



# **TCB880 Counting Scale USER'S MANUAL**

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# FEATURES

- Provides the highest level of counting accuracy
- 30,000 displayed resolutions
- 3 displays - Weight - Unit Weight - Count
- Truly portable - with both AAC adapter and rechargeable battery that lasts 100 hours
- Large removable anti-static stainless steel weighing pan
- Durable ABS housing
- Warning for insufficient unit piece weight and sample size
- Large high contrast back-lit liquid crystal display (LCD)
- Splash proof keyboard and display
- Calibration with reference weights
- Optional RS-232c for bi-directional communication with a PC or Printer
- Multiple weighing units: g, kg, lb, oz
- 1 year limited warranty

# CONTACT US

Please e-mail [sales@tufner.com](mailto:sales@tufner.com) for any question

Don't forget to visit our website at:

[www.tufner.com](http://www.tufner.com)

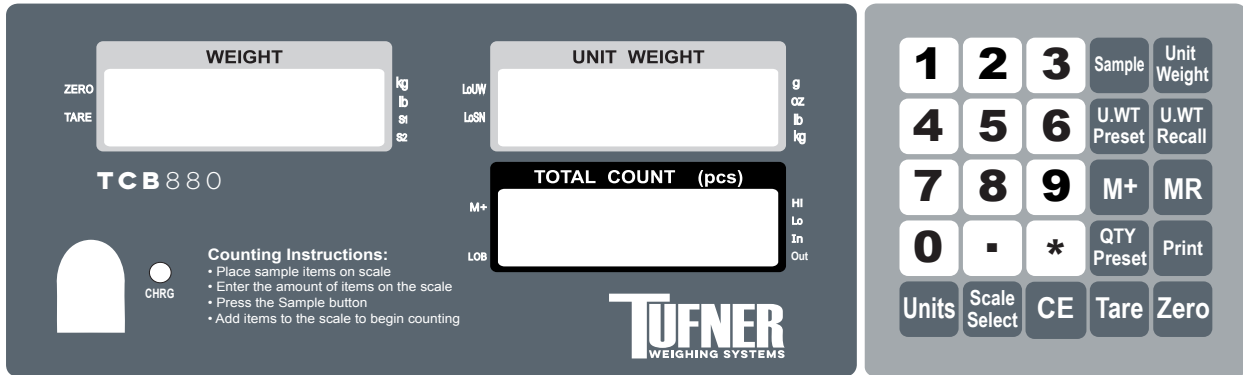
# SAFETY PRECAUTIONS

- To avoid damaging the battery do not keep charger plugged in once battery is fully charged.
- Only use the provided adapter to charge this unit.
- The provided battery should be replaced when it no longer holds a charge of over 12 hours.
- Avoid installing the balance in direct sunlight. This may cause poor performance or malfunctions.
- If the balance will not be used for a long period of time, remove all batteries from the battery compartment to avoid leakage, which may cause damage to the instrument.
- Avoid overloading or dropping material onto the platform as that may damage the balance.
- Please clean the display and operation panel with a wet cloth.
- Place the weight on the center of the pan for accurate weighing. Make sure the weight is not over the Max capacity as it could damage the load cell inside.
- Do not spill liquids on the balance as it is not water-resistant. Liquids may damage the case and any liquid inside may cause damage to the electronics.
- Material that has a static electric charge could influence the weighing. Discharge the static electricity of the samples, if possible. Another solution to the problem is to wipe both sides of the pan and the top of the case with an anti-static agent.

## PREPARATIONS & SET UP

- Place your balance on a stable and level table. Then level your balance by adjusting the feet to center the bubble in the spirit level (located under the plate)
- Plug into a wall outlet to avoid interference with other wirings
- Turn on the balance while there is no load on the pan
- We suggest to warm-up the balance by turning the power on 5 minutes before use for accurate weighing
- Calibration may be required before weighing when the balance is initially installed or moved from a location

# DISPLAY AND KEY DESCRIPTION



<b>1-*</b>	Number Keys
<b>SAMPLE</b>	Setting the quantity sample used for counting
<b>UNIT WEIGHT</b>	Used when manually keying in the unit weight
<b>W.WT PRESET</b>	Unit weight preset
<b>W.WT RECALL</b>	Unit weight recall
<b>M+</b>	This key is used for total count or weight accumulation
<b>MR</b>	Used to read the total accumulation
<b>QTY PRESET</b>	Use this key to confirm desired batch limit
<b>PRINT</b>	Press this key to output data
<b>UNITS</b>	In the weighing mode there are 4 units available (kg, g, lb, oz)
<b>SCALE SELECT</b>	The conversion between the Sub-scale and the parent scale
<b>CE</b>	Use this key to clear the readings entered
<b>TARE</b>	Use this key to subtract the containers weight and show net weight
<b>ZERO</b>	If there is a minor weight displayed without anything on the pan; hit the zero key to clear the display

