FT-107

Weighing Terminal

Technical Manual

flintec

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RIGHTS AND LIABILITIES

1. SAFETY INSTRUCTIONS

CAUTION! READ THIS MANUAL BEFORE OPERATING OR SERVICING THIS EQUIPMENT. FOLLOW THESE INSTRUCTIONS CAREFULLY. SAVE THIS MANUAL FOR FUTURE REFERENCE. DO NOT ALLOW UNTRAINED PERSONNEL TO OPERATE, CLEAN, INSPECT, MAINTAIN, SERVICE, OR TAMPER WITH THIS EQUIPMENT. ALWAYS DISCONNECT THIS EQUIPMENT FROM THE POWER SOURCE BEFORE CLEANING OR PERFORMING MAINTENANCE. CALL FLINTEC GMBH ENGINEERING FOR PARTS, INFORMATION, AND SERVICE.

WARNING! ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

WARNING! FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.

WARNING! DISCONNECT ALL POWER TO THIS UNIT BEFORE REMOVING ANY CONNECTION, OPENING THE ENCLOSURE OR SERVICING.

WARNING! BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT OR BODILY HARM.

CAUTION! OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

2. INTRODUCTION

2.1 Overview

FT-107 weighing terminal is economic and powerful state-of-the-art indicator for industrial weighing applications like basic weighing, piece counting, checkweighing or animal weighing.
FT-107 has the capacity for 100 records.
The scales equipped with FT-107 weighing terminal can be used in all kind of industrial areas up to wet and hygienic environments with its fast and efficient cleaning build to the international guidelines.

2.2 Specifications

A/D Converter	
A/D converter type	24-bit Delta-Sigma ratio metric with integral analog and digital filters
Input sensitivity	0.4 µV/d (approved); 0.1µV/d (non-approved)
Analog input range	0 mV to +18 mV (unipolar)
Resolution	
Display resolution	up to 6.000 increment (approved); up to 30.000 increment (industrial)
Internal resolution	up to 16.000.000
Scale Calibration and Functions	
Calibration	Calibration is performed with or without load cell non-linearity correction.
Digital filter	3 steps programmable adaptive digital filter; 4 steps programmable filter at dynamic weighing.
Weighing functions	Taring, zeroing, auto zero tracking, motion detection, auto zero at power up, increased resolution, unit change, temporary gross weight indication.
Application functions	Basic weighing, check weighing, piece counting, animal weighing, totalization.
Memories	100 product memory at check weighing, 100 product memory at piece counting. 100 product quantity memory at piece counting.
Load cells	
Excitation	5 VDC max. 100 mA
Number of load cells	Up to 4 load cells 350 Ω or 12 load cells 1100 Ω in parallel
Connection	4- or 6-wire technique. Cable length: maximum 2000 m/mm² for 6-wire connection
Communication	
RS-232	1200 to 38400 baud rate, 8N1
Second RS-232 (optional)	1200 to 38400 baud rate, 8N1
Power Consumption	
FT-107	12 VDC (with 100 – 240 VAC / 12 VDC adaptor)
FT-107S	12 VDC or 100 – 240 VAC, 50-60 Hz
Battery	2000mAh Li-ion, up to 36h continuous operation for single load cell / 24h for 4 x load cells
Environment and Enclosure	
Operation temperature	-15 °C to +55 °C; 85% RH max, non-condensing
Enclosure FT-107	ABS plastic, IP30;
FT-107S	Stainless steel, IP65
Size	220 x 110 x 55

2.3 The Front View and Key Functions

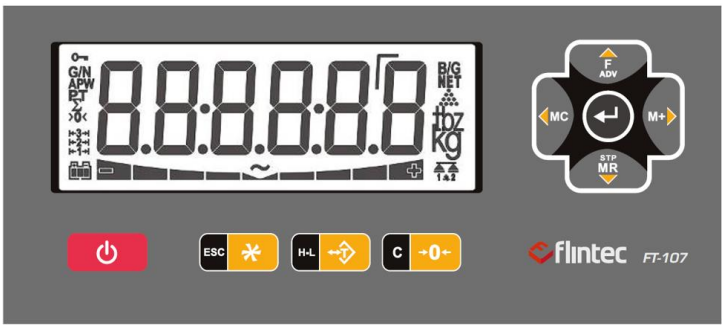


Figure 2.1 – Front view of FT-107(S)

2.3.1 Display

The meanings of the announcement symbols on the display are:

~	**Unstable:** This sign appears if the load on the scale is not stable. The weight value of the object should be read if the scale is stable. The taring, zeroing, printing and accumulation are available when the scale is stable.
>0<	**Center of zero:** This sign appears if the weight is ±0.25e of the center of the zero. *(Page 17)*
kg	**Weight unit:** The weighing unit is located on the right of the weighting display as kg, g, lb, and oz. *(Page 29)*
NET	**Net weight:** This sign indicates that the weight indication is in net. *(Page 17)*
B/G	**Gross weight:** This sign indicates the displayed weight value is gross.
2 1	**Operation range:** Announces the operation range of the multi range scale.
	Piece counting mode: The value on the display indicated the quantity. (Page 29)
Σ	**Total:** Signs the displayed value is the accumulation in the memory *(Page 18 in weighing and page 30 in piece counting)*
APW	**APW:** Announces the displayed value is the average piece weight. *(Page 31)*
G/N	**Gross / Net:** Temporary gross indication. *(Page 18)*
	Battery charging level: This sign indicates the battery charging level. Moving level indicates the battery charging.
	Battery is empty: Announces the battery is discharged and should be charged in a first convenient time.

2.3.2 Key Pad

The keys and the key functions of FT-107(S) in usage are:

	**Power on/off key:** Press button to turn it on. To turn it off, press the button for one second.
	*** key:** The most frequent used function key. Press to use the selected function. *(Page 23)* **Sampling key:** Press the * key more than one second to start sampling in piece counting. *(Page 29)* **Escape key:** In menu mode, press this key to escape from menu and return to normal mode.
	**Tare key:** Press this key to deduct the weight of the container placed on the platform to see the net weight value of the added material in the container or taken out material from the container. *(Page 25)* **Checkweighing key:** To enter check weighing operation press this key until [H-L : n] message appears. *(Page 32)*
	**Zero key:** This key adjusts the scale zero, if there is any drift. Zeroing should be done if there is no load on the platform. *(Page 17)*
	**F key:** This key is used for its programmed function usage. *(Page 23)* **ADV key:** This key is used to enter advance functions setting by pressing more than one second. *(Page 19)*
	**M+ Add to memory key:** Press this key to add the indicated weight to the accumulator in weighing and in counting operations. *(Page 18 in weighing and page 30 in piece counting)*
	**MR Memory read:** Press this key to indicate accumulated total weight in weighing operation or accumulated quantity in piece counting operation. *(Page 18 in weighing and page 30 in piece counting)*
	**MC Memory clear key:** Press this key to erase accumulated value from memory. The weight and count accumulators shall be erased separately. *(Page 18 in weighing and page 30 in piece counting)*
	**Enter key:** Press this key for printout.
	**Navigation keys:** Navigation keys are located on the right of the indicator front which are up, down, left and right arrow keys. These keys are used for navigation in set up and to change any numerical value.

Calibration switch is located on the rear of the instrument. The calibration switch should be sealed before putting the scale in to usage.

2.4 Installation Parts

2.4.1 Parts included for FT-107

	FT-107 Indicator
	100VAC - 240VAC, 50 – 60 Hz / 12VDC, 0.8A regulated adapter.
	Support plate (will be mounted on the rear of the indicator)
	Column holder (will be mounted on the support plate)
	Wall mounting plate (will be mounted on the column holder)
	Battery BAT21 Li-ion
	Sealing kit for sealing with lead (only approved versions)
	1 x Load cell connector
	4 x rubber foot for usage on the table
	3 x M4 screw for installation to Support plate
	2 x allen screws for installation to Column holder

2.4.2 Part included for FT-107S

	FT-107S Indicator
	Column holder (will be mounted on the rear of the indicator)
	Wall mounting plate (will be mounted on the column holder)
	Battery BAT21 Li-ion
	2 x allen screw to install on the indicator support 2

3. INSTALLATION

***PRECAUTION**: Please read this section carefully before installation of the instrument. Applying the recommendations in this section will increase your system reliability and its long-term performance.*

Before starting the installation,

1. Select the weighing terminal location. Refer to recommendations in the following section.
2. Prepare the PE protective earth cable to grounding the indicator housing. The protective earth should be as good as possible for scale reliability.
3. Prepare the power source near the weighing terminal.
4. Prepare the cabling tray, pipe etc. from platform to the weighing terminal.

3.1 Recommendations

3.1.1 Environment

***Warning:** Please care the following warnings for designing your operation area which will increase your system reliability.*

The weighing indicator should be placed clean area, not getting direct sun light if possible, with a temperature between -10 ºC and +40 ºC, humidity not exceeding 85% non-condensing. All external cables should be installed safely to avoid mechanical damages.

This instrument is very low-level signal measuring instrument. To avoid electrical noise, it should be separated from equipment that produces electrical noise. The instrument body shall be connected to a good ground against the electromagnetic disturbances. Load cell cable must be separated from other cables, if possible. If there are noise-generating equipment such as heavy load switches, motor control equipment, inductive loads etc., please be careful against the EMC interference. Connect parallel reverse diodes to the DC inductive loads like relays, solenoids etc. to minimize voltage peaks on the DC power lines.

3.1.2 Cabling

All cables coming to the instrument shall be high quality and shielded. Distance from load cell cables, interface cables and DC power supply cables to power line cables shall be minimum 50 cm. The separate cable tray usage for these low signal level cables is strongly recommended.

Shields of the cables should be connected to the ground.

