capacity (or W1 for dual range),
6. Press **[Print/M+]** to save.
7. Instrument is now ready for animal weighing application.

12.1 Weighing Animal

1. Get animal on platform,
2. This instrument will calculate the mean weight of an animal or a group of animals. The result obtained will be displayed. **HOLD INDICATOR** appears to indicate that this weight value is being held (frozen)[35],
3. Get other animals on platform in case more animals have to be weight in the same transaction,
4. An updated weight will be calculated and displayed[36] as above step **b**.

12.2 To Update Weight Value Manually

To update the weight reading manually, press **[CE/x10]**.

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[39] When weight value is being frozen, weight unit conversion is not possible.

[36] Provide that extra weight added fulfill the weight release variation value listed on point 6 of **7.4**.

12.3 To Quit Animal Mode

Refer to **6.3** on how to quit to other function mode.

After quit, the **AUTO** indicator disappears to indicate that Animal Weighing is no longer in effect.

13. Static Check Mode[37] [38] [39] [40] [41]

To utilize this mode, set F25 to Mode 1.

This mode is used to compare the result (of a static application) obtained with the preset Lo and Hi Limit set to this instrument. The comparison result (HI, OK or LO) will then be displayed with or without buzzer[42].

Check targets for static check mode as below: -

- Weighing mode = weight value.
- Piece Count mode = piece value.
- Percentage mode = percentage value.
- Auto Tare Accumulation mode = weight value.

Notes: -

a. For normal comparison, set both Lo and Hi Limits,
b. To check only if result is lower than or equal to LO (result ≤ LO), set HI Limit = 0,
c. To check only if result is higher than or equal to HI (result ≥ HI), set LO Limit = 0,
d. To check if result is equal to a specified value, set both HI Limit and LO Limit = the specified value
e. To disable Check mode, set both Lo and Hi Limit to zero.

13.1 Set Lo & Hi Limit

Follow the below steps to set Lo and Hi Limit.

---

[37] Check mode will not operate when weight is less than 20d (or 20d1 for dual range).

[38] Set also F15 for desired Check buzzer output.

[39] When F25 = Mode 1, set also F26 (Near Zero weight value).

[40] Check mode does not support animal weighing mode.

[41] Set F26 to zero

[42] Set F15 to obtain the preferred buzzer output configuration.

1. During desired operation mode, press **[Check]**.
2. The current LO Limit is displayed with the **LO Symbol** on, press **[Print/M+]** to confirm, or enter a new LO Limit through the numeric keys and then press **[Print/M+]**,
3. Display current HI Limit with the **HI Symbol** on, press **[Print/M+]** to confirm, or enter a new HI Limit through the numeric keys and then press **[Print/M+]**

Check Mode is now enabled. The check is result is shown by one of the HI/OK/LO symbols. Check results are also sent to Control Output Port[43].

13.2 To Quit Static Check Mode

Refer to **6.3** on how to quit to other function mode.

14. Dynamic Check Mode[44]

To utilize this mode, set F25 to Mode 1.

This mode is used to compare the result (of a dynamic application) obtained with the preset Lo and Hi Limit set to this instrument. The comparison result (HI, OK or LO) will then be displayed with or without buzzer[45]. Check results are also sent to Control Output Port [46] for other external control devices/proposes.

14.1 Operation specifications

a. Maximum belt speed: - 30 meter per minute.
b. Maximum accuracy: - 3000d.
c. Maximum speed: - 30 packs per minutes.

---

[43] Refer to **4.6** for details.

[44] Set preferred near zero weight value in F26. By default, system will ignore any near zero which is less than 20e. If it is the case, system will deem 20e as near zero weight value.

[45] Set F15 to obtain the preferred buzzer output configuration.

[46] Refer to **4.6** for details.

14.2 Before Starting Dynamic Check Mode: -

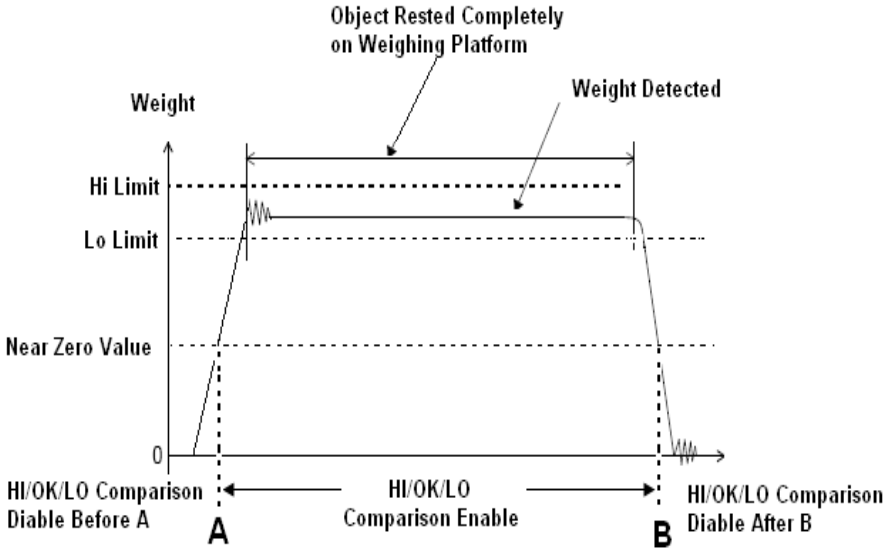
1. Enter Both Hi and Lo limits. Refer to **13.1** on how to set Hi and Lo limits.
2. Enter near zero value in F26. It is recommended that this value is = 70%of the target weight value.

Note: -

a. Nero zero value is very useful for dynamic and conveyor weighing applications. It is used to avoid false LO signal output when load is approaching and leaving the weighing platform.

b. HI/OK/LO comparison will only start when weight reading exceeds the pre-set near zero value. Refer to below diagram for more illustration.

14.3 Near Zero Value Illustration Diagram



After Hi, Lo limits and near zero value have been entered, this instrument is ready for dynamic checking.

14.4 To Quit Dynamic Check Mode

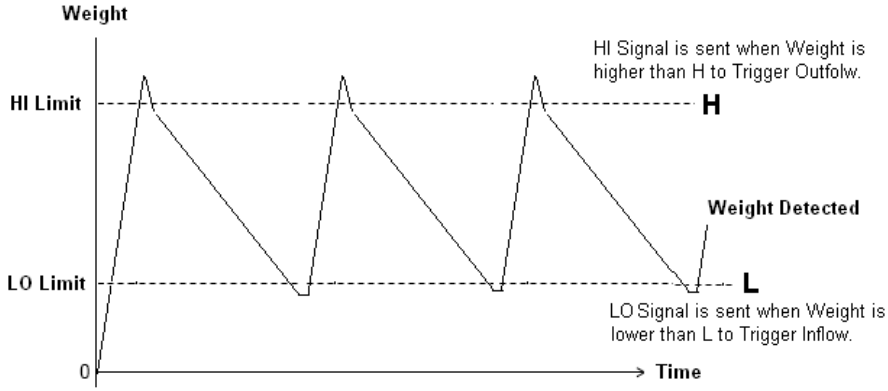
Refer to **6.3** on how to quit to other function mode.

15. Inflow/Outflow Control Mode

To utilize this mode, set F25 to Mode 2.

The inflow/outflow logic mode is built-in the software to facilitate external control devices. This mode is useful to maintain the content level inside a tank or container or reservoir. Refer to below diagram for more information of this control logic.

15.1 Inflow/Outflow Illustration Diagram



Note: -
a. No OK signal will be sent during uploading process (from L to H)
b. OK signal will be sent during unloading process (from H to L)

Check results are also sent to Control Output Port[47]. External control devices should be connected to Control Output Port to form and achieve automatic inflow/outflow system.

Recommended pin assignment of control output ports on instrument with external control devices as below table.

[47] Refer to **4.6** for details.

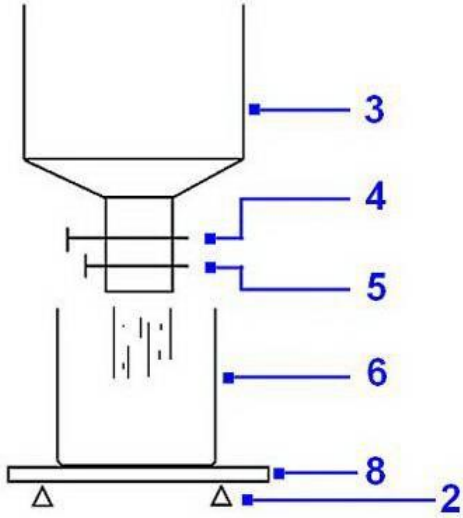
15.2 Control Output Assignment Table

Control Output No.	Control Proposes[48]
#1	Nil
#2	Start Inflow/Stop Outflow
#3	Show level is within Lo and Hi Limit (No inflow or outflow is in process)
#4[49]	Content Level too High/System Alarm/Start Outflow

16. Constant Feeding Mode

To utilize this mode, set F25 to Mode 3.