# OPERATING INSTRUCTIONS

## Power On

- Turn on the power by flipping the switch located on the underside of the scale to the right. Once on, the scale will show the voltage and auto-check by counting down from 0-9 sequentially

## Zeroing

- If the screen reads any number other than 0 before weighing, press the ZERO key to set to 0 (be sure ◀ points to ZERO)

Note: The zero range is 4% max capacity

## Unit Selection

- To switch between measuring units (kg, g, lb, oz) press the [UNITS] key

## Tare Function

- Put a container you wish to use on the pan, then press the [TARE] key and the display will show ▼ pointing to TARE and reset back to 0
- Add your sample to the container to weigh without the weight of the container
- To exit Tare mode simply press [ZERO] key

**Note:** If you remove your container the scale will show the minus weight of the container

## Sample Setting (Setting the sample weight)

There are two ways of setting a sample weight

**Number Setting:** for when you don't know the weight of the object

- Press [CE] for canceling the previous unit weight and sample setting
- Place items on the scale
- On the keypad enter how many items you placed on the scale
- Then press the [SAMPLE] key
- The scale will calculate and then show the number of your sample on the third line
- You can now add more items to the scale and it will count them

**Unit Weight Setting:** for when the weight of the unit is already known

- Press [CE] for canceling the previous unit weight and sample setting
- On the keypad enter the weight of your item then press the [UNIT WEIGHT] key. Add items for scale to count

## Accumulation

- Accumulation mode keeps track and adds your total pieces together for you
- With nothing on the scale press [CE]
- Place your sample on scale
- Enter the amount of pieces your sample is
- Press [Sample]
- Now add to the scale the first weight you want accumulated
- Then press [M+] to save the first weight
- The screen will show 10 . 01 and the piece count
- Press [Unit Weight] to save the first weight
- The scale will beep once
- Now add your second weight you want to accumulate to the scale
- The weight and piece count will show
- Once stable the scale will beep, then press [M+]
- The screen will show 10 . 02 and the total piece count
- Then press [Unit Weight] to save the second weight
- Now add your third weight you want to accumulate to the scale
- The weight and piece count will show
- Once stable the scale will beep, then press [M+]
- The screen will show 10 . 03 and the total piece count
- Then press [Unit Weight] to save the third weight
- Continue these steps until all wanted weights have been accumulated (up to 99 totals can be accumulated)

### Accumulation Checking

- When you want to see the total pieces accumulated press [Total]
- The screen will show "total" the number of accumulated weights and the total amount of accumulated pieces
- To clear the saved weights press [CE]

## Quantity Check Alarm

- When counting you can set a quantity limit alarm by setting limits
- This function allows you to set an alarm when there are too many or too few pieces on the scale. For example you can set an alarm to go off when you have under 10 units on the scale or an alarm when you have over 100 units, or both at the same time
- Press [QUANTITY CHECK] key to enter the quantity check setting mode
- Turn this function On or Off by pressing the [ZERO] key
- To set a Low alarm press [M+] and enter the amount you want to set as your lower alarm (entering 0 disables low alarm)
- To set a High alarm press the [M+] Key again and enter the amount you want to set as the high alarm (entering 0 disables high alarm)
- Press [M+] again to save the alarms and exit quantity check setting mode

## Communication Settings

- Press and hold "2" while powering on the scale
- The scale will display the Baud Rate presets (2400, 4800, or 9600)
- Press [TARE] to cycle through and [ZERO] to select
- The display will show the default output
- Press [TARE] to cycle through the below options
  - Co - Continuous output
  - ST - Output when the reading is stable
  - PR - press [PRINT] key to output
- Press [ZERO] to confirm

## USB Communication Format

Baud rate: 2400, 4800, 9600

Data Bit: 8

Parity: N(None)

Stop Bit: 1

Code: ASCII

Data Format:

G=Gross N=Net



# BATTERY

- Charging Light Indication: When the scale is charging the charge light will turn Red. When the battery is done charging the charge light will turn Green. To fully charge the battery plug in for about 12 hours.
- Power supply: AC 220