3.1.3 Cleaning

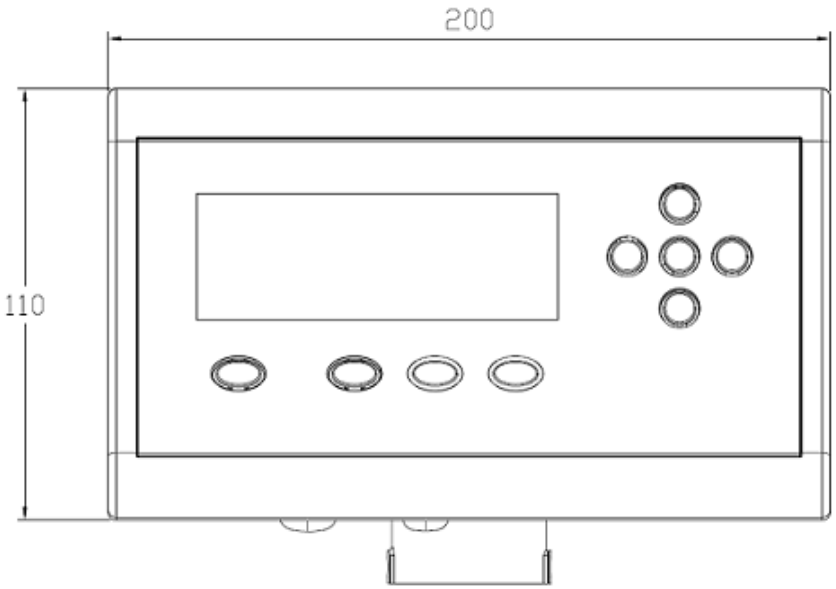
***Warning**: Disconnect the instrument from power source before start cleaning for your safety. Cover the open glands.*

FT-107 instrument is designed for using in wet, hygienic and harsh environment. To maintain the instrument, never use harsh abrasive cleaners or solvents. Wipe the instrument with a soft cloth slightly dampened with warm soapy water or with mild detergent.

3.1.4 Disposal

In conformance with the European Directive 2002/96 EC Waste Electrical and Electronic Equipment (WEEE), this device may not be disposed of with domestic waste. This rule also applies to the non-EU countries, according to their specific regulations. Please dispose of this product in accordance with local regulations at the collecting point specific for electrical and electronic equipment. For your questions, please contact the responsible local authority. Thank you for your attention to environmental protection.

3.2 Housing



3.3 Mechanical Installation

You may install your weighing indicator on a column, on a table or on a wall. Take care of the housing drawings and dimensions given in this manual to design your weighing scale or weighing station mechanically.

Be sure that the mechanical installation of the instrument is done properly for long time life before starting electrical installation as descripted below. Installation of the desk type and wall type housings are identical due to same kits usage as shown below.

If the indicator will be used on the table, stick the 4 pieces rubber foots on the back of the indicator (only FT-107).

For installation on a round scale column, do not stick the rubber foot and follow the pictures below.

Install the **Support plate** to the indicator with 3 pcs M4 screws included in the box (only FT-107).

Install the **Column holder** after installing 2 allen screws.

If the indicator will be mounted on the square column or to the wall, install the **wall mounting plate** to the column holder

3.4 Electrical Connection

Recommendations

1. Always remember that FT-107(S) indicator is very low voltage measuring instrument in the industrial environment. Your proper installation increases reliability and performance of the instrument.
2. A trained person should interface the instrument because of the 230 VAC voltage in the instrument and against malfunction at installation.
3. If the energy condition of your plant is bad, prepare a special power line.
4. The quality of your plant grounding will provide weighing accuracy and the safety of your indicator. If grounding of your plant is bad, prepare a special power line and grounding.
5. The instrument shall be powered off before interfering the instrument.
6. Powered off the instrument before connecting or disconnecting any peripheral instrument.
7. The shielded cable and ground connection of the shield will increase the immunity against electrical disturbances.
8. All required electrical connections should be done as described in the installation section below.
9. If you should service the indicator, turn the power off and wait at least 30 seconds before opening housing to interfere it.

Place of the Peripheral Connections

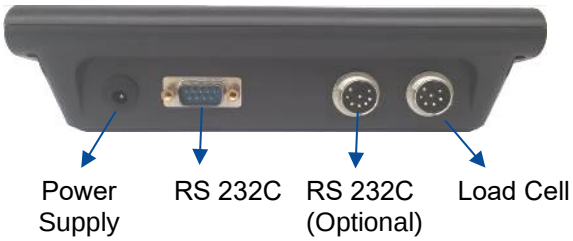


Figure 3.1 – FT-107 connections

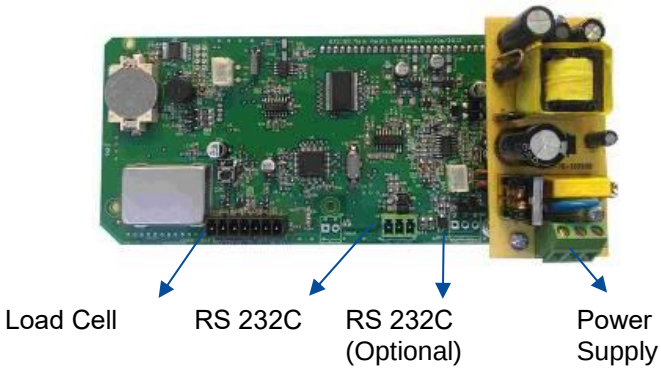
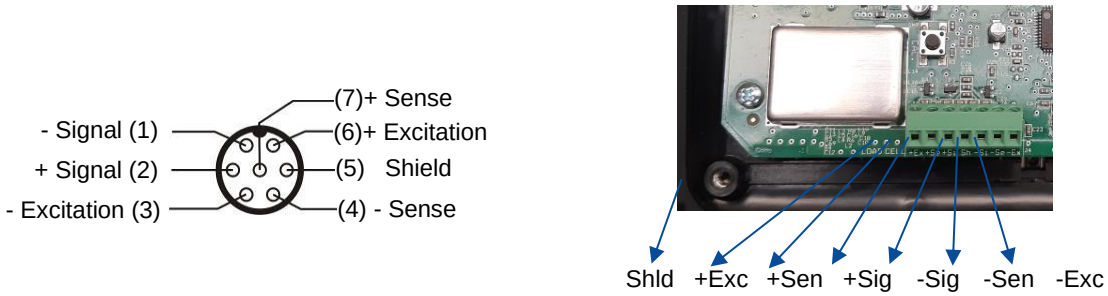


Figure 3.2 – FT-107S connections

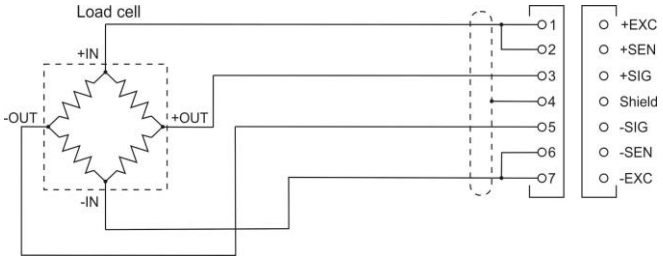
3.4.1 Load Cell Connection

To avoid damages, the load cell wiring should be made carefully before energizing the instrument. Load cell connection details are shown in Figure 3.4. In 4-wire installations the sense and excitation pins with the same polarity **should be short circuited** at the connector side. If you have junction box in your system, use 6 wire cable between FT-107(S) and the junction box, and short circuit these pins at junction box for better performance.

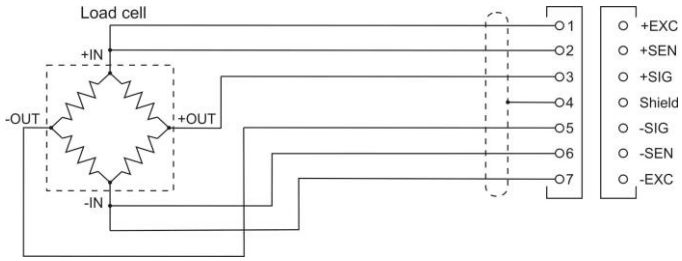


FT-107 (rear view) FT-107S

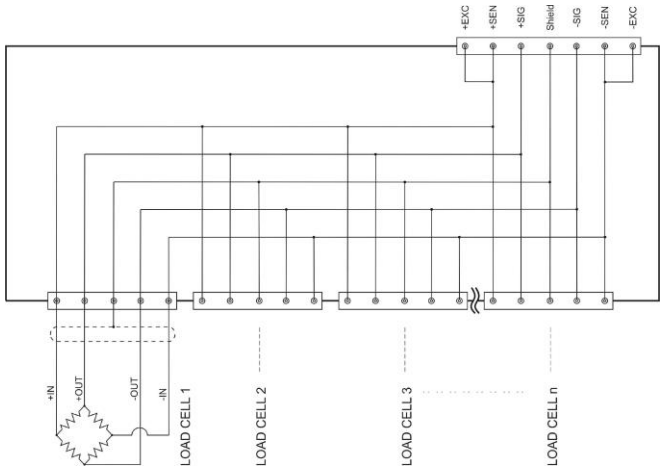
Figure 3.3- The load cell connector



4 wire load cell connection



6 wire load cell connection



Junction box connection

Figure 3.4 – The load cell and junction box connection

Warning: *Always connect Sense pins to Excitation pins for 4 wire connection. Non-connected sense pins may cause the wrong Excitation voltage measurement and create an accuracy problem.*

Warning: *Connect the load cell cable shield to the housing (recommended to increase the EMC immunity against disturbances) or shield pin of the load cell connector.*

3.4.2 RS 232C Serial Port

FT-107(S) weighing terminal has one standard RS232C and one optional RS232C port.

Usage	Interfacing with printer, PC, PLC, remote display etc.
Data formats	Continuous, Continuous 2, Printer
Baud rate	1200 / 2400 / 4800 / 9600 (Default) / 19200 / 38400 bps
Length and parity	8 bits no parity
Start / Stop bits	1 start bit and 1 stop bit

Table 3.1 - RS 232C Serial Interface Specifications

Definition	FT-107 Pin number (DB9 male)	FT-107S Pin number (Terminal)
TXD	2	1
RXD	3	2
GND	5	3

Table 3.2 – Pin configuration of RS 232C terminals

2-wire connection to peripherals: RS 232C serial connection is done with two wires as indicated below in Figure 3.5. if there is no data entry to the weighing terminal. Typical applications are printer and barcode reader connections.

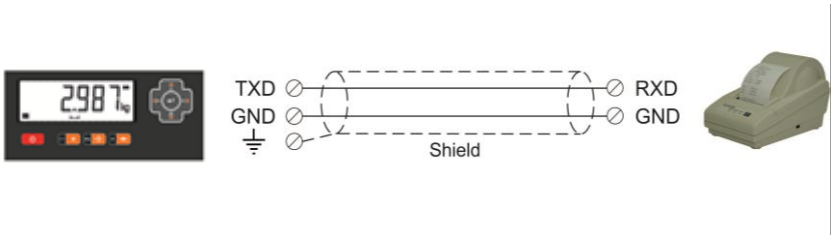


Figure 3.5 – 2 wire RS 232C connection with a printer or PC

3-wire connection to the peripherals: RS 232C serial connection is done with three wires as indicated below in Figure 3.6 for bidirectional interfacing. Typical application is bidirectional BSI format interfacing with PC or PLC.

