

Operation Manual



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Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at www.ricelake.com or obtained by calling 715-234-9171 and asking for the training department

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About This Manual

This manual contains operating procedures for the DC-782 counting scale and provides the user with all the information necessary for setup and operation. It is organized based on the procedures you will likely follow when setting up and using your counting scale. This manual applies to Version 1.006 of the DC-782 counting scale series.



Caution

Some procedures described in this manual require work inside the scale base. These procedures are to be performed by qualified service personnel only.



Authorized distributors and their employees can view or download this manual from the DIGI distributor site at www.ricelake.com.

1.0 Introduction

The DC-782 is a low cost counting scale that offers practical solutions for a full range of counting applications. Its counting resolution of 1/500,000 gives you maximum counting precision and accuracy. Its backlit LCD display enables operators to easily see weights and quantities. The DC-782 can also store an item code, tare weight, unit weight, and setpoint value for 25 of your pieces, parts, or items and recall 10 of them with the pressing of a single preprogrammed key. The RS-232 output allows you to transmit data from the scale to a PC. When portability is required, choose the battery operation option of the DC-782 for over 300 hours of continuous use in mobile workstations, outdoor applications, and rental fleets. The DC-782 is rugged enough to operate reliably in many environments and withstand transport from one area of the plant to another or from one business to the next.

1.1 Capacities and Resolutions

Table 1-1 lists the scale capacities, minimum graduations, and tare ranges for all models of the DC-782 counting scales. The display resolution is 1/6,000 with an internal or counting resolution of 1/500,000.

Part No.	Capacity
108248	6 lb x 0.001 lb
108249	15 lb x 0.002 lb
108250	30 lb x 0.005 lb
108251	60 lb x 0.01 lb

Table 1-1. DC-782 Capacities and Resolutions

1.2 Modes of Operation

The DC-782 has three modes of operation:

- Weighing Mode – where all weighing, counting and outputting of data operations take place.
- Programming Mode – where item data can be programmed into the memory of the scale. The display will show *PROG* to indicate that you are the Programming Mode.
- Maintenance Mode - where your DIGI dealer can set specifications, perform scale calibration and other maintenance functions.

1.3 Keyboard and Display

Figure 1-1 shows the DC-782 console with its indicator lamps, the function keyboard and the numeric keypad. Annunciators are described in Section 1.3.2. Section 1.3.3 describes the DC-782 keyboard and keypad.

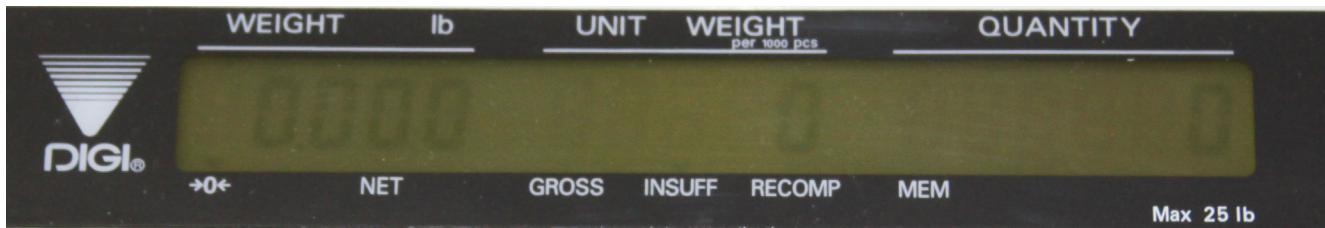


Figure 1-1. DC-782 Display

1.3.1 Display Specifications

Weight display	5 digits
Unit weight display	5 digits
Quantity display	6 digits

Table 1-2. DC-782 Display Specifications

1.3.2 Indicator Lamps

Table 1-3 shows a list of the indicator lamps that the DC-782 uses to provide additional information about the value being displayed. The indicator lamps are illuminated when the specific function is being performed.

Indicator Lamp	Function or Meaning
0	On when the gross weight is zero and is stable
NET	On when the display shows net weight (when a tare weight is entered or recalled and subtracted)
GROSS	On when the GROSS/NET key has been pressed and gross weight is being shown
RECOMP	On when unit weight recomputing is enabled
INSUFF	On when the net weight is below the specified percentage of scale capacity
MEM	On when carrying out accumulation and subtraction
BATT	Battery warning when weak and needs charging (blinks while charging)

Table 1-3. DC-782 Indicator Lamps and Function

1.3.3 Key Functions

The DC-782 features many functions for managing inventory information and scale operation. Figure 1-2 shows the key-sheet and Table 1-4 lists the keys and key functions of the DC-782 keyboard.



Figure 1-2. Key Sheet Layout

Some keys have different functions depending on what mode or function you are in.










Key	Description
	ON/OFF - Turns the scale display on or off
 to 	Numeric keys - Used to enter numeric values. When using the scale, first enter a numeric value, then press the appropriate function key.
	DECIMAL key - Used to set the decimal point.
	CLEAR key. Weighing Mode - Used to clear the Unit Weight. Used to return to the weighing display when doing accumulation. Programming Mode - Used to delete an Item Code or associated value when programming item codes. Used to Cancel input in programming SPEC codes.
	Pieces key - Used for computing unit weight by sampling.
	TARE key. Weighing Mode - Used to set or clear the tare value. Programming Mode - Used to store SPEC changes and escape to the Weighing Mode when programming specifications. Maintenance Mode - Used to escape to the Weighing Mode from the Maintenance Mode.
	REZERO key. Weighing Mode - Used to reset the weight display to zero.
	- (Minus) key. Weighing Mode - Used to delete a character entered during operations. Used to subtract a quantity during accumulation. Also prompts outputting data to a PC if one is connected. Programming Mode - Used to navigate to the previous specification when programming SPEC codes.

Table 1-4. DC-782 Key Functions








Key	Description
	<p>+ (Plus) key.</p> <p>Weighing Mode - Used to accumulate data. Also prompts outputting of data to a PC if one is connected.</p> <p>Programming Mode - Used to navigate to the next specification when programming SPEC codes.</p>
	<p>MODE key - Used to enter the programming mode from the weighing mode.</p>
	<p>UNIT WEIGHT key - Used to set the unit weight from the numeric keypad and display all digits of the unit weight.</p>
	<p>CONFIRM key - Used to confirm the data to be saved or deleted. Also sends the data to the RS-232C port if the specifications are set to send data.</p>
	<p>NET/GROSS key - Used to change the display between net and gross weights.</p>
	<p>PRESET keys - Used to set up and recall specific item codes and their associated data from memory.</p>
	<p>Number Key - Used to call up item codes</p>

Table 1-4. DC-782 Key Functions

2.0 Installation

This section describes the procedure for the installation and setup of the DC-782 counting scale.

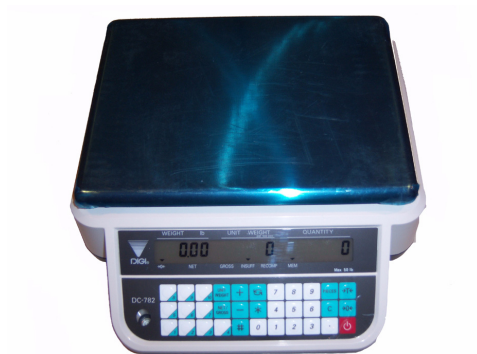
2.1 Unpacking



Caution

Do not turn scale upside down. Always work with scale on its side! Damage to the load cell can occur if the scale is turned upside down.

1. Immediately after unpacking, visually inspect the DC-782 counting scale to ensure all components are included and undamaged. If any were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately.
2. The DC-782 counting scale is carefully packed for protection during shipping. After opening the box, remove all the components. Check the insides of the box carefully to make sure you have all of the pieces. The package should include the following:
 - DC-782 counting scale
 - Stainless steel platter
 - AC power cord
 - Operation manual



3. Remove the bag protecting the scale and the protective film covering the front panel and platter.
4. Seat the stainless steel platter on the platter supports, with the four corner pins inserted into the corner rubber stops.
5. After ensuring that all parts are present, store the DC-782 scale box for possible future use.

2.2 Repacking

If the DC-782 counting scale must be returned for modification, calibration or repair, it must be properly packed with sufficient cushioning materials. Whenever possible, use the original carton when shipping the DC-782. Damage caused by improper packaging is not covered by the warranty.

2.3 Setting Up

Place the scale on a solid, level surface away from fans, breezes, and sources of electrical interference.

Level the scale by turning the four adjustable legs located on the bottom of the scale while referencing the bubble level located on the front of the scale (see Figure 2-1).

NOTE: *To ensure a higher degree of scale stability, turn in all four adjustable legs before leveling. Turn out adjustable legs to level as needed.*

Leveling Bubble



Figure 2-1. Leveling Bubble

2.4 Powering Up the DC-782

The DC-782 can be operated either from an AC power source or with a rechargeable battery pack (DC power). The DC power allows the unit to be completely portable. Instructions for DC operation are contained in Section 2.4.2.

2.4.1 AC Power Source

To power up the DC-782 using the AC power cord:

1. Connect the AC power cord under the scale base as shown in Figure 2-2.

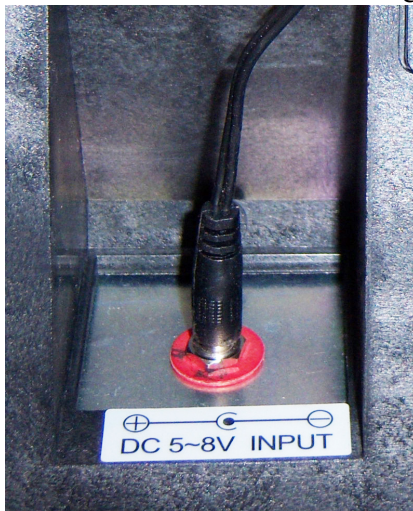


Figure 2-2. AC Plug-in Location on Underside of DC-782

2. Plug the AC power cord into a grounded 115 VAC receptacle.
3. Press the **ON/OFF** key located on the front of the scale. The scale will run through a check of the LCD display's segments. How thorough the segment check is depends on the setting of SPEC 20, Bit 2. The default is 0: Fast (For further instructions on how to set the scale's specifications, see Section 3.2.1):
 - If SPEC 20, Bit 2 is set to 0: Fast, the scale display's 888's for 1.5 seconds, then blanks for 1.5 seconds. It then displays 888's again followed by a blank display for another 1.5 seconds before going into the normal weighing mode.
 - If SPEC 20, Bit 2 is set to 1: Standard, the scale's display will test the LCD segments for each numeral from 0 to 9, asterisks, decimal points and annunciators before going into the normal weighing mode.

