TRANSCELL TECHNOLOGY, INC.

TC-2001 Series

Digital Counting Scale

Setup & Operation Manual

Revision 2.4
October 20, 2003

Electromagnetic Compatibility Statement for North America

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

**CHAPTER 1:   INTRODUCTION TO THE TRANSCELL TC-2001 SERIES DIGITAL COUNTING
SCALE**

The Transcell Model TC-2001 Series Digital Counting Scale is an easy to use, high-resolution counting scale featuring a large (1") backlit LCD screen for easy readout.

This model is the "little brother" to the TC-2005 Series and TC-2010 Series scale line. It features one full duplex serial port for connection to a computer, handheld barcode scanner or remote display. A second serial port allows connection to a serial barcode label or receipt printer.

Optional features include a rechargeable battery for portable applications.

The scale is available in four avoirdupois weight capacities and four metric weight capacities. Table 1-1 shows the TC-2001 series product matrix.

Prior to using the scale, please read this user's guide carefully and completely. Store the manual in a safe and convenient place so it will be available if you have questions concerning the operation of the scale.

MODEL	CAPACITY / GRADUATION	MODEL	CAPACITY / GRADUATION
TC-2001-12	12 x 0.001 lb	TC-2001-6M	6 x 0.0005 kg (0.5g)
TC-2001-30	30 x 0.002 lb	TC-2001-15M	15 x 0.001 kg (1 g)
TC-2001-60	60 x 0.005 lb	TC-2001-30M	30 x 0.002 kg (2 g)
TC-2001-120	120 x 0.01 lb	TC-2001-60M	60 x 0.005 kg (5 g)

TABLE 1-1: TC-2001 Series Product Matrix
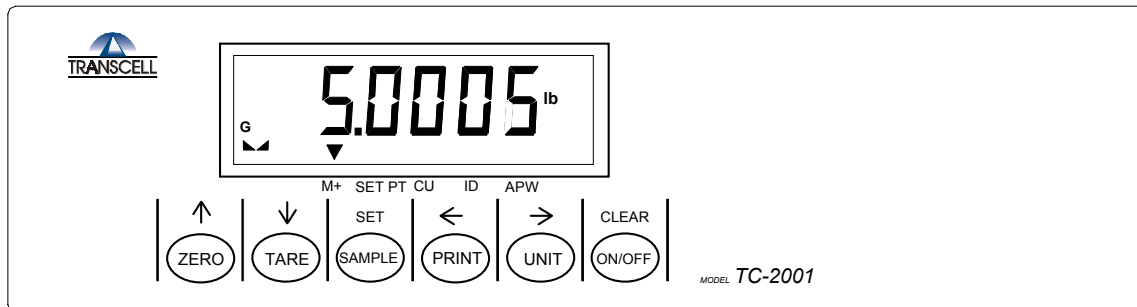
FIGURE 1-1: TC-2001 Series Front Panel

CHAPTER 2: GETTING STARTED

After unpacking the scale, a small amount of preparation is required before the scale can be used. Please refer to Figure 2-1 below as needed.
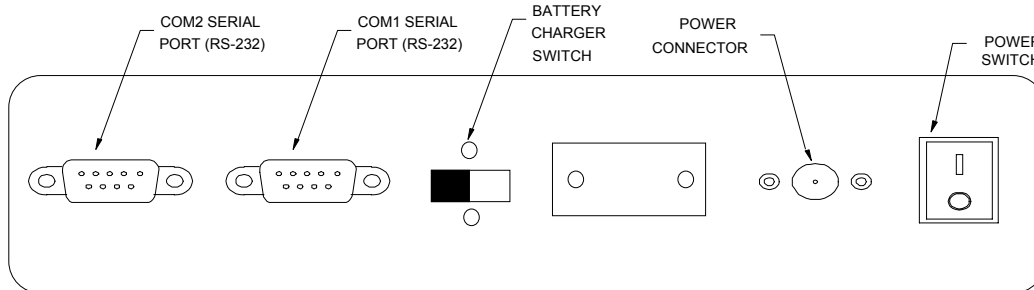
Figure 2-1: TC-2001 Rear Panel

Step 1. Position the scale in its area of intended use. Observe the following guidelines for suitable location.

1. Choose a firm, stable floor or table.

2. Do not share an AC outlet with electrical noise producing equipment, such as refrigeration units. This includes products with electrical motors and/or relays.

3. Do not place the scale in an area with changing ambient temperature and/or high humidity.

4. Do not place the scale in an area prone to exposure to direct sunlight, wind, or dust.

5. Do not place the scale in an area with vibrating equipment.

Step 2. Install the power supply - Non-battery-powered Units Only

1. After placing the scale in its area of use, locate the AC Adapter.

2. Connect the female end of the AC Adapter to the connector on the rear of scale, and then plug the adapter into an AC outlet. ***Make sure that the AC voltage appearing at the wall outlet matches the input voltage marked on the AC adapter.***

Step 3. If applicable, install the serial device(s).

1. Connect the optional serial printer to the COM1 port using the serial cable supplied with the printer.

    NOTE: If interfacing to a printer not supplied by Transcell, see Appendix B for pin outs.

2. Connect the optional scanner or TC Series scale to the COM2 port. The optional scanner has its own built-in cable. The TC Series scale should be connected using the optional NMC-2 serial cable.

    NOTE: If interfacing to a computer or remote display, see Appendix B for pin outs.

3. Configure the communication parameters and select the device type as detailed in Section 5.3.

NOTE 1: **If using a printer with your system, be sure to set the time and date. See Sections 5.4.3**

7

and 5.4.5.

NOTE 2: **The COM1 and COM2 ports cannot be used at the same time.**

Step 4. Switch the scale ON to begin use.

    1. Locate the power switch on the rear panel and switch to the ON (1) position.

    2. Push the ON/OFF key on the scale's front panel.

CHAPTER 3: OPERATION

3.1 DISPLAY

The Model TC-2001 scale utilizes a 6 digit LCD (Liquid Crystal Display) to display the weight and system information.

3.1.1 LIQUID CRYSTAL DISPLAY (LCD)

Figure 3-1 shows the display detail of the LCD. Table 3-1 lists the various annunciators you may see and their meanings.
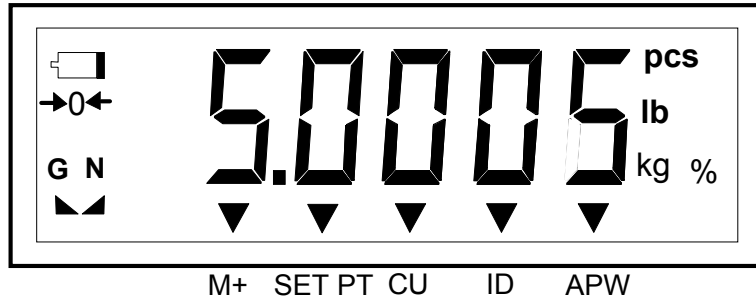
FIGURE 3-1: TC-2001 Display Detail

Annunciator	MEANING
G	Indicates that the scale is displaying Gross weight.
N	Indicates that a tare has been established in the system and the scale is displaying Net weight.
PCS	Indicates the number of pieces on the platform.
lb	Indicates the unit of the displayed weight. "lb" stands for pounds.
kg, g	Indicates the unit of the displayed weight. "kg" stands for kilograms and "g" stands for grams.
CU	Indicates the unit of the displayed weight. "CU" stands for custom unit.
APW	Indicates that the scale is displaying the Average Piece Weight of the items you are counting.
M+	Indicates that the scale is in memory accumulation mode.
%	Indicates the present level of sample accuracy.
◣◢	Indicates that the scale is in a stable weighing mode and sees no motion.
🔋	Indicates that the scale batteries need to be re-charged. NOTE: Re-chargeable battery is an option with this scale. See Section 4.3.

