



TRANSCELL TECHNOLOGY, INC.



MODEL TI-500 RF Series

**Digital Weight Indicator
(with wireless weighing capability)**

User Manual

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THIS EQUIPMENT CONTAINS NO USER SERVICEABLE COMPONENTS.

- Servicing of the equipment must only be carried out by trained and authorized personnel.
- Use only the AC adapter supplied with the scale. Other adapters may cause damage.



Routine maintenance

- Harsh abrasives, solvents, scouring cleaners and alkaline cleaning solutions should not be used; especially on the display window.
- The outside of the product may be wiped down with a clean cloth, moistened with water containing a small amount of soap.

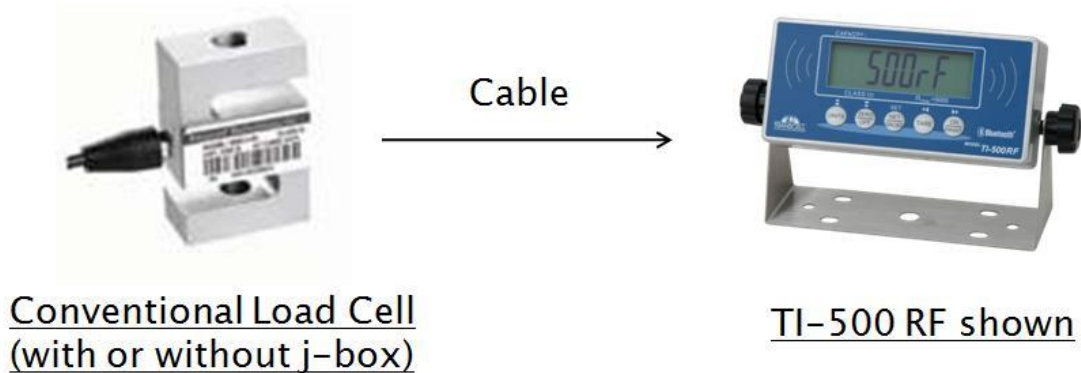
This manual covers the following products:

<i>Model</i>	<i>Display</i>	<i>Antenna</i>	<i>Enclosure Type</i>
TI-500 RF	LCD	Internal	Aluminum/ABS
TI-500 RF SS	LCD	External	Stainless Steel
TI-500 RFTM-B1	N/a	Internal	ABS
TI-500 RFTM-B1E	N/a	External	ABS

OVERVIEW

Scope of TI-500 RF Series

Out of the box, the TI-500 RF series indicator operates as a basic, cabled digital weight indicator. The load cell(s) and/or j-box is connected to the indicator's internal A/D converter. This configuration is depicted in the following diagram:



When sold with an external TI-500 RFTM (Radio Frequency Transceiver Module) and an optional wireless radio, your TI-500 RF series indicator is transformed from "wired" to cable-free. This configuration is depicted in the following diagram:



Our products currently use reliable and popular Bluetooth® wireless technology.

This manual covers operation and troubleshooting. For installation, configuration and calibration of the RF series indicators please refer to the separate installer's guide.

BASIC OPERATION

Getting Started – Cabled Systems

1. Press and hold the ON/PRINT key on the digital indicator unit for two seconds.
After a brief initialization period, the scale will revert to a zero (“0”) weight display.

Your scale is now ready for operation!

Getting Started – Wireless Systems

1. Switch on the RF weighing module(s) by pressing the BLUE button once. The blue LED will turn solid for a few seconds and then start to flash.
2. Next press and hold the ON/PRINT key on the digital indicator unit for two seconds.
After a brief initialization period, the scale will revert to a zero (“0”) weight display.

Your wireless scale is now ready for operation!

Operation – TI-500 RF and TI-500 RF SS

Before weighing it is necessary to check if the scale is unloaded and indicating zero weight in the desired unit of measure, for example lb for pounds.

If the indicator is not displaying the correct unit of measure, press the UNITS key

The indicator features an automatic zero correction meaning that small deviations will be zeroed automatically. If the indicator does not automatically determine the zero point, press the ZERO/OFF key.

Operation – TI-500 RFTM

The TI-500 RFTM contains two buttons and one LED.

