Operators Manual

# TeleWeigh Wired

## Model: 27707




**51164**
**Revision 1 09/07**

# Amendment Record

## TeleWeigh Wired

## Document 51164

Manufactured by Fairbanks Scales Inc.
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| | | |
|---|---|---|
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# Section 1: General Information

## Scale Description

Fairbanks Scales TeleWeigh™ Health Scale is designed for weighing people and communicating that information to a variety of devices, via RS232 communications. The scale has its own calibration parameters and a display for showing measurements and audible alerts for signaling the user.

- The scale is capable of working in a **Stand Alone** mode

  or

- **BT** mode - connected to a device which is equipped for Bidirectional communications by connecting to a computer, or connected to another RS232 device.
- Battery powered or by connecting to a device through the RS232 cable.
  - Uses (4) AA  Alkaline batteries.
  - The DC voltage required from the RS232 port is **8-12 volts**.


- The scale is equipped **with** an **RS232 Output**, including an 8 foot cable.
- *A USB interface is not provided*.
  - A optional USB to RS232 converter at the peripheral device would be required.
  - Battery power for the scale is required using a USB to RS232 converter.

# Scale Specifications

| | |
|---|---|
| **Operating Environment** | • **Home, Office, Light Industrial** |
| **Dimensions** | • **14” x 14” x 2”** |
| **Weight Capacity** | • **500 lbs / 226.8 kg** |
| **Overall Weight** | • **Less than 10 lbs. without batteries** |
| **Power** | • **6VDC (4 AA Alkaline)**<br>• **12VDC via RS232 cable**<br>• **Autoswitching** |
| **Cable Ports: RS232 Connection** | • **One (1) RS232 Bidirectional Output**<br>– **9600 Baud**<br>– **8-bit Data**<br>– **No Parity**<br>– **One (1) Stop Bit**<br>• **Eight (8) foot attached cable**<br>• **DB9 female external**<br>• **Internal RJ45 Connection (27706) 8-12 VDC** |
| **Overload Protection** | • **50% of rated capacity** |
| **Annunciators** | • **Lbs**<br>• **Kg**<br>• **Ready / Stable** |
| **Materials** | • Rigid metal platform frame<br>• Composite base<br>• Composite top-over platform |
| **Power On Start Switch** | • Integrated |
| **Division Size** | • 0.5 lbs / 0.2 kg |
| **Mode Switch (Located on under-side)** | • **Lb**<br>• **Kg**<br>• **BT (B**idirectional **T**elecommunications)<br>– ignored in customized state |
| **Zero Switch** | • Used to Zero the scale up to 100% of capacity |

# Scale Specifications continued

| | |
|---|---|
| **Calibration Switch** | • Momentary switch places the scale into the Calibration Mode |
| **Smart Switch** | • **Integrated ON switch**<br>• The scale will turn **OFF** when a **predetermined time length expires.** |
| **Load cell Interface** | • Utilizes (4) internal load Cells. No external load cell interface |
| **Filtering** | • Three levels, adjusted using **Remote Communications** |

## *Environmental Characteristics*

| | |
|---|---|
| **ESD** | • 8kv IEC 1000-4-2 standards |
| **Vibration** | • Per ISTA QATR FP-1-011 standards |
| **Shock** | • Per ISTA QATR FP-1-011 standards |

## *Standard Approvals*

| | |
|---|---|
| **RoHS** | • Every attempt has been made selecting components which are **Pb-free** and/or **RoHS Compliant** |