TABLE 3-1: TC-2001 Series Annunciator Definitions

3.2 KEYBOARD

The keyboard is composed of six function keys. Refer to Figure 3-2 for the overall layout and key locations.
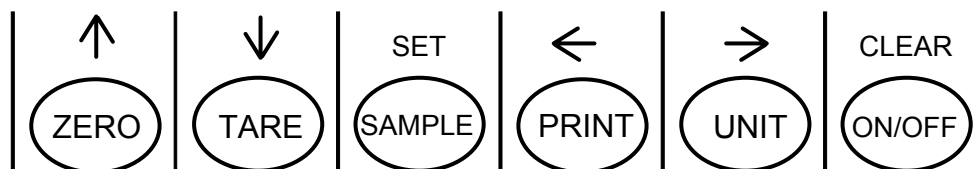
FIGURE 3-2: Function Keys Layout

3.2.1 FUNCTION KEYS

ZERO - This key sets the scale to display zero.

TARE - This key is used to establish a Tare provided the scale is not at or below Gross zero. See Sections 3.3.2 and 3.3.3 below for more information.

SAMPLE – This key is used to sample the items currently on the scale's platter for piece counting. Refer to Section 3.3.4 for more information.

PRINT - This key is used to send weight information out to the serial interface port provided the scale is in a state of stability.

UNIT – This key toggles the scale among pound (lb), kilogram (kg) and custom unit (CU) weight units when in Gross weight mode. When an APW (Average Piece Weight) exists, this key toggles the scale among piece count (PCS), weight units mentioned above, APW and Sample Accuracy (%).

ON/OFF/CLEAR - This key is used primarily to clear the current APW (Average Piece Weight) and tare weight from the scale. When the scale is OFF, turns scale ON. When the scale is ON, turns the scale OFF if pressed and held for three seconds.

3.3 GENERAL SCALE OPERATION

3.3.1 WEIGHING AN ITEM

1. If necessary, press the Zero key to obtain a weight reading of zero.

2. Place the object to be weighed on the scale's platter and allow the weight indication to stabilize. If the item weight exceeds the scale's weight capacity, it displays "o o o o o".

3. Read the weight shown on the display.

Note: If you wish to change the unit of measure, press the UNIT key.

3.3.2 TARING AN ITEM OF UNKNOWN WEIGHT

To weigh an item in a container, the weight of that container must first be subtracted from the overall weight to obtain an accurate weight reading. This is known as taring.

1. If necessary, press the Zero key to obtain a weight reading of zero.

2. Place the empty container on the scale's platter and allow the weight indication to stabilize.

3. Press the Tare key. The NET light comes on and the scale displays a weight reading of

zero.

4. Place the material to be weighed in the container and allow the weight indication to stabilize.

5. Read the weight shown on the display.

3.3.3 CLEARING A TARE

1. To clear a tare, press the ZERO key at any time. The NET annunciator disappears and the gross weight is displayed.

   NOTE: Enabling the Auto Tare Clear feature in the User Menu (Chapter 5) can eliminate this step.

3.3.4 PIECE COUNTING

This mode is used to indicate the number of pieces of an item you have placed on the scale's platform and is accessed by pressing the SAMPLE key. To ensure accuracy, the parts you are counting must be consistent in weight.

The scale uses the sampling method to determine the average piece weight (APW) of the items you wish to count. When sampling items, always count the parts in your hand and place them on the platform all at once. If the APW of the items is too light or the total weight of the sample is too light, accuracy cannot be guaranteed.

1. If the items you will be counting require a container, you must first tare the container off by pressing the TARE key.

2. Press the SAMPLE key. The scale will display "10   0". The scale is prompting you to place ten identical items on the platform.

   NOTE: If you wish to change the sample number, simply press the SAMPLE key repeatedly until the desired sample number appears. Available choices are 5, 10, 25, 50 and 100.

3. Place the sample items on the platform all at once. Once the scale stabilizes, the scale will display "10   –".

4. Press the SAMPLE key to take the sample. The scale will now display the number of pieces on the scale. To see how accurate your piece counting will be based upon the sample, press the UNIT key until the screen shows the % annunciator. If you are not happy with the results, you should use a higher sample amount to achieve better piece count accuracy.

   NOTE 1: If the scale displays an "Add" message, the unit weight of the items you wish to count or total sample weight is too light for your scale to process at all.

   NOTE 2: You can eliminate the need to press the SAMPLE key in Step 4 by enabling the Auto Sample feature in the User Menu (Chapter 5).

3.3.5 CLEARING THE PIECE COUNT

1. To clear the piece count, either press the CLEAR key to erase the sample or repeat the steps in Section 3.3.4.

CHAPTER 4: ADVANCED FEATURES AND OPERATION

4.1 AVERAGE PIECE WEIGHT ENTRY

If you already know the Average Piece Weight or APW of the items you wish to count, then use one of the following procedures.

4.1.1 APW ENTRY FROM SCALE KEYBOARD

1. Press the SAMPLE key. The display shows "10   0".

2. Press the UNIT key. The display will momentarily show **"UT-PT"**, followed by "0.000"

3. Use the left or right directional keys to move the decimal point position to the correct position. Pressing the PRINT key or the UNIT key will change the position of the decimal point.

4. After setting the correct decimal point position, press the SAMPLE key. The display shows **"UT"** briefly then "0.000" with the first digit blinking.

5. Use the four directional keys to adjust the displayed value to the actual APW value. Increase the flashing digit by pressing the ZERO key. Decrease the flashing digit by pressing the TARE key. Pressing the PRINT key or the UNIT key will change the position of the flashing digit.

6. Once the correct APW value is displayed, press the SAMPLE (set) key. The display will show **"End Ut"** momentarily and the scale will now display the number of pieces on the scale. If the scale briefly displays an error message instead, please see Appendix C for an explanation of the error message.

   NOTE: If the scale displays an "Error 10" message, the unit weight of the items you wish to count is too light for your scale to process at all.

4.1.2 DOWNLOAD APW FROM TC SERIES SCALE[1]

To use this method, you must have either a TC-100 or a TC-200 scale connected to COM2. Also, TC Scale must be enabled in the User Menu. See Appendix B for pin outs. See Chapter 5 for User Menu information.

