CYLINDER WEIGHT SCALE GQ-CWS

INSTRUCTIONS
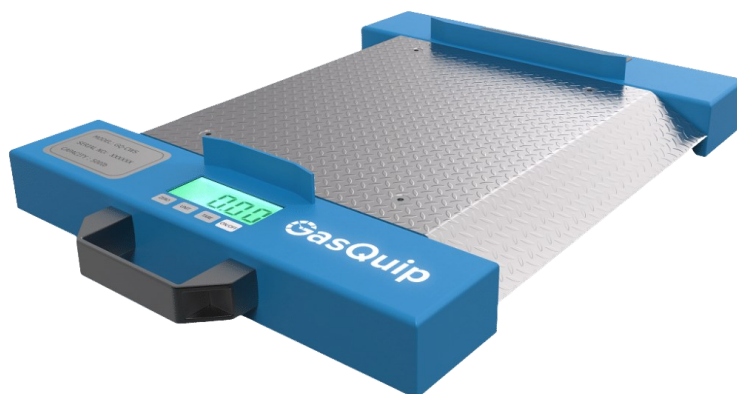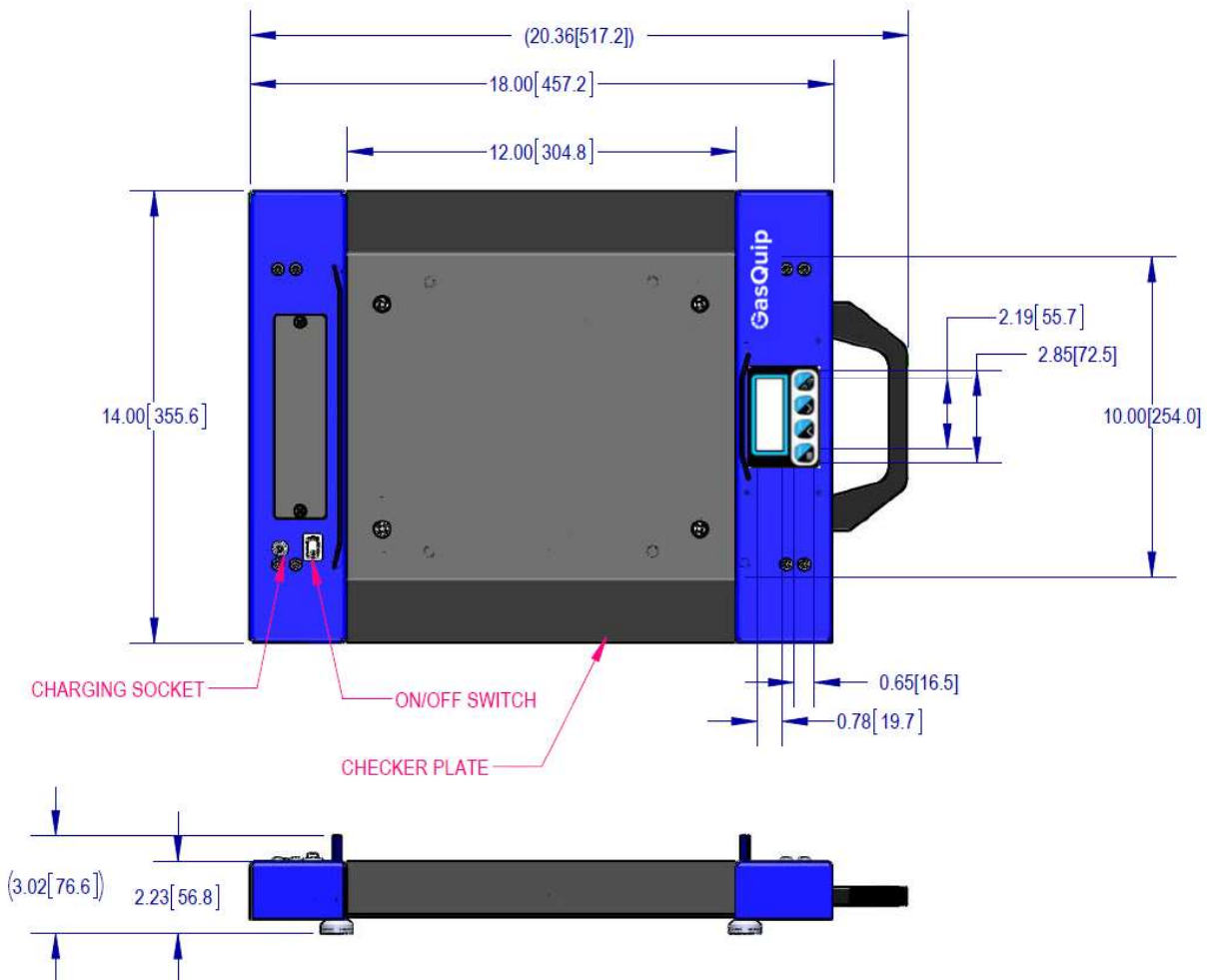
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1.   MECHANICAL CONSTRUCTIONS