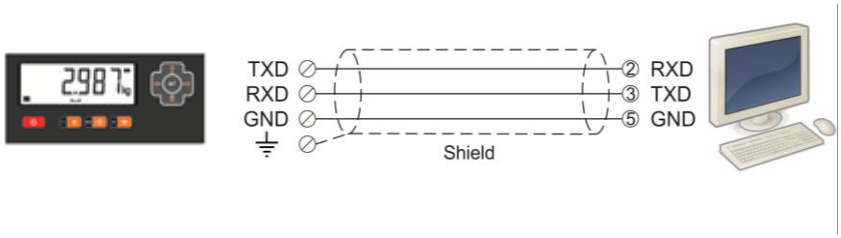


Figure 3.6 – 3 wire RS 232C connection with a PC or PLC

3.4.3 Optional RS232C Serial Port

Usage	Interfacing with printer, PC, PLC, remote display etc.
Data formats	Continuous, Continuous 2, Printer,
Baud rate	1200 / 2400 / 4800 / 9600 (Default) / 19200 / 38400 bps
Length and parity	8 bits no parity
Start / Stop bits	1 start bit and 1 stop bit

Table 3.3 – optional RS232 Serial Interface Specifications

Definition	FT-107 Pin number (Round Male)	FT-107S Pin number (Terminal)
TXD	2	2
GND	3	3

Table 3.4 – Pin configuration of optional RS 232

3.4.4 Power Source Connection and Grounding

The weighing instruments measures very low signal levels. The quality of the power line will determine the accuracy and the safety of your measuring system. It is very important that the instrument should not share power lines with noise-generating parts such as heavy load switching relays, motor control equipment, inductive loads, etc. If the condition of the power supply in the plant is poor, prepare a special power line and grounding. Before connecting the power source check if its voltage is the same as the voltage written on the weighing terminal.

Table 3.5 – Power supply connector

The protected ground shall be connected to the 230 VAC powered instrument against the safety and electrical disturbances.

4. FT-107(S) FUNCTIONS

4.1 Basic Functions

Press [**On/Off**] key to switch on the scale. Indicator activates all segments of the display for a few seconds then shows indicator´s model name and version. At the end a display test will be carried out.
After starting cycle, the weight value is displayed. The message [**E E E**] will appear at power on if the weight exceed the zeroing range. The scale should be unloaded before power on.

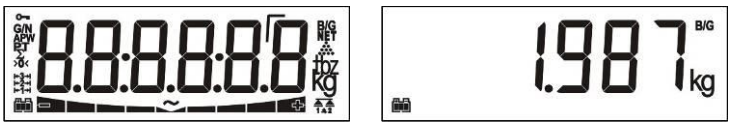


Figure 4.1 - LCD Display segments and Weight display.

Place the object on the scale. If the scale is stable and the symbol ~ disappeared, the weight will be displayed.

If one of the function keys (“ ***** ” or “**F**” key) were programed for unit changing, press this key to select desired weighting unit (*Page 29*).

Zeroing
Zeroing is done to compensate deviations from zero of the unloaded scale.

1. Ensure the scale is clean and does not touch any surroundings.
2. Press the **Zero** key to compensate the zero deviation. The zeroing is done if the scale is stable and in zeroing range.
3. >0< sign appears to indicate the zeroing is done and the scale is at center of zero.
4. If zeroing is not done properly, wait for the ~ sign disappear and press **Zero** key again.

Taring
Taring is done to deduct the container weight and to see only the material inside. FT-107 is programmable for 3 types of tare function: Multi tare, Tare/Clear, Automatic tare *(Page 25).*

Warning: *Tare value cannot exceed the maximum scale capacity. The scale capacity in Net is the subtraction of maximum capacity to the tare weight. Capacity in Net = Maximum capacity – Tare weight.*

Multi taring

1. Place the container on the platform and press the **Tare** key.
2. The display value is zeroed and the **NET** (net weight) symbol appears.
3. Place the material into the container and read the net weight.
4. The tare value is used until either a next tare or pressing **Tare** key after unloading the scale or until zeroing the scale.

Tare / Clear

1. Place the container on the platform and press the **Tare** key.
2. The display is zeroed and the **NET** (net weight) symbol appears.
3. Place the material into the container and read the net weight.
4. Press the **Tare** key to clear the tare. Or press the **Zero** key after unloading the platform.

Auto Tare
This function allows taring automatically after loading the scale in gross operation without pressing **Tare** key if the load is bigger than 20e. After unloading the scale, the indication goes back to the gross. To activate the auto tare function, refer to Advanced functions (*Page 25*).

1. Place the container on the platform.
2. Scale activates the tare function automatically after stabilization.
3. Place the material inside the container for net weighing.
4. After unloading the scale, the indicator starts to indicate in gross.

Gross / Net Function

You can use the Gross/Net function at any time to switch the display between the net and gross weight, if you programmed one of the function keys as **G/N** key. After the **G/N** key is pressed, the display shows the gross weight for a few seconds and then automatically goes back to the net weight indication.

Printing

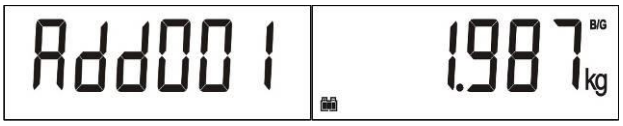
You may connect your indicator to the printer and adjust the RS 232C serial data output related parameters. Select the printout ticket form from the table below. Press **Enter** key to print the ticket if the indication is stable after loading.

The table below shows different printouts for various operation modes *(Page 27).* For 16-character printers, select small printer format which has abbreviated data names.

Ticket	Basic Weighing	Animal Weighing	Piece Counting	Check Weighing
Form 1	Gross 4.205 kg	Dyn Gross 4.206 kg	Quantity 4205 pcs	Gross 0.030 kg OK
Form 2	Weighing number #000010 15-09-2012 01:04:03 Gross 4.771 kg Tare 1.675 kg Net 3.097 kg	Weighing number #000014 15-09-2012 01:08:57 Dyn Gross 4.771 kg Tare 1.675 kg Dyn Net 3.096 kg	Weighing number #000018 15-09-2012 01:14:39 Gross 4.770 kg Tare 1.675 kg Net 3.096 kg Piece Weight 0.00100 kg Quantity 3096 pcs	Weighing number #000024 15-09-2012 01:24:06 Gross 1.705 kg Tare 1.675 kg Net 0.030 kg OK
Form 3	Weighing number #000011 15-09-2012 01:04:53 Gross 4.771 kg Net 3.097 kg	Weighing number #000015 15-09-2012 01:10:02 Dyn Gross 4.771 kg Dyn Net 3.096 kg	Weighing number #000020 15-09-2012 01:16:35 Gross 4.770 kg Net 3.095 kg Piece Weight 0.00100 kg Quantity 3095 pcs	Weighing number #000026 15-09-2012 01:24:47 Gross 1.706 kg Net 0.031 kg OK
Form 4	Weighing number #000012 15-09-2012 01:05:58 Net 3.096 kg	Weighing number #000016 15-09-2012 01:10:54 Dyn Net 3.096 kg	Weighing number #000022 15-09-2012 01:17:15 Net 3.095 kg Quantity 3095 pcs	Weighing number #000027 15-09-2012 01:25:33 Target weight 3.000 kg Actual net 0.031 kg Deviation - 2.969 kg

Total memory at weighting

To accumulate the weighing values, put an object on the platform, if the scale is stable (~ symbol off), and press **M+** key to add the weight value to the total.



The weight value will be added and accumulation quantity increased. Press **M+** for further accumulations.

To see the total value, press **MR** key and the accumulated value will be displayed.

To print the accumulated value, press **Enter** key if the accumulated value is displayed. To erase the accumulation, press **MC** and accumulated value will be deleted after your confirmation.

4.2 Advanced Functions

You can change the instrument advanced functions in set-up menu by pressing **ADV** key longer than one second.

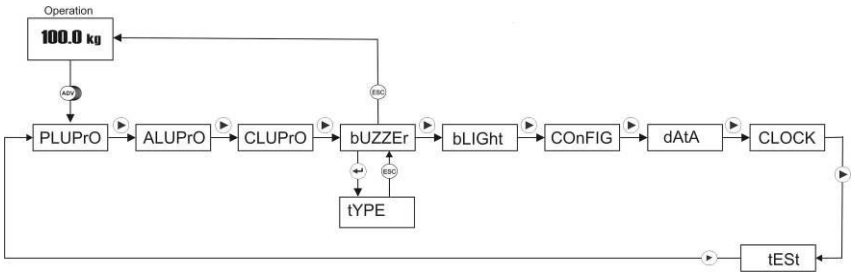
In ADV menu the navigation key functions are;

▲	- Increase the selected digit value.
▼	- Decrease the selected digit value.
►	- Next menu item, - Shift the digit to the right to change the value.
◄	- Previous menu item, - Shift the digit to the left to change the value.
↵	- Enter the menu and menu item, - Enter the next item.
ESC ✱	- Return from item, - Return to operation from menu.

The symbols in ADV programming diagrams are;

↵ ► ESC	- Press the key in the circle to enter the next step.
ADV	- Press the key longer than 1 second until the next prompt appears.
↵	- Press the key the circle quantity times. (3 times for the symbol on the left)
100.0 kg	- Operation
-12.345-	- Enter the value by pressing navigation keys. Press ► or ◄ keys to shift the digit; press ▲ or ▼ keys to increase or decrease the selected digit.

With the ► key change to the next item. Press **Enter** key to access items in the selected menu or press **Esc** key to return to previous step.



The advanced functions set-up are described in the flow diagrams above.

4.2.1 PLU Memory Menu

PLU memory is used in checkweighing operation. This memory use and data input are described in checkweighing operation in Section 4.2.1 *(Page 32).*

4.2.2 ALU Memory Menu

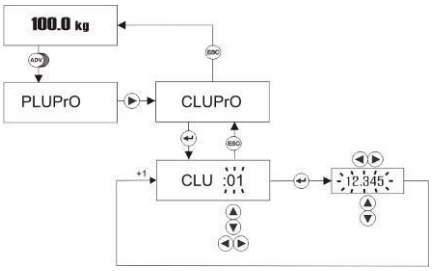
ALU memory is used to check the quantity at piece counting. This memory usage and data input are described in Section 5.2 *(Page 32).*

4.2.3 CLU Memory Menu:

CLU memory is used in piece counting operation. This memory usage and APW saving after sampling are described in to the piece counting operation in Section 5.1 (*Page 29*).

4.2.4 Manual APW entry:

FT-107 indicator has 100 memory locations for counting various materials. The data entry to the CLU memory is carried out in Advanced functions menu by pressing **ADV** key longer than one second. Follow the diagram below to entry the APW (average piece weight) of the material into the CLU memory.