- The BLUE button is used to power up the RF weighing module
- The RED button is used to immediately power down the RF weighing module

The TI-500 RFTM has several operating modes to save battery life and also to alert the user when it’s time to replace the batteries. You can determine the operating mode by observing the blinking behavior of the blue LED:

LED Functionality – Blinking interval		
During Power-up (Initialization)	ON for 5 seconds	
FULL BATTERY	Blink interval	
Working Mode	1.5 seconds	
Sleep Mode (power savings)	4 seconds	
LOW BATTERY	Blink interval	
Working Mode	10 seconds	Double Flash
Sleep Mode	10 seconds	Double Flash

Replace the batteries when the blink interval is 10 seconds!

NOTE 1: TI-500 RFTM will shut down completely within two hours of a lost connection with the indicator.

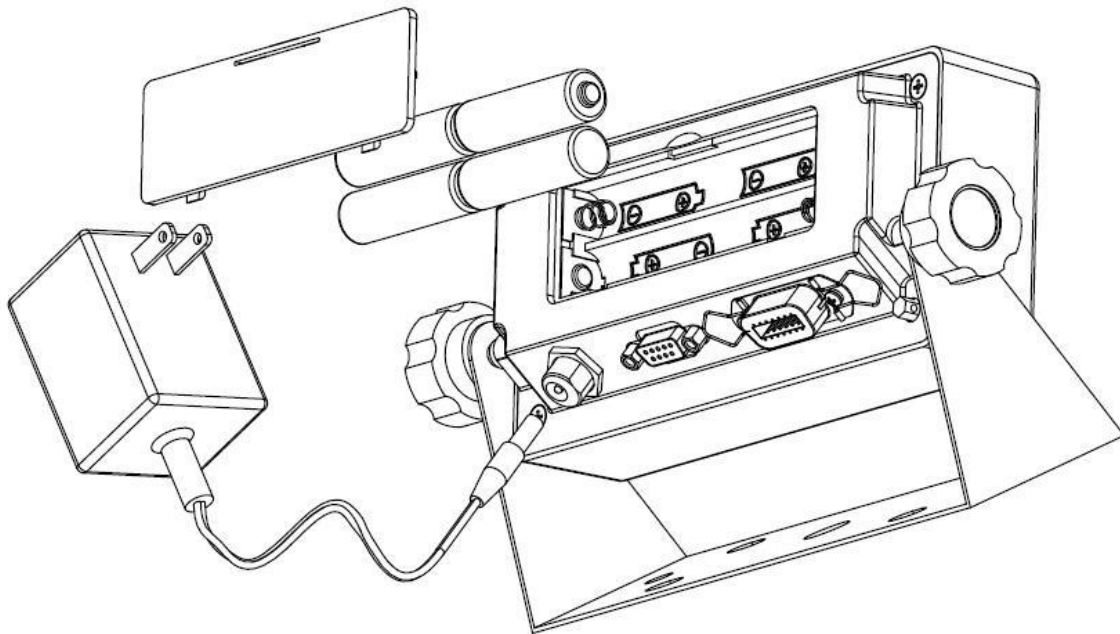
NOTE 2: TI-500 RFTM will only enter sleep mode when the TI-500 RF indicator is OFF.

When shipped from the factory, the TI-500 RF digital indicator is configured to automatically switch off after 5 minutes of inactivity.

Replacing the batteries – TI-500RF

The TI-500 RF digital indicator can operate either from its AC adaptor or from 4-AA batteries.

1. Remove the plastic battery cover from the rear panel.
2. Remove four AA batteries and discard.
3. Observing the proper direction (polarity), install the new batteries.
4. Replace the battery cover.



Replacing the batteries – TI-500 RFTM

An optional cylindrical battery holder is available which requires 4 “C” cell alkaline batteries.

1. Turn the TI-500 RFTM OFF (Press the RED button)
2. Locate the metal battery cylinder
3. Unscrew either end cap to reveal batteries
4. Exchange the batteries – be careful to note polarity
5. Replace the end cap
6. Re-install the metal battery cylinder

Rechargeable battery information – TI-500 RF SS

The TI-500 RF SS contains an internal lead-acid rechargeable battery. Before using the indicator for the first time, be sure to charge the battery overnight.

The indicator's battery should operate for about 85 hours if left on continuously. The indicator is configured to power off after 5 minutes of inactivity, but this value can be changed via configuration menu A10 (see separate installer's guide for more information).

The indicator can be operated while the battery is charging unless the state of charge is very low. The indicator need not be on to charge the battery.