- Once the scale is on, the time interval before the scale will automatically power itself off, if there no key is pressed and no weight is placed on the platter, is determined by SPEC 00- Auto Power-Off Function. The default is 0000: Disabled. (For further instructions on how to set the scale's specifications, see Section 3.2.1)

2.4.2 DC Battery Pack Replacement/Installation

An optional DC battery pack (PN 108516) for the DC-782 is available and can be purchased from RLWS to ship with the scale or retrofit in the field. The rechargeable 6V 5.0 AH battery pack allows for up to 300 hours of scale use without an AC power supply (with the backlight off). It is located in the bottom of the scale base. Use the following procedure to install or replace the battery pack.

- Unplug the scale from power source.
- Place scale its left side.



Caution

Do not turn the scale upside down. Always work with the scale on its side. Damage to the load cell can occur if the scale is turned upside down.

- Unscrew the thumb screw (4 below) holding the battery compartment door (5 below) closed.
- Unscrew the two screws (3 below) holding on the battery holding bracket (2 below) and remove the bracket.

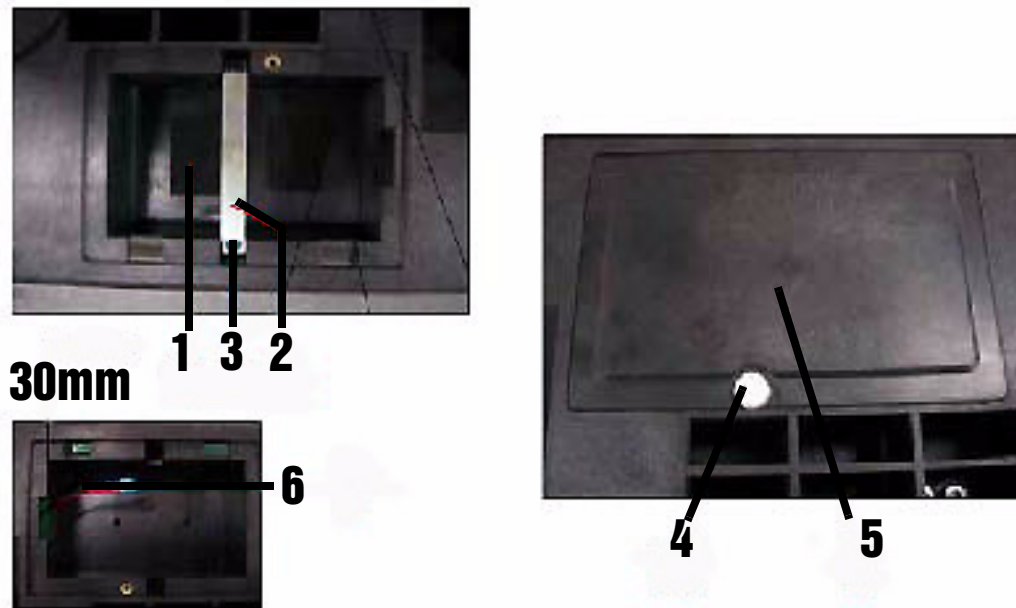


Figure 2-3. Installing the Battery

- If you are removing a battery previously installed, remove the battery from its compartment, then disconnect the black (-) and red (+) electrical leads from the battery (6 above). If you are installing a new battery, go to step 6.
- Attach the red lead to the positive (+) terminal of the new DC battery pack, and the black lead to the negative (-) terminal. Place new DC battery pack in battery compartment.
- Replace the battery holding bracket (2 above) and fasten it with its two screws (3 above).
- Replace the battery compartment door (5 above) and fasten it with its thumb screw (4 above).
- Put the scale back upright on its feet.
- Press the **ON/OFF** key located on the front of the scale. The scale will run through a check of the LCD display's segments. How thorough the segment check is depends on the setting of SPEC 20, Bit 2. The default is 0: Fast (For further instructions on how to set the scale's specifications, see Section 3.2.1):
 - If SPEC 20, Bit 2 is set to 0: Fast, the scale display's 888's for 1.5 seconds, then blanks for 1.5 seconds. It then displays 888's again followed by a blank display for another 1.5 seconds before

going into the normal weighing mode.

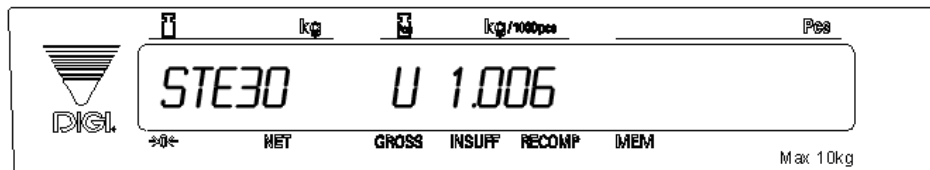
- If SPEC 20, Bit 2 is set to 1: Standard, the scale's display will test the LCD segments for each numeral from 0 to 9, asterisks, decimal points and annunciators before going into the normal weighing mode.

2.4.3 Battery Charging

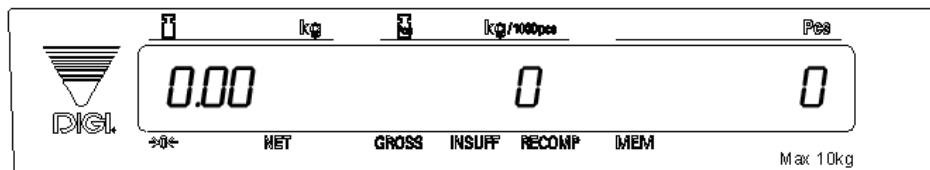
A fully charged battery allows for approximately 300 hours of continuous use (with the backlight off). When the battery is low the battery indicator light will light up. It will take approximately 12-14 hours to fully recharge a battery that has been completely dissipated. To charge the battery, plug in the AC power cord.

2.4.4 Start-Up Screens

1. If SPEC 20, Bit 3 - Version Display When Power On is set to 0: Allow, the scale will display the current version of the firmware it is using as it powers up (For further instructions on how to set the specifications, see Section 3.2.1).



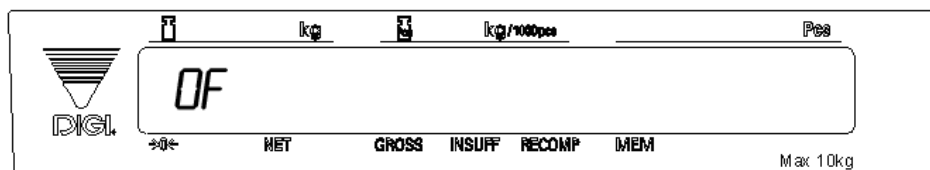
2. After a test of the different elements of the display, the scale takes you to the stand-by screen in the Weighing Mode. SPEC 20, Bit 2 - Selection of Segment-Check Style controls whether the startup test of the segments is Fast or Standard. At the stand-by screen the QUANTITY, WEIGHT, and UNIT WEIGHT displays show zeroes.



From this stand-by screen all of the basic weighing, counting and inventory operations can be performed

3. If there is anything on the platform(s) and it exceeds the scale start range, the display will show the error message *OF* indicating "weight overflow".

Note: The Initial Start Range settings are controlled by SPEC 20, Bit 1. The default setting is 0: ± 10% OF FULL SCALE.



If this error appears, remove the weight from the platform and the scale will continue its startup sequence.

2.5 Replacement Parts

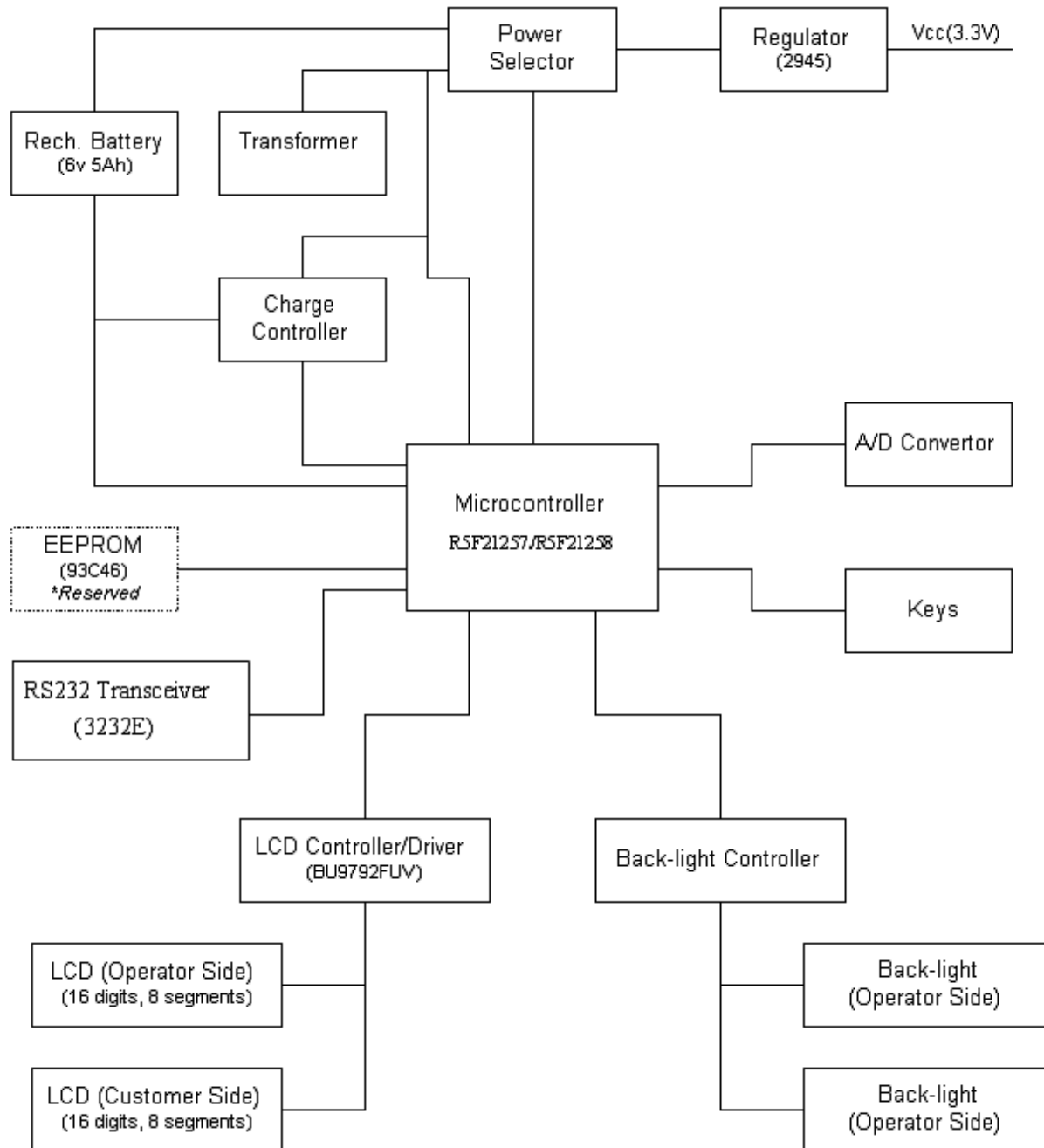
The following list contains the part numbers and descriptions of replacement parts available for the DC-782 counting scale.