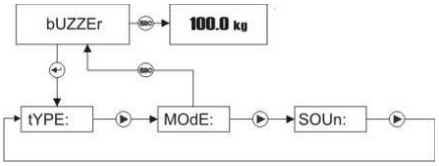


CLU code increases or decreases by pressing ▲ or ▼ keys. The APW value's digit can be selected by pressing ► or ◄ keys and the digit value can be increased or decreased by pressing ▲ or ▼ keys.

Press **Esc** key 2 times to return to operation.

4.2.5 Buzzer Menu

To access to Buzzer related functions menu, press **ADV** key longer than one second until [**PLUPrO**] message appears on the display. Press ► until [**bUZZEr**] prompt appears.

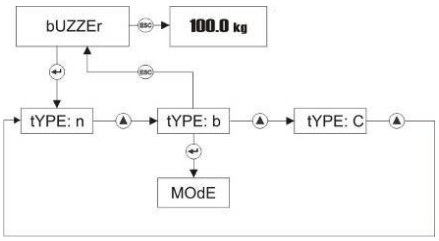


Buzzer Sound type at Checkweighing

The buzzer sound can be programmed as a continuous or only a 3-seconds warning as shown below.

n	No sound.
b	One-time warning for 1 second
C	Continuous warning

Press **Enter** key to access Buzzer sound type item at [**bUZZEr**] prompt.



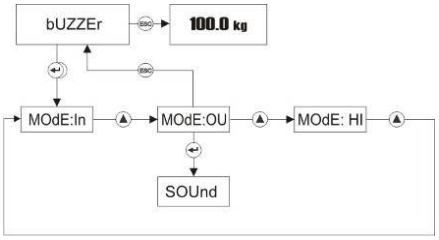
Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting buzzer sound type by ▲ key.

Buzzer Mode at Checkweighing

Buzzer warning can be done as shown in the table below.

Ou	Warn when weight is out of tolerance.
in	Warn when weight is in the limits.
Hi	Warn when weight is over the high limit.

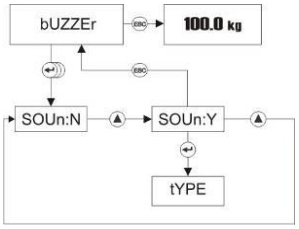
Press **Enter** key 2 times in Buzzer menu to access the warning mode item.



Press **Enter** key to enter the next item or press **Esc** key to enter the previous step after selecting warning mode by ▲ key.

Keypad Sound

Buzzer sounds after pressing any key. Press **Enter** key 3 times in Buzzer menu to access this item.

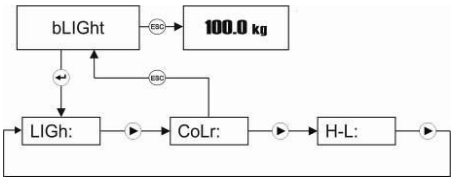


n	Keypad Sound off.
Y	Keypad Sound on.

Press **Enter** key enter the next item or press **Esc** key enter the previous step after selecting keypad sound by ▲ key.

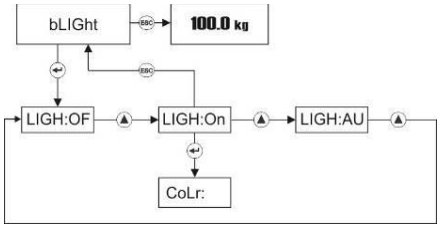
4.2.6 Backlight Menu (only FT-107S) :

To access the Backlight menu, press **ADV** key longer than one second until [**PLUPrO**] message appears on the display. Press ► key several times until [**bLiGht**] prompt appears. You can program the backlight operation, backlight color at basic weighing and back light warning at over – under operation in this menu.



Backlight

Press **Enter** key in Backlight menu to access the backlight adjustment item.

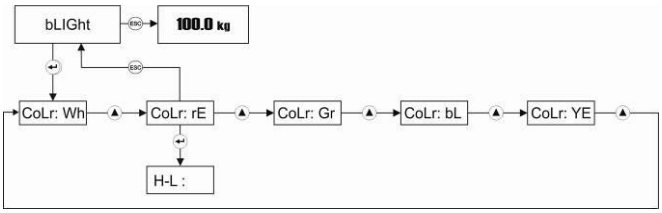


OF	Backlight always off.
On	Backlight always on.
AU	Backlight turns off, if the scale is not used 5 seconds.

Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting backlight by ▲ key.

Color

You may program backlight color in this item as shown below.

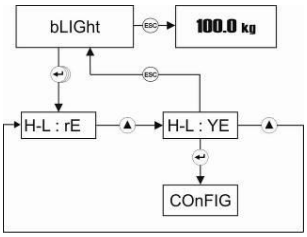


Wh	Backlight color is white.
rE	Backlight color is red.
Gr	Backlight color is green.
bL	Backlight color is blue.
YE	Backlight color is yellow.

Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting backlight color by ▲ key.

H-L Color

You may program backlight color in check weighing operation.

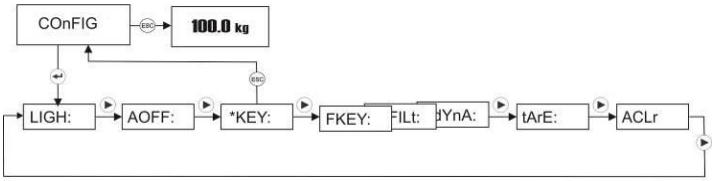


	Under	In tolerance	Over
rE	Red	Green	Yellow
YE	Yellow	Green	Red

Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting backlight color by ▲ key.

4.2.7 Configuration Menu:

To access to Configuration menu, press **ADV** key longer than one second until [**PLUPrO**] message appears on the display. Press ► key several times until [**COnFIG**] prompt appears.

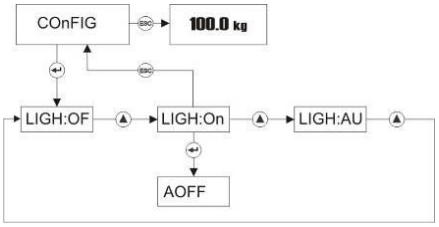


Backlight (only FT-107)

You may program backlight operation in this item as seen below.

On	Backlight always on.
OF	Backlight always off.
Au	Backlight turns off, if the scale is not used 5 seconds.

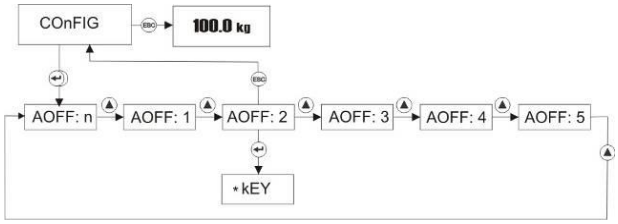
Press **Enter** key in Configuration menu to access the backlight adjustment item.



Press **Enter** key to go to the following item or press **Esc** key to go previous step after selecting backlight by ▲ key.

Auto Power off

The indicator is programmable for automatic power off to increase the battery life, if the scale is not used for some period. Press **Enter** key 2 times in Configuration menu to access the backlight adjustment item.



n	Disable.
1	Automatic power off after 1 minute.
2	Automatic power off after 2 minutes.
3	Automatic power off after 3 minutes.
4	Automatic power off after 4 minutes.
5	Automatic power off after 5 minutes.

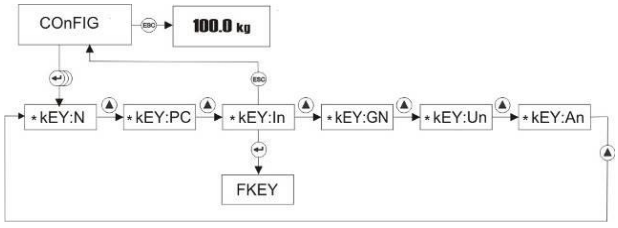
Press **Enter** key to enter the next item or press **Esc** key to return to step after selecting auto power off by ▲ key.

* key usage

You can select this key function from the table below.

n	Disable.
PC	Piece count
In	Increased resolution
Gn	Temporary Gross indication in Net
Un	Unit change
An	Animal weighing

Press **Enter** key 3 times in Configuration menu to access ***** key item.



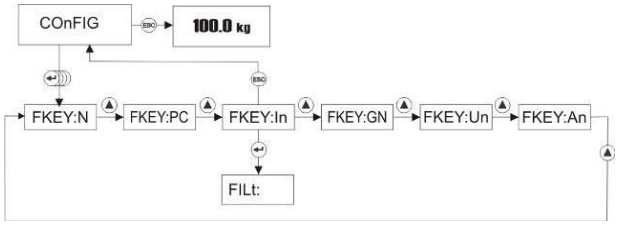
Press **Enter** key to enter the next item or press **Esc** key to return to previous step after selecting ***** key function by ▲ key.

F key usage

You can select this key function from the table below.

n	Disable.
PC	Piece count
In	Increased resolution
Gn	Temporary Gross indication in Net
Un	Unit change
An	Animal weighing

Press **Enter** key 4 times in Configuration menu to access **F** key item.



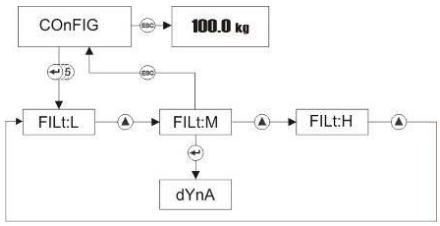
Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting **F** key function by ▲ key.

Stability Filter

You can change the digital filtering in this parameter to compensate the environmental effects on the scale performance or for faster response.

L	Faster response with low filtering
M	Medium settling time (recommended)
H	Slow response with high filtering

Press **Enter** key 5 times in Configuration menu to access filter adjustment.



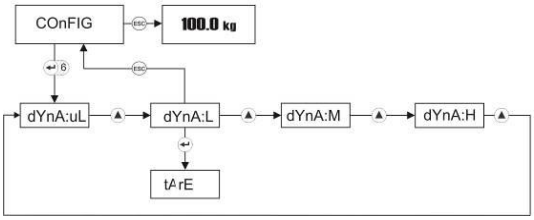
Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting digital filtering by ▲ key.

Animal Filter

You can change the dynamic filtering in this parameter to compensate the animal movement on the scale. Higher filtering gives more reliable result for very dynamic loads.

uL	Very Low filtering (1.6 second)
L	Low filtering (3.2 second)
M	Medium filtering (4.8 second)
H	High filtering (6,4 second)

Press **Enter** key 6 times in Configuration menu to access dynamic filter adjustment.