NOTE: The TC-100 or TC-200 scale must be configured for "Transmit APW Mode". See scale manual for more information.

1. Press the CLEAR key on the TC-2001 scale to clear current APW.

2. Perform the sampling on the TC-100 or TC-200 scale.

3. Press the PRINT key on the TC-100 or TC-200 scale. The TC-2001 briefly displays the downloaded APW. If the scale briefly displays an error message instead, please see Appendix C for an explanation of the error message.

4. Place your parts on the TC-2001 scale. The scale will now display the number of pieces on the scale.

4.1.3 APW ENTRY FROM SCANNER

To use this method, you must have a working scanner plugged into the COM2 port and the Transcell TC-2001 scale must have printed the barcode you are scanning. Also, Scanner

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[1] Also works with PBS Series scale.

must be enabled in the User Menu. If you have a printer installed, you must unplug it at this time.

1. Press the CLEAR key to clear current APW from scale.

2. Aim the scanner at the APW barcode you wish to scan and press the trigger. When the scanner beeps, the TC-2001 scale will briefly display the scanned-in APW. If the scale briefly displays an error message instead, please see Appendix C for an explanation of the error message.

3. Place your parts on the TC-2001 scale. The scale will now display the number of pieces on the scale.

4.2 MEMORY ACCUMULATOR

Your scale comes equipped with a handy memory accumulator, which can be used in conjunction with the piece counting feature. As with a hand-held calculator, the memory accumulator can be added to, displayed and cleared at anytime.

NOTE: Make sure the scale is in piece counting mode. If it is not, follow the sampling procedure found in Section 3.3.4 or the alternative sampling procedure found in Section 4.1.

4.2.1   ACCESSING THE MEMORY ACCUMULATOR

1. Press the UNIT key several times until the M+ becomes lit.

4.2.2   ADDING TO THE MEMORY ACCUMULATOR

1. Press the SAMPLE key. The scale adds the current number of pieces to the memory accumulator, briefly shows **"-ACC-"**, and then briefly displays the total number of pieces.

2. Repeat Step 1 as needed – up to 999,999 pieces.

4.2.3   PRINTING THE MEMORY ACCUMULATOR

1. Press the PRINT key.

4.2.4   CLEARING AND EXITING THE MEMORY ACCUMULATOR

1. Press the CLEAR key. This will clear the accumulator AND take you out of accumulator mode.

4.3 CHARGING THE BATTERY

If your scale came equipped with the optional battery pack, follow this procedure to properly charge your batteries.

NOTE: You should perform this procedure whenever the scale's low battery annunciator turns on.

1. Push and hold the ON/OFF key for three seconds or use the power switch to shut the scale OFF.

2. Locate the battery charger switch on the rear panel of the scale.

NOTE: This may be hidden behind a metal plate held on by two drilled-head screws.

3. Position the switch as shown here:

4. Locate the AC adapter that shipped with the scale.

5. Connect the female end of the AC Adapter to the connector on the rear of scale, and then plug the adapter into an AC outlet. ***Be sure to use the 24 VDC, 2A AC adapter that shipped with the scale. Any other AC adapter may cause damage to the scale.***

6. Allow at least three hours for the batteries to become fully charged. At the end of the charging period, simply disconnect the AC adapter and resume normal use.

    NOTE 1: The batteries will be charged regardless of the setting of the power switch (ON or OFF). You may continue to use the scale while the batteries are charging if you wish.

    NOTE 2: After charging the batteries, you may leave the battery charger switch in the position shown above. If, however, you wish to store or ship the scale, you should position it the opposite way.

CHAPTER 5: CONFIGURATION

5.1   CONFIGURATION OVERVIEW

The scale contains two main setup menus: The Setup ("F") menu configures the factory settings for your scale. The User ("A") menu configures the COM1 serial communication port and enables some user options. The Setup and User menus consist of several menu selections, each with its own sub-menu of choices.

To set up the scale, you must first enter the appropriate menu mode. Once there, four of the front panel keys become directional navigators to move around in the menus, and one key is used to save or SET the selections.

5.2   SETUP ("F") MENU

To **ENTER** "F" menu, turn scale off. Press and hold the TARE key while pressing ON. Scale displays F1. Use the LEFT or RIGHT arrow keys to change F number, the DOWN arrow key to enter parameter, the LEFT or RIGHT arrow keys to change the existing value, the SET key to save and UP arrow to return to "F" menu. To **EXIT** "F" menu, go to F24 and press DOWN arrow key. Scale resumes normal weighing mode.