RLWS Part Number	Description
108516	Rechargeable Battery Pack, 6 V, 5.0AH
108517	AC Adapter 110VAC
108518	AC Adapter 230VAC
109429	Operating Manual
109241	Display Overlay
109242	Keyboard Underlay
73524	Weighing Platter
109243	Display Window Overlay 6 lb Capacity
109244	Display Window Overlay 15 lb Capacity
109245	Display Window Overlay 30 lb Capacity
109246	Display Window Overlay 60 lb Capacity
109247	Keyboard Overlay
109248	Platter Support Bracket
73438	Platter Support (Black)
109249	Center Support (Black)
109250	Foot
109251	Hexagonal Nut T3 M6 for Foot
109252	Loadcell, 6 lb (3 kg)
109253	Loadcell, 15 lb (6 kg)
109254	Loadcell, 30 lb (12 kg)
109255	Loadcell, 60 lb (30 kg)
109256	Main Board
109257	A/D Board
109258	DC Power Board

Table 2-1. DC-782 Replacement Parts

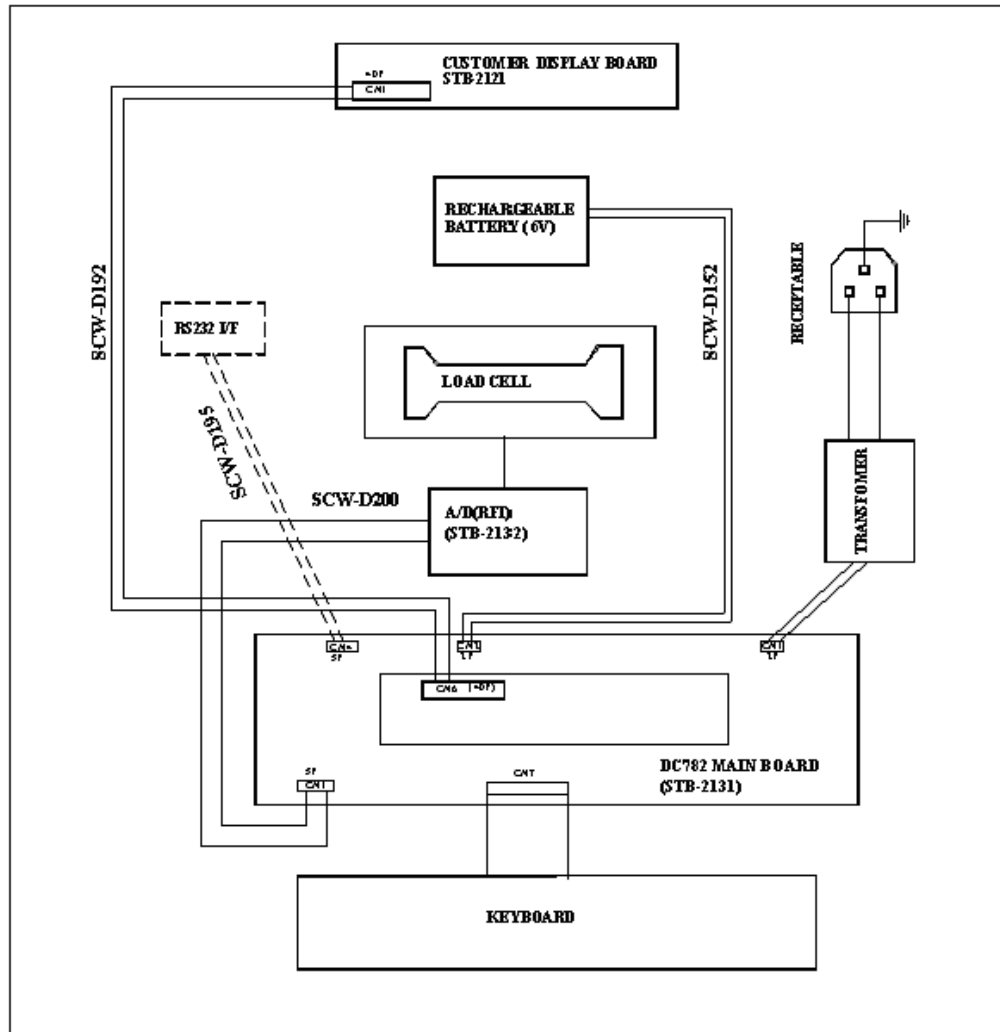
2.6 Block Diagram of Electrical Connections

The following block diagram illustrates the electrical connections.



2.7 Physical Layout of Electrical Connections

The following diagram illustrates the actual layout of the electrical connections.



3.0 Configuration Settings

This section presents the setup and configuration of the DC-782 counting scale to be used specifically by distributors and service technicians. Configuring these specifications allow you to tailor the DC-782 to your specific applications.

Setting the specifications allows you to modify the functionality of the DC-782. Use the tables in this section to view the options you can modify.

3.1 Putting the Scale in Maintenance Mode

Before you can configure the specification settings of the DC-782 scale, you must first place the scale in Maintenance Mode by pressing the span switch.

NOTE: You can exit the Maintenance Mode and return to the Weighing Mode at any time by pressing the **TARE** key.

Turn the scale on, then press the span switch to reset it. (See Figure 3-1 below.)

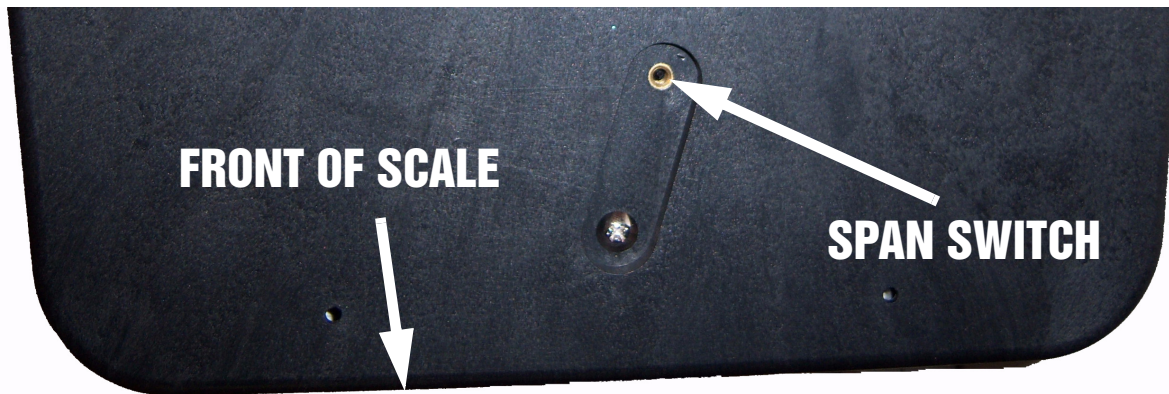


Figure 3-1. Location of Span Switch

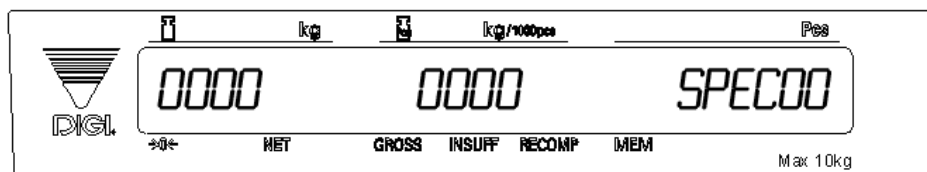
3.2 Configuring Specification 141 and 142 Settings from the Scale Keyboard

The following tables list the DC-782 specifications, their corresponding default values, and the other possible values to which they can be programmed. The default values are set at the factory when the scale is shipped. SPEC 0 through SPEC 10 (Table 3-1) are customer specifications and use the 141 access code, while SPEC 20 through SPEC 29 (Table 3-2) are weight and measurement specifications, and use the 142 access code

In programming specifications, the **+** (Plus) and **-** (Minus) keys allow you to move to the next or previous specification. The **CLEAR** key cancels any input you have made. The *** CONFIRM** key temporarily stores to memory any changes you have made. The **TARE** key saves to memory the changes you have made and returns you to the weighing mode. Note also that when programming specifications, only the 0 and 1 keys on the numeric keypad are enabled, since those are the only valid entries.

3.2.1 Customer Specification (141 Settings)

1. To configure customer specifications, press and hold the **REZERO** key and enter **141** using the numeric keypad. The first SPEC code is displayed.



The *Quantity* display shows what specification you are in (in this case, SPEC00). The *Weight* display shows how this specification is currently programmed (Bit 3 = 0; Bit 2 = 0; Bit 1 = 0, and Bit 0 = 1 in this example, while the *Unit Weight* display will show any changes you enter.

If this is the SPEC that you want to modify, enter the new setting from the numeric keypad and press the * **CONFIRM** key to enter the change into temporary memory and move to the next SPEC code.

2. Use the + (plus) and – (minus) keys to scroll through the specifications until you find the one you want. Then make your changes per the instructions in Step 1. Alternatively, you can go directly to a specific specification by entering that specification’s number and pressing the # key (Example: 9 + # will bring up SPEC 09; 11 + # will bring up SPEC 11).
3. To change another SPEC code before exiting, repeat Steps 1 and 2.
4. To save all the changed SPEC settings currently in temporary memory and exit to the Weighing Mode, press the **TARE** key.
5. Turn off Power and restart the scale.