16.1 Constant Feeding Illustration System Block Diagram



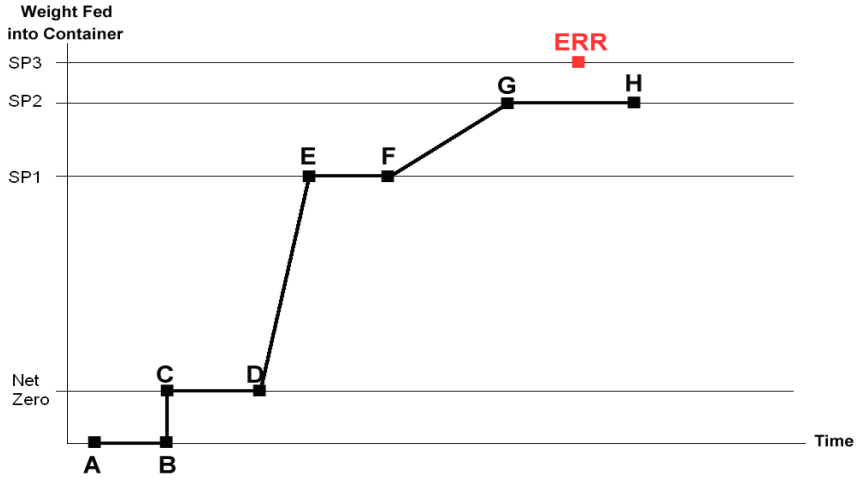
Marking	Description
2	Load Cell
3	Reservoir
4	Solenoid Valve/Gate 1
5	Solenoid Valve/Gate 2
6	Container
8	Weighing Platform

[48] Always check with professional personnel for connection plan according to actual system configuration.

[49] Signal will be triggered if actual weight is higher than HI Limit set + 9e.

16.2 Constant Feeding Sequence Illustration Diagram

Refer to below illustration diagram for feeding sequence.



16.3 Constant Feeding Sequence Description

Seq.	Point	Description
1	A	a. In case **[Unit]** key is pressed, or automatically triggered by Seq. 11 automatically) b. Control output 4 starts action.
2	B	a. **[Func]** key is pressed. b. Control output 4 stops action. (If Control output 4 has been triggered)
3	C	a. Instrument displays **Start**. b. Feeding sequence starts.
4	C ➔ D	Time delay as set forth in Delay 1.
5	D	a. Weight of container is tare off automatically[50]. b. Control output 2 (SP1) starts action. c. Fast feeding starts.

[50] Tare L<= weight of container <=Tare H

6	E	a. Weight value of SP1 is reached. b. Control output 2 stops action. c. Fast feeding stops.
7	E ➔ F	a. Time delay as set forth in Delay 2. This is the stabilization waiting time before SP2 (slow feeding) starts. b. If a weight value **less** than SP1 is detected in this period, Seq. **5** and **6** will be repeated automatically.
8	F	a. Control output 3 (SP2) starts action. b. Slow feeding starts.
9	G	a. Weight value of SP2 is reached. b. Control output 3 stops action. c. Slow feeding stops.
10	G ➔ H	a. Time delay as set forth in Delay 2. This is the stabilization waiting time before the feeding process is completed and automatically stopped. b. If a weight value **less** than SP2 is detected in this period, Seq. **8** and **9** will be repeated automatically. Note: - if any weight (e.g. a value = point **ERR**) >= SP3 is detected in this period: - ● Control output 1 (error) will be triggered. ● Feeding sequence come to a halt. ● Manual intervention is required set
11	H	a. Instrument displays **Stop**. b. Feeding sequence completed. c. Instrument displays gross weight (Tare weight + weight of material filled) d. A printout[51] [52] is generated automatically.

[51] When F18 is set to Mode 3.

[52] Whether the current transaction will be automatically accumulated to memory

		e. A signal is sent to trigger control output 4.

16.4 Constant Feeding Control parameters

Control parameters are available to achieve various applications functions and targets, Refer below table for more details.

Parameter	Description
Tare H	● The highest weight value of an empty container which can be automatically tare off. ● Condition: Tare H > = Tare L ● To disable Tare H checking, input 000000.
Tare L	● This is the lowest weight value of an empty container which can be automatically tare off. ● Condition: Tare L < =Tare H ● To disable Tare L checking, input 000000.
SP1 (Set Point 1)	● Set Point 1. ● This is the weight value at or above which fast feeding comes to end. ● Condition: < = SP3
SP2 (Set Point 2)	Set Point 2. It is usually used for slow feeding comes to end. ● This is the weight value at or above which slow feeding comes to end. ● Condition: SP1 < = SP2 < = SP3
SP3 (Set Point 3)	Set Point 3. It is usually used as alarm when the preset value is reached/exceeded. ● This is the weight value at or above which (if such weight value is achieved within the time delay duration set in Delay 3) and control output 1 starts action. ● Condition: SP1 <= SP2 <= SP3

depends on F17 setting.

dELAy1 (Delay Time 1)	Time duration (00~99 sec). This is the time duration in between: - ● When **[Func]** key (Start) key is pressed, and ● SP1 (Control output 2) starts action.
dELAy2 (Delay Time 2)	Time duration (00~99 sec) This is the time duration in between: - ● When weight value of SP1 is reached or exceeded (Control output 2 stops action), and ● SP2 (Control output 3) starts action.
dELAy3 (Delay Time 3)	Time duration (00~99 sec). This is the time duration in between: - ● (Normal case) When weight value of SP2 is reached or exceeded (Control output 3 stops action) and before feeding sequence stops, or ● (Alarm case) When weight value of SP2 is reached or exceeded and before weight value set in SP3 is/will be reached (Control output 1 starts action). SP3 is the preset alarm weight value ***SP3, Delay 3 and Control output 1 together are used for fail safe proposes.***

16.5 Key Functions During Operation & Parameters Setting

Refer to below table for key functions during feeding operation and parameters setting.

Key	Function Description
[Zero]	● Before feeding process starts: - To set weight displayed to zero manually. ● During feeding process: - No function.
[Tare]	● Before feeding process starts: - To tare off the weight of a container manually. ● During feeding process: - No function.
[Func]	● During feeding process: - To start/stop feeding process

	● During parameter setting: - Go next.
[Check]	● To start parameter setting menu.
[CE/x10]	● During feeding process: - No function. ● During parameter setting: - To clear value entered.
[Unit]	● Before feeding process starts: - Trigger Relay 1. ● During operation: - No function. ● During parameter setting: - Go previous.
[Print/M+]	● During feeding process: - Send current weight result to printer/ Accumulate current weight to memory (if a net weight = zero or negative has been previously attained). ● During parameter setting: - Enter, save and return.
[MR]	● During feeding process: - To recall total number of stored transactions and total accumulated gross weight. ● During parameter setting: - No function
[0~9]	● During feeding process: - No function. ● During parameter setting: - Numeric keys.

16.6 To Enter & Set Parameters

a. Select Mode 3 in internal function number F25,
b. During normal operation status, press **[Check]**,
c. Instrument displays one of the parameters listed on **16.4.**
d. Input value for each of the parameters. Refer to **16.5** for key function during parameter setting,
e. Press **[Zero]** to quit to operation status.

16.7 To Trigger/Stop Feeding

a. During normal operation status, press **[Func]** to start.
b. During feeding/dispensing sequence, press **[Func]** to stop.

16.8 Constant Feeding Control Logic Outputs

The control logic output of this mode should always be achieved through the control output port. Refer to below table for relay output assignment.

16.8.1 Constant Feeding Relay Output Assignment Table

Output Control of Instrument	Mode 3
Output Control #1	SP3 Output. To be connected with system alarm/system halt devices.
Output Control #2	SP1 Output. To be connected with fast feeding valve/gate.
Output Control #3	SP2 Output. To be connected with slow feeding valve/gate
Output Control #4	Manual Output (by **UNIT** Key)

16.9 Constant Feeding Auto Printout[53]

After each successful feeding transaction, a printout of that transaction will be generated. Refer to below for printout content and description.

TIME	23:04:56	
DATE	25.10.2010	
NO.	1	**(Note 1)**
NET	234kg	**(Note 2)**
TARE	97kg	**(Note 3)**
GROSS	331kg	**(Note 4)**
TOTAL	234kg	**(Note 5)**

TIME	23:06:16	
DATE	25.10.2010	
NO.	2	**(Note 1)**
NET	236kg	**(Note 2)**
TARE	56kg	**(Note 3)**

[53] Number of printout copy depends on setting for internal function F18 Mode 3.