1.1 Outline dimensions

- All Dimensions are in Inch[mm]

2. BATTERY INSTALLATION INSTRUCTIONS

- Remove battery cover as below image.
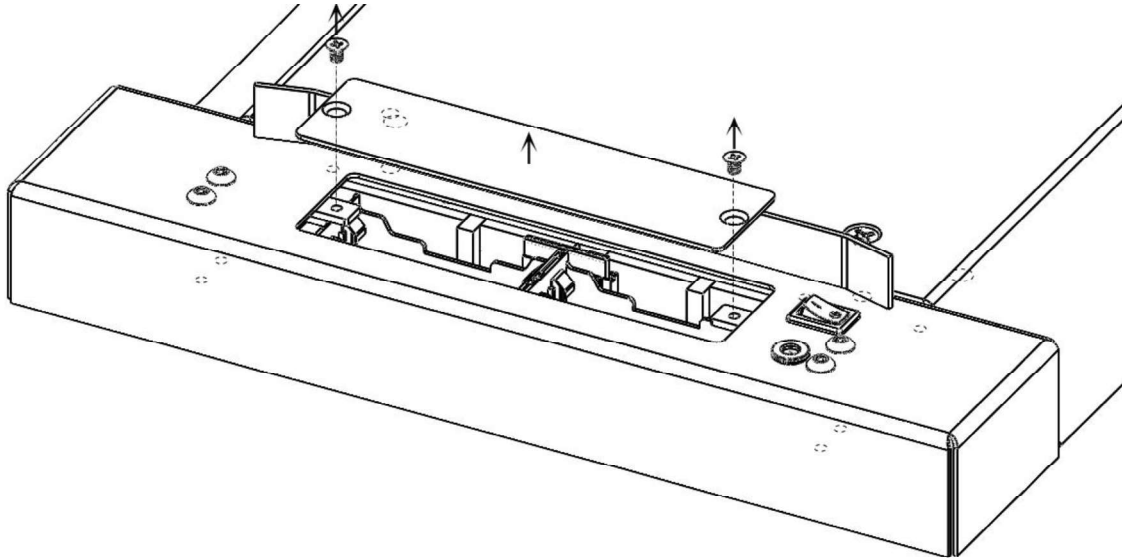
- Verify battery polarity as labeled in battery holders.
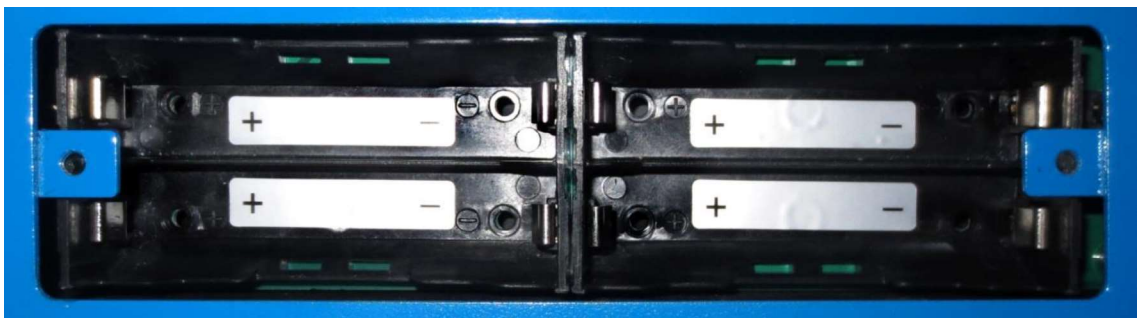
- Lithium-Ion 3.7V button-top rechargeable 18650 Batteries are recommended.