SPEC No.	Bit 3	Bit 2	Bit 1	Bit 0
00	Auto Power-off Function (for no key operation and weighing operation) 0000: Auto power-off disable when scale is not in use (DEFAULT) 0001: 3 minutes 0010: 10 minutes 0011: 30 minutes 0100: 1 hour (DEFAULT) 0101: 3 hours 0110 ~ 1111 - not used			
01	Buzzer 0: On (DEFAULT) 1: Off	Error Alarm 0: On (DEFAULT) 1: Off	Set Point Alarm 0: On (DEFAULT) 1: Off	Not Used 0: (DEFAULT)
02	Tare Override 0: Allow (DEFAULT) 1: Inhibit	Unit Weight Override 0: Allow(DEFAULT) 1: Inhibit	Zero Unit Weight Override 0: Allow (DEFAULT) 1: Inhibit	Not Used 0: (DEFAULT)
03	Back-Light Function 00: Auto (DEFAULT) 01: Always On 10: Always Off 11: Not Used		Auto Back-Light Function 00: 6 seconds (DEFAULT) 01: 15 seconds 10: Not Used 11: Not Used	
04	Extent of Insufficient Samples 00: 0.1% (DEFAULT) 01: 0.2% 10: 0.0% 11: Not Used		Set Point Type 00: % quantity (DEFAULT) 01: % weight 10: Quantity 11: Weight	
05	Sampling Time for Unit Weight Calculation 0: 10 times 1: 5 times (DEFAULT)	Negative Counting 0: Allow (DEFAULT) 1: Inhibit	Re-Zero Function 0: Allow (DEFAULT) 1: Inhibit	Transmission Condition of RS-232 0: Weight Stable 1: Unconditional (DEFAULT)
06	RTS/CTS Handshaking of RS-232C 0: On 1: Off (DEFAULT)	Baud Rate of RS-232C 000: 1200 bps 001: 2400 bps 010: 4800 bps 011: 9600 bps (DEFAULT) 100: 19200 bps 101: 38400 bps 110: Not used 111: Not used		

Table 3-1. DC-782 (141) Settings

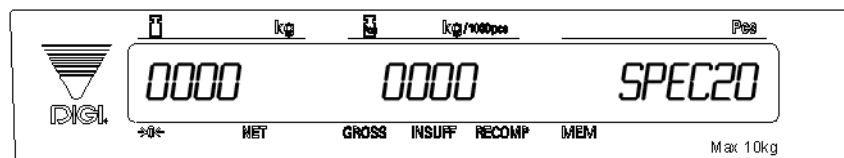
SPEC No.	Bit 3	Bit 2	Bit 1	Bit 0
07	Stop bit of RS-232C 0: 1 bit (DEFAULT) 1: 2 bit	Data length of RS-232C 0: 7 bits 1: 8 bits (DEFAULT)	Parity of RS-232C 00: None (DEFAULT) 01: Odd 10: Even 11: Not Used	
08	Interval of Time-Out Error of RS-232C 00: 1 second 01: 3 seconds (DEFAULT) 10: 5 seconds 11: 10 seconds		Additional Parity Code in Text of RS-232C 0: No (DEFAULT) 1: Yes	Status and Weight Condition Flag in Text of RS-232C 0: No (DEFAULT) 1: Yes
09	Tare Weight in Text of RS-232C 0: No 1: Yes (DEFAULT)	Unit Weight in Text of RS-232C 0: No 1: Yes (DEFAULT)	Quantity in Text of RS-232C 0: No 1: Yes (DEFAULT)	Header Code in Text of RS-232C 0: No 1: Yes (DEFAULT)
10	RS-232C PC Protocol 0000: Inhibit data transfer (DEFAULT) 0001: Standard Stream Type (Continuous Output) 0010: Standard Manual Type 0011: Standard Command Type 0100 ~ 1111: Not Used			
11 ~ 19	Not Used (reserved for future use)			

Table 3-1. DC-782 (141) Settings

3.2.2 Weight and Measurement Specifications (142 Settings)

To make changes to the Weight and Measurement Specifications, the span switch must be on. (For instructions on how to turn the span switch on, see Section 4.0.)

1. To configure customer specifications, press and hold the **REZERO** key and enter **142** using the numeric keypad. The first SPEC code is displayed.



The *Quantity* display shows what specification you are in (in this case, SPEC20). The *Weight* display shows how this specification is currently programmed (Bit 3 = 1; Bit 2 = 0; Bit 1 = 0, and Bit 0 = 0), while the *Unit Weight* display will show any changes you enter.

If this is the SPEC that you want to modify, enter the new setting from the numeric keypad and press the * **CONFIRM** key to enter the change into temporary memory and move to the next SPEC code.

2. Use the **+** (Plus) and **-** (Minus) keys to scroll through the specifications until you find the one you want. Then make your changes per the instructions in Step 1. Alternatively, you can go directly to a specific specification by entering that specification's number and pressing the # key (Example: 25 + # will bring up SPEC 25).

3. To change another SPEC code before exiting, repeat Steps 1 and 2.
4. To save all the changed SPEC settings currently in temporary memory and exit to the Weighing Mode, press the **TARE** key.
5. Turn off Power and restart the scale.

SPEC No.	Bit 3	Bit 2	Bit 1	Bit 0
20	Version Display When Power On 0: Allow (DEFAULT) 1: Inhibit	Selection of Segment-Check Style 0: Fast (DEFAULT) 1: Standard	Start Range 00: ±10% of Full Scale (DEFAULT) 01: ± 5% of Full Scale 10: ± 3% of Full Scale 11: ± 2% of Full Scale	
21	Wight Stability Condition 00: Loose 01: Normal (DEFAULT) 10: Tight 11: Stringent		IR Mode Protected by Span Switch 0: No (DEFAULT) 1: Yes	Password Setting 0: Allow 1: Inhibit (DEFAULT)
22	Decimal Point Position on Weight Display 00: No Decimal Point 01: 2nd Digit (0000.0) 10: 3rd Digit (000.00) (DEFAULT 50 lb) 11: 4h Digit (00.000) (DEFAULT for 6 lb, 25 lb)		Minimum Display 00: 1 ((DEFAULT 6 lb) 01: 2 10: 5 (DEFAULT 25 lb) 11: 10 (DEFAULT 50 lb)	
23	Weight Single Interval or Multi-Interval 0: Single Interval (DEFAULT 6 lb) 1: Multi-Interval (DEFAULT 25 lb, 50 lb)	Selection of Resolution 000: 1/2,500 001: 1/5,000 (DEFAULT 25 lb, 50 lb) 010: 1/10,000 011: Not Used 100: 1/3,000 (DEFAULT 6 lb) 101: 1/6,000 110: 1/7,500 111: Not Used		
24	Negative Weight Display Mask 0: Minus gross > 9e 1: Minus gross weight (DEFAULT)	Gross Mode 0: Allow (DEFAULT) 1: Inhibit	PLU Tare 0: Allow (DEFAULT) 1: Inhibit	Tare Range 0: 50% of full scale (DEFAULT) 1: 100% of full scale
25	Manual Tare Cancellation 0: Allow 1: Inhibit	Tare Subtraction 0: Allow 1: Inhibit	Tare Accumulation 0: Allow 1: Inhibit	Auto Tare Clear When Re-Zero 0: Allow 1: Inhibit
26	Digital Tare 0: Allow (DEFAULT) 1: Tare	Accumulation When Tare 0: Allow (DEFAULT) 1: Inhibit	Zero Tracking When Tare 0: Allow (DEFAULT) 1: Inhibit	Weight Reset When Tare 0: Allow (DEFAULT) 1: Inhibit

Table 3-2. DC-782 Weight and Measurement Specifications

SPEC No.	Bit 3	Bit 2	Bit 1	Bit 0
27	Tare Auto Clear 0: Allow 1: Inhibit (DEFAULT)	Unit Weight Auto Clear 0: Allow 1: Inhibit (DEFAULT)	Auto Clear Condition 0: \geq Gross 21e & \geq Net 5e 1: \geq Net 1e & Quantity Not 0 (DEFAULT)	Net/Gross Multi-Interval 0: Gross 1: Net (DEFAULT)
28	Accumulation 0: Allow (DEFAULT) 1: Inhibit	Subtraction 0: Allow (DEFAULT) 1: Inhibit	Accumulation Number Display 0: Allow (DEFAULT) 1: Inhibit	Weight Range of Data Output 0: Allow (DEFAULT) 1: Inhibit
29	Exit From Accumulation Mode After 15 Second Time Out 0: Allow (DEFAULT) 1: Inhibit	Exit From Accumulation Mode When Weight Change 0: Allow (DEFAULT) 1: Inhibit	Quantity Accumulation Without Removing Weight 0: Allow (DEFAULT) 1: Inhibit	Quantity Accumulation Without Change Weight (for $\geq \pm$) 0: Allow (DEFAULT) 1: Inhibit
30 ~ 47	Not Used (reserved for future use)			

Table 3-2. DC-782 Weight and Measurement Specifications

4.0 Calibration

The DC-782 scale is a high-precision instrument. Although the scale needs very little maintenance, you may want to check the calibration after every month or so of normal usage. To do this you will need to have a test weight of approximately the total capacity of the scale (i.e. a 10 lb weight if you have a 10 lb capacity scale). After the scale is initially installed, put the weight on the platform and record the weight displayed. Then every month or so put the same weight on the scale and verify that it still reads the same.

Many facilities have a technician come in and check their units with certified test weights four times a year. If you are ISO certified, you will want to check to see if your certification specifies more stringent requirements in order to stay in compliance. Your DIGI scale dealer has the calibrated test weights, expertise and experience to perform this task for you as well as to check other operating parameters of your scale and help you effectively integrate scales into your operations. If you do not know who your local DIGI dealer is, call us at 1-715-736-0002 and we will help you find someone who can provide you with on-site support.

Follow the instructions below to calibrate your DC-782 scale to ensure its continued accuracy.

NOTE: You can exit the Maintenance Mode and return to the Weighing Mode at any time by pressing the **TARE** key. If you have a remote scale attached to the DC-782, you must first set the SPECs for that remote scale before beginning the calibration process.

1. Turn the scale on, then press the span switch to reset it. (See Figure 4-1 below.)

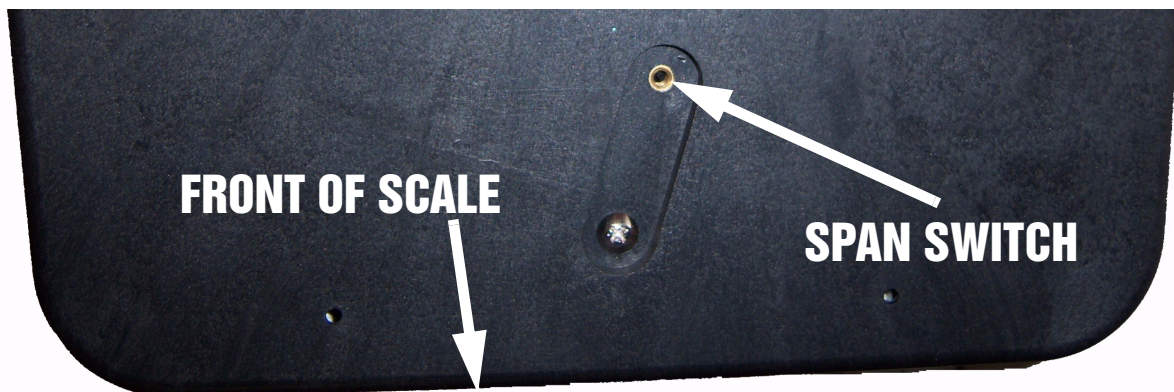
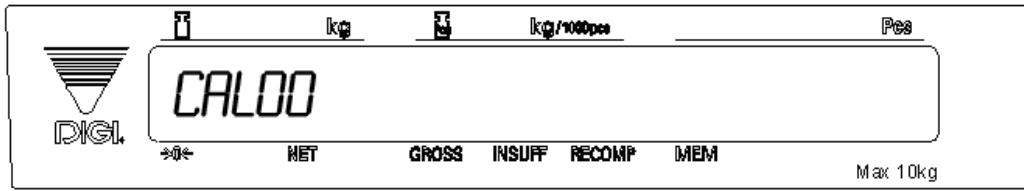


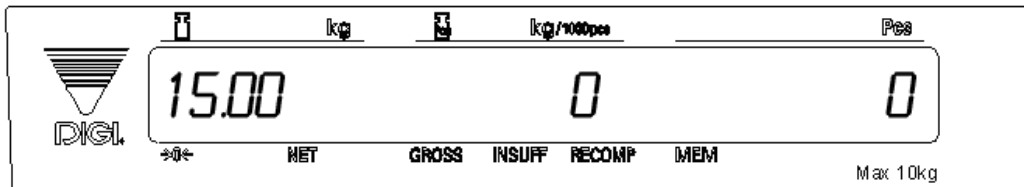
Figure 4-1. Location of Span Switch

2. While pressing the **REZERO** key, enter **8715** from the numeric keypad to enter the calibration mode.

- The scale display will confirm that you are in the Calibration Mode.