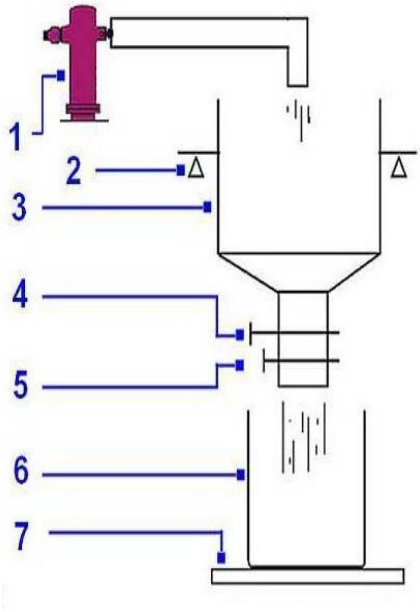
GROSS	292kg	**(Note 4)**
TOTAL	470kg	**(Note 5)**

1. (In case internal function F17 auto accumulation is set to on) sequence number (also = total number) of current feeding transaction accumulated to memory. 1 = 1st, 2 = 2nd …etc. 0 = auto accumulation function disable.
2. Weight of material fed of this feeding transaction.
3. Weight of value (of the container) of this current feeding transaction has been tare off.
4. Gross weight of the container (after material has been filled in).
5. Total accumulated net weight of material fed.

17. Constant Dispensing Mode

To utilize this mode, set F25 to Mode 4.

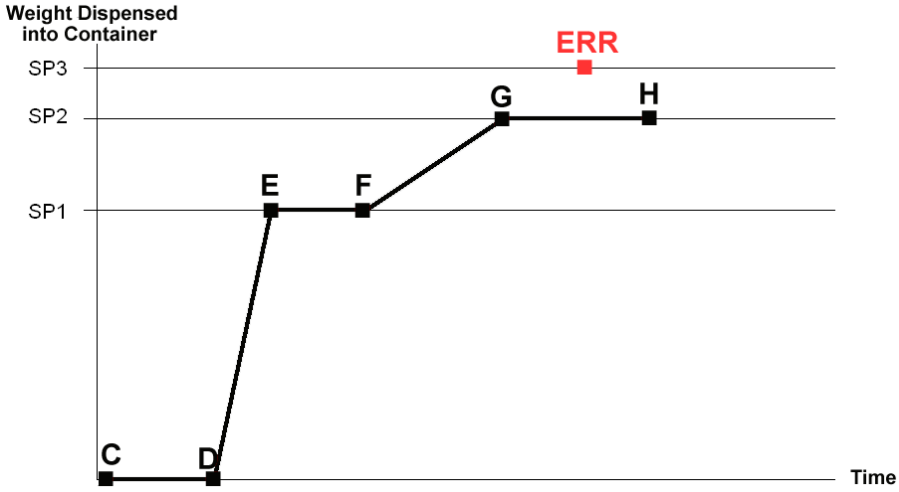
17.1 Constant Dispensing Illustration System Block Diagram



Marking	Description
1	Reservoir Refill Devices
2	Load Cell
3	Reservoir
4	Solenoid Valve/Gate 1
5	Solenoid Valve/Gate 2
6	Container
7	Working Platform

17.2 Constant Dispensing Sequence Illustration Diagram

Refer to below illustration diagram for dispensing sequence.



17.3 Constant Dispensing Sequence Description

Seq.	Point	Description
1	C	a. **[Func]** key is pressed. b. Instrument displays **Start**.
2	C ➔ D	Time delay as set forth in Delay 1.
3	D	a. Dispensing sequence starts. b. Control output 2 (SP1) starts action. c. Fast dispensing starts.
4	E	a. Weight value of SP1 is reached. b. Control output 2 stops action. c. Fast dispensing stops.
5	E ➔ F	a. Time delay as set forth in Delay 2. This is the stabilization/waiting time before SP2 (slow dispensing) starts. b. If a weight value **less** than SP1 is detected in this period, Seq. **3** and **4** will be repeated

		automatically.
6	F	a. Control output 3 (SP2) starts action. b. Slow dispensing starts.
7	G	a. Weight value of SP2 is reached. b. Control output 3 stops action. c. Slow dispensing stops.
8	G ➔ H	a. Time delay as set forth in Delay 3. This is the stabilization/waiting time before the dispensing process is completed and automatically stopped. b. If a weight value **less** than SP2 is detected in this period, Seq. **6** and **7** will be repeated automatically. Note: - if any weight (e.g. a value = point **ERR**) >= SP3 is detected in this period: - ● Control output 1 (error) will be triggered. ● Dispensing sequence come to a halt. ● Manual intervention is required set
9	H	a. Instrument displays **Stop**. b. Dispensing sequence completed. c. A printout[54] [55] is generated automatically.

[54] Number of printout copy depends on F18 Mode 3

[55] Whether the current transaction will be automatically accumulated to memory depends on comport setting

17.4 Constant Dispensing Control parameters

Control parameters are available to achieve various applications functions and targets, Refer below table for more details.

Parameter	Description
rEF H (Refill Hi)	● This is the weight value of the reservoir at or above which auto refill stops. ● Condition: H > = rEF L > = SP2 > = SP1 (SP3 is not considered)
rEF L (Refill Lo)	● This is the weight value of the reservoir at or below which auto refill starts. ● Condition: rEFl L < = rEF H
SP1 (Set Point 1)	● Set Point 1. ● This is the weight value at or above which fast dispensing comes to end. ● Condition: < = SP3
SP2 (Set Point 2)	Set Point 2. It is usually used for slow dispensing comes to end. ● This is the weight value at or above which slow dispensing comes to end. ● Condition: SP1 < = SP2 < = SP3
SP3 (Set Point 3)	Set Point 3. It is usually used as alarm when the preset value is reached/exceeded. ● This is the weight value at or above which (if such weight value is achieved within the time delay duration set in Delay 3) and control output 1 starts action. ● Condition: SP1 <= SP2 <= SP3
dELAy1 (Delay Time 1)	Time duration (00~99 sec). This is the time duration in between: - ● When **[Func]** key (Start) key is pressed, and ● SP1 (Control output 2) starts action.
dELAy2 (Delay Time 2)	Time duration (00~99 sec) This is the time duration in between: -

	● When weight value of SP1 is reached or exceeded (Control output 2 stops action), and ● SP2 (Control output 3) starts action.
dELAy3 (Delay Time 3)	Time duration (00~99 sec). This is the time duration in between: - ● (Normal case) When weight value of SP2 is reached or exceeded (Control output 3 stops action) and before dispensing sequence stops, or ● (Alarm case) When weight value of SP2 is reached or exceeded and before weight value set in SP3 is/will be reached (Control output 1 starts action). SP3 is the preset alarm weight value ***SP3, Delay 3 and Control output 1 together are used for fail safe proposes.***

17.5 Key Functions During Operation & Parameters Setting

Refer to below table for key functions during dispensing operation and parameters setting.

Key	Function Description
[Zero]	● Before dispensing process starts: - To set weight displayed to zero manually. ● During auto dispensing process: - No function.
[Tare]	● Before dispensing process starts: - To tare off the weight of a container manually. ● During auto dispensing process: - No function.
[Func]	● During dispensing process: - To start/stop dispensing operation process ● During parameter setting: - Go next.
[Check]	● To start parameter setting menu.
[CE/x10]	● During dispensing process: - No function. ● During parameter setting: - To clear value entered.

[Unit]	● Before dispensing process starts: - Trigger Relay 1. ● During dispensing process: - Select weight unit. ● During parameter setting: - Go previous.
[Print/M+]	● During operation: - Send current weight result to printer/ Accumulate current weight to memory (if a net weight = zero or negative has been previously attained). ● During parameter setting: - Enter, save and return.
[MR]	● During dispensing process: - To recall total number of stored transactions and total accumulated gross weight. ● During parameter setting: - No function
[0~9]	● During dispensing process: - No function. ● During parameter setting: - Numeric keys.

17.6 To Enter & Set Parameters for Constant Dispensing

a. Select Mode 4 in internal function number F25,
b. During normal operation status, press **[Check]**,
c. Instrument displays one of the parameters listed on **17.4.**
d. Input value for each of the parameters. Refer to **17.5** for key function during parameter setting,
e. Press **[Zero]** to quit to operation status.

17.7 To Trigger/Stop Dispensing

a. During normal operation status, press [Func] to start.
b. During feeding/dispensing sequence, press [Func] to stop.