https://www.18650batterystore.com/products/samsung-35e-button-top

3. ELECTRICAL CONNECTIONS

ON/OFF SWITCH

5.5 x 2.1mm Female DC Power Connector

- C +   O.D. 5.5 mm   I.D. 2.1 mm
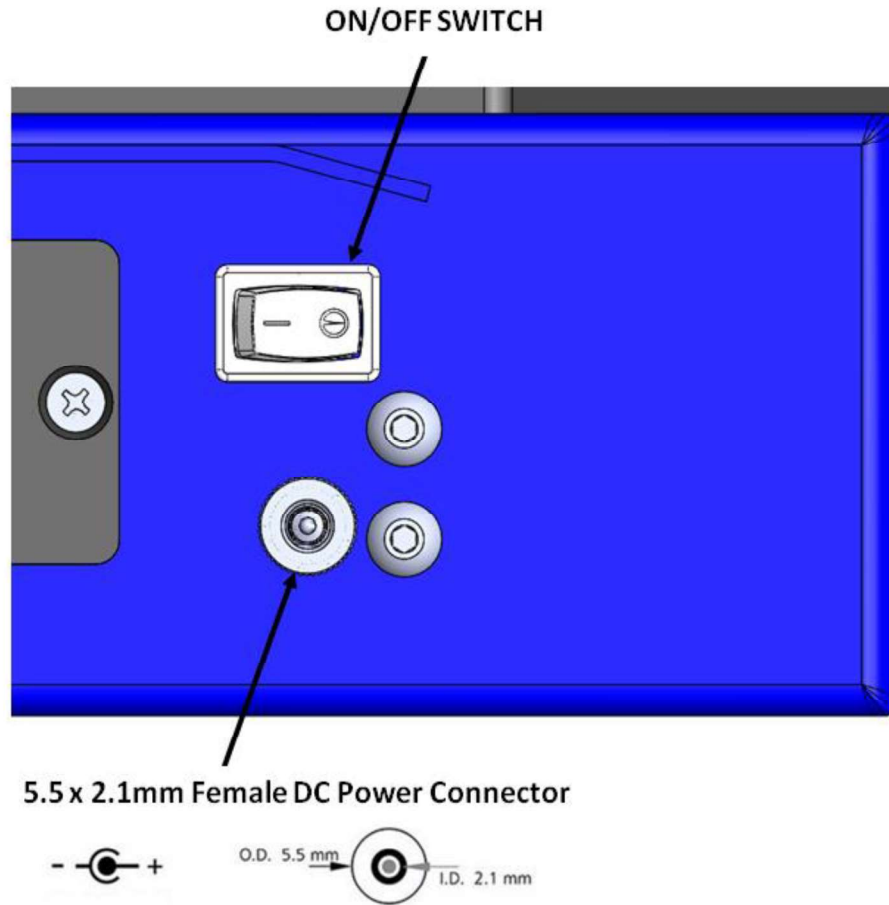
Use only provided battery charger to charge the Lithium-Ion 18650 rechargeable batteries. Using other charger or power supply can cause damages to the scale.

4.   KEY FUNCTIONS

Below table describe the basic functionality of the scale keypad when they are using in the two main windows "Weighing window" & "Menu Window".

Key	Weighing Display functionality	Menu Display functionality
Menu/SELECT	Move to Menu	Select an item
ZERO/ UP	Set Scale ZERO	Move UP. When entering number, the key is used to increase the number by 1
Tare/ DOWN	Set Scale Tare	Move DOWN. When entering number, the key is used to decrease the number by 1.
Back/Left/Lb to kg Conversion	lb to kg conversion.	When entering number, the key used to move to right digit.