- Make sure that there is no weight on the platform of the scale you are calibrating and press the * **CONFIRM** key. The scale will flash briefly as it searches for the zero point and then will alternate between showing CAL00 and the capacity.
- Place a reference weight on the platform. It is preferable to calibrate the scale using a weight equal to the full capacity of the scale (i.e. a 15 lb weight for 15 lb capacity scale, etc.) If the reference weight is not equal to the full capacity of the scale, it must at least be greater than 10% of the full scale capacity. If the reference weight is equal to the full capacity of the scale, press the * **CONFIRM** key. If the reference weight is less than the full capacity of the scale, enter the value of the weight placed on the platter using the numeric keys before pressing the * **CONFIRM** key. The weight you enter will appear in the *Weight* display.
- The display will flash briefly again as the span settings for calibration of the scale are being temporarily saved. Then the display will return to the weighing mode with the calibrated weight showing in the *Weight* window..



- To exit the Maintenance Mode and save your calibration, power down your DC-782 scale. To exit the Maintenance Mode and return to the Weighing Mode without saving your calibration, press the **TARE** key.

5.0 Scale Operations

The following sections contain detailed operator instructions for the DC-782 counting scale (see Figure 5-1). Included are instructions on how to enter tare weights, how to enter unit weights, and how to perform counting operations.



Figure 5-1. DC-782 Counting Scale

5.1 Counting Scale Accuracy

Counting scale accuracy is primarily determined by the following factors:

- Sample size (number of pieces)
- Total sample size as a percentage of full scale capacity
- Piece-to-piece weight variation

As a general rule when determining sample size of fairly uniform pieces, the larger the sample size the greater the total sample weight, therefore, the better the counting accuracy. Selecting the smallest capacity scale that can obtain the highest counting resolution should be considered, but should not sacrifice the capacity required for the heaviest container of parts.

There is a direct relationship between piece-to-piece weight variation (non-uniformity) and counting accuracy. Therefore, elimination of the piece-to-piece weight variations can be accomplished by:

1. Isolating the sample used to calculate the unit weight and use the same sample to re-check the scale.
2. Recalculating the unit weight from lot-to-lot of parts. Parts manufactured on one machine may vary slightly from another machine relative to weight.
3. Tightening the manufacturing tolerances on the parts reduces piece weight variations and increases count accuracy.

Parts can vary greatly in their value. With parts of lesser value per piece, the extra sampling and time involved in trying to achieve 100% accuracy as opposed to 99.5% may not be cost-effective. However, with high value items, 100% accuracy is vital. The DC-782 Counting Scale has the precision to help you with both situations.

5.2 Setting Tare Weights in Weighing Mode

This section will describe the different tare-related operations you can perform from the weighing mode. Tare weight can be set by one touch tare using the **TARE** key or, if the value is known ahead of time, can be entered digitally using the digital tare function. Tare addition and subtraction can also be done digitally or by using the **TARE** key. Finally, an existing tare stored with an Item Code can be overridden temporarily in the Weighing Mode if needed.

Note: The following SPEC codes must be set properly to allow these operations before continuing: SPEC 25, Bit 3 - MANUAL TARE CANCELLATION sets whether or not the tare weight can be cancelled from the keyboard. SPEC 25 also controls whether TARE SUBTRACTION (Bit 2) and TARE ACCUMULATION (Bit 1) are allowed or inhibited and whether AUTO TARE CLEAR WHEN REZERO (Bit 0) takes place or not. SPEC 26 controls whether the scale allows DIGITAL TARE entry (Bit 3), whether the scale can do ACCUMULATION WHEN TARE (Bit 2), if there will be ZERO TRACKING WHEN TARE (Bit 1) and WEIGHT RESET WHEN TARE (Bit 0). SPEC 27 sets whether or not TARE AUTO CLEAR is activated (Bit 3). (For further instructions on how to set the specifications, see Section 3.2.1)

5.2.1 One Touch Tare (When the Tare Weight is Unknown)

1. While in the weighing mode, place a bin, box or other weight to be tared out on the platform.
2. Press the **TARE** key to subtract the tare weight. The *Net* annunciator will light up and the *Weight* display should now show 0.
3. If you remove the tare weight from the platform, the tare weight will show as a negative weight in the weight window and the *Net* annunciator will remain lit.

NOTE: This tare weight will be overridden by the weight stored with an Item Code when you call up an Item Code.

4. To clear this tare weight and return to the Weighing Mode, press the **TARE** key again. The *Net* annunciator will not longer be lit.

5.2.2 Digital Tare (When Tare Weight is Known in Advance)

1. While at the stand-by screen, enter the known tare weight by using the numeric keypad.
2. Press the **TARE** key to subtract the tare weight. The *Net* annunciator will light up and the tare weight will be displayed in the weight display.

NOTE: This tare weight will be overridden by the weight stored with an Item Code when you call up an Item Code.

3. To clear this tare weight and return to the Weighing Mode, press the **TARE** key again. The net annunciator will no longer be lit.

NOTE: For digital tare entry, the decimal must be in the appropriate place as it would be displayed in the weight display. For example, .250 would be entered as 0.250, not .250. The weight display shows weight entered with a negative sign indicating that it is a tare weight.

5.2.3 Tare Addition or Subtraction

Two tares can be accumulated or subtracted using the **TARE** key as well. Tare weights cannot be accumulated or subtracted by digital entry.

NOTE: SPEC 25, Bits 2 and 1 must be set to 00 to enable Tare Accumulation and Tare Subtraction. (For further instructions on how to set the specifications, see Section 3.2.1)

1. Place the container, box or item to be tared on the platform and press the **TARE** key. The weight display should show 0, the *Net* annunciator will illuminate and the tare weight will appear in the Tare display.
2. Place another tare weight on the platform and press the **TARE** key again. This will add the two tare weights together (Tare Addition).
3. Tare weights can be subtracted individually by removing one from the platform and pressing the **TARE** key again. To clear all the tare weights and return to the Weighing Mode, remove all the tare weights and press the **TARE** key. The *Net* annunciator will no longer be lit.

5.3 Entering Unit Weights

Entering unit weights can be done either by sampling, as presented in Section 5.3.1, or by key entry as described in Section 5.3.2.

NOTES: SPEC 04 - EXTENT OF INSUFFICIENT SAMPLES controls unit weight sampling. The default setting for the SPEC is 00: 0.1 percent. (For further instructions on how to set the specifications, see Section 3.2.1)

The Benefit of Unit Weight per 1000 Pieces Over Unit Weight per 1 Piece

Your DIGI DC-782 scale displays the unit weight calculated per 1000 pieces. Why is this a more accurate way to display unit weight than the more common unit weight per individual piece? The scale's internal microprocessor calculates unit weights to 7 or 8 decimal places. However, the scale display generally can only show Unit Weight to 5 characters. If this Unit Weight is recorded from the scale display and entered by key entry, this can introduce errors in the Unit Weight and consequently in the counts. This error increases as the Unit Weight of the parts being counted decreases.

Example: A sample of 10 zener diodes is placed on the scale. The Unit Weight is computed by the scale to be 0.0006536 lbs. However, the scale has a 5 character display for Unit Weight so the scale can only display.0065 as the Unit Weight. If this Unit Weight were recorded and keyboard entered in future counting operations, the resulting error would be:

$$00065 = .55\%$$

$$.0006536$$

On the other hand, with entry of the Unit Weight as “weight per 1000 pieces” the decimal place is, in effect, moved three places to the right, allowing 3 more decimal places of accuracy. In this example, the entry would be made as 0.6536 per 1000 pieces, eliminating the error.

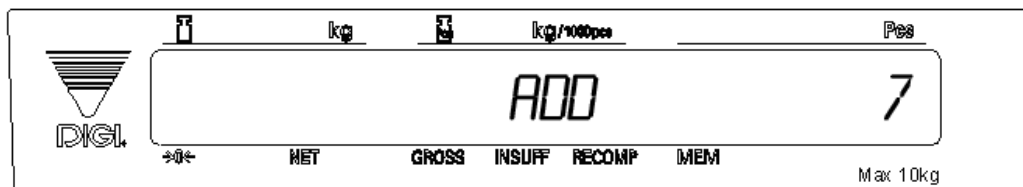
As a practical note, entering unit weights per 1000 pieces also lessens the chances of entering the wrong number of zeros when keying in weights with many leading zeros. Misentry of unit weights is a common cause of inaccurate counting.

5.3.1 Unit Weight Operation by Sampling

Unit weight operation by sampling is accomplished by placing a 10 piece sample on the scale and then pressing the **PIECES** key. The scale calculates a unit weight based on the capacity of the scale compared to the weight of the sample. If you wish to use a sample of more than 10 pieces, place the sample on the scale, then input the sample size before pressing the **PIECES** key.

If the sample size is insufficient to give an accurate unit weight, no unit weight will be displayed, the *INSUFF* lamp will be illuminated. To get to an adequate sample size :

- You can add pieces to the sample (keeping track of how many you add) until the *INSUFF* lamp goes out. Key in the new total sample quantity and press the **PIECES** key. The scale will compute and display the unit weight.
- If you press the **PIECES** key while the *INSUFF* lamp is lit, the scale will show the word *ADD* in the *Unit Weight* display and a number of pieces to add in the *Quantity* display..



- Add exactly the suggested number of pieces shown to bring the sample up a weight that allows calculation of a more accurate unit weight. The *Quantity* display will go down to zero, then press the **PIECES** key. The scale will recompute and display the total weight in the *Weight* display, the unit weight per thousand in the *Unit Weight* display, and the number of pieces in the *Quantity* display.