F1 Zero Track									F2 Motion Band			F3 Creep Track						F4 Creep Time

0	0.1	0.3	0.5	1	2	3	4	5

1	3	5	10

Of	10	15	20	25	30	50

1	2	3	4	5	10	20	30

F5 Zero Cal	F6 Span Calibration	F7 Number of G d								F8 Disp Div

Press TARE to

1000	2000	5000	10000	12000	15000	20000	24000

30000	50000

1	2	5

F9 Dec Point					F10 lb or kg		F11 N/A Set Point Unit				F12 N/A

None	0.0	0.00	0.000	0.0000

1	2

off	lb	kg	pc

F24 N/A EXIT "F" MENU
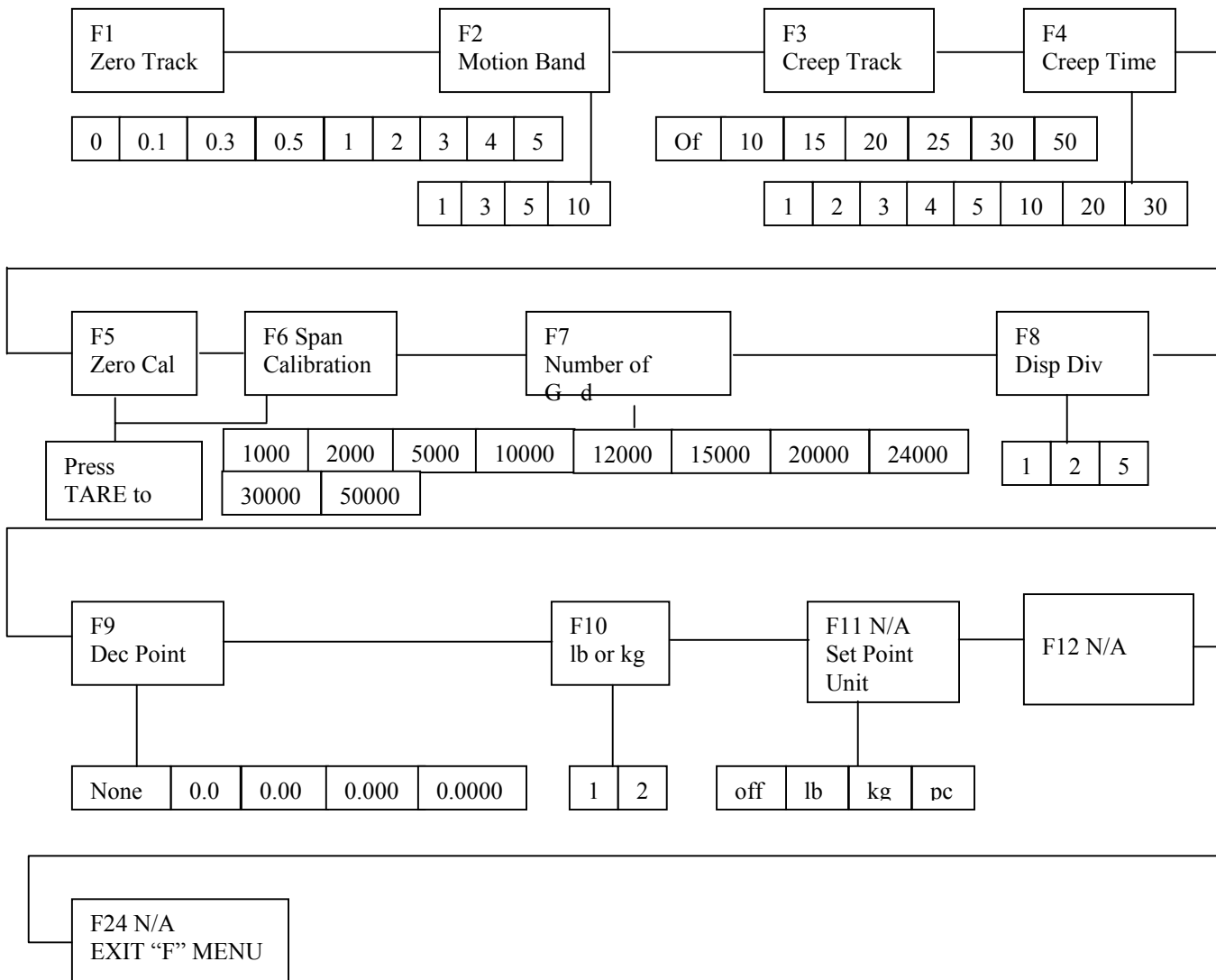
PARAMETER (Soft Key Text)	DESCRIPTION	AVAILABLE CHOICES
F1 Zero Track	Selects the range within which the scale will automatically zero. Note that the scale must be in standstill to automatically zero. Selections are in Display Divisions.	0d **0.5d**√ 1d 3d 5d
F2 Motion Band	Sets the level at which motion is detected by comparing the present display update with the previous one. If motion is not detected for two seconds or more, scale is in standstill and can process a Print or Zero command. Maximum value varies depending on local regulations.	**1d**√ 3d 5d 10d
F3 Creep Tracking (CrpTrk)	Sets the range within which the scale will attempt to offset the effects of load cell creep. Use a lower setting for lower capacity load cells and vice-versa. Selections are in seconds. FACTORY SET – DO NOT CHANGE	Off 10, 15, 20, 25, 30, 50,√
F4 Creep Time	Sets the range within which the scale will attempt to offset the effects of load cell creep. Use a lower setting for lower capacity load cells and vice-versa. Selections are in seconds. FACTORY SET – DO NOT CHANGE	1, 2, 3, 4, 5, 10, 20, 30,
F5 Zero Calibration	Performs zero calibration. ***See chapter 6 for calibration instructions***	
F6 Span Calibration	Performs scale calibration. ***See chapter 6 for calibration instructions***	
F7 Graduations	Specifies number of full-scale graduations. Value should be consistent with legal requirements and environmental limits on the useful system resolution. Note – default for 30 lb or 15 kg is 15000 divisions.	1,000 2,000 5,000 10,000 **12,000** 15,000 24,000 30,000 50,000
F8 Display Divisions	Determines the desired weight increments. Value should be consistent with legal requirements.	1 2 5
F9 Decimal Pt.	Determines location of the decimal point.	0 0.0 0.00 0.000 0.0000
F10 lb or kg	Sets the starting unit during power up	1 = lb 2 = kg
F11	**NOT AVAILABLE**	
F12	**NOT AVAILABLE**	
F24	**EXIT "F" MENU**	

5.3   USER ("A") MENU

5.3.1   ENTERING THE USER MENU

1. Push and hold the ON/OFF key for three seconds or use the power switch to shut the scale OFF.

2. Press and hold the SAMPLE key while turning back ON the scale. When the scale shows " A   1" you are in User Menu mode and you may release the SAMPLE key.

5.3.2   NAVIGATING IN THE USER MENU

Use the directional keys shown in Figure 5-1 to move around in the User Menu Chart shown in Figure 5-2 on the following page. Detailed descriptions of the User Menu can be found in Table 5-1.

1. To move to a new "A" heading, use the PRINT (left) or UNIT (right) key to move right or left in the User Menu Chart.

2. To move to the selection level, press the TARE (down) key once. The current saved selection is shown.

3. To view the available selections for the current "A" heading, use the PRINT (left) or UNIT (right) key to move through the selection field.

4. To save a new selection, press the SAMPLE (Set) key .To exit without saving, press the ZERO (up) key to return to the current "A" heading.

5. Repeat Steps 2 through 5 until the User Menu is programmed.

USER MENU MODE KEY FUNCTIONS

ZERO   TARE   SAMPLE   PRINT   UNIT

↑   ↓   SET   ←   →
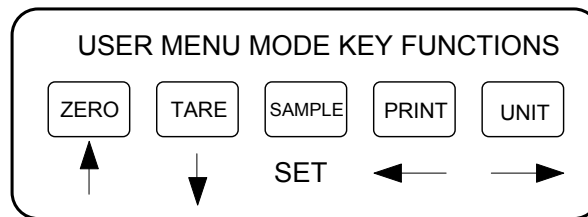
Figure 5-1: User Menu Key Assignments

A1	A2	A3	A4	A5	A6	A7	A8	A9
Baud Rate	Data Bits, Parity	COM Mode	Printer Type	Display Check	Custom Unit	ID No. Entry	Set Time	Chk Time

A2 Data Bits, Parity: 8n | 7O | 7E

A3 COM Mode: 0 | 1 | 2 | 3

A4 Printer Type: 0 | 1

A5 Display Check: Press TARE key to begin

A6 Custom Unit: Press TARE key to begin

A7 ID No. Entry: Press TARE key to begin

A8 Set Time: Press TARE key to begin

A9 Chk Time: Press TARE key to begin

A1 Baud Rate: 1200 | 2400 | 4800 | 9600

A10	A11	A12	A13
Set Date	Chk Date	Auto Off	Print Fmt

A10 Set Date: Press TARE key to begin

A11 Chk Date: Press TARE key to begin

A12 Auto Off: OFF | 3 | 5 ... 30

A13U1	A13U2	A13U3	A13U4	A13U5	A13U6
ID	TAD	Gross	Tare	Pieces	APW
0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2