4.1 Tare/Zero/lb to kg conversion
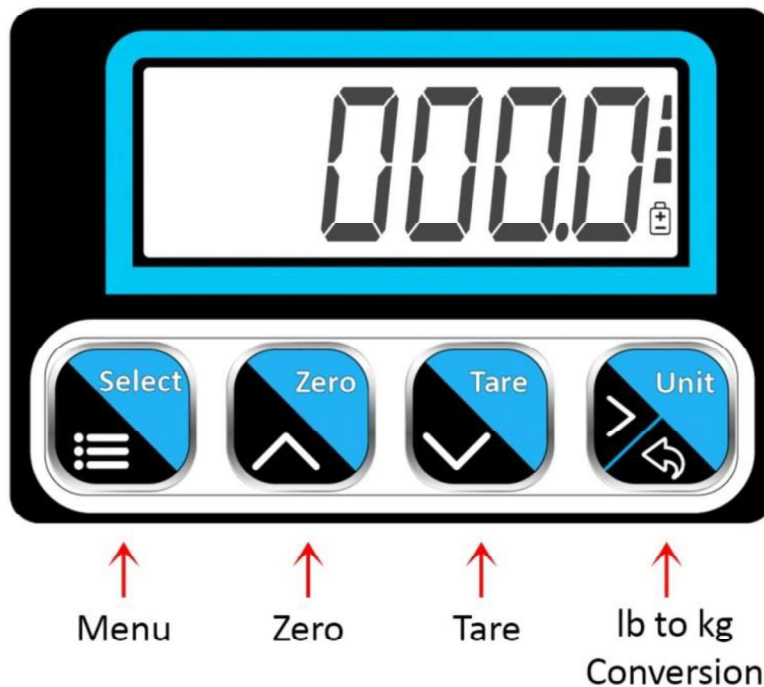
4.2 "Menu/Select" FUNCTION

In weighing window by touching "Menu/Select" key, it allows to go to Menu and Select the functions that available in the menu.

4.3 "ZERO" and "REST ZERO" FUNCTION

Set the system zero - this function will create a "current" zero point which will become the basis for all weigher operation, until further updated by the zero tracking function, or another "set zero" or the "reset zero". Any attempt to zero a drift of more than +/- ZERORANGE will result in the "set zero" being rejected and show "Error" message. The "set zero" is also rejected if the weighing signal is fluctuating, as defined by the "no-motion" function parameters. Issuing the "set zero", which has no error, will return the "Done" message. Using the same button can being performed "reset zero" once "set zero".

Reset the zero point to the "calibration" zero - this function will return the zero point to that which was stored during the calibration procedure. Issuing the "reset zero", which has no error, will return the "Done" message.

4.4 "TARE" and "REST TARE" FUNCTION

Set the tare point - this function will activate the net weighing function, by storing the current weighing signal output value as a tare value. The "set tare" is rejected and show "Error" message if the weighing signal is fluctuating, as defined by the "no-motion" function parameters. Issuing the "set tare", which has no error, will return the "Done" message.

Using the same button, it can be performed "reset tare" once done the "set tare". This function cancels the net weighing mode, and restores the current zero. The weighing signal output returns to the gross mode. Issuing the "reset tare", which has no error, will return the "Done" message.

4.5 "LB TO KG CONVERSION" FUNCTION

Initially the Scale has been calibrated to lb unit and by default it shows the output in lb. Once press the "lb/kg" button it shows the output in kg.
Once the lb/kg conversion button is pressed, the unit of measure that will be converted is shown before the scale output.