You can ignore or override the *INSUFF* indicator by pressing the **PIECES** key again without adding more pieces to the sample. However, it may affect counting accuracy to use a Unit Weight calculated on the basis of an insufficient sample. If you do press the **PIECES** key again, the scale will compute and display the unit weight based on the original sample you gave it.

If the *RECOMP* indicator is lit, the accuracy of the unit weight computation can be improved by adding approximately double the number of pieces currently on the scale and pressing the **PIECES** key again. The scale will flash as it recomputes the unit weight, after which it will display the new Unit Weight.

5.3.2 Unit Weight Operation by Key Entry

Unit weight operation by key entry is accomplished by using the numeric keypad to enter the known value of the unit weight and then pressing the **UNIT WEIGHT** key. An example of unit weight operation by key entry is shown below:

1. With the display in the weighing mode, enter the known unit weight using the keyboard, for example, 5.2578.
2. Press **UNIT WEIGHT** key to enter the unit weight.
3. Press the **CLEAR** key to clear the Unit Weight.

5.4 Operations Without Recalling an Item Code

The following sections describe ways to carry out operations without having to recall the Item codes.

5.4.1 A Single Counting Operation - Without Recalling an Item Code

At times you may want to perform a weighing and counting operation without recalling an Item Code from memory. This can be done from the keyboard in the Weighing Mode.

1. Place a 10 piece sample on the scale and press the **PIECES** key or enter the unit weight from the numeric keypad and press the **UNIT WEIGHT** key. The display will flash briefly, then return to normal.
2. To set a tare value, enter the tare from the numeric keypad and press the **TARE** key or place the container to be tared on the platter and press the **TARE** key.
3. Place the product to be weighed and counted on the platter. The total weight and pieces count will be displayed. If a PC is connected to the DC-782, you can send the data to it by pressing the * **CONFIRM** * key.
4. To perform another weighing and counting operation, remove the product from the scale platter and press the **CLEAR** key.

5.4.2 Part Accumulation or Subtraction and Negative Counting - Without Recalling an Item Code

The DC-782 has the capability to calculate the total number of parts using the accumulation or reduction function of the scale (similar to the add/subtract functions of a calculator).

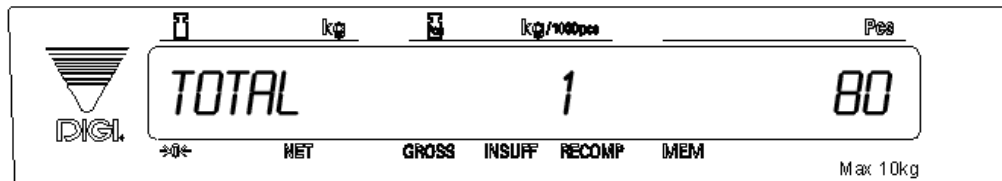
5.4.2.1 Part Accumulation or Subtraction

To find the total accumulated quantity of similar containers filled with parts, use the accumulation procedure detailed below. To add or subtract from inventory, see Section 5.5.2.

1. Enter the unit weight of the pieces (if known) or conduct a sampling process (Section 5.3.1) to determine the unit weight of the pieces. Press the **PIECES** key.
2. Enter the known tare weight, or place an empty container on the scale to perform tare function (Section 5.2). Press the **TARE** key.

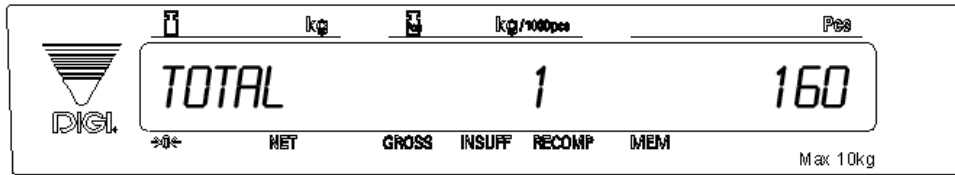
NOTE: If SPEC 3, Bit 1 - Negative Counting is set to 0: Allow, a quantity of pieces may be displayed if a tare is entered with no weight on the scale. (For more information on how to set customer specifications, see Section 3.2.1.)

3. Place container 1 (full of parts) on the scale.
4. Press the + (**Plus**) key to store the total in container 1. The Memory annunciator is now illuminated. The weight display briefly shows *TOTAL 1* and the quantity display shows the total pieces in the first container.

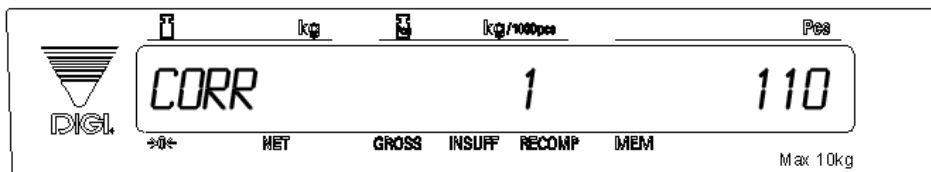


NOTE: If the DC-782 is connected to a PC, the data will be outputted each time the + (plus), - (minus) or * **CONFIRM** keys are pressed. If SPEC 29, Bit 3 - Exit From Accumulation Mode After 15 Sec Time Out is set to 0: Allow, the display will return to the weighing mode automatically after 15 seconds. If it is set to 1: Inhibit, you must press the **CLEAR** key to return to the weight display. (For more information on how to set the Weight and Measurement specifications, see Section 3.2.2.)

5. Remove container 1 and place container 2 (full of parts) on the scale.
6. Press the + (**Plus**) key (Total 2 is equal to container 1 plus container 2) The Memory indicator will be illuminated.



7. Continue with the remainder of the containers to be counted. The total number of parts stored in all the containers will be stored in the accumulation register.
8. To subtract pieces from the accumulation, place the container to be subtracted on the platform and press the - (**Minus**) key. The display will show *CORR* and the number of pieces being subtracted. The Memory indicator will continue to be illuminated.



Wait for the Total screen to clear and return to the Weighing Mode or press the **CLEAR** key.

9. You can also accumulate or subtract by key entry. To add pieces to the accumulated total, enter the number of pieces from the keypad and press the + (**Plus**) key. As with placing pieces on the platform, the display will show *TOTAL* and the total number of pieces in the *Quantity* display increases to reflect the new total. To subtract pieces from the accumulation, enter the number of pieces from the keypad and press the - (**Minus**) key.
10. When done with accumulation and subtraction, remove all products from the platter and press the **CLEAR** key to clear the Unit Weight.
11. Press the + (**Plus**) key to display the accumulated total when the Unit Weight is zero. Wait for the Total screen to clear and return to the Weighing Mode or press the **CLEAR** key.
12. Press the **TARE** key to clear the Tare Weight.
13. To output the accumulated data and clear the accumulation register, press the * **CONFIRM** key while the totals are on the display (by having pressed the + (**Plus**) key). The Memory indicator will no longer be lit, indicating that the accumulation registers have been cleared.

5.4.2.2 Negative Counting

Just as you can count by adding parts to the scale, you can also count by removing parts from the scale. This is called “negative counting” because a negative weight is displayed while counting. Contrary to what may seem intuitively logical, you do not use the (-) key to do negative counting. The (-) key is only used to delete an entry in accumulation mode that you want to erase.

NOTE: To utilize the negative counting feature, SPEC 5, Bit 2 - Negative Counting must be set to “0: ALLOW”. (For information on setting Customer specifications, see Section 3.2.1.)

There are two ways to do this depending on whether at the end you want to see the total amount remaining in the container or the total amount removed from the container.

5.4.2.3 Counting Out of a Full Container - See Total Amount Remaining in the Container

To carry out this operation you must know the tare weight ahead of time.

1. Place the full container on the scale. Press the **TARE** key.
2. Remove a 10 piece sample to the container and press the **PIECES** key. After the unit weight has been calculated, return the 10 piece sample to the container.
3. Remove a number of parts from the container. The *QUANTITY* window of the scale display will show the number of pieces you have removed. This process can be repeated as many times as desired.

4. If at the end of the procedure, if you want to see how many remain in the bin or container, you first have to know the tare weight of the bin or container. After removing the parts you want to take out of the bin, simply digitally enter the tare weight of the bin and press the **TARE** key. The scale will display how many parts were left in the bin.

If a PC is connected to the DC-782, pressing the * **CONFIRM** key will output the data to the PC.

5.4.2.4 Negative Counting - Total Removed Displayed at the End

With this procedure you can count accurately out of a full container for kiting, shipping, etc. without having to know the tare weight of the container.

1. Place a full container on the scale and press **TARE**.
2. Remove a 10 piece sample from the container and press **PIECES**. After the unit weight has been calculated, return the 10 piece sample to the container.
3. Remove the number of pieces you need for kiting, shipping, etc. The amount removed will be displayed in the *QUANTITY* window. The Memory indicator will be illuminated and the scale displays the accumulated total of pieces removed so far. Then press the **TARE** key while the total is still shown on the display.
4. After removing each batch of pieces, press the + (**Plus**) key, then the **TARE** key (while the total is still showing on the display).
5. When you have removed the last batch of pieces, press the * **CONFIRM** key to show the total number of pieces you have counted out of the full container. (Again you must press the * **CONFIRM** key while the total is shown on the display.) If a PC is connected to the DC-782, pressing the * **CONFIRM** key will output the data to the PC. The Memory indicator will no longer be illuminated.

5.4.2.5 Clearing Accumulated Data

To clear accumulated data, press the ***CONFIRM** key. The Memory indicator will no longer be illuminated.

5.5 Using Item Codes in Weighing Mode

The following paragraphs describe the procedure to recall item codes, view the information stored in memory with an Item Code, carry out inventory operations related to the item code quantity, and delete an item code.

NOTE: For these functions to work, information has to have been previously programmed for the item code being recalled. For more information on how to program an item code, see Section 6.2.

5.5.1 Recalling Item Codes using Item Code Number

The following procedure allows you recall item codes stored in memory.

1. Enter a numeric Item Code using the numeric keypad.
2. Press the # key to call up the item.

If an Item Code not stored in memory is entered, the scale will beep to indicate that the action cannot be completed.

If an Item Code existing in memory is entered, the stored Unit Weight will be displayed after the # key is pressed. Weighing operations can now be carried out utilizing the Tare Weight, Unit Weight, and Set Point stored with that Item Code.

Press the **CLEAR** key to clear the item information and return to stand-by status.

5.5.2 Delete Item Memory

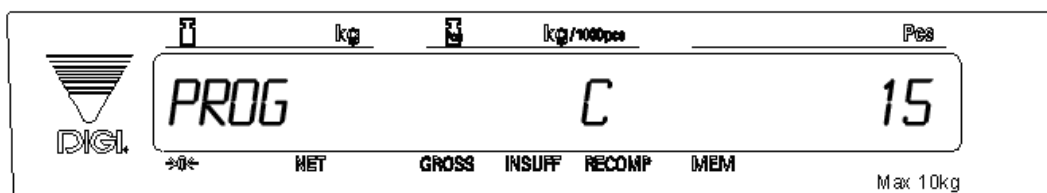
Deletion of an Item Code with all of its associated information (Tare Weight, Unit Weight, and Setpoints) can only be done from the item programming mode. See Section 6.5 for procedures on deleting item codes or specific items associated with item codes.