17.8 Constant Dispensing Control Logic Outputs

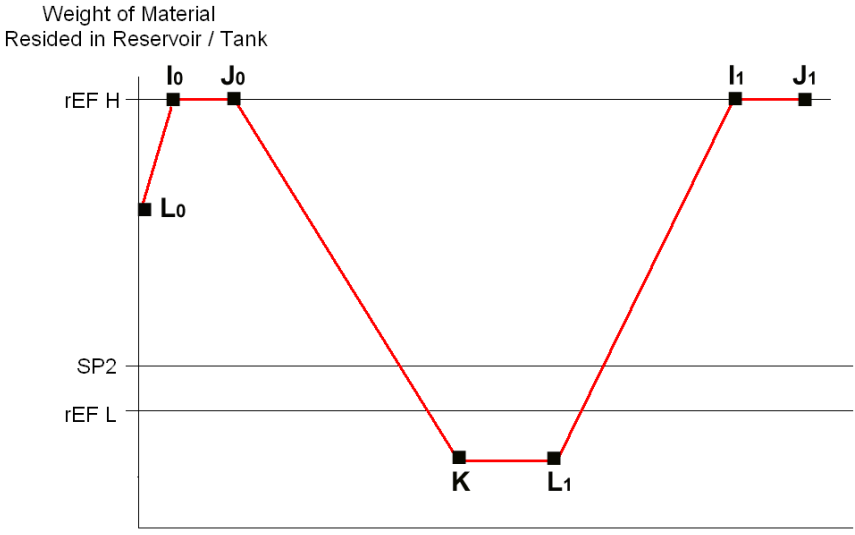
The control logic output of this mode should always be achieved through the control output port. Refer to below table for relay output assignment.

17.8.1 Constant Dispensing Relay Output Assignment Table

Output Control of Instrument	Mode 4
Output Control #1	SP3 Output. To be connected with system alarm/system halt devices.
Output Control #2	SP1 Output. To be connected with fast dispensing valve/gate.
Output Control #3	SP2 Output. To be connected with slow dispensing valve/gate
Output Control #4	rEF L (Connected with reservoir refill start/stop)

17.9 Auto Reservoir Refill Function

The constant dispensing control logic comes with auto reservoir refill logic & output. Refer to below diagram illustration diagram for auto reservoir refill sequence.



17.9.1 Auto reservoir refill sequence description

Seq.	Point	Description
1	L_0 ➔ I_0	Reservoir refill in process. Control output 4 in action.
2	I_0	a. Reservoir refill completed. b. Control output 4 stops action.
3	I_0 ➔ J_0	a. In case **[Func]** key is pressed or had been previously pressed (at reservoir weight value less than rEF L). b. Time delay as set forth in Delay 1.
4	J_0	Dispensing sequence starts.
5	J_0 ➔ K	Weight of material in reservoir decreased after one or more dispensing sequence.
6	K	a. Weight of material in reservoir drops below SP2 after the last dispensing sequence completed. b. **[Func]** key is pressed to start another dispensing sequence.
7	K ➔ L_1	Time delay as set forth in Delay 1.
8	L_1	a. Control output 4 starts action. b. Reservoir refill starts.
9	L_1 ➔ I_1	Reservoir refill in process.
10	I_1	a. Reservoir refill completed. Control output 4 stops action. b. In case **[Func]** key is pressed or had been previously pressed (at reservoir weight value less than rEF L), then = point C of **7.11.3.**
11	I_1 ➔J_1	Time delay as set forth in Delay 1.
12	J_1	= point D of **7.11.3**

17.10 Constant Dispensing Auto Printout[56]

After each successful dispensing transaction, a printout of that transaction will be generated. Refer to below for printout content and description.

TIME	06:59:53	
DATE	27.10.2010	
NO.	1	**(Note 1)**
NET	213kg	**(Note 2)**
TARE	0kg	
GROSS	816kg	**(Note 3)**
TOTAL	213kg	**(Note 4)**

TIME	07:01:00	
DATE	27.10.2010	
NO.	2	**(Note 1)**
NET	201kg	**(Note 2)**
TARE	0kg	
GROSS	615kg	**(Note 3)**
TOTAL	414kg	**(Note 4)**

Notes: -

1. (In case internal function F17 auto accumulation is set to on) sequence number (also = total number) of current dispensing transaction accumulated to memory. 1 = 1st, 2 = 2nd …etc. 0 = auto accumulation function disable,
2. Weight of material dispensed if this dispensing transaction.
3. Weight value of material resided in reservoir after the current transaction.
4. Total accumulated weight of material dispensed.

[56] When F18 is set to Mode 3

18. Communication & Outputs[57]

18.1 PC Output Formats

If PC is selected in F16 and/or F17, refer to **Appendix B** for protocol details.

18.2 Manual Output Formats

If Manual is selected in F16 and/or F17, refer to **5.5.3.1** (Lab 1), **5.5.3.2** (Lab 2) and **5.5.3.3** (LP-50) for details.

18.3 CMD Formats

If CMD is selected in F16 and/or F17, refer to **Appendix C** & **D** for details.

18.4 Auto 1~3 Output Formats

If Auto 1~3 is selected in F16 and/or F17, refer to **5.5.4** for details.

18.5 Sending Keyboard Commands from External Devices

Except when comport is assigned for LP-50, Keyboard commands can be sent by an external device to this instrument. Refer to **Appendix A** for details.

19. Printing Formats

19.1 Lab 1 Print Output Format[58]

When Lab 1 is selected, output in default format will be generated with printed data is sent. Lab1 does not support customs format. Refer to below table for default output format. No header will be generated when line number is set = 00.

[57] Instrument should be re-started (by power off then power on again) after F16 nd/or F17 setting is changed under normal operation status.

[58] When Lab 1 is selected under in F16 and/or F17

C.1 Lab 1 Format in Weighing Function

A	B	C	D	E	F	G	H	I
DATE	TIME	No.	NET	TARE	GROSS	TOTAL	REF.	R
16-01-2013	09:45:52	1W	0.999kg	0.000kg	0.999kg	0.999kg		L
16-01-2013	09:46:00	2W	1.998kg	0.000kg	1.998kg	2.997kg		A
16-01-2013	09:46:13	3W	1.997kg	0.999kg	2.996kg	4.994kg		A
16-01-2013	09:46:27	4W	0.998kg	1.000kg	1.998kg	5.992kg		L
16-01-2013	09:46:34	5W	4.994kg	0.000kg	4.994kg	10.986kg		H

C.2 Lab 1 Format in Piece Counting Function

A	B	C	D	E	F	G	H	I
DATE	TIME	No.	NET	TARE	GROSS	TOTAL	REF.	R
16-01-2013	09:56:19	1C	50P	0.000kg	0.999kg	0.999kg	19.9747g	
16-01-2013	09:56:30	2C	100P	0.000kg	1.998kg	2.997kg	19.9747g	
16-01-2013	09:56:38	3C	50P	1.998kg	2.996kg	3.995kg	19.9747g	
16-01-2013	09:56:45	4C	100P	1.998kg	3.994kg	5.991kg	19.9747g	
16-01-2013	09:57:06	5C	200P	1.998kg	5.992kg	9.985kg	19.9747g	

C. 3 Lab 1 Format in Percentage Function

A	B	C	D	E	F	G	H	I
DATE	TIME	No.	NET	TARE	GROSS	TOTAL	REF.	R
16-01-2013	10:12:14	1P	100%	0.000kg	1.998kg	1.998kg	1.998kg	
16-01-2013	10:12:23	2P	50%	0.000kg	0.999kg	2.997kg	1.998kg	
16-01-2013	10:12:34	3P	100%	0.000kg	2.996kg	5.993kg	2.996kg	
16-01-2013	10:12:57	4P	166.68%	0.000kg	4.994kg	10.987kg	2.996kg	H
16-01-2013	10:13:14	5P	200%	0.000kg	5.992kg	16.979kg	2.996kg	H

Notes: -

- A = Date of Printing
- B = Time of Printing
- C = No of transaction accumulated in memory. W = Weighing, C = Counting, P = Percentage.
- D = Net Result
- E = Tare Weight
- F = Gross Weight
- G = Total accumulated net weight in memory
- H = Unit price Weight for piece counting function; Reference mass value for percentage function.
- I = Check result (check mode is in effect). A = OK, L = LO, H = HI

19.2 Standard Lab 2 Print Output Format[59]

Standard ticket/receipt printout of various function modes are illustrated below.

19.2.1 Weighing & Auto Tare Accumulation mode

7 lines will be transmitted as below: -

1. Time of print,
2. Date of printing,
3. Transaction sequent number (if this transaction is accumulated to memory),
4. Net weight,
5. Tare Weight,
6. Gross Weight,
7. Total accumulated net weight (if accumulation function is in effect).