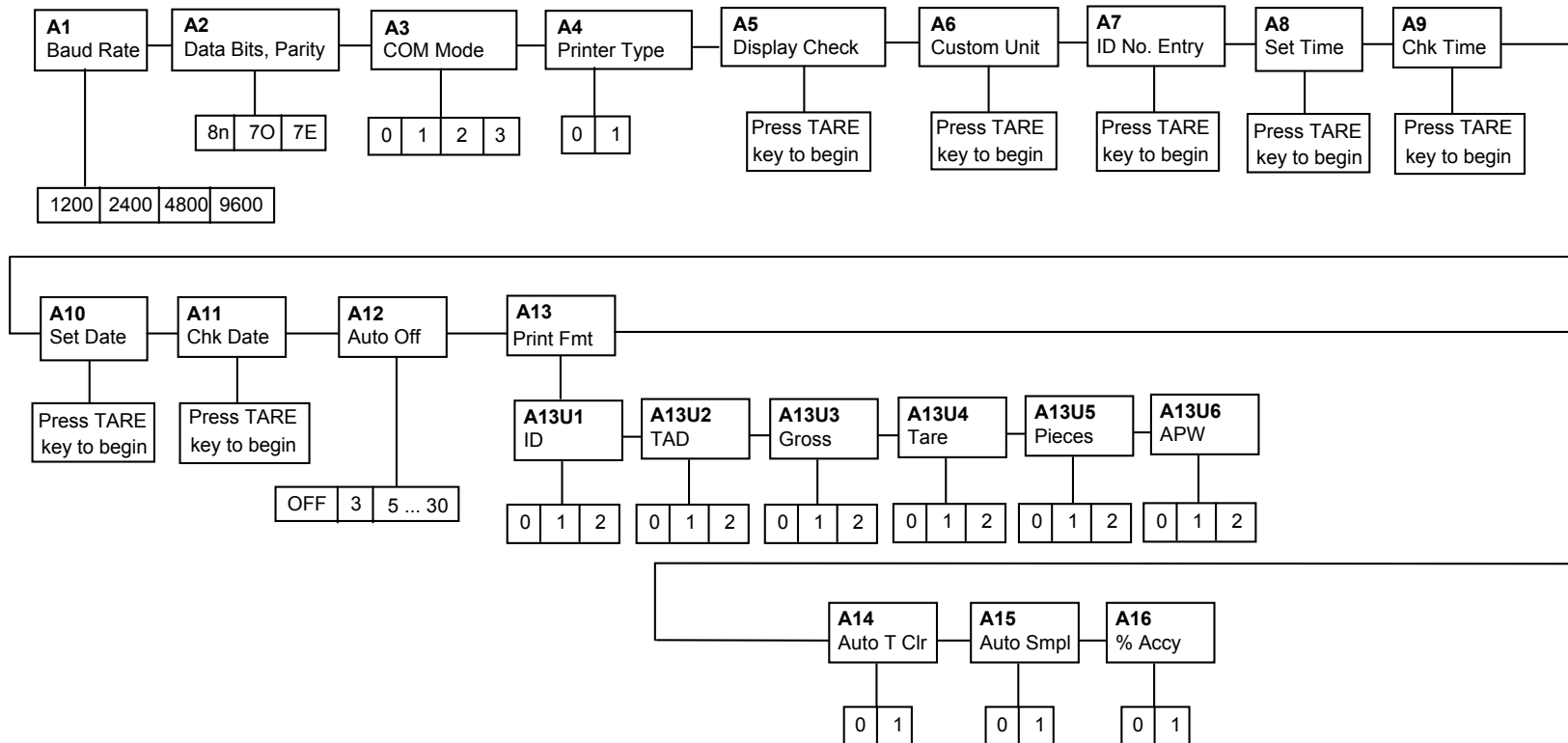| A14	A15	A16
Auto T Clr	Auto Smpl	% Accy
0 1	0 1	0 1

Figure 5-2: User Menu Chart

5.3.3 EXITING THE USER MENU

1. Push and hold the ON/OFF key for three seconds or use the power switch to shut the scale OFF.

2. Turn the scale back on without holding down any keys. The display will go through a digit check, then settle into Normal Operating mode. All front panel keys will now return to their normal mode of operation.

NAME/CODE	DESCRIPTION	CODE/VALUE
A1 Baud Rate	Selects the baud rate for data transmission through the serial port.	1200 2400 4800 **9600**√
A2 Data Bits and Parity	Selects the number of data bits and parity of serial transmission. "8n" = 8 data bits with no parity bit "7O" = 7 data bits with odd parity bit "7E" = 7 data bits with even parity bit	**8n**√ 7O 7E
A3 COM Port Device	Selects the device and function of the COM1 and COM2 serial ports: "0" = Printer (COM1) "1" = TC Scale for APW Download (COM2) "2" = Scanner (COM2) "3" = Computer (COM2)	**0**√ 1 2 3
A4 Printer Type	Selects the type of printer connected to COM1: "0" =Non-barcode (Text) Printer (MP-20, Epson TM295,) "1" = Barcode Printer (Eltron 2742, 2842)	0 **1**√
A5 Display Check	Actuates the function that illuminates all digit segments, decimal points, and LCD annunciators in a test sequence. Pressing the **TARE** key to scroll down one level begins the test sequence.	Press **TARE** key to begin sequence
A6 Custom Unit	Actuates the function that allows you to enter a multiplier for the custom unit. Pressing the **TARE** key to scroll down one level begins the test sequence.	(1.0)√
A7 ID No. Entry	Actuates the function that allows entry of a one ID No. up to 6 characters long. Pressing the **TARE** key to scroll down one level begins the sequence.	(123456)√
A8 Set Time	Actuates the function that allows entry of the current time. Pressing the **TARE** key to scroll down one level begins the sequence.	Press **TARE** key to begin sequence
A9 Check Time	Allows you to check the present time set on the scale. Pressing the **TARE** key to scroll down one level begins the sequence.	Press **TARE** key to begin sequence
A10 Set Date	Actuates the function that allows entry of the current date. Pressing the **TARE** key to scroll down one level begins the sequence.	Press **TARE** key to begin sequence

Table 5-1: User Menu Descriptions – A1 to A10

NAME/CODE	DESCRIPTION	CODE/VALUE
A11 Check Date	Allows you to check the present date set on the scale. Pressing the **TARE** key to scroll down one level begins the sequence.	Press **TARE** key to begin sequence
A12 Auto Power Off	Selects the auto power off time period in minutes: "Off" = Disabled (Always ON)	**Off**√[2] 3, 5, 10, 15, 20, 30
A13 Print Format	Selects which of the available fields will be printed on the print ticket and their format. This menu selection has six sub-menus: A13U1 = ID A13U2 = Time and Date A13U3 = Gross Weight A13U4 = Tare Weight A13U5 = Pieces A13U6 = APW All: "0" = Not printed "1" = Text Only "2" = Both (Text and Barcode)	A13U1: **0**√ A13U2: **2**√ A13U3: **2**√ A13U4: **2**√ A13U5: **2**√ A13U6: **2**√
A14 Auto Tare Clear	Allows you to program the Auto Tare Clear feature ON or OFF. "0" = Disabled and "1" = Enabled	**0**√ 1
A15 Auto Sample	Allows you to program the Auto Sample feature ON or OFF. "0" = Disabled and "1" = Enabled	**0**√ 1
A16 Sample Accuracy	Allows you to program the scale to disallow the user to view the Sample Accuracy from the front panel keypad. "0" = Disabled and "1" = Enabled	0 **1**√

Table 5-1a: User Menu Descriptions – A11 to A16

5.4   USER MENU PROCEDURES

This section provides instructions for all of the User Menu procedures.