6.0 Scale Programming

The DC-782 can store information for the parts you count most frequently, eliminating the need for re-entering data during parts counting. With each Item Code you can specify a Tare Weight, Unit Weight, and Setpoint Value. Up to 25 items can be programmed into your DC-782 counting scale, with as many as 10 of those being able to be assigned to the preset keys (P1 to P10).

6.1 Checking Memory Status

To see how many items of the 25 capacity have already been programmed, press the **MODE** key twice to enter the Programming Mode. The display will show *PROG* and the scale will display the *PRG* indicator, indicating that you are in the programming mode, will illuminate. The total number of Item Codes currently in memory will appear in the *Quantity* column on the display.



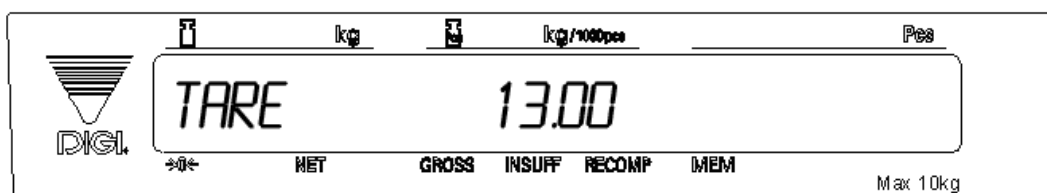
6.2 Program Item Code, Tare Weight, Unit Weight, Setpoint 1 and 2

The DC-782 has the capacity to store information on up to 25 items (10 of which can be assigned to the preset keys 1-10). This section details the procedure for storing the item code, tare weight, unit weight, and set points to be associated with an item code. You can enter all of this information for each item code or only the data pertinent to your application. The memory fields associated with item codes can be programmed subject to the following parameters:

Parameters	Format and Maximum Length
Item Code	2 digits numeric
Tare Weight	5 digits plus the decimal point
Unit Weight	5 digits plus the decimal point
Setpoint Value	5 digits plus the decimal point

Table 6-1. Format and Length of Item Code Memory Fields

1. Press **MODE** key twice to enter the Programming Mode. The display will show *PROG*. The number of items currently programmed into memory will appear in the QTY column on the scale display.
2. Enter the Item Code number and press the * key. (The maximum length of the field is 2 characters.)



NOTE: If you enter an Item Code that has already been stored in memory, the scale will display the Unit Weight associated with that item code. To keep the current settings, press the * key to move through the fields or press the **MODE** key once

to exit the Programming Mode. To change the previously entered data in any field, enter it from the keypad or, in the case of the unit weight you can use the scale to sample for the unit weight. Press the * key after each entry to move to the next field. Once you've completed the reprogramming of the item code, press the **MODE** key to save the changes and exit the Programming Mode.

3. The display will prompt you to enter a tare weight for this item by displaying *TARE* in the *Weight* column. The tare weight is limited to 5 digits plus the decimal symbol and must be entered numerically (i.e. you cannot place a container on the platform in the Item Programming Mode and press the **TARE** key). Note that if you enter a tare weight here to be associated in memory with this Item Code, when you recall an Item Code this stored Tare Weight will override any Tare Weight you have digitally entered into the scale or entered using the **TARE** key. Press the * key to store the tare weight and move to the Unit Weight.
4. Enter Unit Weight (refer to Section 5.5). The unit weight is limited to 5 digits plus the decimal symbol. This can be done by sampling if the unit weight is unknown or by digital entry if known. Press the * key to store the unit weight and move to the programming of the setpoints.
5. SPEC 04, Bits 1 and 0 - Setpoint Type determines what type of setpoint you are programming: 00: % Quantity, 01: % Weight, 10: Quantity, or 11: Weight. The setpoints are programmed by entering and storing a value (Setpoint 1) and then entering and storing a percentage or amount (Setpoint 2). Enter the value for Setpoint 1 (Ex. 100 pcs) and press the * key to advance to Setpoint 2. (For instructions on how to program Customer specifications, see Table 3.2.1.)
6. Enter a value for Setpoint 2 (Ex. 85%) and press the * key to store the value and complete the programming cycle for this item number.

NOTE:

- There are four types of setpoints which can be selected by setting SPEC 04, Bits 1 and 0: % of Quantity (%QTY), % of Weight (%WT), Over/Under Quantity (QTY), or Over/Under Weight (WT).
- When entering weight setpoints, be sure that you enter in the weight values with decimal point and all leading and trailing zeros.
- All percentage values must be rounded to the nearest whole number, fractional percentages are not allowed.
- Setpoints involving % of quantity or weight are limited by the decimal places available on the display. For example: if Set Point value 1 specifies a Quantity of 9999999, then a Set Point value 2 of % of Quantity cannot be set for more than 100% because all 7 digits of the display are already in use.

Table 6-2 below shows what to enter in each of the two set point values to program each type of set point. The alarm sounds with a rhythmic beeping at setpoint one and with a rapid beeping at setpoint two. For the Setpoint Alarm to be activated, SPEC 02: SET POINT ALARM must be set to "0: ON". See Section 3.2.1 for instructions on how to set Customer specifications.)

	% QTY	QTY	% WEIGHT	WT
Program Set Point 1 value with . . .	target quantity	low value	target weight	low value
Program Set Point 2 value with . . .	% of quantity	target value	% of weight	target value

Table 6-2. Setpoint Configuration

Here are some examples of how the setpoints can be programmed. These examples can be adjusted to fit your application.

Setpoint Types	% QTY	QTY	% WEIGHT	WT
Setpoint 1	80 pieces (target)	50 pieces	2.0 lb (target)	1.2 lb
Setpoint 2	80%	75 pieces (target)	50%	1.5 lb (target)
Equation	80 x 80% = 64	N/A	2.0 x 50% = 1.0	N/A
Slow Beeping Occurs At	64 pieces	50 pieces	1.0 lb	1.2 lb
Rapid Beeping Occurs At	80 pieces	75 pieces	2.0 lb	1.5 lb

Table 6-3. Setpoint Examples

7. If you wish to program another Item Code's information, enter a new Item Code and press the * key.
8. When you are finished programming item codes, press the **MODE** key to exit the Programming Mode and return to the Weighing Mode.

6.3 Program a General Setpoint

You can program the DC-782 with a setpoint that will be enabled either when no Item Code is called up or when an Item Code is called up from memory that has no setpoint already associated with it in programming.

1. Press the **MODE** key twice to enter the Programming Mode. The scale display will show *PROG*.
2. SPEC 04, Bits 1 and 0 - Setpoint Type determines what type of setpoint you are programming: 00: % Quantity, 01: % Weight, 10: Quantity, or 11: Weight. (For instructions on how to program Customer specifications, see Section 3.2.1.) The setpoints are programmed by entering and storing a value (Setpoint 1) and then entering and storing a percentage or amount (Setpoint 2). Enter the value for Setpoint 1 (Ex. 100 pcs) and press the **+ (Plus)** key to save the change and advance to Setpoint 2.
3. Enter a value for Setpoint 2 and press the **+ (Plus)** key to store the value and return to the Programming Mode Screen

NOTE:

- There are four types of setpoints which can be selected by setting SPEC 04, Bits 1 and 0: % of Quantity (%QTY), % of Weight (%WT), Over/Under Quantity (QTY), or Over/Under Weight (WT).
- When entering weight setpoints, be sure that you enter in the weight values with decimal point and all leading and trailing zeros.
- All percentage values must be rounded to the nearest whole number, fractional percentages are not allowed.
- Setpoints involving % of quantity or weight are limited by the decimal places available on the display. For example: if Set Point value 1 specifies a Quantity of 9999999, then a Set Point value 2 of % of Quantity cannot be set for more than 100% because all 7 digits of the display are already in use.

Table 6-4 below shows what to enter in each of the two set point values to program each type of set point. The alarm sounds with a rhythmic beeping at setpoint one and with a rapid beeping at setpoint two. For the Setpoint Alarm to be activated, SPEC 02: SET POINT ALARM must be set to "0: ON". See Section 3.2.1 for instructions on how to set Customer specifications.

	% QTY	QTY	% WEIGHT	WT
Program Set Point 1 value with . . .	target quantity	low value	target weight	low value
Program Set Point 2 value with . . .	% of quantity	target value	% of weight	target value

Table 6-4. Setpoint Configuration

Here are some examples of how the setpoints can be programmed. These examples can be adjusted to fit your application.

Setpoint Types	% QTY	QTY	% WEIGHT	WT
Setpoint 1	80 pieces (target)	50 pieces	2.0 lb (target)	1.2 lb
Setpoint 2	80%	75 pieces (target)	50%	1.5 lb (target)
Equation	80 x 80% = 64	N/A	2.0 x 50% = 1.0	N/A
Slow Beeping Occurs At	64 pieces	50 pieces	1.0 lb	1.2 lb
Rapid Beeping Occurs At	80 pieces	75 pieces	2.0 lb	1.5 lb

Table 6-5. Setpoint Examples

4. Press the **MODE** key to quit the Programming Mode and return to the Weighing Mode.

6.4 Programming a Preset Key

The DC-782 has 10 preset keys that can have items assigned to them so that their tare weight, unit weight and setpoints can be recalled by simply pressing the preset key.

To program an item code to one of the preset keys:

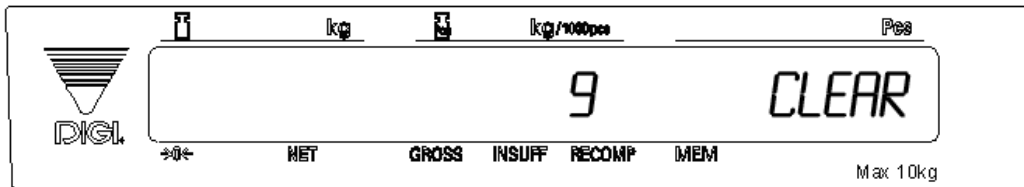
1. Press the **MODE** key twice to enter the Programming Mode.
2. Enter the Item Code you wish to program to a preset key and press the **#** key to recall the item.
3. Press the preset key you wish to program this item code to (P1 to P10).
4. Press the **MODE** key once to exit the Programming Mode and return to the Weighing Mode.

6.5 Delete Item Memory

The DC-782 allows you to delete individual items from memory.

The following procedure describes the steps used to delete a single specific Item Code together with all of its associated information (tare weight, unit weight, and set point).