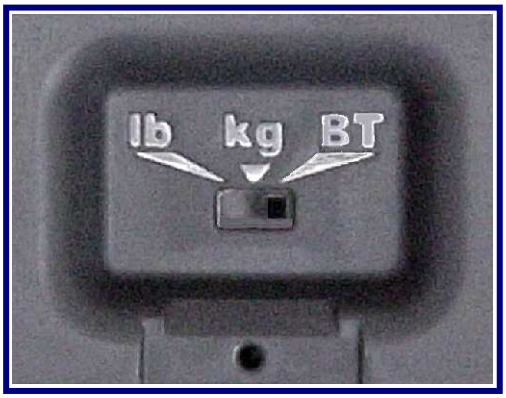
## *Display*

| | |
|---|---|
| **Display Type** | • **LCD, 1.25 in.**<br>• Seven (7) segment display<br>• No backlight<br>• 4-digits plus annunciators |
| **CZ** | • Upper-left corner<br>• "**C**" used in **Test Mode** |
| **Gross, Tare Net** | • Gross only |
| **Lb** and **Kg** | • Small diamond indicates which unit of measure |
| **Ready Stable** | • Small diamond indicates when scale is stable |
| **Low Battery** | • Displays "**LbAt**" |

# Section 2: Installation

## Unpacking and Setup

1. Remove the scale from the packing box.
2. On the bottom-side of the scale, move the switch to the appropriate setting.
   - **lb** (**Pounds**) is used for Standard English Weighments.
   - **kg** (**Kilogram**) is used for Metric Weighments.
   - **BT** (**Bidirectional Telecommunications**) is used for relaying the weighment from the scale to the computer to the professional office.




3. Place the scale on a flat surface where it will be used.
4. If the scale is used for **Stand Alone** operations, and not needing computer access, it is now ready for use.

***NOTE: For Stand Alone operations, the Mode switch will be in the lb or kg position.***

5. If the scale needs computer access, with the computer powered down, plug the RS232 (DB9) cable into the computer port, then re-start the computer. The weights may be viewed by enabling the Serial port with HyperTerminal or software which is available from Fairbanks.

***NOTE: For computer access or BT operations, the Mode switch must be in the BT position.***

# Section 3: Operations

## Manual Zero Operation

The scale may need to be manually zeroed occasionally. The following procedure will perform a manual zero of the scale.


1. While the display is still active (**thirty seconds**), press the **Zero Button**. using an item such as a straightened paper clip or toothpick.
   - This is the top hole on the bottom of the scale near the **Mode Switch.**
2. Once the switch has been pressed, place the scale on a flat surface where it will be used.
3. The scale will set itself to **zero (0.0)** and be ready for use.

# Modes of Operation

The **two basic modes of operation** are Stand Alone Weighing Operations, and Weighing with Bidirectional Telecommunications.

## *Stand Alone Weighing Operations*

Stand Alone Weighing Operations occur when the Mode switch is in the lb or kg position. It will also occur if the BT position is selected and the RS232 device does not communicate with the scale

1. On the bottom-side of the scale, move the switch to the one of these settings.
    - **lb** (**Pounds**) is used for Avoirdupois Weighments.
    - **kg** (**Kilogram**) is used for Metric Weighments.


2. Once the switch is selected, place the scale on a flat surface where it will be used.
3. Stand on the scale to momentarily to activate the scale and its display.
4. After its warm-up test, the scale should display **zero (0.0)**
5. Stand on the scale to obtain the weight.
6. Once the weight is stable, the scale will beep twice (2) indicating the weight has been captured
7. Step off the scale. The displayed weight is held on the display for about **ten (10) seconds**.
8. After the **ten (10) seconds,** the scale will briefly try to re-zero itself for the next weighment, provided there is less than **ten (10) pounds** on scale.
9. If a new weighment is not detected, the scale will automatically turn off after **30 second**s and the weighing process is complete..

## *Weighing with Bidirectional Telecommunications*

Upon power-up, the scale transmits an **ENQ 05hex character through the RS232 port,** which allows a connected RS232 device to customize the scale.