5. MENU

5.1 Structure of the Menu

Settings

Settings	
Backlight	
	10s
	40s
	60S
	off
Auto power off	
	10s
	40s
	60S
	off
Gross /Net	
	Net
	Gross
Serial Number	
	View Serial Number
	Enter Serial Number
Factory Defult Settings	
	Enter Password
Informations	
	Device ID
	Firmware Version
	Display TAC counter

Calibration

Calibration	
Enter Password (123456)	
Quick Calibration	
Set DP	
	Enter DP
	Set AG
	Enter AG
	Unit
	kg
	lb
	Set CZ
	Set CG
Max and Min capacity	
	Max capacity
	Min capacity
Zero rage	
	Edit Zero Range
Display step size	
	1
	2
	5
	10
	20
	50
	100
	200
	500

Filters & Motions

Filters & Motions	
Filter Mode	
IIR	
FIR	
Filter Value	
IIR	FIR
None	None
18.0	19.8
8.0	9.7
4.0	6.5
3.0	4.9
2.0	3.9
1.0	3.2
0.5	2.8
0.25	2.5
Update rate	
1200	
600	
300	
150	
75	
37.5	
18.8	
9.4	
Motion Settings	
No motion range in increments	
No motion TIME in ms	

Functions

| Functions	
Tare Mode	
	T.MOD1
	T.MOD2
Zero tracking	
	Edit tracking number
Store Zero Value	
	On
	Off
Store Tare Value	
	On
	Off
Intial zero range	
	Edit initial zero range

5.2 Access to Main Menu

In weighing window, by pressing the Menu button it allows to access to the scale menu and button functionality has been changed to reach menu functionalities as below.
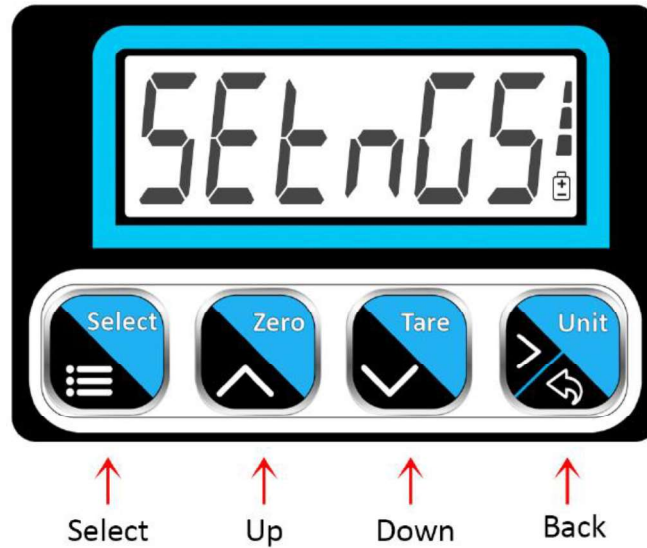
5.3 Change numeric parameter

When changing the values stored in parameters, it is required to enter some numbers. Once reached to that kind of function the keypad has been changed as below.
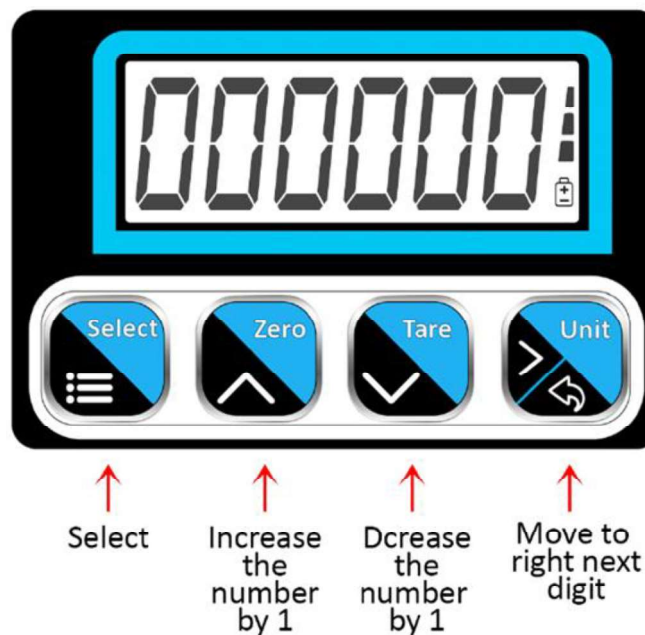
Initially, there are six zeros displayed in this section, and one of them is flashing. The flashing zero is a changeable digit. When the "Unit/>" button is press, it moves to next right digit and begins blinking that digit. The value of the blinking digit can be changed using "Zero/^" and "Tare/v" buttons. Using the "Select" button, the modified value may then be saved.