Sample 1

TIME 15:21:00
DATE 14.04.2009
NO. 1 (First transaction added to memory)
NET 500.0kg
TARE 0.0kg
GROSS 500.0kg
TOTAL 500.0kg (Total accumulated net weight)

Sample 2

TIME 15:21:16
DATE 14.04.2009
NO. 2 (Second transaction added to memory)
NET 200.0kg
TARE 0.0kg
GROSS 200.0kg
TOTAL 700.0kg (Total accumulated net weight)

[59] When Lab 2 is selected under in F16 and/or F17

Sample 3

TIME 15:21:25
DATE 14.04.2009
NO. 3 (Third transaction added to memory)
NET 500.0kg
TARE 200.0kg
GROSS 700.0kg
TOTAL 1200.0kg (Total accumulated net weight)

19.2.2 Piece count mode

5 lines will be transmitted as below: -

1. Time of print,
2. Date of printing,
3. Net weight,
4. Unit weight (average piece weight),
5. Count (quantity in terms of number of pieces).

Sample 1

TIME 15:30:44
DATE 14.04.2009
NET 300.0kg
UNIT.W 599.949 g
COUNT 500PCS

Sample 2

TIME 15:31:54
DATE 14.04.2009
NET 500.0kg
UNIT.W 599.949 g
COUNT 833PCS

19.2.3 Percentage mode

5 lines will be transmitted as below: -

1. Time of print,
2. Date of printing,
3. Net weight,
4. Weight value of reference (100%) mass,
5. Count (quantity in terms of number of pieces).

Sample 1

```
TIME      15:39:13
DATE    14.04.2009
NET        699.0kg
REF %      200.0kg
PERCENT   350.00%
```

19.2.4 Animal weighing mode

3 lines will be transmitted as below: -

1. Time of print,
2. Date of printing,
3. Weight (Net) being held.

Sample 1

```
TIME      16:33:42
DATE    14.04.2009
HOLD.W     496.0kg
```

19.2.5 Weighing mode with check

12 lines will be transmitted as below: -

1. Time of print,
2. Date of printing,
3. Transaction sequent number (if this transaction is accumulated to memory),
4. Net weight,
5. Tare Weight,
6. Gross Weight ,

7. Total accumulated net weight (when accumulation function is in effect),
8. One blank line,
9. One blank line,
10. HI limit,
11. LO limit,
12. Comparison result.

Sample 1

```
TIME      17:39:05
DATE    14.04.2009
NO.           5
NET        200.0kg
TARE         0.0kg
GROSS      200.0kg
TOTAL     3799.0kg



HIGH      2000.0kg
LOW        500.0kg
BELOW LIMIT
```

Sample 2

```
TIME      17:39:15
DATE    14.04.2009
NO.           6
NET        500.0kg
TARE         0.0kg
GROSS      500.0kg
TOTAL     4299.0kg



HIGH      2000.0kg
LOW        500.0kg
ACCEPT
```

Sample 3

```
TIME      17:39:34
DATE    14.04.2009
NO.           7
NET       2500.0kg
TARE       200.0kg
GROSS     2700.0kg
TOTAL     6799.0kg



HIGH      2000.0kg
LOW        500.0kg
ABOVE LIMIT
```

19.2.6 Piece count mode with check

10 lines will be transmitted as below: -

1. Time of print,
2. Date of printing,
3. Net weight,
4. Unit weight (average piece weight),
5. Count (quantity in terms of number of pieces),
6. One blank line,
7. One blank line,
8. HI limit,
9. LO limit,
10. Comparison result.

Sample 1

```
TIME      17:48:07
DATE    14.04.2009
NET        500.0kg
UNIT.W   1001.04 g
COUNT        499PCS



HIGH        1000PCS
```

```
LOW         500PSS
BELOW LIMIT
```

19.2.7 Percentage mode with check

10 lines will be transmitted as below: -

1. Time of print,
2. Date of printing,
3. Net weight,
4. Weight value of reference (100%) mass,
5. Count (quantity in terms of number of pieces),
6. One blank line,
7. One blank line,
8. HI limit,
9. LO limit,
10. Comparison result.

Sample 1

```
TIME      17:51:09
DATE    14.04.2009
NET        500.0kg
REF %      200.0kg
PERCENT   250.00kg



HIGH      1500.0 %
LOW        750.0 %
ABOVE LIMIT
```

19.3 Custom Print Output Format[60] [61]

Maximum 10 or 15 lines can be included for the below modes:-

- Weighing & Auto Tare Accumulation mode [62] (15 lines),

[60] When F18 is either set to **MODE 3**

[61] This instrument does not support DTR (data of offline detection)

[62] Set F21 = CUSTOM to edit print output format.

- Piece Count[63] (15 lines),
- Percentage[64] (15 lines),
- Animal weighing[65] (10 lines)

16 variants + 2 commands (**Cr LF and End**) are available for custom print output format. Refer to the below **PRINT OUTPUT FORMAT VARIANTS TABLE** for more detail.

19.3.1 To edit custom print output format

Follow the below steps to create custom printout.

a. Go to internal function and select the desired function number to edit,
b. Select **CUSTOM** and press **[Print/M+]**,
c. This instrument displays **Line 1** and the last variant or command (see **19.2.2** for details) stored,
d. Press **[Print/M+]** to confirm or select other variant or command by press **[Func]** or **[Unit]**. Then press **[Print/M+]** to confirm and save,
e. This instrument displays **Line 2** and the last variant or command stored,
f. Repeat steps **d** and **e** for other lines,
g. (In case, number of lines to be printed is less than 15 lines) To finish editing, select command **End**, then press **[Print/M+]** to confirm.
h. This instrument returns to and displays the current internal function number,
i. If required, repeat steps **a** to **h** to create and edit custom printout format for other modes.

Notes: -

1. Disregarding the total number of lines, the last line must be = **End**.
2. This instrument will automatically add **End** on line number 15th for Weighing, Piece Count and Percentage mode, and on line number 10th for animal weighing mode.

---

[63] Set F22 = CUSTOM to edit print output format.

[64] Set F23 = CUSTOM to edit print output format.

[65] Set F24 = CUSTOM to edit print output format.

19.3.2 Print output format variants table

SYMBOL	DESCRIPTION
End	Edit finished
Cr LF	Goto next line
dAtE	Date of printing
tiME	Time of print
nEt	Net weight
tArE	Tare weight
GroSS	Gross weight
Unit	Average piece weight
cOuNT	Number of piece
PCt	Percentage value
P rEF	Reference mass (100%)
H rEF	HI limit
L rEF	LO limit
Ani	Weight Hold (Animal weighing)
Ch rES	Comparison result
trAnS	Transaction sequent number (if this transaction is accumulated to memory)
ACC	Total accumulated weight (when accumulation function is in effect)
SiGn	Signature

19.3.3 Edit sample for custom print output format

PRINT CONTENT	Line No.	Select
TIME 17:39:05	1	tiME
DATE 14.04.2009	2	dAtE
NET 200.0kg	3	nEt
TARE 0.0kg	4	tArE
GROSS 200.0kg	5	GroSS
(Blank line)	6	Cr LF

Signature	7	SiGn
	8	End

20. Label Printing (LP-50 or Compatible)

This instrument supports label printing by LP-50 and any LP-50 compatible label printers. Contract your dealer for more information about label printers.

Set all preferred operation parameters according to F16 and/or F17 listed on **5.4 INTERNAL FUNCTION TABLE**.

CAUTION: -

1. Always design independent labels for different working modes. Do not combine data of different working modes on the same label.
2. Do not print any labels of non-current working mode. This will retrieve wrong data of non-current working mode.
3. Print only label data when the same working mode is in operation.
4. Do not combine data of various working modes on same label. This will retrieve wrong data of non-current working mode.

20.1 Label Format Groups & Label File Names

2 label format groups are available, these are: -

- For 1 (label format group 1), and
- For 2 (label format group 2).

20.1.1 For 1 (Label Format Group 1)

For 1 (format group 1) is for current transaction data printing (during normal working status).

In order to trigger the right label to be printed, label files stored in printer for this format group 1 must have a file name of AA1.dlb, AA2.dlb, AA3.dlb, AA4.dlb and AA5.dlb.

In this instrument, 5 printout selections are available in format group 1: -

- **For 1 1**: - Select this to print label file AA1.dlb stored in printer.
- **For 1 2**: - Select this to print label file AA2.dlb stored in printer.
- **For 1 3**: - Select this to print label file AA3.dlb stored in printer.
- **For 1 4**: - Select this to print label file AA4.dlb stored in printer.
- **For 1 5**: - Select this to print label file AA5.dlb stored in printer.

20.1.2 For 2 (Label Format Group 2)

For 2 (format group 2) is for totalized data printing (after **MR** is pressed and memory recall is in effect).