- The connected device that handles the data is usually a computer.
- Regardless of the switch on the bottom-side (**lb, kg or BT**), the scale is in one of these two modes.
- This mode transmission depends upon whether or not there is a response after the **ENQ message**.
- If no response is received within **five (5) seconds**, the scale reverts to **Stand Alone Weighing.**
- If the scale is ***customized***, on **Power-up**, the bottom-side mode switch is ignored.
  - *The* **last value** *for* **Units, Filter Factor, Output Rate** *and* **Transmission Mode** *is used*

# Inquiry Cycle

1. Upon a successful **Power up Sequence**, the scale will transmit an **ENQ 05hex** out of the RS232 port.
2. The scale will then **wait five (5) seconds for a response**.
3. If a response is returned, it will be acted upon per t*he Response Table below.*

## *Response Table*

| Possible replies | Scale action taken |
|---|---|
| **0dhex = carriage return** | If the transmission mode is TP, transmit the current weight on the scale in the current units. There will be no ACK transmitted for this command but if the mode is not TP, a NAK will be transmitted.<br><br>*Weight string transmitted will be 11 characters*<br>*<STX>PWWWWWUUS<ETX><CS>*<br><STX> = 02hex = start of text<br>P = Polarity<br>WWWWW = weight string including decimal and leading spaces<br>UU = units, either lb or kg<br>*S = stable weight reading, S for stable, U for unstable or motion on scale*<br><ETX> = 03hex = end of text<br><CS> = Check Sum<br>*This string may also be <STX>LOW BATTERY<ETX><CS>, <STX>UNDERLOAD<ETX><CS> or <STX>OVERLOAD<ETX><CS> in an error condition.* |
| ***"CAL"*** | *Enter calibration mode.* |
| ***"DEF"*** | *Load default settings.*<br>*Units = lbs, Filter factor = 2 = medium, Transmission mode = TW, output rate is slow or 500ms and the timer is reset.This takes the scale out of a customized state.* |
| ***"F#"**** | *Change to filter #, either 1, 2, or 3 where 1 = light, 2 = medium, 3 = heavy. Default will be 2 = medium.* |
| **'M'** | Transmit the current mode including units, filter setting and transmission mode. Example "ULF3TW"<CS> |
| **"Or"*** | Output rate for TC/continuous mode. 'r' is to be 'F' for fast or 'S' for slow. Fast = 200ms, slow = 500ms between outputs. |
| **"TW", "TP" or "TC"*** | Change to transmission mode indicated. TP and TC mode do not allow the scale to power down.<br>-TW = Use the Stable Weighment Cycle (default or Stand Alone Weighing mode)<br>-TP = Use a polled interface similar to the Ultegra using a Carriage Return.<br>-TC = Continuously transmit the weight on the scale per the output rate setting. |
| **"UL" or "UK"*** | Change to units in response.<br>Default will be lb. |
| **'Z'** | Zero the scale. |

# Inquiry Cycle, Continued

## *Rules for Responses*

- If a response is received, it will be processed and no weight will be transmitted (unless it is a CR and mode is TP).
- One response will be processed at a time.
- Responses may be received in any transmission mode.
- Changing from **TP/TC Mode** to **TW Mode** resets the 5 second timer so that other settings may be changed before a weight is transmitted.
- *Setting the filter factor, output rate, transmission mode or units through the serial port puts the scale in a customized state.
  - In the customized state, the **lb/kg/BT** mode switch (located on the underside) is ignored on **Power-up**.
  - The scale may be taken out of the customized state by reception of the **DEF Command** through the serial port or by using the spare switch.

# Stable Weighment Cycle – TW mode

After a successful **Power up Sequence** and **Inquiry Cycle**, the scale is in a **Weighment Mode**.

- The display shows either the **current weight** or '**0.0**'.
- To preserve battery life, the user has **thirty (30) seconds** to step on the scale,
  - After thirty (30) seconds, if no weight is detected or if the weight is unstable, the scale powers-down.
- If weight is detected and once the weight is stable, it is captured and displayed on the LCD.
  - A **dual audible beep** indicates the end of the weighment cycle.
- In the event that the scale incurs an error condition, it is indicated on the display along with an audible alarm.