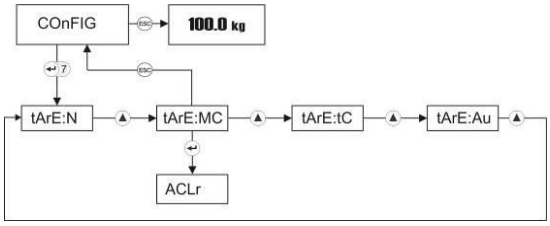
Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting dynamic filtering for animal weighing by ▲ key.

Tare

Taring feature of the scale can be programmed in this parameter for taring with key or auto taring

N	Disable
MT	Multi tare.
TC	Tare – Clear in sequence
AU	Automatic tare

Press **Enter** key 7 times in Configuration menu to access taring function adjustment.



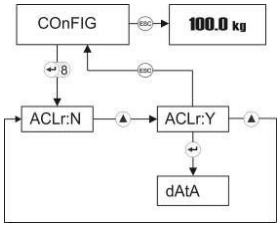
Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting taring function of the scale by ▲ key.

Auto Clear Tare

This feature of the scale can be programmed in this parameter for auto clear tare.

N	Disable (default)
Y	The scale gets back to gross mode after unloading.

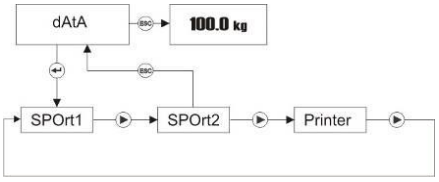
Press **Enter** key 8 times in Configuration menu to access this function adjustment.



Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting this function of the scale by ▲ key.

4.2.8 Serial Data Outputs:

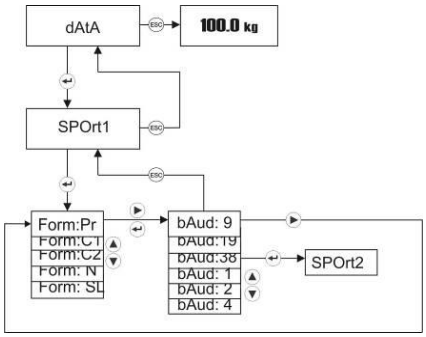
To access the Data Outputs menu, press **ADV** key longer than one second until [**PLUPrO**] message appears on the display. Press ► key several times until [**dAtA**] prompt appears. Serial data output and printer data formatting related parameters are in this menu.



Press **Enter** key to enter the Serial port-1 setting or press ► key to access other menus.

Serial Port-1 settings

To change Serial port-1 settings, press **Enter** key at [**SPOrt1**] message.



The first step is the data format. The display indicates two digits at the right of the data format.

n	Disable
C1	Continuous-1 *Page 43* (select for remote display connection)
C2	Continuous-2 (for PC) *Page 43*
Pr	Printer
SL	Single line printer (for PC)

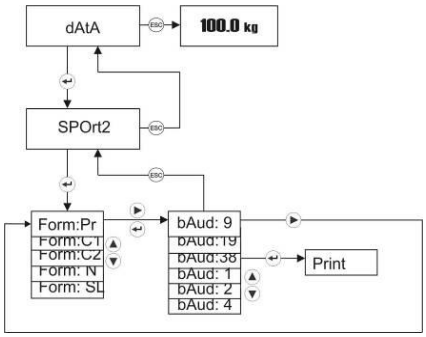
After changing the data format with ▲ key, press **Enter** key to enter the next step, baud rate adjustment. Two digits on the right of the display indicates the baud rate as;

01	1200 bauds
02	2400 bauds
04	4800 bauds
09	9600 bauds
19	19200 bauds
38	38400 bauds

Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after selecting baud rate by ▲ key.

Serial Port-2 settings (option)

To change Serial port-2 settings, press **Enter** key at [**SPOrt2**] message.



The first step is the data format. The display indicates two digits at the right the data format.

n	Disable
C1	Continuous-1 (*Page 43)* (select for remote display connection)
C2	Continuous-2 (for PC) (*Page 43)*
Pr	Printer
SL	Single line printer (for PC)

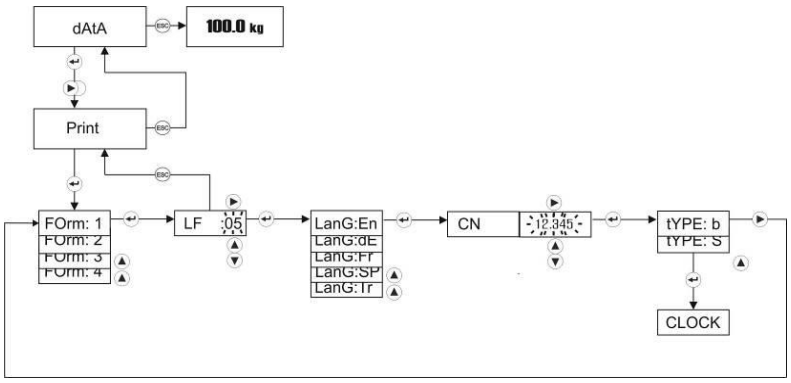
After changing the data format with ▲ key, press **Enter** key to enter the next step, baud rate adjustment. Two digits on the right of the display indicates the baud rate as;

01	1200 bauds
02	2400 bauds
04	4800 bauds
09	9600 bauds
19	19200 bauds
38	38400 bauds

Press **Enter** key to enter the next following item or press **Esc** key to return to the previous step after selecting baud rate by ▲ key.

4.2.9 Printer setting

Press ► key several times until printer item seen.



The first item of printer setting is the printout format. Printer data output can be set to 4 different print form. The printout form differs also with operation mode as described on *Page 18*. Select the printout format from this table.

Select the format by pressing the ▲ key and press the **Enter** key to enter the next item, line feed. After changing LF item with navigation keys for feeding the printout from printer, press **Enter** key. The language selection item appears.

EN	English
DE	German
FR	French
SP	Spanish
TR	Turkish

Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after printout language setting.

[CN] Weighing Ticket Number

Press **Enter** key at [**CN**] prompt to adjust the printing number in this item. CN number can be re-entered by pressing navigation keys. If the number exceeds 999999, it automatically returns to 1.

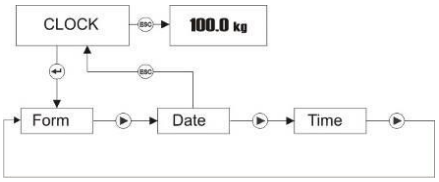
[tyPE: S] Printer Type

S	Print-out for narrow printers. Maximum 16 characters per line.
B	Print-out for wide printers. Maximum 26 characters per line.

After changing the printer type with ▲ key, press **Enter** key to enter the next item.

4.2.10 Date and Time

To access the Clock menu, press **ADV** key longer than one second until [**PLUPrO**] message appears on the display. Press ► key several times until [**CLoCk**] prompt appears. Clock related items are in this menu.

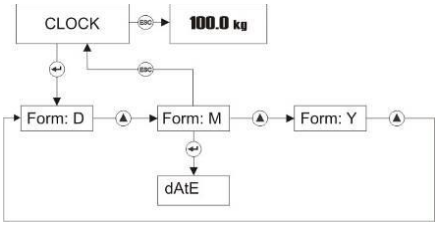


Press **Enter** key to enter the Date format item or press ► key to access other items.

Date Format

Press **Enter** key at [**CLoCk**] prompt to adjust the date format for your country in this item.

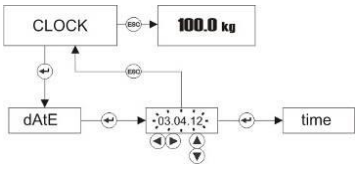
d	DD:MM:YY
M	MM:DD:YY
Y	YY:MM:DD



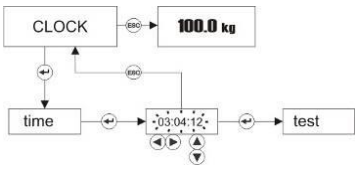
Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after date format setting by pressing ▲ key.

Date

Press **Enter** key several times in clock menu until the date prompt seen. You can change the date as shown below by navigation keys.



Press **Enter** key to access time adjustment.



Press **Enter** key to enter the next item or press **Esc** key to return to the previous step after time adjustment with navigation keys.

Test Menu:

Test menu helps the service technician to find the problem source faster.

iCount

iCount is a value related with the ADC conversion to help the service engineer to follow the scale performance in high resolution without dead load compensation.
Press **Esc** key to return to [**tESt**] menu. To return to the operation, press the **Esc** key for the second time.

4.3 Unit Change

You may need to change the unit in your application. One of the function keys should be programmed to Unit change function to use this feature. The changeable units are between **kg** and **lb** or between **g** and **oz**.

1. The weight indication is in power on unit after power on.
2. Press the function key programmed for unit change (*Page 23*).
3. The indicator switches the unit to the second unit.
4. Press the same function key second time to go back to the first unit.

Warning:

1. *The PLU memory and CLU memory data entries should be done in power on unit.*
2. *Unit change feature is not available after sealing the instrument in legal usage.*

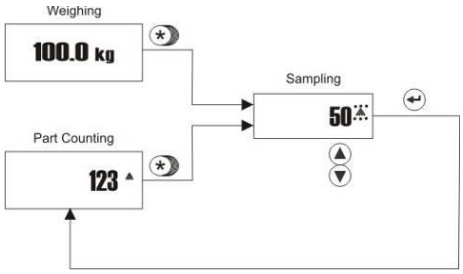
5. APPLICATION WEIGHING

5.1 Piece Counting

FT-107 indicator has several powerful features in count weighing as described in this section. It is recommended to use the ***** key for piece counting *(Page 23).*
Press ***** key to enter piece counting operation. The last used **average piece weight (APW**) value is valid in counting. APW default is the increment of the scale at power on.

Sampling

The scale counts the pieces on it by using the calculated **average piece weight** (APW) of the item. In sampling, FT-107 measures a certain number of pieces total weight in very high resolution and divides it by the number of pieces (the so-called sampling quantity) to find average piece weight (APW). Based on this calculated average piece weight, counting can then be carried out.



Sampling should be done very carefully for correct counting.

1. Empty the scale and press **Zero** key until ›0‹ symbol appears on the display.
2. Press ***** key longer than a second until [**10**] or any other reference number of pieces appears on the display. This value is the quantity of pieces you can place on the platform for sampling.
3. If the pieces are small or piece weights are not very close to each other, sampling in high quantity is recommended to increase the counting accuracy. Press ▲ to change the sampling quantity to 20, 30, 50 or 100. To decrease the quantity press ▼ key.