In order to trigger the right label to be printed, label files stored in printer for this format group 1 must have a file name of BB1.dlb, BB2.dlb, BB3.dlb, BB4.dlb and BB5.dlb.

In this instrument, 5 printout selections are available in format group 2: -

- **For 2 1**: - Select this to print label file BB1.dlb stored in printer.
- **For 2 2**: - Select this to print label file BB2.dlb stored in printer.
- **For 2 3**: - Select this to print label file BB3.dlb stored in printer.
- **For 2 4**: - Select this to print label file BB4.dlb stored in printer.
- **For 2 5**: - Select this to print label file BB5.dlb stored in printer.

20.2 Label Programming

Prompt commands, information description, working mode and suggested length on label are listed on the below table**.**

Caution: - Do not combine information of different working mode on the same label.

20.2.1 Label programing information table

Prompt Command[66]	Description	Working Mode[67]	Suggested Length

[66] Commands are case sensitivity.

[67] "All" means the information is good for all working modes.

a	Peak Value	Peak	9
b	Product Code	All	18
K	Date of printing	All	10
L	Time of print	All	8
M	No. of accumulated transaction	Normal Weighing	7
N	Total accumulated weight	Normal Weighing	9
O	Net weight	All	10
P	Tare weight	All	10
Q	Gross weight	All	10
R	HI limit[68]	**Note A**	10
S	LO limit[69]	**Note A**	10
T	Comparison Result	All	11
U	Number of piece	Counting	10
V	Average piece weight	Counting	9
W	Reference mass (100%)	Percentage	9
X	Percentage value	Percentage	10
Y	Weight Hold (Animal weighing)	Animal Weighing	9

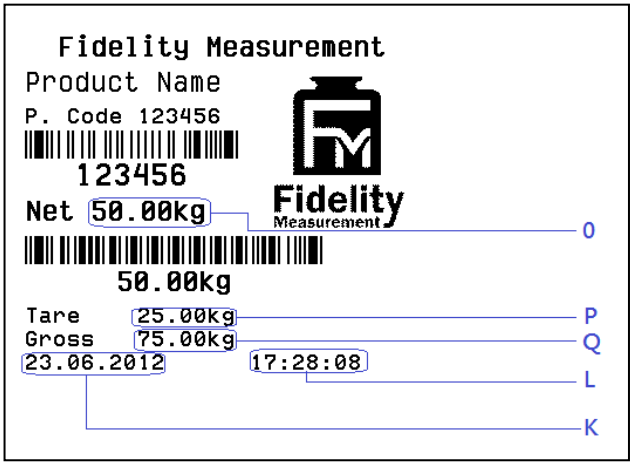
Note A: - Good for all except animal weighing mode.

[68] Each working mode has its own Hi Limit format (weight for weighing & auto tare accumulation mode; pieces for piece count mode; % for percentage mode. If Hi Limit has to be printed, set Hi Limit value under the preferred working mode.

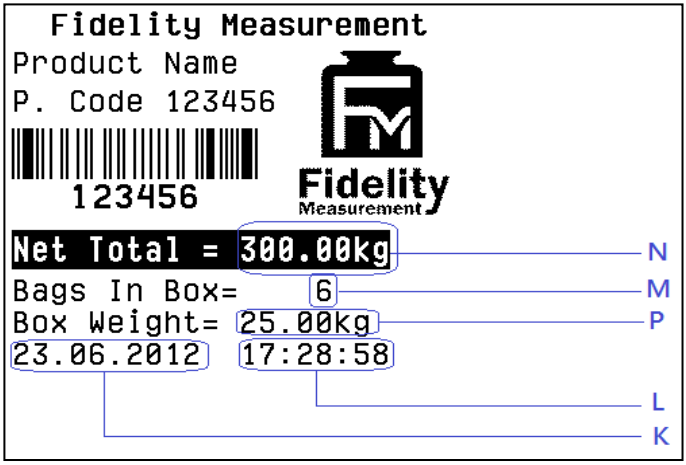
[69] Each working mode has its own Lo Limit format (weight for weighing mode & auto tare accumulation; pieces for piece count mode; % for percentage mode. If Hi Limit has to be printed, set Hi Limit value under the preferred working mode.

20.2.2 Label programming sample

20.2.2.1 Sample label of current transaction (For 1)



20.2.2.2 Sample label of totalized data (For 2)



21. Battery Power and Recharging

21.1 Battery Operation Time

Remaining battery power of the built-in rechargeable battery is displayed by the **Battery Power/Level Indicator.**

21.2 Symbols & Remaining Power: -

- Full Battery: ≥ 6.3V
- 2 Blocks: ≥6.0V (Battery level~75%)
- 1 Block: ≥5.7V (Battery level~20%)
- Frame only: ＜5.7V (Battery level is less than 15%)

21.3 Battery Recharge

When appears, it means that the built-in rechargeable battery is at low voltage status. It is recommended to recharge as soon as possible.

To protect the built-in rechargeable battery, this instrument will be powered off automatically when battery is at extremely low level. If this is the case, do not attempt to power this instrument on. Recharge this instrument immediately. Fail to do so may cause unrecoverable damages to the built-in rechargeable battery.

Battery charging status is shown by the Battery Power/Level Indicator : -

- Progressing: - Recharging in process,
- Flashing Recharge completed.

Battery recharge is possible while operating. Overcharge protection circuit is inside to prevent battery damages from overcharge.

Notes: -

- This instrument will auto power on when the power adaptor when an energized power adaptor is plugged in.
- The backlight remains switched on when an energized power adaptor is plugged in.

22. Error Codes

Error Code No.	Description
Err 1	Time value error
Err 2	Date value error
Err 3	Exceed maximum power on/manual zero range
Err 4	Offset out of range/unstable during power on
Err 5	No load cell signal detected
Err 6	Tare operation error
Err 7	Logic error. HI limit set is lower than LO limit (and HI is not = 0)
Err 8	Logic error. LO limit is higher than HI limit (and HI is not = 0)
Err 9	Error in percentage mode. Input value = 0 or less than 50e
Err 10	(F25 Mode 3) Container weight is higher than tArE H
Err 11	(F25 Mode 3) Container weight is lower than tArE L
Err 12	(F25 Mode 3 and Mode 4) Actual weight is higher than SP3
--oL--	Overload (Gross weight is more than Max plus 9d)
UndEr	Negative Weight values exceeds display range
------	Negative Tare value exceeds display range

23. Daily Care & Maintenance

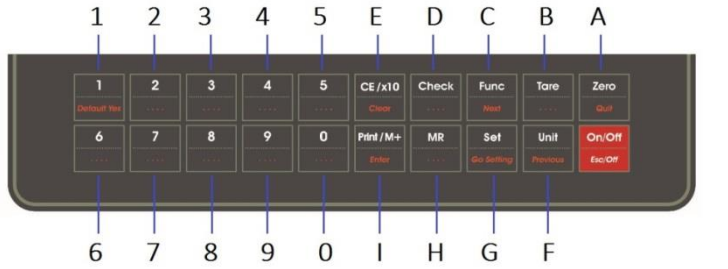
- Clean the instrument with a soft, damp cloth. If necessary, use a mild detergent in water,
- Do not use any harsh, abrasive material, acetone, volatile solvent, thinner or alcohol for cleaning,
- Verify the accuracy of this instrument periodically. Re-calibrate if necessary. In some countries, calibration requires authorized/qualified agent. Contact your dealer for more information,
- Store this instrument in a dry and clean place,
- Recharge battery before and every 4 months during long time storage.

Appendix A: - Keyboard Commands

Keyboard commands can be sent to this instrument from computer through any standard communication program to simulate keyboard entries.

There is no keyboard command to simulate the **[On/Off]** key on panel. Thus, power on and off this instrument must be done through key the **[On/Off]** key on panel. Keyboard Command format as below: -

a. Hex code 0D (CR), then followed by
b. Hex code 0A (LF) then followed by
c. Letter shown on below illustration diagram, then followed by
d. Space (Hex code 20)



Notes: -

c. Keyboard commands are case sensitive.
d. Keyboard command is not suggested for internal function setting proposes or entering values during internal function setting process. Always use keyboard for internal function settings.

Appendix B: - PC Output Protocols

Data Code	Description
,	Comma
+,-	Polarity Sign Positive = space. Negative = minus (-)
P	Polarity Sign Positive = 0. Negative = minus (-)
C	Control command • ETX : End of Text • STX : Start of Text • CF : Carriage Return • LF : Line Feed • SOH : Start of Heading • = : ASCII equal sign (DEC 61, HEX 3D)
G/N	Gross/Net • NT = Net weight • GS = Gross weight
NET	Net Weight

S	Status Code • ST for Stable • US for unstable
R	Revered 7 digits weight value including location of decimal point. If there is no decimal point, then the last character = space.
SP	Space
SWA	Status Word A
SWB	Status Word B
U	Weight Unit • kg = kilogram • lb = pound • g(space) = gram
W	7 digits weight value including location of decimal point. If there is no decimal point, then the first character = space.