5.4.1   Custom Unit Multiplier Entry (A6)

The custom unit multiplier is the conversion factor that you would multiply the calibration unit by in order to obtain the custom unit of weight. For example, if your scale is calibrated in pounds and you wish to display weight in ounces, you would enter in a multiplier value of 16.0. The scale automatically determines the proper display increment for your custom unit.

1.   While in the User Menu mode, scroll to "**A 6**", then scroll down once using the TARE key to enter the custom unit multiplier menu.

2.   The display will momentarily show "**CU PT**" for the custom unit, followed by the current value for the custom unit multiplier with the decimal point.

3.   Use the left or right directional keys (shown in Figure 5-1 above) to move the decimal point position to the correct position. Pressing the PRINT key or the UNIT key will change the position of the decimal point.

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[2] Non-battery powered scales only. For battery-powered scales, this is preset to 3 minutes at the factory.

4. After setting the correct decimal point position, press the SAMPLE key to save it.

5. The display will momentarily show "**CU**" and then a value with one flashing digit. This value will be the current multiplier value with the decimal point position programmed above.

6. Use the four directional keys (shown in Figure 5-1 above) to adjust the displayed value to the actual custom unit multiplier value. Increase the flashing digit by pressing the ZERO key. Decrease the flashing digit by pressing the TARE key. Pressing the PRINT key or the UNIT key will change the position of the flashing digit.

7. After setting the exact value, press the SAMPLE key to save the custom unit multiplier value. The display will show "**Set-CU**" momentarily, then revert back up to A6.

5.4.2   ID Number Entry (A7)

1. While in the User Menu mode, scroll to "**A 7**", then scroll down once using the TARE key to enter the ID Number menu.

2. The display will momentarily show "**ID NO**", followed by a value with one flashing digit. This value will be the current ID number value.

3. Use the four directional keys (shown in Figure 5-1 above) to adjust the displayed value to the actual ID Number value. Increase the flashing digit by pressing the ZERO key. Decrease the flashing digit by pressing the TARE key. Pressing the PRINT key or the UNIT key will change the position of the flashing digit.

4. After setting the exact value, press the SAMPLE key to save the ID Number value. The display will show "**SET**" momentarily, then revert back up to A7.

5.4.3   Set Time (A8)

Your scale will keep track of the current time for you, which can then be printed on the print ticket. Use this procedure to set the current time, which must be set in military (24-hr) format. For example, for 9:00 AM, you would enter 9.00.00. For 5:00 PM, you would enter 17.00.00. The extra zeroes are for seconds.

1. While in the User Menu mode, scroll to "**A 8**", then scroll down once using the TARE key to enter the time entry menu.

2. The display will momentarily show "**SET T**", followed by a value with one flashing digit. This value will be the current time in military (24-hr) format.

3. Use the four directional keys (shown in Figure 5-1 above) to adjust the displayed value to the actual time value. Increase the flashing digit by pressing the ZERO key. Decrease the flashing digit by pressing the TARE key. Pressing the PRINT key or the UNIT key will change the position of the flashing digit.

4. After setting the exact value, press the SAMPLE key to save the time value. The display will show "**SET**" momentarily, then revert back up to A8.

5.4.4   Check Time (A9)

Use this menu to verify the current time set on the scale.

1. While in the User Menu mode, scroll to "**A 9**", then scroll down once using the TARE key to enter the check time menu.

2. The display will momentarily show "**t - - -**", followed by the current time in military (24-hr) format.

3. After checking the time, press the SAMPLE key to exit and revert back up to A9.

5.4.5 Set Date (A10)

Your scale will also keep track of the current date for you, which can then be printed on the print ticket. Use this procedure to set the current date, which must be set in mm/dd/yy format. For example, for January 7, 1998, you would enter 01.07.98. For November 30, 1998 you would enter 11.30.98.

1. While in the User Menu mode, scroll to "**A 10**", then scroll down once using the TARE key to enter the date entry menu.

2. The display will momentarily show "**SET D**", followed by a value with one flashing digit. This value will be the current date in mm/dd/yy format.

3. Use the four directional keys (shown in Figure 5-1 above) to adjust the displayed value to the actual date value. Increase the flashing digit by pressing the ZERO key. Decrease the flashing digit by pressing the TARE key. Pressing the PRINT key or the UNIT key will change the position of the flashing digit.

4. After setting the exact value, press the SAMPLE key to save the date value. The display will show "**SET**" momentarily, then revert back up to A10.

5.4.6 Check Date (A11)

Use this menu to verify the current date set on the scale.

1. While in the User Menu mode, scroll to "**A 11**", then scroll down once using the TARE key to enter the check date menu.

2. The display will momentarily show "**d- - -**", followed by the current date in mm/dd/yy format.

3. After checking the date, press the SAMPLE key to exit and revert back up to A11.

CHAPTER 6: CALIBRATION

6.1 CALIBRATION OVERVIEW

Your TC-2001 scale ships from the factory fully calibrated. There is no need to calibrate the scale unless you feel that it has become inaccurate. It is a good idea to check the calibration of your scale from time to time with a precision test weight. Transcell recommends that you perform a new calibration on your digital scale at least once a year.

During calibration, at least two values are saved in the scale's memory – the zero value (deadweight) and the up to three span values (test weights). See Table 6-1 for a listing of minimum and recommend test weights.

6.2 CALIBRATION MODE

1. Push and hold the ON/OFF key for three seconds or use the power switch to shut the scale OFF.

2. Press and hold the ZERO key while powering back on the scale.

3. When the scale shows "C 0" you are in Calibration mode and you may release the ZERO key. The scale then displays a value. The value shown is for troubleshooting purposes only. Allow a 20-minute warm-up period for the load cell and electronic components to become thermally stable.

4. Remove all items from the scale's platter. Press ZERO to zero the value.

5. Press the SAMPLE key to save the zero point value. The scale shows "C 1" followed by "0.000". The "C 1" indicates that the scale is prompting for the first span calibration value.

6. Use the four directional keys (shown in Figure 6-1 below) to adjust the displayed value to the actual test weight value. Increase the flashing digit by pressing the ZERO key. Decrease the flashing digit by pressing the TARE key. Pressing the PRINT key or the UNIT key will change the position of the flashing digit.

7. Place the test weight(s) onto the scale's platter, then press the SAMPLE key. If the calibration was successful, the display will show "SAVE" momentarily, then prompt for the next span calibration value.