4. Once the exactly counted quantity is placed on the platform, press **Enter** key.
5. Display will stop flashing after sampling and start to display the quantity on the scale.

Counting without container

1. After sampling press the **Zero** key, the sign ›0‹ appears.
   Or call the APW of the item from CLU memory *(Page 19).*
2. Place the pieces you want to count on the weighing pan,
3. The total quantity of pieces will be displayed.

If you want to accumulate the sequential counting, press **M+** key *(Page 30).*

To return to the weighing mode, press * key. The last used APW can be used at the following piece counting at the following piece counting.

Counting pieces into a container

1. For counting into a container, place an empty container on the scale and tare with the **Tare** key (the sign ›0‹ appears on the display).
2. If needed, perform sampling into the container after taring.
3. Add parts into the container to count them.

Note: *If the automatic taring function is active, you do not need to press the* ***Tare*** *key, because the scale will be tarred automatically as soon as the container was placed on the weighing pan.*

Counting pieces out of a container

1. Place the **full** container on the weighing pan and then press the **Tare** key to tare the scale (the sign ›0‹ appears).
2. Press the * key to enter to the piece counting mode.
3. If needed, perform sampling as
   a. Press the * key longer than one second until sampling quantity appears.
   b. Change the sampling quantity by pressing ▲ or ▼ keys.
   c. Remove the sampling quantity of pieces from the weighing container and then press the **Enter** key for sampling.
   d. The scale starts to count by displaying the number of pieces after sampling by a minus sign.

   Or select the item APW from CLU memory *(Page 19).*
4. Take some pieces out of the container.
5. The scale displays the number of removed pieces showing the minus sign.
6. Press **Tare** key for next counting.

Press * key to return to basic weighing operation.

APW optimization

Sampling in high quantity gives higher accuracy result although the high quantity is more difficult to count by hand.
You may follow the procedure below for APW optimization:

1. First count low quantity, for example 10 pcs and do sampling with 10 pcs.
2. Then count on the scale 2 times of the sampled quantity. In our example count 20 pcs on the scale and apply sampling for 20 pcs.
3. Then count 50 pcs on the scale and perform sampling with 50 pcs.
4. Then you may count 100 pcs on the scale and may perform sampling with 100 pcs.
   After each APW optimization, piece counting accuracy will increase.

Total memory at counting

The quantities of the sequential counting can be accumulated in as total value in the piece counting accumulator (CAD).

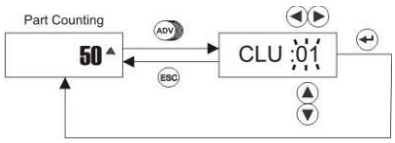
1. For counting accumulation, press **M+** key during the quantity is displayed and the scale stable. The accumulation number appears on the display as [**Cad001**].
2. Place another batch on the scale and press **M+** key again to add the second counting number to total [**Cad002**].
3. Continue adding further pieces to the memory by pressing **M+** key.

The accumulated total count can be retrieved pressing **MR** key.
While the total count is displayed it can be printed by pressing the **Enter** key.

To delete the accumulated value, press **MC** key during count accumulation is displayed.

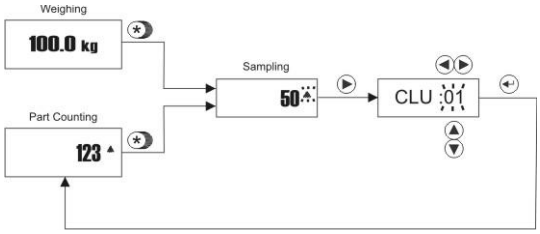
APW Recording to the memory after sampling

Up to 100 average piece weights APW of the different materials can be saved in the CLU memory. For saving of APW into the CLU memory, press **ADV** key in piece counting mode longer than one second



Press ▲ and ▼ keys to increase / decrease the flashing digit. Press ► and ◄ to shift to the next digit..
After accessing the desired memory code, press **Enter** key for saving. The indicator returns to the counting operation automatically.

Counting with preset APW record



To access to memory database press * key longer in counting mode or in weighing mode and then ► key.
Press **Enter** key after accessing the CLU memory code with navigation keys.

5.2 Checkweighing (+/-)

This function is used for classifying products. The check weighing bar on the bottom of the display helps the operator to indicate the deviation from target weight. In the Figure 5.1 the bar indicates the status of the tolerance during the check weighing. The indicator is also programmable for acoustic check weighing warning (*Page 20*).

Check weighing operation requires the nominal weight and tolerance values entry into the PLU memory.

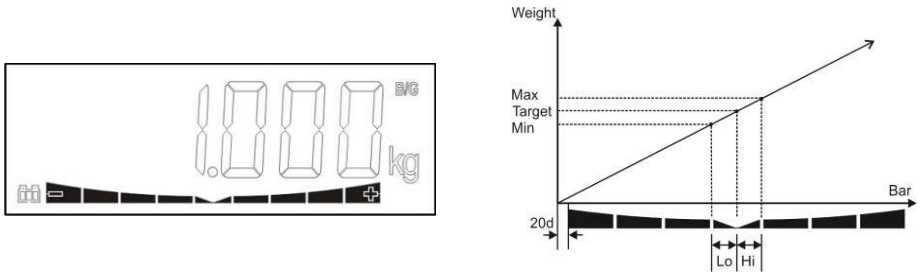


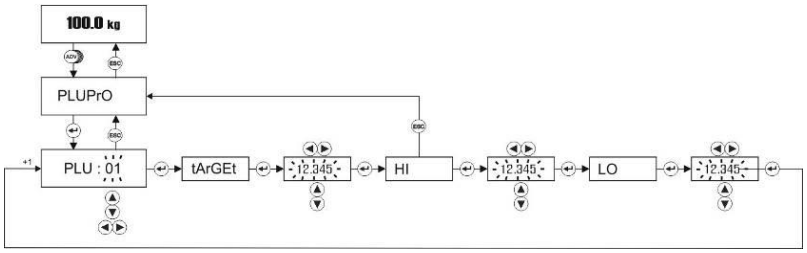
Figure 5.1 – Check weighing bar

Data entry to Checkweighing memory PLU and Checking in quantity memory ALU

Warning: *The PLU memory data entries are done in power on unit.*

In Checkweighing mode, FT-107 offers PLU storage space for 100 different materials and in Piece counting 100 ALU storage space for checking in quantity.
For data entries to the PLU / ALU memory press **ADV** key longer than one second in Advanced function. Follow the diagram below to entry the data into the PLU or ALU memory. Here, the Target is the nominal value of the material. Hi and LO are the "+ tolerance" and "– tolerance" of the material in sequence.

For example, if the target is 1000 g and the weight limits are 950 and 1100 g in checkweighing enter:
Target = 1000 g, Hi = 100 g and Lo = 50 g.
The values are entered in quantity to the ALU memory entry.

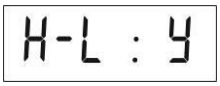


PLU / ALU code increases or decreases by pressing ▲ or ▼ keys. The values for Target, Hi and Lo are selected by pressing ► or ◄ keys.

Checkweighing operation (+/-)

Checkweighing is used to check if the weight of an object is in tolerance. The back-light color changes automatically to indicate if the load is under, over or in tolerance. Refer to page 22 to adjust this feature.

1. Press **H-L** key longer than one second until the message **H-L : Y** appears.. The letter on the right indicates the check weighing is enabled or not.



n	Checkweighing disabled
Y	Checkweighing enabled
t	Checkweighing enabled with auto tare in okay range

2. To enable the checkweighing operation, press ▲ key, select " Y " and then press **Enter** key.
3. The PLU memory number appears on the display as [**PLU :01**]
4. Change the PLU record number by using navigation keys and press the **Enter** key to start operation or press **Esc** key to return to operation without saving the PLU code.
5. The Target, Hi and Lo values display automatically before checkweighing operation.

6. Place an object on the platform and the checkweighing bar is activated after loading the platform as shown below.

Under

In tolerance

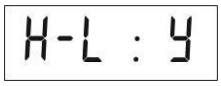
Over

To return from checkweighing function to basic weighing, press **H-L** key for a while, change the H-L item value to “n” and press **Enter** key. The checkweighing bar will be disabled.

Checking the quantity at piece counting (+/-)

This feature is used for checking if the quantity is in tolerance at piece counting mode. The back-light color changes automatically if weighing to indicate the load is under, okay or over. Refer to page 22 to adjust this feature.

1. Press **H-L** key longer than one second in piece counting mode until the message below appears. The letter on the right indicates the check weighing is enabled or not.



n	Check quantity disabled
Y	Check quantity enabled
t	Check weighing enabled with auto tare in okay range

2. To enable the checking operation, press ▲ key, select “ Y “ and then press **Enter** key.
3. The ALU memory number appears on the display as [**ALU :01**]
4. Change the ALU record number by using navigation keys and press the **Enter** key to start operation or press **Esc** key to return to the operation without saving the ALU code.
5. The values Target, Hi and Lo display automatically before check piece operation.
6. Place an object on the platform and the check piece bar is activated after loading the platform as shown below.

Under

In tolerance

Over

To disable from checkingweighing function, press **H-L** key for a while, change the H-L item value to “n” and press **Enter** key.

Double sided display scale for multi operator

FT-107(S) can be programmed as “Remote” instrument and then connected to the weighing indicator over RS232 port. Double sided display / keypad scale can be configured by using a weighing scale and a remote instrument.

5.3 Animal Weighing

One of the function keys (the ***** key is recommended) can be programmed for animal weighing. The indicator calculates the weight of the dynamic load after pressing the programmed function key. The dynamic filter value must be adjusted according to the application to achieve the best results. The dynamic weighing cycle is;

1. Load the scale.
2. Press the ***** key (if the function key was programmed for animal weighing (*Page 23*))
3. The message [**- - - - -**] appears to indicate that the indicator is measuring the dynamic weight.
4. After calculating the dynamic weight, the indicator displays the weight value.
5. Press **Enter** key to print out or **M+** key to add the weight value to the total memory.
6. Unload the scale or press **Esc** key to return to the basic weighing mode.

5.4 Temporary Gross Weight Indication

Sometimes it is needed to check shortly the gross weight value during net weighing operation. If one of the function keys is programmed to G/N function (*Page 23*), temporary gross weight value indication is available in net operation.

1. Press the G/N programmed function key in net mode.
2. The indicator activates the **B/G** and **G/N** signs and indicates the gross weight value.

3. The display goes back to the net weight indication after 5 seconds automatically.

6. PROGRAMMING AND CALIBRATION

You will find the programming and calibration procedure of FT-107 weighing terminal in this section.