# ALARMS

## Overloading alarm

- When the load on the platform is over 9d of the scale's maximum capacity, a beep will sound to alert you to remove the load from the platform immediately The display will show "EEEEEE"

## Sample Number Alarm

- If the total weight of your sample is below limit value, it will indicate lack of sample

## Quantity Check Alarm

- When the quantity check function is on and you are over or under the scale's limitation the scale will emit beeps to warn you
  - Short sounding beeps: if the quantity is over the upper limitation
  - Long sounding beeps: If the quantity is less than the lower limitation

# TROUBLESHOOTING

"AdL---" - the weight is under the set division

"AdH---" - the weight is over the set capacity, please remove all weight

"Ad-QUER" - the weight is over the scale's capacity, please remove all weight from the scale immediately!

- Please check to see if the plate is in place properly and the scale is level
- If error persists please contact the dealer

When powering on if the display shows "Error Vol 500" before auto-checking, the present voltage is 5.0V and the scale cannot be turned on.

- Charge the scale with the included charger and do not use until the voltage reads 5.3V when you power on the scale
- If error persists please contact the dealer

# CALIBRATION

## When to calibrate

- When the scale is initially installed
- When the scale's location has changed
- After the scale has not been used for a long period of time

## How to calibrate TCB880 (Externally)

*You will need 1 weights 2/3 of the max capacity.*

- Turn the scale on and press and hold [ZERO] until the end of the scale self-test
- The scale will show "CAL"
- Press [ZERO] to show "0"
- Place a weight (2/3 of the Max. Capacity is recommended) on the tray
- Enter the value of the weight via the numeric keys (in KG)  
ex. If the max. Capacity is 3kg; the weight should be 2kg and you would enter "2" on they keypad
- Once stable, press [ZERO] to confirm
- The calibration is done.

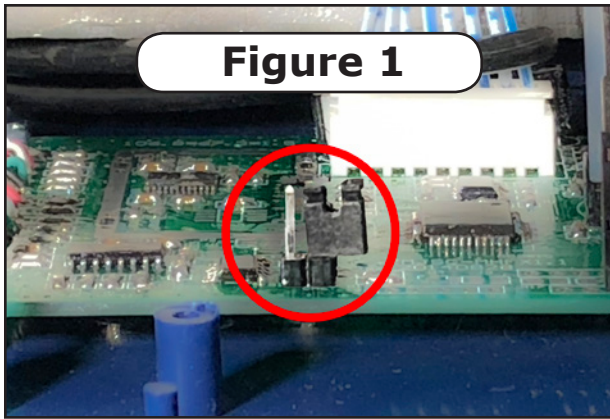
## How to calibrate TCB880 & your second scale (Internally)

*You will need 3 weights 1/3, 2/3 and 3/3 of the max capacity of your scale.*

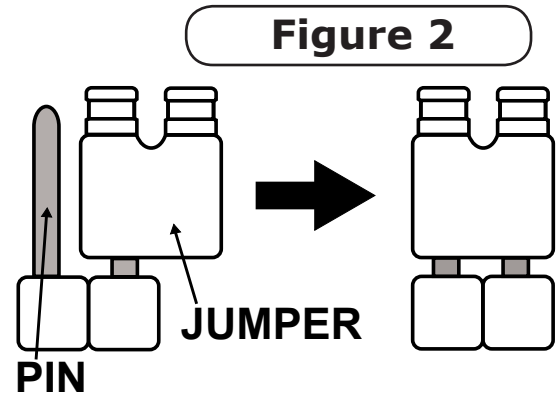
To begin you will need a Phillips head screwdriver.

- Remove the pan and turn the TCB880 scale upside down
- Remove the 4 screws holding the enclosure together
- Very carefully flip the scale right side up and slowly lift the cover partially up, there will be 2 wires connecting the two top and bottom together. **Do not** lift lid off entirely or you will damage the scale
- On the circuit board you will see a jumper and two pins
- Figure 1 shows the jumper sitting on only one pin while  
Figure 2 shows the jumper sitting on two pins

To enter calibration mode you will need to move the jumper from the Figure 1 position to the Figure 2 position



**Figure 1**



**Figure 2**

Once moved, you may close the scale enclosure and replace the pan

- Connect your second scale to the TCB880 via the 5 pin connector port labeled "Sensor Interface" on the right side of the scale
- Power on the TCB880, the display will show "PASS"