5.4 Change Maximum capacity of the Scale

- Start with Scale powered on and in normal weighing mode.

1	Select	Press "Menu" button to enter to Menu	SETNGS
2	Tare	Press "Down" button	CAL
3	Zero Tare Unit	Enter the password using "Up", "Down", "Right" buttons	000000
4	Select	Press "Select" Button	123456
5	Tare	Press "Down" button	QCIC. CL
6	Select	Press "Select" Button	CAP
7	Select	Press "Select" Button	NNA. CAP

8	Select	Press "Select" Button	000550
9	Zero Tare Unit	Enter the maximum capacity including decimals using "Up", "Down", "Right" buttons	000000
10	Select	Press "Select" Button	005500
11	Unit	Press "Back" button 2 times for back to normal weighing mode	SAVED

- Maximum capacity set as 550.0 lb.

5.5 Settings

Backlight – Sets the operation of the backlight, to save power set this parameter to 10S, 40S or 60S. When this parameter is set to 10S, the display backlight will be "Turn-Off" after 10 seconds if there is no any motion on Scale. It stays "Turn Off" until there is a variation on the scale or button is pressed. Note:- Once in menu mode, the Backlight stays turned-on until return to weighing mode.

Options:
10S – Backlight will be Turn-Off after 10 seconds
40S – Backlight will be Turn-Off after 40 seconds
60S – Backlight will be Turn-Off after 60 seconds
N.OFF – Backlight will be stays Turn on
Default – N.OFF

Auto power off – The scale can be set up to automatically power down after a period of no activity. Weight motion or any press of the keyboard is enough to keep the instrument powered on.
When this parameter is set to 10S, the display will "turned-off" after 10 seconds if there is no any variation on Scale.
Auto power off setting applicable in weighing window only, In menu window the display will never "Turned-off"

Options:
10S – Display will "off" after 10 seconds
40S – Display will "off" after 40 seconds
60S – Display will "off" after 60 seconds
N.OFF – Display will never "off"

Default – N.OFF

Gross/Net – Gross weight or Net weight can be display by selecting this setting.

Options:
    Net – Display the net weight
    Gross – Display the gross weight

    Default – Net

Serial Number – the Serial Number of the scale can be edit or display by using this setting. The serial number has only 6 digits. To edit the serial number the password (123456) should be entered.

Factory Default Settings –The following settings can be reset to factory default using this setting. The password (123456) should be enter to enable this setting.

Settings	Factory Default Setting
Backlight	N.OFF
Auto power off	N.OFF
Gross/Net	Net
Maximum Capacity	999999
Minimum Capacity	-999999
Zero range	0
Display Step Size	1
Filter Mode	IIR
Filter Value	0.25
Update Rate	300
No Motion Range	1
No Motion Time	1000
Tare Mode	T.Mod1
Zero Tracking	0
Store Zero value	Off
Store Tare value	Off
Initial Zero	0

Information –Device ID, Firmware version, TAC count, of the scale can be display under this mode.

5.6 Calibration Settings

Calibration Settings are password protected. Default password (123456).

Quick Calibration

Set DP – Set the decimal point position - this allows the decimal point to be positioned anywhere between leftmost 3-digit .Permitted values are 1, 2 and 3.

Set AG – This is the reference point for the calibration under load. The weight signal used for calibration should be as close as possible to the maximum allowable display value (**Maximum Capacity**) so as to ensure optimum calibration accuracy. When calibrating the span, the actual value of the calibration weight must be entered as a parameter of the AG.
For example if the output 500lb is required for the weight placed on the scale, then the 005000 counts should be entered in to the display when DP is 1.

Unit – Unit of measure for the calibrated weight. This is the reference point for the lb to kg conversion. Unit of measure can be selected as lb or kg.