WHEN TO CHARGE THE INTERNAL BATTERY

The best time to charge the sealed lead-acid type battery is any time the indicator is not in use. You need not wait for the Low Battery Indication – in fact it's best that you don't. Charging the battery when not in use keeps the battery "fresh" and is the recommended way to manage it.

When the battery needs to be charged, the Low Battery Indicator will start blinking in the upper left-hand corner of the display. The indicator may be used for an additional 2 minutes before it automatically powers down. ***It is imperative that you charge the battery at this time to avoid permanent damage.***

HOW TO CHARGE THE INTERNAL BATTERY

1. Connect the charger (AC Adapter 12 VDC, 800mA) to the scale, and then plug the charger into an AC outlet. ***Make sure that the AC voltage appearing at the wall outlet matches the input voltage marked on the AC adapter.***
2. After the charging period expires, unplug the charger from the AC outlet, then from the scale. The scale is now ready for use under its own battery power.

NOTE: The charger may be left connected to the scale indefinitely without damage to the internal battery.

HOW LONG TO CHARGE THE INTERNAL BATTERY

In general, the battery should be allowed to charge a minimum of 1.5 hours for every hour of use. If you discharge the battery below 50% and do not allow the proper time for charging, you may start to notice a decline in the usage period. This is normal and eventually the battery must be replaced.

REPLACING THE BATTERY

The recommended practice when removing the battery is to disconnect the ground connection (black) first, then the red terminal. This ensures that a short circuit will not occur from a battery lead or fuse lead touching the grounded housing while disconnecting the other terminal. Similarly, the ground should be connected last when installing a new battery.

The US government has classified the internal battery as hazardous waste. Do not place battery into landfill. An automotive store or a local waste agency may accept the batteries for recycling. Contact the battery manufacturer for more information.

DISPLAY & KEYPAD DETAILS

This model utilizes a 6-digit LCD (Liquid Crystal Display) with adjustable LED backlight. The Table below summarizes the display annunciators.



Symbol

Meaning



The scale is at Zero.

N

The indicator is displaying Net weight (Gross weight minus Tare weight).

G

The indicator is displaying Gross weight

T

A tare weight has been established in the system

P

The indicator is in PEAK HOLD mode

lb

The unit of the displayed weight is in pounds

kg

The unit of the displayed weight is in kilograms

g

The unit of the displayed weight is in grams

oz

The unit of the displayed weight is in ounces

pcs

The scale is displaying the quantity of uniform items currently on the platform (piece count model)



The scale is at rest, i.e. you have a stable reading



When blinking, indicates that battery life of the indicator has reached its useful end and needs to be recharged or replaced soon. More information below

The TI-500 RF digital indicator can show overall system battery health. See the Error Messages for more information.

The keypad is composed of a total of five (5) function keys.



Keypad Functions

- Units** This key is used to switch between pounds (lb) and kilograms (kg).
- Zero/Off** This key will zero the displayed weight provided the following conditions are met:
1. The indicator is displaying Gross weight.
 2. The scale is not in motion.
 3. The scale is not in overload (see error codes).
- Press and hold for five seconds to shut the unit OFF.**
- Net/Gross** This key is used to switch between Gross weight and Net weight - but only if a Tare weight has first been established
- Tare** This key is used to establish a Tare weight provided the following conditions are met:
1. The indicator is displaying a Gross weight above zero.
 2. The scale is not in motion.
 3. The scale is not in overload (see error codes).
- If a tare weight has already been established, then this key cancels the current tare weight.
- On/Print** Press and hold for two seconds to turn the unit ON. When the unit is already on, this key is used to send weight information out to the serial port provided the following conditions are met:
1. The scale is not in motion.
 2. The scale is not in overload (see error codes).

ADVANCED OPERATION

Note that except for NET weighing, each one of these modes must first be activated and configured by the installer, i.e. they are all turned off by default.

Hold operation:

This mode captures an unstable load, e.g. livestock, by locking the weight on the display. When the weight has been locked onto the display, two arrows beneath the weight display will be turned ON.

There are three hold modes available:

AUTOMATIC – Automatically locks weight on the display when stable. If the weight of the object on the scale changes by a pre-determined value (e.g. 10%), then the scale unlocks the held reading and relocks onto the new weight. This occurs during both increasing and decreasing weight values.