Protocol 1 Output Format

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Data	S	S	,	G/N		+,-	W	W	W	W	W	W	W	,	U	U	C	C
1.000kg	S	T	,	G	S				1	.	0	0	0	,	k	g	CR	LF
-0.012kg	S	T	,	G	S	-			0	.	0	1	2	,	k	g	CR	LF
220.450lb	S	T	,	G	S		2	2	0	.	4	5	0	,	l	b	CR	LF

Protocol 2 Output Format

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Data	C	SWA	SWB	SP	Field 1 (Net Weight)						Field 2 (Tare Weight)						CR
Net	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
-0.015kg	STX	5	7		0	0	0	0	1	5	0	0	2	0	0	0	CR
220.450lb	STX	5	!		2	2	0	4	5	0	1	0	0	0	0	0	CR

Tare Value
2.000kg
100.000lb

Protocol 3 Output Format

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Data	C	C	SP	+,-	W	W	W	W	W	W	W	SP	U	U	SP	SP	SP	SP	C	C
1.000kg	SOH	STX					1	.	0	0	0		k	g					CR	LF
-0.015kg	SOH	STX		-			0	.	0	1	5		k	g					CR	LF
220.450lb	SOH	STX			2	2	0	.	4	5	0		l	b					CR	LF

Protocol 4 Output Format

Position	1	2	3	4	5	6	7	8	9
Data	C	R	R	R	R	R	R	R	P
1.000kg	=	0	0	0	.	1			0
-0.015kg	=	5	1	0	.	0			-
220.450lb	=	0	5	4	.	0	2	2	0

Protocol 5 Output Format

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Data	S	S	,	G/N		,	+,-	W	W	W	W	W	W	W	U	U	C	C
1.000kg	S	T	,	G	S	,				1	.	0	0	0	k	g	CR	LF
-0.015kg	S	T	,	G	S	,	-			0	.	0	1	5	k	g	CR	LF
220.450lb	S	T	,	G	S	,		2	2	0	.	4	5	0	l	b	CR	LF

Protocol 6 Output Format

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Data	NET			SP	+,-	W	W	W	W	W	W	W	U	U	C	C
1.000kg	N	E	T					1	.	0	0	0	k	g	CR	LF
-0.014kg	N	E	T		-			0	.	0	1	4	k	g	CR	LF
220.450lb	N	E	T			2	2	0	.	4	5	0	l	b	CR	LF

Protocol 7 Output Format

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Data	C	C	SP	+,-	W	W	W	W	W	W	W	SP	U	U	SP	SP	SP	C	C
1.000kg	SOH	STX					1	.	0	0	0		k	g				CR	LF
-0.015kg	SOH	STX		-			0	.	0	1	5		k	g				CR	LF
220.450lb	SOH	STX			2	2	0	.	4	5	0		l	b				CR	LF

Protocol 8 Output Format

Position	1	2	3	4	5	6	7	8	9	10
Data	C	+,-	W	W	W	W	W	W	W	C
1.000kg	STX				1	.	0	0	0	ETX
-0.015kg	STX	-			0	.	0	1	5	ETX
220.450lb	STX		2	2	0	.	4	5	0	ETX

Protocol 9 Output Format

Position	1	2	3	4	5	6	7	8	9	10	11	12
Data	C	+,-	SP		W	W	W	W	W	U	U	C
1.000kg	STX				1	.	0	0	0	k	g	ETX
-0.015kg	STX	-			0	.	0	1	5	k	g	ETX
220.450lb	STX		2	2	0	.	4	5	0	l	b	ETX

Appendix C: - Operation Result & Details Request Commands[70]

Operation Result & Details Request commands are those commands which are used to request operation result and details from this instrument. These commands can be sent to this instrument from computer through any standard communication program. Command format as below: -

a. Hex code 0D (CR), then followed by
b. Hex code 0A (LF) then followed by
c. Command code listed on below command table, then followed by
d. Space (Hex code 20)

Refer to below table for commands details.

Operation Result & Details Request Commands Table

Command Codes[71]	Operation Data	Working Mode[72]	Data Length[73]
J	Current status, weight and tare weight values	All	26
K	Date of printing	All	12
L	Time of print	All	10
M	No. of accumulated transaction	Weighing	6
N	Total accumulated weight (when accumulation function is in effect)	Weighing	12
O	Net weight	All	12

[70] when F16 or F17 is set to CMD

[71] Commands are case sensitive.

[72] "All" means that information is good for all working modes.

[73] Data length shown include hex code 0D and 0A at the end.

P	Tare weight	All	13
Q	Gross weight	All	12
R	HI Limit	**Note B**	**Note A**
S	LO Limit	**Note C**	**Note A**
T[74]	Comparison Result	All	13
U	Number of piece	Piece Count	12
V	Average piece weight	Piece Count	11
W	Reference mass (100%)	Percentage	11
X	Percentage value	Percentage	12
Y	Weight Hold (Animal weighing)	Animal Weighing	11
Z	Call internal count (AD) value	All	10

Note A: - 13 for piece count mode; 12 for all other modes.

Note B: - Good for all except animal weighing mode.

Cautions: -

1. Do not retrieve any data of non-current working mode. This will retrieve wrong data of non-current working mode.
2. Retrieve only data when the same working mode is in operation. This will retrieve wrong data of non-current working mode.

[74] Does not support animal weighing mode.

Appendix D: - System Parameter Inquiry Commands[75]

System parameter inquiry commands are used to check system parameter settings. Command format as below: -

a. Hex code 0D (ASCII code $0D), then followed by
b. Hex code 0A (LF) (ASCII code $0A) then followed by
c. Command code listed on below table (all commands are case sensitive), then followed by
d. Hex code 20 (ASCII code $20)

System Parameter Inquiry Commands Table

Command Code	Description	Number & Description Responded Parameters **Notes: -** a. If more than one parameter, comma separation is inserted between parameters. b. Response from instrument always end up with Hex code 0D 0A
Aa	Calibration weight unit and application	• **d1** = calibration weight unit: - 0 = kg; 1 = lb. Data length = 8 including decimal with leading space (Hex code 20) • **d2** = application: - 0 = none; 1 = OIML; 2= NTEP
Ab	Decimal Point of kg, g and lb	• **d1** = kg: - 0 = no decimal; 1 = 1 decimal place…… 4 = 4 decimal place • **d2** = g: - 0 = no decimal; 1 = 1 decimal place…… 4 = 4 decimal place • **d3** = lb: - 0 = no decimal; 1 = 1 decimal place…… 4 = 4 decimal place

[75] when F16 or F17 is set to CMD

Ac	Capacity1 of kg, g, lb	• **d1** = capacity in kg. Data length = 8 including decimal with leading space (Hex code 20) • **d2** = capacity = g. Data length = 8 including decimal with leading space (Hex code 20) • **d3** = capacity = lb. Data length = 8 including decimal with leading space (Hex code 20)
Ad	Capacity 2 of kg, g, lb	• **d1** = capacity in kg. Data length = 8 including decimal with leading space (Hex code 20) • **d2** = capacity = g. Data length = 8 including decimal with leading space (Hex code 20) • **d3** = capacity = lb. Data length = 8 including decimal with leading space (Hex code 20)
Ae	Division 1 of kg, g, lb	• **d1** = kg: - 0 = 1; 1 = 2; 2 = 5; 3 = 10; 4 = 20; 5 = 50 • **d2** = g: - 0 = 1; 1 = 2; 2 = 5; 3 = 10; 4 = 20; 5 = 50 • **d3** = lb: - 0 = 1; 1 = 2; 2 = 5; 3 = 10; 4 = 20; 5 = 50
Af	Division 2 of kg, g, lb	• **d1** = kg: - 0 = 1; 1 = 2; 2 = 5; 3 = 10; 4 = 20; 5 = 50 • **d2** = g: - 0 = 1; 1 = 2; 2 = 5; 3 = 10; 4 = 20; 5 = 50 • **d3** = lb: - 0 = 1; 1 = 2; 2 = 5; 3 = 10; 4 = 20; 5 = 50
Ag	Gravity Factor of Calibration Place and Operation Place	• **d1** = gravity factor of calibration place. Data length = 8 including decimal with leading space (Hex code 20). • **d2** = gravity of location of operation place. Data length =

		8 including decimal with leading space (Hex code 20).
Ah	Linearity Compensation Function	0 = Off; 1 = On
Ai	ad value of zero point (offset) value, weight value of LD1, ad value of LD1, weight value of LD2 and ad value of LD2	• **d1** = ad value of zero point. Data length = 8 including decimal with leading space (Hex code 20). • **d2** = weight value of LD1. Data length = 8 including decimal with leading space (Hex code 20). • **d3** = ad value of LD1. Data length = 8 (integers only) with leading space (Hex code 20). • **d4** = weight value of LD2. Data length = 8 including decimal with leading space (Hex code 20). • **d5** = ad value of LD2. Data length = 8 (integers only) with leading space (Hex code 20).
Aj	ad value of zero point (offset), span weight value in kg, span weight value in g, span weight in lb and span ad value	• **d1** = as value of zero point. Data length = 8 (integers only) with leading space (Hex code 20). • **d2** = span weight value in kg. 8 including decimal with leading space (Hex code 20). • **d3** = span weight value in g. 8 including decimal with leading space (Hex code 20). • **d4** = span weight value in lb. 8 including decimal with leading space (Hex code 20).