	**Escape key**	:	- Return to the menu - Return to the operation without saving parameters.
	**Zero key**	:	Fast calibration access.
	**Right key**	:	- Next menu item. - Move to the right digit.
	**Left key**	:	- Previous menu item. - Move to the left digit.
	**Up key**	:	Increase the selected digit value.
	**Down key**	:	Decrease the selected digit value.
	**Enter key**	:	Press this key to go to the next item.

Calibration switch is located on the rear of the instrument. The calibration switch should be sealed before putting the scale in to usage.

Figure 6.1- The location of calibration switch

6.1 Entering the Programming and Calibration

To enter the programming menu, you should follow the description in the table below.

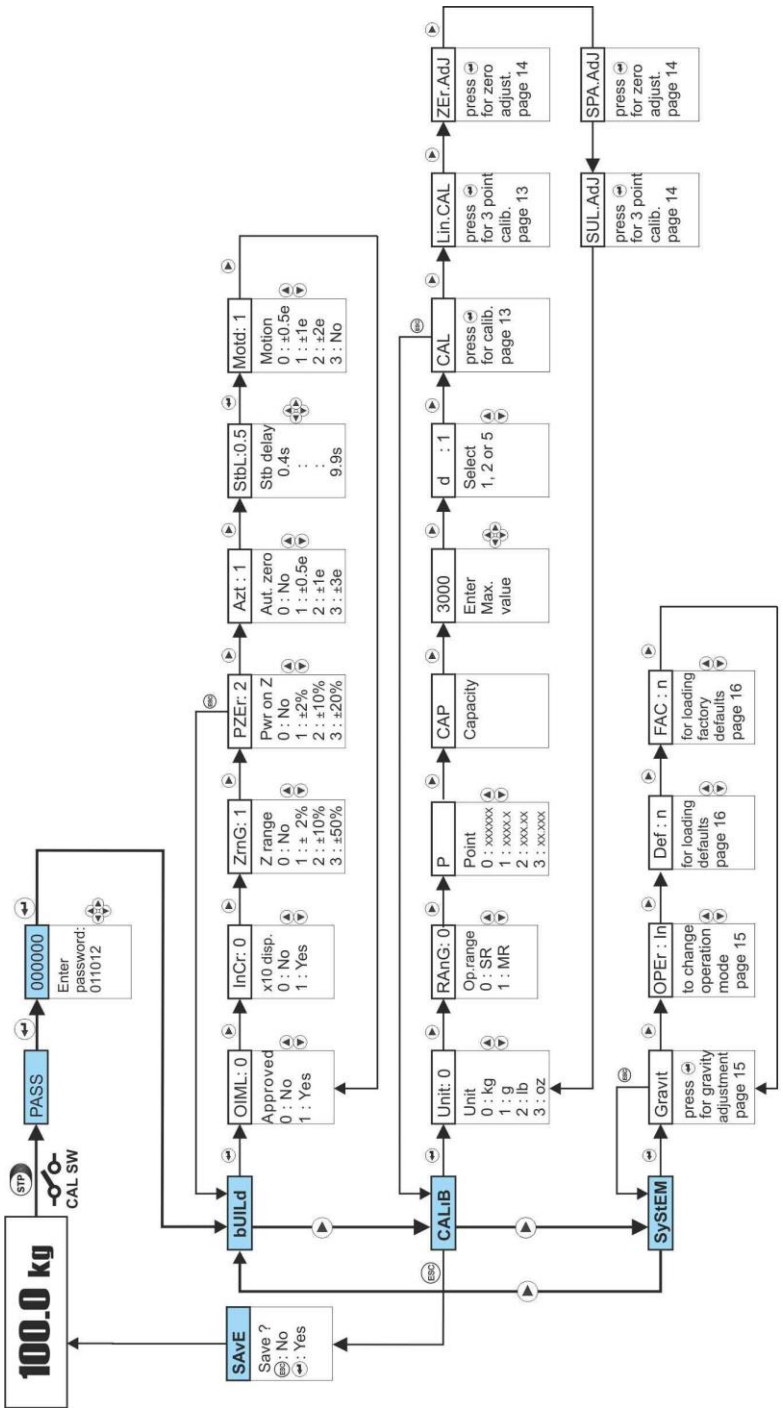
Display	Operation
[**123.456**] kg	Press **STP** key until [**PASS**] prompt appears and then **Enter** key (only non-OIML scales).
	Or press calibration switch.
[**PASS**]	Enter '011012' with navigation keys.
[**011012**]	Press **Enter** key for confirm password.
[**bUıLd**]	First block of set-up.

Set-up menu consist of three main blocks, which are **Scale build** block, **Calibration** block and **System** block. Press ► key to reach the desired block and press **Enter** key. Press **Enter** key to navigate in this block items or change item value by ▲ and ▼ keys. For entering numerical value, press the ► and ◄ keys to select the digit and press the ▲ and ▼ keys the change the value.

6.2 Exiting the Programming and Calibration

With the **Esc** key the menu block can be left. Follow the diagram below to return to the operation from set-up.

Display	Operation
[*item*] For example [**ZrnG**]	Press **Esc** key to return to the main block.
[*block*] For example [**bUıLd**]	Press **Esc** key to leave the set-up.
[**SAVE**]	Press **Enter** key to save the set-up.
	Press **Esc** key to return to operation without saving.



6.3 Fast Access to the Calibration

The instrument has fast access calibration feature to save time for the service technician. If only the calibration adjustment is needed, follow the steps below for fast calibration.

Display	Operation
[**123.456**] kg	Press **STP** key until [**PASS**] prompt appears and confirm with **Enter** (only non-OIML scales).
	Or press calibration switch.
[**PASS**]	Enter "**011012**" with navigation keys.
[**011012**]	Press **Enter** key for confirm password.
[**bUıLd**]	First block of set-up. Press **Zero** key longer than 2 seconds to jump to the zero adjustment until the prompt on the below seen.
[**CAL**]	Zero adjustment: Unload the scale and press **Enter** key. Do not touch the scale at [**- - -**] prompt.
[**LoAd**] [**XXXXX**]	Span adjustment: Load the scale and enter the load value by pressing navigation keys and press **Enter** key. Do not touch the scale at [**- - -**] prompt.
[**LınCAL**]	The next item Linearity Correction prompt appears after the calibration.

6.4 Programming and Parameters

[Build] Scale Build Block

The scale is defined with the following parameters. Press **Enter** key to enter the block or press ► key to enter the next block or press **Esc** key to return to the operation *(Page 36).*

6.4.1 [OIML: 0] OIML

O	Non-OIML scale application.
1	Approved scale.

This parameter should be selected as ‘ 1 ’ for approved scales to activate the calibration switch for securing the sealing.
Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

6.4.2 [InCr : 0] Increased Display Resolution

O	Weight indication.
1	x10 times increased resolution.

Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

6.4.3 [ZrnG: 1] Zero Range

This parameter sets the zeroing range by pressing the **Zero** key.

O	Disable
1	±2% of the scale range
2	±10% of the scale range
3	±50% of the scale range

Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

6.4.4 [PZer: 1] Power on Zero Range

This parameter sets the zeroing range at power on.

O	Disable
1	±2% of the scale range ([E E E] prompt cannot be erased. Call service)
2	±10% of the scale range
3	±20% of the scale range

Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

6.4.5 [AZT : 1] Automatic Zero Tracking

This parameter sets the AZT against small zero drifts against environmental affects like rain, snowing and dust etc.

O	Disable
1	±0.5 e
2	±1 e
3	±3 e

Press ▲ key to change the value. Press **Enter** key to enter to next item or press **Esc** key to return to the main block.

6.4.6 [StbL: 0.5] Stability Delay

If the scale is stabile during this time zeroing, taring, printing etc. functions can be proceeded. The stability time can be entered between 0,4 and 9,9 seconds.

Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

6.4.7 [Motd: 1] Motion Detection

This parameter sets the stability range as;

O	± 0.5 e
1	± 1 e
2	± 2 e
3	Disable

Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

6.5 Calibration

Please read this document carefully and select the parameter values which will fit your application before programming the instrument

***Warning*:** *You cannot change the legally related parameter values and calibration after sealing the instrument in legal usage. Be sure the proper adjustments you done before sealing the scale.*

Before the calibration can be performed the capacity and resolution of the scale must be defined. Calibration involves emptying the scale then placing a known test weight on an empty platform and allowing the indicator to capture values for zero and span. Calibration is performed as;

6.5.1 [CALıB] Scale Parameters

You can reach the parameters to calibrate the scale in this block. Press **Enter** key to enter to this block or press ► key to enter the next block or press **Esc** key to return to the operation *(Page 36).*

[Unit: 0] Unit

O	kg
1	g
2	lb
3	oz

Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

[rAnG: 0] Operation Range

O	Single range
1	Multi range

Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

[P : 0] Decimal Point

O	XXXXXX
1	XXXXX.X
2	XXXX.XX
3	XXX.XXX
4	XX.XXXX
5	X.XXXXX

Press ▲ key to change the value. Press **Enter** key to enter the next item or press **Esc** key to return to the main block.

If the scale is a multi-range scale two capacities and divisions, *Cap1* / *d1* and *Cap2* / *d2* will be shown instead of single range *CAP* / *d*.

[CAP] Capacity
Press **Enter** key and enter the first scale range capacity by pressing navigation keys. Press **Enter** to enter the next item. Maximum value can be 15000 kg or 30000 lb.

[d : 1] Division
Select the first division of the scale from available ranges by pressing navigation keys. Press **Enter** to go to the next item.

6.5.2 [CAL] Calibration

Calibration consists of two adjustments: zero adjustment and span adjustment.
For linearization of a scale press ► key.

Calibration is performed as;

1. Press **Enter** to start the calibration.
2. At the [**UnLoAd**] prompt, unload the scale then press **Enter** .
3. The indicator automatically starts to capture zero and the [**- - -**] message indicates the operation is in progress.
4. After a while the [**LoAd**] prompt appears with a suggested test weight on the display as [**XXXXXX**]. For definition of different test weight use the navigation keys.
   FLINTEC recommends using between 50 and 100% of the scale capacity but minimum 20%.
   An insufficient weight leads to a calibration error.
5. Place the test weights or another practical weight on the scale.
6. Press **Enter** to start span calibration. [**- - -**] message appears on the display while span calibration is being performed.
7. After the calibration the Linearity Correction can be executed.