8. If you wish to use up to two more calibration test weights, repeat Step 7 twice. Each subsequent test weight must be greater than the last. If you do not wish to use more calibration test weights, simply press SAMPLE twice. The scale then automatically enters Normal Operating Mode by performing a countdown test. Remove the test weight from the platter

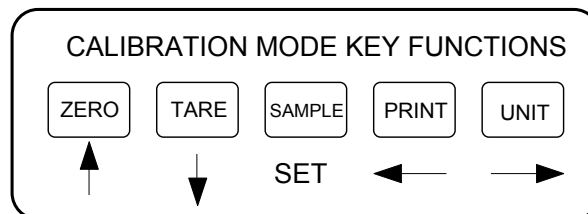**NOTE:** If you encounter a failure, consult Appendix C for possible causes and remedies.

Figure 6-1: Calibration Mode Key Assignments

MODEL	Capacity / Graduation	Minimum Test Weight	Recommended Test Weight
TC-2001-12	12 x 0.001 lb	0.12 lb	8 lb to 12 lb
TC-2001-30	30 x 0.002 lb	0.3 lb	20 lb to 30 lb
TC-2001-60	60 x 0.005 lb	0.6 lb	40 lb to 60 lb
TC-2001-120	120 x 0.01 lb	1.2 lb	80 lb to 120 lb
TC-2001-6M	6 x 0.0005 kg (0.5g)	60 g	4 kg to 6 kg
TC-2001-15M	15 x 0.001 kg (1 g)	150 g	10 kg to 15 kg
TC-2001-30M	30 x 0.002 kg (2 g)	300 g	20 kg to 30 kg
TC-2001-60M	60 x 0.005 kg (5 g)	600 g	40 kg to 60 kg

TABLE 6-1: Minimum / Recommended Calibration Test Weights

APPENDIX A: SPECIFICATIONS

CONSTRUCTION:
> **Housings:** Gray ABS
> **Sub-Platform**: Metal
> **Platter**: Stainless Steel
> **Feet**: Non-skid Hard Rubber

DISPLAY:
> 6 Digit, 7-Segment LCD with backlighting

KEYPAD:
> 6-key Tactile Keypad

OVER CAPACITY ANNUNCIATION:
> 103% of Full Scale Capacity

OPERATING TEMPERATURE RANGE:
> 32°F to 104°F
> (0°C to 40°C)

POWER SOURCE:
> AC Adapter, 12VDC, 800 mA, included

OPTIONAL POWER SOURCE:
> Two 12VDC, 1200 mAH NiMH battery packs
> Charger: 24VDC, 2 A
> Charge Period: 3 hours, max.
> Battery Life: 24 hours, approx.

COM1 SERIAL PORT:
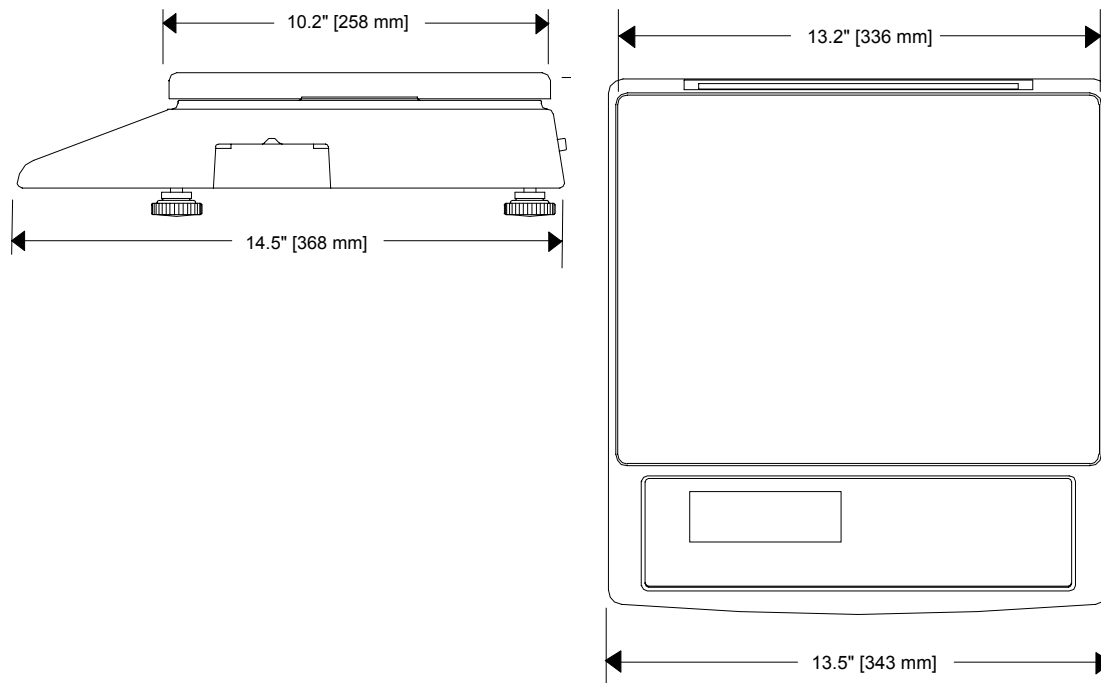> Full Duplex RS-232, DSUB9M

COM2 SERIAL PORT:
> Full Duplex RS-232, DSUB9F

WEIGHT:
> Net Weight: 23.0 lb (10.4 kg)
> Shipping Weight: 24.0 lb (10.8 kg)

PHYSICAL DIMENSIONS:

10.2" [258 mm]

14.5" [368 mm]

13.2" [336 mm]

13.5" [343 mm]

APPENDIX B: SERIAL PORT INFORMATION

B.1   COM1 SERIAL PORT

B.1.1   CONNECTING THE SERIAL DEVICE

The COM1 serial port is a full duplex RS-232 port designed for connection to one of the following:

- **Serial barcode printer - label or receipt**
- **Serial non-barcode printer - label, ticket or receipt**

Figure B-1 shows the serial port pin out. Use the cable that came with your optional printer or consult the printer's user guide to fashion one of your own.

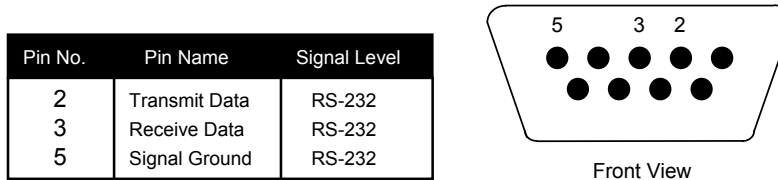1. Plug the serial device cable (not included) directly into the DSUB9 serial port connector.

Pin No.	Pin Name	Signal Level
2	Transmit Data	RS-232
3	Receive Data	RS-232
5	Signal Ground	RS-232

Front View

Figure B-1: Pin assignments for the COM1 serial port connector

B.1.2   DEFAULT PRINT FORMAT

Figure B-2 shows the fixed format of the print format. The TC-2001 scale prints all barcodes in Code 39 format.