		• **d5** = span AD value. Data length = 8 (integers only) with leading space (Hex code 20).
Ak	Weight unit enable/disable for kg, g and lb	• **d1** = kg: - 0 = Off; 1 = On • **d2** = g: - 0 = Off; 1 = On • **d3** = lb: - 0 = Off; 1 = On
Al	Filter strength	0 = level 1; 1 = level 2; 2 = level 3; 3 = level 4; 4 = level 5; 5 = level 6
Am	Initial Zero range, manual zero range, auto zero tracking speed	• **d1** = initial zero range: - 0 = Off, 1 = 1%, 2 = 2%; … 5 = 5%; 6 = 10%; 7 = 20% • **d2** = manual zero range: - 0 = 1%; 1 = 2%; 2 = 3%; 3 = 4%; 4 = 5%; 5 = 10%; 6 = 20%; 7 = 50%; 8 = 75%; 9 = 100% • **d3** = auto zero tracking speed: - 0 = Off; 1 = 0.25e; 2 = 0.50e; 3 = 10e; 4 = 1.5e; 5 = 2.0e; 6 = 2.5e; 7 = 3.0e; ….; 9 = 5e; $3A = 7.5e; $3B = 10e
An	Auto tare, repetitive tare and preset tare	• **d1** = auto tare: - 0 = Off; 1 = On • **d2** = repetitive tare: - 0 = Off; 1 = On • **d3** = Preset tare: - 0 = Off; 1 = On
Ao	Stability control of manual zero and manual tare	• **d1** = manual zero stability control: - 0 = no (disable); 1 = Yes (enable) • **d2** = manual tare stability control: - 0 = no (disable); 1 = Yes (enable)
Ap	Auto power off time, backlight brightness and keypad	• **d1** = auto power off time: - 0 = Off; 1 = 1 minute; 2 = 3 minute; 3 = 5 minute; 4 = 10 minute; 5 = 20 minute

	buzzer	• **d2** = backlight brightness: - 0 = Level 1; 1 = level 2; …. 8 = level 9 • **d3** = keypad buzzer: - 0 = Off; 1 = On
Aq	Check result buzzer, near zero value, high limit for weighing, low limit for weighing, high limit for counting, low limit for counting	• **d1** = check result buzzer: - 0 = Off; 1 = In; 2 = Out; 3 = hi, 4 = lo • **d2** = near zero value. Data length = 8 with leading space (Hex code 20) • **d3** = Hi Limit for weighing. Integer only. Data length = 8 including decimal with leading space (Hex code 20). • **d4** = Lo Limit for weighing. Integer only. Data length = 8 including decimal with leading space (Hex code 20). • **d5:** = Hi Limit for counting. Integer only. Data length = 8 (integers only) with leading space (Hex code 20). • **d6**: = Lo Limit for counting. Integer only. Data length = 8 (integers only) with leading space (Hex code 20).
Ar	Comport 1 working mode, baud rate, output protocol, print stability control, transmission interval, auto	• **d1** = working mode: - 0 = Auto 1; 1 = Auto 2; 2 = Auto 3; 3 = Manual; 4 = PC, 5 = CMD • **d2** baud rate: - 0 = 1200; 1 = 2400; 3 = 4800; 3 = 9600; 4 = 19200; 5 = 38400; 6 = 57600; 7 = 115200 • **d3** = protocol: - 0 = Protocol 1; 1 = Protocol 2; … ; 8 = Protocol

	accumulation, number of copy, check result control, manual output format, LP-50 label format group 1 file number, LP-50 label format group 2 file number, data length, parity, minimum output weight value	9 • **d4** = print stability control: - 0 = no (disable); 1 = Yes (enable) • **d5** = transmission interval: - 0 = int 0; 1 = int 0.5; 2 = int 1.0; 3 = int 1.5; …..; 9 = int 300. • **d6** = auto accumulation: - 0 = Off (disable); 1 = On (enable) • **d7** = number of copy: - 0 = 1 copy; … 7 = 8 Copy • **d8** = check result control: - 0 = no (disable); 1 = Yes (enable) • **d9** = manual output: - 0 = Lab1; 1 = Lab2; 2 = LP-50 • **d10** =LP-50 label format group 1 file number: - 0 = file1; 1 = file2; … 4 = file5 • **d11** = LP-50 label format group 2 file number: - 0 = file1; 1 = file2; … 4 = file5 • **d12** = data length:- 0 = 7bit; 1 = 8bit • **d13** = parity: = 0 = none; 1 = 0dd; 2 = even • **d14**: minimum output weight value: - 0 = from 00d; 01 = from 01d; … ; 20 = from 20d. Data length = 2 with leading space (Hex code 20)
As	Comport 2 working mode, baud rate, output protocol, print stability control,	• **d1** = working mode: - 0 = Auto 1; 1 = Auto 2; 2 = Auto 3; 3 = Manual; 4 = PC, 5 = CMD • **d2** baud rate: - 0 = 1200; 1 = 2400; 3 = 4800; 3 = 9600; 4 = 19200; 5 = 38400; 6 = 57600; 7 = 115200

	transmission interval, auto accumulation, number of copy, check result requirement, manual output format, For1 number, For2 number, data length, parity, minimum output weight value	• **d3** = protocol: - 0 = Protocol 1; 1 = Protocol 2; … ; 8 = Protocol 9 • **d4** = print stability control: - 0 = no (disable); 1 = Yes (enable) • transmission interval: - 0 = int 0; 1 = int 0.5; 2 = int 1.0; 3 = int 1.5; …..; 9 = int 300. • **d6** = auto accumulation: - 0 = Off (disable); 1 = On (enable) • **d7** = number of copy: - 0 = 1 copy; … 7 = 8 Copy • **d8** = check result control: - 0 = no (disable); 1 = Yes (enable) • **d9** = manual output: - 0 = Lab1; 1 = Lab2; 2 = LP-50 • **d10** =LP-50 label format group 1 file number: - 0 = file1; 1 = file2; … 4 = file5 • **d11** = LP-50 label format group 2 file number: - 0 = file1; 1 = file2; … 4 = file5 • **d12** = data length:- 0 = 7bit; 1 = 8bit • **d13** = parity: = 0 = none; 1 = 0dd; 2 = even • **d14**: minimum output weight value: - 0 = from 00d; 01 = from 01d; … ; 20 = from 20d. Data length = 2 with leading zero
At	Current weight unit and function mode	• **d1** = weight unit: - 0 = kg; 1 = g; 2 = lb • **d2** function mode: - 0 = weighing; 1 = piece count; 2 = percentage; 3 = AT; 3 = peak hold; 4 = Peak; 5 = animal

Au	high limit for percentage, low limit for percentage	• **d1** = Hi Limit for percentage. Data length = 8 including decimal with leading zero. • **d2** = Lo Limit for percentage. Data length = 8 including decimal with leading zero.

Revision Notes

1. 2014/01/28 Rev 207: - Major software upgrade to include Auto Tare Accumulated Function (sorting), even faster stabilization time, new calibration methods and increased remote accessibility.
2. 2014/03/10 Rev 208: - Debug F6 Default Setting error, fine tuning paragraph alignment and cosmetic changes on Appendix B.
3. June 6th 2014 Rev209: -
   a. Add Product Code, Peak Hold, ATM & RTM and keyboard lock function.
   b. Add parameters Lo and Hi to F15.
   c. Amend F1, F15, F19, F20 on paragraph 5.4
   d. Amend Appendix B & C.
   e. Add Appendix D.
4. 2014/07/23 V209 Rev1: - Rearrange page number of Appendix B.
5. 2014/8/9 V209 Rev2: -
   - Correct **d2** of command Ar and As on System Parameter Inquiry Commands Table
   - Correct data length of Command Z on Operation Result & Details Request Commands Table