6.5.3 [LınCAL] Linearity Correction

Three steps calibration will improve the performance of the scale.
If you will not perform linearity correction press ► key or press **Esc** key to return to the main block.
Linearity correction is performed as;

1. Press **Enter** prompt to start three-point calibration.
2. At the [**UnLoAd**] prompt, remove any weight on the platform, then press **Enter** .
3. The indicator automatically starts to capture zero and the [**- - -**] message indicates the operation is in progress.
4. After a while the [**Load 1**] prompt appears with a suggested test weight on the display as [**XXXXXX**]. This load shall be between 35% and 65% of the scale's capacity. Enter the Load 1 value using navigation keys.
5. Load the scale.
6. Press **Enter** to start the span calibration at Load 1. [**- - -**] message indicates the operation is in progress.
7. At the [**Load 2**] prompt, the second load will be suggested as [**XXXXXX**]. For definition of different test weight use the navigation keys. Load 2 weight shall be between 90% and 100% of the scale capacity.
8. Place the test weights or another practical weight on the scale.
9. Press **Enter** to start second step span calibration. [**- - -**] message appears on the display.
10. The next item Zero Adjustment prompt appears after the linearization.

6.5.4 Zero and Span Adjustment

[ZerAdJ] Zero Adjustment

This parameter is only being used for refreshing the zero level of the scale to prevent wrong weighing from zero drifts.
If you will not perform Zero adjustment press ► key or press **Esc** key to return to the main block.
Zero adjustment is performed as;

1. Press **Enter** key to start the zero adjustment.
2. At the [**UnLoAd**] prompt, remove any weight from the platform, then press **Enter** .
3. The indicator automatically starts to capture zero and the [**- - -**] message indicates the operation is in progress.
4. Next item appears on the display after the zero adjustment.

[SPA.AdJ] Span Adjustment

This parameter lets you to perform span adjustment.
If you will not perform Span adjustment press ► key or press **Esc** key to return to the main block.
Span adjustment is performed as;

1. Press **Enter** key to start the span adjustment.
2. After a while the [**LoAd**] prompt appears with a suggested test weight on the display as [**XXXXXX**]. For definition of different test weight use the navigation keys.
   FLINTEC recommends to use between 50 and 100% of the scale capacity but minimum 20%.
   An insufficient weight leads to a calibration error.
3. Place the test weights or another practical weight on the scale.
4. Press **Enter** to start span adjustment. [**- - -**] message will be shown on the display while span calibration is being performed.
5. The next item Span Adjustment Under Load prompt appears after the calibration.

[SUL.AdJ] Span Adjustment Under Load

This parameter is being used to perform span adjustment of a scale without lifting the load. This operation is especially recommended for span adjustment for filled tanks without emptying the material.
If you will not perform Span Adjustment Under Load press ► key or press **Esc** key to return to the main block.

Span Adjustment Under Load is performed as;

1. Press **Enter** key to start the span adjustment under load.
2. At the [**UnLoAd**] prompt, press **Enter** for temporary zero adjustment.
3. After a while the [**LoAd**] prompt appears with a suggested test weight on the display as [**XXXXXX**]. For definition of different test weight use the navigation keys.
   FLINTEC recommends to use between 50 and 100% of the scale capacity but minimum 20%.
   An insufficient weight leads to a calibration error.
4. Place the test weights or another practical weight on the scale.
5. Press **Enter** to start span adjustment. [**- - -**] message will be shown on the display while span calibration is being performed.
6. The next item appears after the calibration.

6.5.5 [GrAvit] Gravity Adjustment

For gravity adjustment before shipment of the scale, enter the values below.
If you will not adjust the gravity press ► key to enter the next item.

1. Press **Enter** key.
2. [**CAL-Gr**] Gravity of the manufacturer. Press **Enter** key and enter the gravity coefficient of the place of the scale calibration via navigation keys. Press **Enter** key.
3. [**USAGE**] Gravity of the usage. Press **Enter** key and enter the gravity coefficient of the place of the scale usage via navigation keys.

Warning: *Check the scale accuracy after gravity adjustment against wrong entry.*

7. SERIAL DATA FORMATS

Continuous data and single line data format are described in this section. FT-107´s serial ports are suitable for bi-directional communication. If you transmit ASCII codes for **P(print), Z(zero), T(tare) or C(clear)** to the one of the serial ports, the indicator will act like the related keys are pressed.

Continuous-1 Data Format

The data format of the Continuous-1 data output:

	Status			Indicated						Tare								
STX	STA	STB	STC	D5	D4	D3	D2	D1	D0	D5	D4	D3	D2	D1	D0	CR	LF	CHK

The including of the status bytes STA, STB and STC are

Definition Table for Status A (STA)

Bits 0, 1 and 2				Bits 3 and 4			Bits 5,6	Bit 7
0	1	2	Decimal point	3	4	Inc. size	Always 1	X
1	0	0	XXXXXO	1	0	X 1		
0	1	0	XXXXXX	0	1	X 2		
1	1	0	XXXXX.X	1	1	X 5		
0	0	1	XXXX.XX					
1	0	1	XXX.XXX					
0	1	1	XX.XXXX					

Definition Table for Status B (STB)

Bit 0	Bit 1	Bit 2	Bit 3	Bits 4,5	Bit 6	Bit 7
1= Net	1= Weight negative	1= Error	1= Unstable	Always = 1	1=Zeroed with power on zero	X
0 = Gross	0 = Weight positive	0 = No Error	0 = Stable		0 = Not power on zeroed	

Status C (STC) is always hex '30'.

Note: *The weight data is represented with right aligned and the error messages (UNDER, OVER and A.OUT) are represented with left aligned in indicated data field.*

Continuous-2 Data Format

The data format of the Continuous-2 data output is;
[STX][STATUS][SIGN][INDICATED WEIGHT VALUE][UNIT][CR][LF][CHK]

Examples :

S+000123.4kg	(weight is stable and 123.4)
D+000123.4kg	(weight is dynamic and 123.4)
+	(Over load)
-	(Under load)
O	(ADC out error)

Checksum Calculation:
CHK (Checksum) = 0 – (STX + STATUS + ... + LF)

Single Line Data Formats

Single line data output of the instrument is transmitted in the following data structure.

CN				Gross				Tare				Net					
MSD		LSD	Space	MSD		LSD	Space	MSD		LSD	Space	MSD		LSD		LF	CR
9 chars			3	13 chars			3	13 chars			3	13 chars				1	1

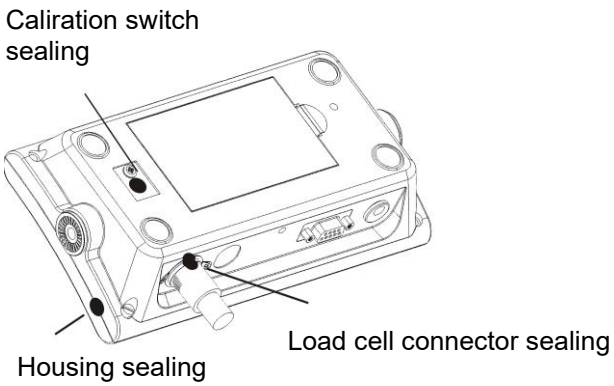
Example:
Data output string for CN=21, Gross weight = 30.00 kg, Tare = 10.00kg and Net = 20.00kg will be;

CN: 21		G: 30.00kg		T: 1.000kg		N: 2.000kg		
9 chars	3	13 chars	3	13 chars	3	13 chars	1	1

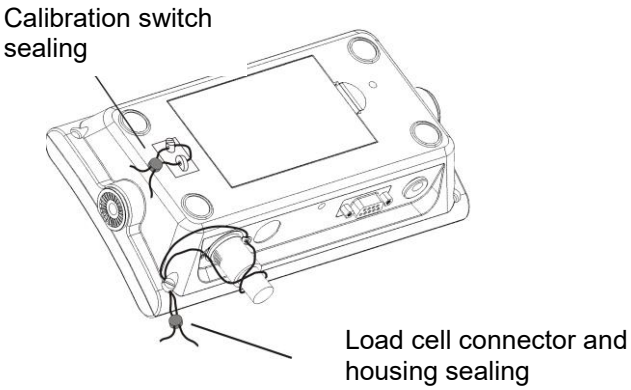
8. SEALING OF APPROVED SCALE

Sealing of FT-107

Sealing with sticker:

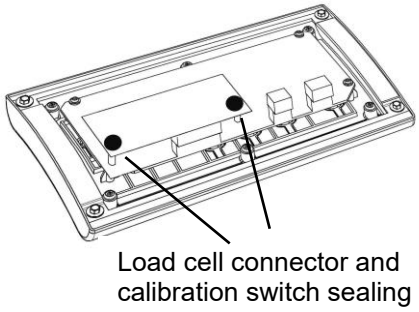


Sealing with lead:

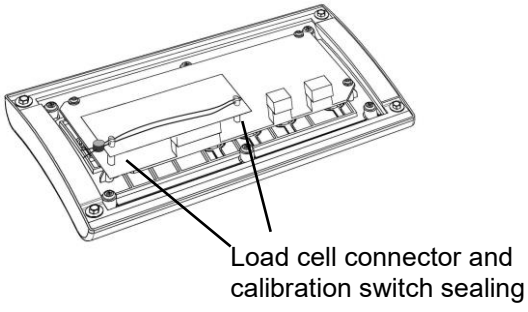


Sealing of FT-107S

Sealing with sticker:



Sealing with lead:



9. TROUBLE SHOOTING

FT-107(S) weighing indicator had been designed as a very reliable and virtually error free instrument. However, if an error occurs, do not attempt to repair the equipment before understanding what caused the error. Note the problems you have with your instrument and the error messages shown on the display. Then try to solve the problem according to the error table given below.

[**Over**] on the display	Load cell signal is higher than calibrated maximum level. Call service for checking load cell and recalibration.
[**Under**] on the display	Load cell signal is lower than calibrated zero level. Call service for checking load cell and recalibration.
[**E E E**] on the display	Zeroing at power on not possible. Check the scale. The scale should be unloaded at power on.
[**AdCoUt**] on the display	Load cell signal is out of the ADC range. - Check load cell connection. - Check the load cell. - Check the calibration. - Change PCB.
Err 2	ADC communication error. - Change PCB.
Err 34	Load cell signal is not increasing after loading the scale. - Check the load cell connection. - Check the load cell cable in the instrument. - Change PCB.
Err 35	Load increase is small. - Check the scale mechanic. - Check the load cell connection. - Increase the test weight. - Change PCB.
Err 37	Scale is not stabile for calibration.
Err 70	Maximum scale capacity is more than 15000 kg or 30000 lbs. - Reduce the capacity of the scale.
Err XX (others)	- Disconnect power adaptor and battery. - Connect battery and power adaptor in sequence - Switch on the instrument if it is not. - If there is any malfunction, change PCB or call service.

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