CZ – Set the calibration zero point - this is the reference point for all weight calculations. Make sure there is no any weight on the scale when performing this function, Also it will give an "Error" if there is any motion on the scale.

CG – Set the calibration gain - this is the reference point for the calibration under load. Placed the weight on the scale that was entered under the AG value and select CG. It will give an "Error" if there is any motion on the scale.

Save – Save the calibration using this setting.

Maximum Capacity - Set the maximum allowable output value using this setting. This setting can be set to $0 - 999999$ range. This value will determine the point at which the output will change to "**Over Load**". From this parameter the value of maximum capacity can be view or edit.

Default $- 999999$

Minimum Capacity - Set the minimum allowable output value using this setting. Permitted values for this parameter are between the lower limit of -999999 and the upper limit of 0.This value will determine the point at which the output will change to "**Under Load**". From this parameter the value of minimum capacity can be view or edit. Even though a negative value is entered it won't appear in the display.
Default $- (-999999)$

Zero Range – This is the range in increments within which the weighing scale can be zeroed. Permitted values are between the lower limit of 0 and the upper limit of 999999. A value of zero enables the standard zero range of +/-2% of max. The value of zero range can be view or edit. When Zero Range value is "0" the scale can be zero in any increments.

Default $- 0$

Display Step Size – This allows the output to step up or down by a unit other than 1.

Options:
1 – Display output count step up or down by 1
2 – Display output count step up or down by 2
5– Display output count step up or down by 5
10 – Display output count step up or down by 10
20 – Display output count step up or down by 20
50 – Display output count step up or down by 50
100 – Display output count step up or down by 100
200 – Display output count step up or down by 200
500 – Display output count step up or down by 500

 Default – 1

5.7 Filters and Motions

Filter Settings

The parameter exists for set the digital filter via the Filter value setting, and this filter can be adjusted to eliminate most unwanted disturbances. Note that this filter is positioned immediately after the A/D Converter, therefore have an effect on all aspects of weigher operation.

Filter Mode – There are two adjustable digital Low pass filters to be set in filter mode setting.

Options:

IIR	18-0.25 Hz
FIR	19.8-2.5 HZ

Default – IIR

Filter Value – The digital Low pass filter value can be changed according to the Filter Mode setting.

Options:

Filter Value	
IIR	FIR
None	None
18	19.8
8	9.7
4	6.5
3	4.9
2	3.9
1	3.2
0.5	2.8
0.25	2.5

Default – 0.25

Update Rate – This setting defines the number of available updates per second of output.

Options:

1200 u/sec	600 u/sec	300 u/sec	150 u/sec	75 u/sec	37.5 u/sec	18.8 u/sec	9.4 u/sec

Default – 300

Motion Settings

The Motion Detection facility provides a means of disabling certain functions whenever a condition of instability, or "motion", is detected. The "no-motion" or "stable" condition is achieved whenever the signal is steady for the period of time set by "no-motion time", during which it cannot fluctuate by more than "no-motion range" increments.
The functions, which are disabled whenever motion is detected, are "Calibrate Zero", "Calibrate Gain", "Set zero" and "Set tare".

No Motion Range – This is the range within which the weighing signal is allowed to fluctuate and still be considered as "stable". Permitted values are between the lower limit of 0 and the upper limit of 65535.

Default – 1

No Motion Time – This is the time parameter that defines the period during which the output must not fluctuate more than "no-motion range" increments in order to be considered "stable". Permitted values are between the lower limit of 0 and the upper limit of 65535.

Default – 1000

5.8 Functions

Tare Mode – This setting sets the tare mode. The tare modes are defined in the option table below.

Options:

Tare Mode	Allow tare of negative values
T.Mod1	Yes
T.Mod2	No

Default – T.Mod1

Zero Tracking – This function set the zero track band in divisions (d). Zero tracking will be performed only on results less than +/-(0.5 * Zero Tracking) at a rate of 0.4 d/sec where d = display step size. The zero can only be tracked to +/- Zero range. A value of zero turns off the zero tracking.