# Transmission Cycle

The **Transmission Cycle** is the data transfer to a **computer** or **other device**, and then on to the **Professional Office** (if applicable).

- Only the **weighment information** is transmitted, which consists of the **weight data** and **units**.

# Section 4: Service & Maintenance

## Scale Maintenance

### *Installing Batteries*

1. To install the four (4) AA Batteries, **lift the compartment lid.**
2. Match the correct poles and **insert** two **batteries** in one direction, then two in the other direction.
3. Replace the **battery cover**.

### *Finding the Best Location*

- Place the scale on a flat, solid, level floor, close enough to the computer that the cable is out of the way of regular operations.
- Keep the scale in a location completely away from all high water, such as low-lying areas that may flood or near any drain pipes.

### *Cleaning the Scale*

- Use a moist cotton cloth to clean the scale.
  - If spray cleaner is needed for shoe sole marks, squirt it into the cloth, and not directly onto the scale.
  - Use only tap water in the cloth to wipe off the scale's clear plastic display.

# External Connections

1. Plug display interface cable into the scale base where marked.
2. Plug the RS 232 interface cable into the computer, if required.

<table>
<tr><td>Internal Connection</td><td>
<ul><li>RJ45 8-pin connector</li><li>PCB J6 Wiring</li></ul>
<table>
<tr><th>Wire</th><th>Output</th></tr>
<tr><td>1</td><td>RX</td></tr>
<tr><td>2</td><td>TX</td></tr>
<tr><td>3</td><td>+12VDC</td></tr>
<tr><td>4</td><td>GND</td></tr>
<tr><td>8</td><td>Shield</td></tr>
</table>
</td></tr>
<tr><td>External Connection</td><td>
<ul><li>DB9 Female Wiring</li></ul>
<table>
<tr><th>Wire</th><th>Output</th></tr>
<tr><td>2</td><td>TX</td></tr>
<tr><td>3</td><td>RX</td></tr>
<tr><td>5</td><td>GND</td></tr>
<tr><td>9</td><td>+12VDC</td></tr>
<tr><td>NC</td><td>Shield</td></tr>
</table>
</td></tr>
</table>

# Troubleshooting

## *Scale Error Codes*

There are several error conditions and operational steps indicated by the scale.

- Not all are applicable in every sequence.
- Some errors are indicated using audible beeps and some are shown on the scale display.
- Listed below are the error conditions and their indication that have been defined to this point.

## LCD Display Indications

| Displayed Text or Enunciator | Description |
|---|---|
| - - - - | The scale is initializing its hardware |
| **All LCD Segments ON** | Hardware test to check for a malfunctioning display. |
| LbAt | Scale battery requires changing |
| **Motion/Stable Annunciator** | Weight is stable on the scale |
| **Lb Annunciator** | Displayed weight is in pounds |
| **Kg Annunciator** | Displayed weight is in kilograms |
| -u l- | Weight Under Capacity |
| -o l- | Weight Over Capacity |
| Good | Calibration sequence successful |
| ErrC | Error in Calibration sequence |

## Audible Beep errors/Signals

| Number of Beeps | Display message | Description |
|---|---|---|
| **1** | - - - - **or** 0.0 | Scale is ready for the weighment. |
| **2** | **Weight value and "stable" indicator on** | Weight measurement is stable and captured. |
| **7** | EEEE | Short chirps at 5 second intervals for 30 seconds.<br>Weight is left on scale, and **On** switch contact closed. |

## Load left on Scale Error

To preserve battery life, the **Load Left On Scale** error operation is implemented.

- This happens when the scale is turned on due to weight placement on the scale.
- The scale executes either **Stand Alone Weighing** or weighing the **Bidirectional Telecommunications Cycle**.
- After completion of either cycle, if a load is still sensed on the scale, it signals an alarm by **chirping** (*short beeps*) **every five (5) seconds for a duration of thirty (30) seconds**.
- This alarms users that there is weight on the scale, compromising the battery's life.

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