NOTE: **The PCS and UW fields are blank when an APW has not been established in the system.**

10/22/02 22:55:51

GR   0.220 LB

TR   0.000 LB

NT   0.000 LB

PCS   100

APW 0.0022 LB

FIGURE B-2: Default Print Format

B.2   COM2 SERIAL PORT

B.2.1   CONNECTING THE SERIAL DEVICE

The COM2 serial port is a full duplex RS-232 port designed for connection to one of the following:

- **Computer**
- **Remote display**
- **Transcell TC-100, TC-200 or PBS Series scale**
- **Scanner**

Figure B-3 shows the serial port pin out. To connect to a PC-type computer, use the optional Transcell cable – Model NMC-1. To connect to a Transcell scale, use the optional Transcell cable – Model NMC-2.

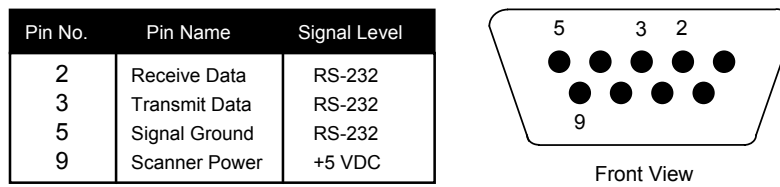1. Plug the serial device cable (not included) directly into the DSUB9 serial port connector.

Pin No.	Pin Name	Signal Level
2	Receive Data	RS-232
3	Transmit Data	RS-232
5	Signal Ground	RS-232
9	Scanner Power	+5 VDC

Front View

Figure B-3: Pin assignments for the COM2 serial port connector

B.2.2   FULL DUPLEX MODES FOR COM2

B.2.2.1   CONTINUOUS MODE

The Continuous mode is used to interface to computers, scoreboards and other remote devices requiring constant data updating. The transmission occurs at the end of each display update. Set A3 to "3" to get this output. Figure B-4 shows the serial data format for the Continuous Mode. Table B-1 shows the recognized host commands.
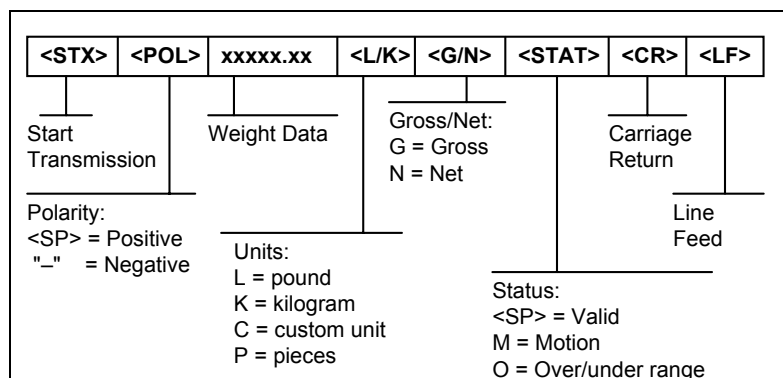
<STX>	<POL>	xxxxx.xx	<L/K>	<G/N>	<STAT>	<CR>	<LF>

Start Transmission

Weight Data

Gross/Net:
G = Gross
N = Net

Carriage Return

Polarity:
<SP> = Positive
"–" = Negative

Units:
L = pound
K = kilogram
C = custom unit
P = pieces

Status:
<SP> = Valid
M = Motion
O = Over/under range

Line Feed

FIGURE B-4. Consolidated Controls Continuous Mode

"z" - This command is sent to the scale to zero the scale. If the scale is in motion, the scale will wait until a state of equilibrium is achieved. The scale will not respond at all if the scale is in positive overload or negative overload.

"t" - This command is sent to the scale to tare the scale. If the scale is in motion, the scale will wait until a state of equilibrium is achieved. The scale will not respond at all if the scale is in positive overload or negative overload. The scale will also not respond if it displaying a negative gross value.

"c" - This command is sent to the scale to toggle among the configured units.

TABLE B-1. Recognized Host Commands

NOTE 1**: Host device must send lower case characters to scale.**

NOTE 2**: No output for APW or % modes at this time.**

APPENDIX C: ERROR MESSAGES

C.1   ERROR MESSAGES

If the scale encounters an error condition, it will display a message alerting the operator. A description of each display follows:

C.1.1   OPERATOR ERRORS

Message	**Explanation**
□□□□□	Indicates that the weighing capacity of the selected scale has been exceeded.
Add	Indicates that there is not enough internal resolution to calculate the APW of an item. This means that the items you are counting are too light for the scale to process at all.
Err 9	Span calibration value has been lost. Re-calibrate scale.
Err 11	Keyed-in sample value is equal to zero or is a fractional value. Key-in a valid sample value.
Err 14	The keyed-in value for APW is equal to zero or exceeds the capacity of the scale. Key-in a valid APW value.

C.1.2   CALIBRATION ERRORS

Message	**Explanation**
Err 0	Indicates that the test weight value you have chosen exceeds the scale's capacity.
Err 1	Indicates that the test weight value you have chosen is less than 1% of the scale's capacity.
Err 2	Occurs when you do not place the test weight on the scale during calibration. Can also indicate that there is an internal error in the scale.

LIMITED WARRANTY

Seller warrants that the TC Series Digital Counting Scale line will conform to written specifications, drawings, and other descriptions made by the manufacturer, including any modifications thereof. The Seller warrants the goods against faulty workmanship and defective materials. If any goods fail to conform to these warranties, Seller will, as its sole and exclusive liability hereunder, repair or replace such goods if they are returned within the following warranty period:

Twelve (12) months from date of shipment from manufacturer.

These warranties are made upon the following TERMS and CONDITIONS:

This warranty is limited to the original equipment manufactured by TRANSCELL TECHNOLOGY, INC. Items not covered under this warranty are batteries and normal wear items like connectors, shrouds, front panels and fuses.
For the first sixty (60) days from the date of installation, the warranty covers parts, on-site labor, and limited travel time and mileage. (3 hrs/150 miles maximum per occurrence).
After sixty (60) days, the warranty covers the cost of replacement parts only.
However, at the discretion and prior approval of TRANSCELL, certain equipment may be returned , freight pre-paid, for repair, free of any parts or labor charges.

TRANSCELL's responsibility is confined to repair, replacement or credit of equipment of parts. The warranty does not extend coverage to labor, material, freight or service charges involved in removal, shipping or reinstallation of equipment or parts.

CONDITIONS WHICH VOID LIMITED WARRANTY:
This warranty shall not apply to equipment which:
A. Examination of such goods discloses that the nonconformity exists and was caused by accident, misuse, neglect, alteration, improper installation improper or unauthorized repair, improper testing, or an act of GOD including lightning and such goods have not been modified, altered, or changed by any person other than the Seller or its duly authorized repair agents.

Transcell Technology, Inc. will have a reasonable time to repair or replace such goods.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ORAL OR WRITTEN, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SELLER WILL NOT IN ANY EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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No terms, conditions, understanding, or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of the Seller.