Default – 0

Store Zero Value – This function sets the zero mode to volatile (off) or non-volatile (on). If set to "on" (non-volatile), every set/clear zero will write the value directly to the EEPROM.

Default – off

Store Tare Value – This function sets the tare mode to volatile (off) or non-volatile (on). If set to "on" (non-volatile), every set/clear tare will write the value directly to the EEPROM.

Default – off

Initial Zero Range – Define the initial zero range (0...999999 d). If initial zero range is non-zero the device will perform an automatic Set Zero when the weight stabilizes with the No-motion settings and the weight is within the initial zero range.

Default – 0

6. CALIBRATIONPROCEDURE

Step1   Select Quick Calibration

Step2   Select "DP"

Step3   Enter the decimal point that need to set $(0-3)$

Step4   Select "AG"

Step5   Enter the weight value that going to be used for calibration

Step6   Select "Unit"

Step7   Select the unit of the weight that previously enter in "AG" (lb or kg)

Step8   Verify, there is no any weight on the scale and select the "CZ"

Step 9   Keep the weight on the scale that going to be used for calibration and select "CG"

Step 10   Select the "Save" after successfully calibrate the scale

7.   Accessories

7.1 Battery Charger

The device is 4 stages smart battery charger by Microprocessor controlled with solid 4 LEDs charging indicator.

4 Stage Charging Process

Stage 1: Pre-charge the battery through small current, Charger enters this stage if it detects battery deep discharge. It is helpful for battery cycle Life. (LEDs: 1 ON, 2-4 OFF)

Stage 2: Bulk charge using charger highest rated current for the type of battery in use until it reaches 80% capacity. (LEDs: 1-4 Blinking Sequentially)

Stage 3: Constant voltage, the output voltage is limited to 4.2V/Cells while current declines as the battery charges to its full capacity without overheating. (LEDs: 1-3 ON, 4 Blinking)

Stage 4: Cut-off, at this stage, the battery is fully charged and the charger will cut-off output automatic, that means the charger can be connected to battery left indefinitely. (LEDs: 1-4 ON)

Specification

Input: 100-240VAC@50/60Hz 0.5rms
Output: 3A
Limited Voltage: 16.8V
Cut-Off Current: 200mA
Charging mode: Fully automatic 4 stages
Suitable battery type: Lithium Ion

Troubleshooting

Problem	Error Code	Possible Causes	Suggested Solution
Charger Does Not Work	No Indicator lights on	No AC Power	Check AC connections and make sure Power Point is switched ON
No DC Output	4 LEDs Indicator flashing simultaneously	Output is short circuited Reverse polarity connection to Battery	Check DC connection between charger and battery and make sure they are not short circuiting. Check the batteries are installed in correct polarity. Check the battery voltage.
No Charging Current	4 LEDs indictor light off	Battery no voltage	Battery is defective Move battery

How to Use

1. Plug in charger to AC socket, all the lamp will be blinking sequentially then solid "power" LED ON.
2. Connect the charger to scale. The "4 Green LEDs" lamps will light in sequence. IF the battery polarity reversed or output shorted, the "4 Green LEDs" lamps will blink simultaneously. Please Disconnect and Check.
3. Depending on the charged battery capacity the "4 Green LEDs" will be light up solid, when all led's are ON, the battery is fully charged, you can disconnect the charger to use or keep it connected to battery left indefinitely.

Warning

1. This charger is designed for charge Lithium ion battery pack, do not use for any other purpose.
2. Since batteries may emit explosive gases, always provide good ventilation and avoid any source of flames or sparks when charging.
3. To reduce risk of damage to electric plug and cord, pull by the plug rather than by the cord when disconnecting charger.
4. Use of an improper extension cord could result in a risk of fire and electric shock.
5. Do not disassemble the charger; take it to a qualified serviceman when service of repair is required. Incorrect reassembly may result in a risk of electrical shock or fire.
6. Do not charge if you notice any signs of damage to charger or cords.
7. To reduce risk of electric shock, unplug charger from AC outlet before attempting any maintenance or cleaning.