MANUAL – Press the NET/GROSS key before applying any weight to the scale. After the load has stabilized, the display will hold the weight reading on the screen until the NET/GROSS key is pressed again. If the weight of the object on the scale changes by a pre-determined value (e.g. 10%) then the scale unlocks the held reading and relocks onto the new weight. This occurs during increasing weight values only.

PEAK HOLD – The display updates as the load increases but not as the load decreases. The value shown on the screen is the maximum weight applied to the scale platform or test fixture. Press the UNITS key to toggle between live mode and peak hold mode. The 'P' annunciator is used to indicate that you are in Peak Hold mode. When you exit out of peak hold mode, the old peak value is automatically cleared.

Please check with the installer as to which mode is active, if any.

NET Weighing

Gross weight refers to the total weight of a material plus its container. Conversely, **net weight** refers to the weight of the material alone, minus the weight of its container; and **tare weight** is the weight of the container alone.

NOTE: This indicator stores the current tare weight in memory if the indicator is properly powered OFF. If a tare weight is present at startup, the indicator will revert to NET weighing mode and apply the stored tare weight.

1. Place the empty container onto the scale's platform
2. Allow the weight indication to stabilize, and then press the TARE key.
The display shows zero weight and the NET annunciator is activated
3. Add the material into the container and allow the weight indication to stabilize.
The reading shown is the net weight of the added material
4. If necessary, use the NET/GROSS key to toggle between the gross weight and the net weight
5. Press the TARE key again to clear the tare value and return to gross weighing mode

Piece Counting

IMPORTANT NOTE: The piece counting function cannot be used in commercial (NTEP) applications.

This mode is used to determine the quantity of parts placed onto the scale platform by weight. It is accessed by pressing the UNITS key. To ensure accuracy, the parts must be of uniform size and weight.

The indicator uses the sampling method to determine the average piece weight (APW) of the parts you wish to count. When sampling parts, always count them in your hand and place them on the platform all at once. If the APW of the parts is too light or the total weight of the sample is too light, then accuracy cannot be guaranteed. In this scenario, the indicator will display an error message, yet still allow piece counting. This indicator does not retain the piece weight when powered off.

1. If the parts to be counted require a container, you must first tare off the weight of the container by pressing the TARE key.
2. Tap the NET/GROSS key once. "Add 5" is indicated on the display. The indicator is prompting you to place five identical parts on the platform.

If you wish to change the sample number, simply tap the UNITS key until the desired sample number appears. Available choices are 5, 10, 20, 25, 50 and 100.

If you continue to tap the UNITS key, the indicator will eventually revert to weighing mode and you must start again from Step 2.

3. Place the sample parts onto the scale platform all at once and wait a few seconds for the weight to stabilize.
4. Press the NET/GROSS key to take the sample. If the sample size is large enough, the indicator now displays the number of parts on the scale platform and the "PCS" annunciator will turn on. Otherwise, the indicator will briefly display "Lo".

If the indicator continues to display "Lo" even after sampling 100 pieces, then the unit weight of the parts you wish to count is too light for the scale to process accurately.

5. Place the parts to be counted onto the scale platform. The display shows the quantity
6. To continue counting the same parts, repeat step 5 as needed.
To continue counting different parts, repeat steps 1 – 5.
7. To exit the piece count mode, press the UNITS key.

Note that the APW does NOT remain in scale memory when exiting piece counting mode.

Peak Hold Mode

IMPORTANT NOTE: The peak hold function cannot be used in commercial (NTEP) applications.

This mode is used to indicate and hold the peak weight recorded during a specific process. A common application is determining the breaking point of a part or assembly. The TI-500 RF records both positive and negative peak weights.

1. Push the UNITS key to active peak hold mode. The “P” annunciator turns ON.
2. Apply force to the part – the display indicates the peak force applied, updating it as necessary
3. To toggle between positive and negative peak weights, tap the NET/GROSS key.
4. To reset both peak values to zero, press the ZERO key.
5. To exit peak hold mode, press the UNITS key. The “P” annunciator turns OFF.

Accumulation (Totaling)

The mode allows you to add separate weighments together to obtain a total weight. When a tare weight is active, the net weight is added automatically.

1. Load the system with a weight that is to be added.
2. Press the ON/PRINT key to add the current weight to the weight accumulator.
The display briefly shows the message “ADDED” and then returns to weighing mode.
If a printer is installed, a printout will be made.
3. No weight can be recorded twice, so the system needs to return to net zero before another weight can be added. (In other words, remove all net weights from the scale platform before proceeding)
4. Repeat Steps 1 - 3 for each additional weighment.
5. The subtotal can be obtained by pressing and holding the ON/PRINT key for about 3 seconds.