### **TO CALIBRATE THE BALANCE (TCB880)**

- Press "2" six times, followed by [ZERO] to confirm
- The display will show "SPAN1" + "XXX" (XXX = max. capacity)
- Press [TARE] to rotate through and select your balance's Max. Capacity (750g, 1200g, 1500g, 2100g, 3000g, 5100g, 6000g, 7500g, 10500g, 12000g, 15000, 21000g, 30000g)
- Once selected press [ZERO] to confirm
- The screen show "div1" + "\_\_\_\_\_"
- Press [TARE] to rotate through and select your balance's Division (1g, 2g, 5g, 10g, 0.01g, 0.02g, 0.05g, 0.1g, 0.2g, 0.5g)
- Once selected press [ZERO] to confirm
- The screen will show "2 CAL1", and "0" Make sure the scale is empty and press [ZERO] to zero calibrate the scale
- The screen will show "2 CAL2", and "X" X=1/3 of your balance's max cap.
- Place 1/3 of Max. Cap. weight on the scale, then press [ZERO] to confirm
- The screen will show "2 CAL3", and "X" X=2/3 of your balance's max cap.
- Place 2/3 of Max. Cap. weight on the scale, then press [ZERO] to confirm
- The screen will show "2 CAL4", and "X" X=3/3 of your balance's max cap.
- Place 3/3 of Max. Cap. weight on the scale, then press [ZERO] to confirm
- Calibration is complete
- The scale should display the weight on the scale. If not please repeat calibration procedure
- If done, reset the jumper from Figure 2 back to Figure 1
- Close enclosure and secure with screws
- To continue to second scale's calibration, power off and on balance

## TO CALIBRATE THE SENSOR (SECOND SCALE)

- Press "1" six times, followed by [ZERO] to confirm
- The display will show "SPAN1" + "XXX" (XXX = max. capacity)
- Press [TARE] to rotate through and select your balance's Max. Capacity (15kg, 30kg, 45kg, 60kg, 75kg, 120kg, 150kg, 200kg, 300kg, 500kg, 600kg, 1000kg, 1500kg)
- Once selected press [ZERO] to confirm
- The screen show "div1" + "\_\_\_\_\_"
- Press [TARE] to rotate through and select your balance's Division (1g, 2g, 5g, 10g, 20g, 50g, 100g, 200g, 500g, 1000g)
- Once selected press [ZERO] to confirm
- The screen will show "1 CAL1", and "0" Make sure the scale is empty and press [ZERO] to zero calibrate the scale
- The screen will show "1 CAL2", and "X" X=1/3 of your scale's max cap.
- Place 1/3 of Max. Cap. weight on the scale, then press [ZERO] to confirm
- The screen will show "1 CAL3", and "X" X=2/3 of your scale's max cap.
- Place 2/3 of Max. Cap. weight on the scale, then press [ZERO] to confirm
- The screen will show "1 CAL4", and "X" X=3/3 of your scale's max cap.
- Place 3/3 of Max. Cap. weight on the scale, then press [ZERO] to confirm
- Calibration is complete
- The balance should display the weight on the scale. If not please repeat calibration procedure
- Reset the jumper from Figure 2 back to Figure 1
- Close enclosure and secure with screws

# SPECIFICATIONS

<b>Max. Capacity</b>	1.5kg	3kg	7.5kg	15kg	30kg
<b>Readability</b>	0.05g	0.1g	0.2g	0.5g	1g
<b>Resolution</b>	1:30,000	1:30,000	1:37,500	1:30,000	1:30,000
<b>Response</b>	3 -5 seconds				
<b>Display</b>	LCD display with backlight				
<b>Tare</b>	Equal to Max capacity				
<b>Over-load alarm</b>	Auto alarm when load is over capacity				
<b>Over-load capacity</b>	Protect automatically when the load is 125% of capacity				
<b>Power Supply</b>	Rechargeable battery: DC6V 4Ah    Adapter: AC110-240V    Output: 12V/500mA				
<b>Consumption</b>	Work: 70mA    Sleep: 35mA				
<b>Temperature</b>	Storage: -10°C ~+50°C (14-120°F)    Work: 0°~+40°C (32-104°F)				
<b>Humidity</b>	Storage: 5% ~ 90% R.H.    Work: 10% ~ 80% R.H.				
<b>Pan Size</b>	11in x 8.5 in				
<b>Gross Weight</b>	9.5 lbs				

## Unit Conversion

1 kg        =    1000 g  
 1 lb        =    453.59237 g  
 1 Oz        =    28.349523125 g