For the next 8-10 seconds, the display alternates among the total net weight, the number of weighments totaled so far, and the last net weight added, e.g.:

“37.50 lb” - “0003” - “12.50 lb”

Total net weight is 37.50 lb – number of weighments is 3– last weight added is 12.50 lb.

Note that the scale must be at net zero, otherwise it will display “Err 08”

If the PRINT key is tapped during this period, then the total weight is printed (if a printer is installed).

If the PRINT key is pressed and held during this period, then the weight accumulator is reset to zero, but nothing is printed.

If no key is pressed during this period, then the subtotal stays in memory

Printer

If the weighing system has been equipped with a printer, then weighing and time & date data can be printed.

Here is an example of a possible printout:

ID.NO.	123456
DATE	01/28/11
TIME	10:23 AM
GROSS	1067 lb
TARE	67 lb
NET	1000 lb
PCS	1000

NOTES:

1. Some fields may not appear on your printout, depending upon your configuration settings
2. The TARE and NET fields are printed only when a tare has been established in the system.

Adjusting the Time and Date on the Printout

Your indicator will keep track of the current time and date for you, which can then be printed on the print ticket. To adjust the time and date, you must first enter the User Menu Mode.

1. Switch off the RF digital indicator by pressing and holding down the ZERO/OFF key for about 5 seconds.
2. Press and hold down the ON/PRINT key (about 20 seconds) until the screen shows “-F-”.
3. Press the ON/PRINT (right) key once. The screen displays “-A-”.
4. Scroll down using the ZERO/OFF (down) key to reach the parameter level. The scale shows “A 1”.
5. Move from A1 to A20 by pressing the TARE (left) key repeatedly until the screen shows “A 20”.
6. Once you have arrived at A20 press the ZERO/OFF (down) key once. The screen displays “ho_xx” where ‘xx’ is the current hour, e.g. “15”. One digit will be flashing.
7. Use the four directional keys to adjust the displayed value to the actual hour value. Increase the flashing digit by pressing the UNITS key. Decrease the flashing digit by pressing the ZERO/OFF key. Pressing the TARE key or the ON/PRINT key will change the position of the flashing digit.
8. After entering the exact value, press the NET/GROSS key to save the value. The screen displays “n_xx” where ‘xx’ is the current minute, e.g. “55”. One digit will be flashing.
9. Use the four directional keys to adjust the displayed value to the actual minute value. Increase the flashing digit by pressing the UNITS key. Decrease the flashing digit by pressing the ZERO/OFF key. Pressing the TARE key or the ON/PRINT key will change the position of the flashing digit.

10. After entering the exact value, press the NET/GROSS key to save the value. The screen displays "dA_xx" where 'xx' is the current day of the month, e.g. "14". One digit will be flashing.
11. Use the four directional keys to adjust the displayed value to the actual day value. Increase the flashing digit by pressing the UNITS key. Decrease the flashing digit by pressing the ZERO/OFF key. Pressing the TARE key or the ON/PRINT key will change the position of the flashing digit.
12. After entering the exact value, press the NET/GROSS key to save the value. The screen displays "n_ xx" where 'xx' is the current month of the year, e.g. "02". One digit will be flashing.
13. Use the four directional keys to adjust the displayed value to the actual month value. Increase the flashing digit by pressing the UNITS key. Decrease the flashing digit by pressing the ZERO/OFF key. Pressing the TARE key or the ON/PRINT key will change the position of the flashing digit.
14. After entering the exact value, press the NET/GROSS key to save the value. The screen displays "yE_xx" where 'xx' is the current month of the year, e.g. "11". One digit will be flashing.
15. Use the four directional keys to adjust the displayed value to the actual year value. Increase the flashing digit by pressing the UNITS key. Decrease the flashing digit by pressing the ZERO/OFF key. Pressing the TARE key or the ON/PRINT key will change the position of the flashing digit.
16. After entering the exact value, press the NET/GROSS key to save the value and revert back up to the parameter level, e.g. "A 20".
17. In order to save all parameter settings, it is imperative to exit all menus in the following manner: At the parameter level, press the UNITS (up) key twice (two times) to exit the User Menu. The indicator displays 'SAvE' and then automatically powers off.

Set Point Control (RELAY OPTION)

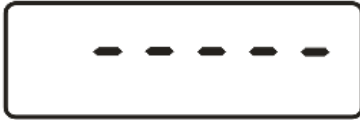
This mode requires an optional relay board.

Please refer to separate instruction sheet for this option

ERROR MESSAGES



Indicates that the weighing capacity of the scale has been exceeded.



Indicates that the weight on the scale is negative. Press the **Zero/Off** key.



TI-500 RFTM #1 not found; ensure that it is powered ON or move it closer to the digital indicator.
WIRELESS SYSTEMS ONLY



NOTE: Dual systems only
TI-500 RFTM #2 not found; ensure that it is powered ON or move it closer to the digital indicator.
WIRELESS SYSTEMS ONLY



TI-500 RFTM #1 batteries have been depleted and need to be replaced. **WIRELESS SYSTEMS ONLY**



TI-500 RFTM #2 batteries have been depleted and need to be replaced. **WIRELESS SYSTEMS ONLY**



Both TI-500 RFTM #1 *and* #2 batteries have been depleted and need to be replaced. **WIRELESS SYSTEMS ONLY**



Battery in TI-500 RF indicator need to be recharged or replaced.



Battery in digital indicator need to be recharged or replaced *and* TI-500 RFTM #1 batteries need to be replaced.



Battery in digital indicator need to be recharged or replaced *and* TI-500 RFTM #2 batteries need to be replaced.



Battery in digital indicator need to be recharged or replaced *and* both TI-500 RFTM batteries need to be replaced.

Err 24	Value for SP1 is greater than value for SP2.
Err 99	Parameter menus blocked. Toggle calibration switch back to its original position.
No-ad	Weighing platform not detected

SPECIFICATIONS

Digital Indicator Specifications – TI-500 RF

- Aluminum/ABS enclosure
- 0.8", 6 digit LCD w/LED backlight
- Operating temperature 14°F to 104°F (-10°C to 40°C)
- External DSUB9 connection port for optional printer
- Tilt adjustable bracket included

Digital Indicator Specifications – TI-500 RF SS

- Stainless steel enclosure
- 0.8", 6 digit LCD w/LED backlight
- Operating temperature 14°F to 104°F (-10°C to 40°C)
- Internal connection port for optional printer
- Tilt adjustable bracket included

Bluetooth Specifications

- 2.0, Class I
- Up to 100m unobstructed
- (ISM) band at 2.4 to 2.485 GHz

Digital Indicator Battery – TI-500 RF

- 4 AA alkaline
- User replaceable
- 85+ continuous hours of operation under typical operating conditions

Digital Indicator Battery – TI-500 RF SS

- 6 volt 3 Ah internal rechargeable lead acid battery
- 115+ continuous hours of operation on full charge under typical operating conditions

OPTIONAL TI-500 RFTM Battery Holder

- Holds 1.5 volt x 4 "C" alkaline
- User replaceable
- 130+ continuous hours of operation under typical operating conditions

TROUBLESHOOTING

Issue / Recommendation

“Low Battery” icon blinks on the digital readout, then the indicator powers off.

Replace or recharge the batteries.

Weight reads out lower at one end of the weighing platform than the other end.

- Check for any type of mechanical binding or impingement of scale that is displaying the lower weight
- Check underneath the scale for any obstructions or foreign debris
- Make sure that the scale feet are not screwed in so far as to restrict downward movement of the scale.
- Adjust platform corners using variable trimmer junction box (if supplied)

Indicator displays six small zeros.

- Scale is overloaded. Remove weight from scale.
- Cut, damaged, loose, pinched cable between indicator and platform or within platform with multiple load cells (*cabled configuration only)
- Load cell damaged on platform
- Internal fault with indicator; call Transcell Tech Support

Scale turns off on its own.

The indicator has a power conservation feature, set to automatically power off the scale after 30 minutes of non-use. If your needs require a different setting, call Transcell Tech Support or installer.

Display is erratic.

- A battery may be fully depleted. If so, this condition can cause erratic displays. Power off the indicator and replace or recharge the battery.
- Check underneath the scale for any obstructions or foreign debris

Transcell Tech Support: (847) 419-9180

Limited 12 month Warranty

This product is warranted by Transcell Technology against manufacturing defects in material and workmanship under normal use for twelve (12) months from the date of purchase. For complete warranty details and service information, please contact us at the address below.

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