1. Press **MODE** key twice to enter the Programming Mode. The scale display will show *PROG*.
2. Enter the Item Code you wish to delete (the Item Code will appear in the *Unit Weight* display). If the Item Code you entered does not exist in memory, the scale will beep twice to indicate that this operation is not available.
3. Press the - (**MINUS**) key to delete the item. The display will show *CLEAR*, asking you to confirm that you want to delete or clear this item from memory.



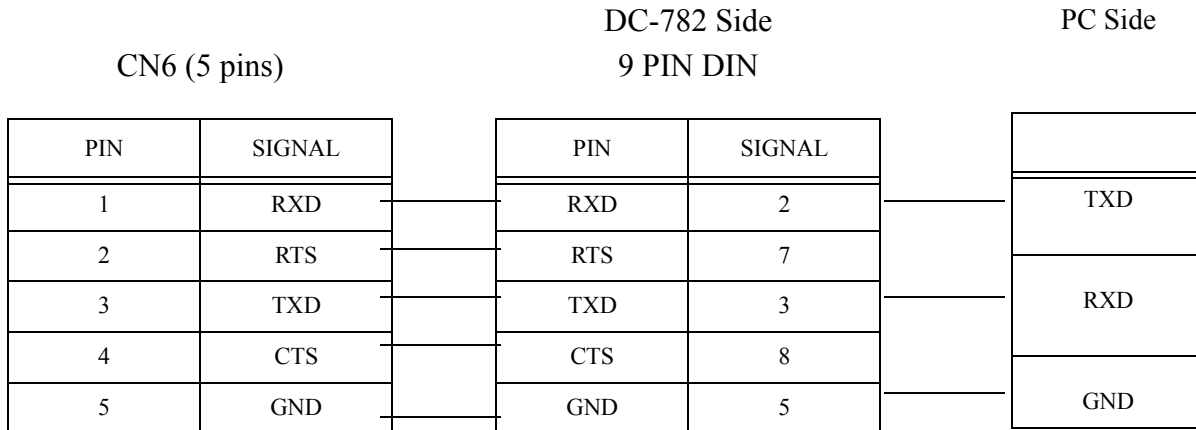
4. To complete the deletion of this item and all of its data, press the **CLEAR** key, or press the **MODE** key to cancel the deletion. If you pressed the **CLEAR** key, the Item Code will be deleted and the scale will return to the Programming Mode screen.
5. To return to the Weighing Mode, press the **MODE** key once.

7.0 RS-232C Communication with PC

The DC-782 Counting Scale is equipped with an RS-232C port that allows the scale to send data to a PC.

7.1 Connection

Below are the pin assignments for the connectors to a PC.



7.2 General Specifications of the RS-232C Interface

Baud Rate: 1200 / 2400 / 4800 / 9600 / 19200 / 38400 BPS

Start Bit: 1 Bit

Stop Bit: 1 / 2 Bits

Date Bit: 7 / 8 Bits

Parity Bit: Even / Odd / None

7.3 Setting the Scale Specifications for Communication to a PC

The DC-782's RS-232C port can be used to connect the scale to a PC and output the data string to the computer. The following specifications must be set for the data transfer to take place: (for more information on setting specifications, see Section 3.2.1)

- SPEC05, Bit 0 Transmission Condition of RS-232C sets whether you want the data output only when the weight is stable or to be output unconditionally.
- SPEC06, Bit 3 RTS/CTS Handshaking of RS-232C must be set to 0: On or 1: Off depending on the application receiving the data.
- SPEC06, Bits 0, 1 and 2-Baud Rate of RS-232C must be set for the proper Baud Rate for your application.
- SPC07, Bit 3-Stop Bit of RS-232C must be set to the proper Stop Bit for your application.
- SPC07, Bit 2-Data Length of RS-232C must be set to the proper Data Length for your application.
- SPC07, Bits 1 and 0-Parity of RS-232C must be set to the proper Parity for your application.
- SPEC08, Bits 3 and 2 - Interval of Time Out Error of RS-232C must be set to the proper Time Out Interval for your application.
- SPEC08, Bit 1 - Additional Parity Code in Text of RS-232C must be set to determine whether or not to allow an additional parity code in the text of the transmission.
- SPEC08, Bit 0 - Status and Weight Condition Flag in Text of RS-232C determines whether or not the condition flag will be included in the transmission.

7.4 Communication Method

SPEC10-RS-232C PC Protocol configures whether the data transfer to the computer is inhibited (0000: Inhibit Data Transfer); is transmitted continuously to the computer (0001: Standard Stream Type (continuous output)); is transmitted when pressing the + (Plus), - (Minus), or * CONFIRM keys (0010: Standard Manual Type); or is transmitted only when a command is received from the PC (0011: Standard Command Type).

7.4.1 Standard Stream Data Transmission (Continuous)

Set SPEC10-RS-232C PC Protocol to 0001: Standard Stream Type (continuous output). The communication between the DC-782 and the computer flows as follows:

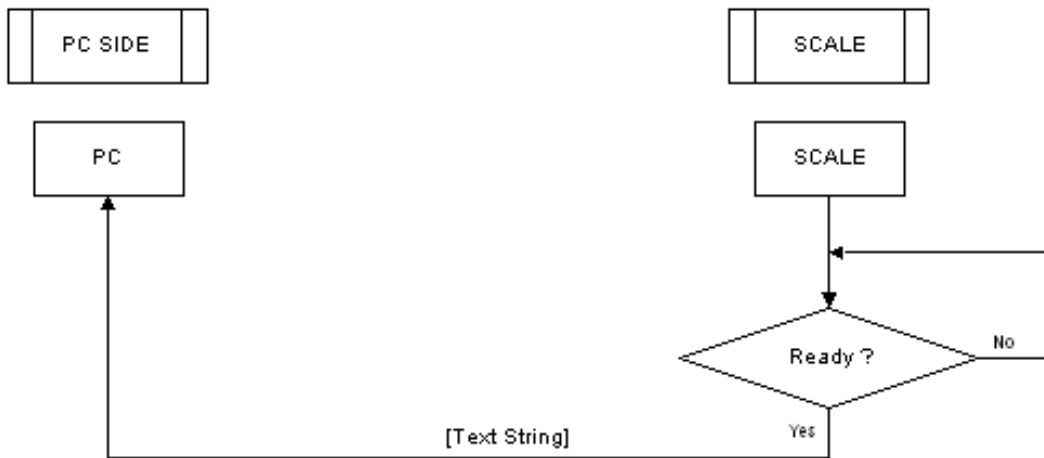


Figure 7-1. Continuous Stream Data Transmission Flowchart

7.4.2 Standard Manual Data Transmission

Set SPEC10-RS-232C PC Protocol to 0010: Standard Manual Type. The communication between the DC-782 and the computer flows as follows. SPEC05, Bit 0 determines whether the data is transmitted only when the weight is stable or to output it right away when the * key is pressed.

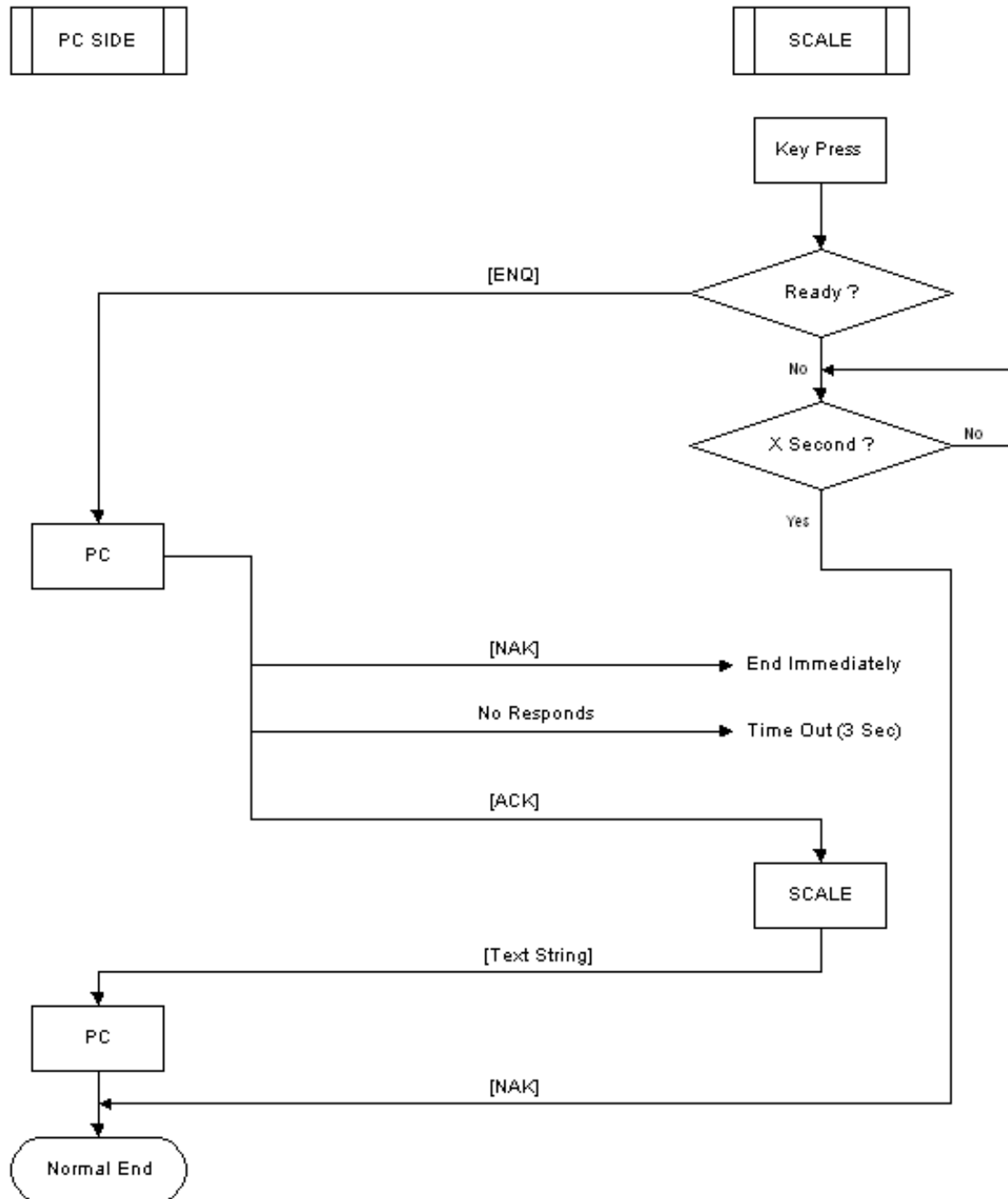


Figure 7-2. Standard Manual Data Transmission Flowchart

7.4.3 Standard Command Data Transmission

Set SPEC10-RS-232C PC Protocol to 0011: Standard Command Type. The data transmission starts by receiving the command from the PC. The communication between the DC-782 and the computer flows as follows:

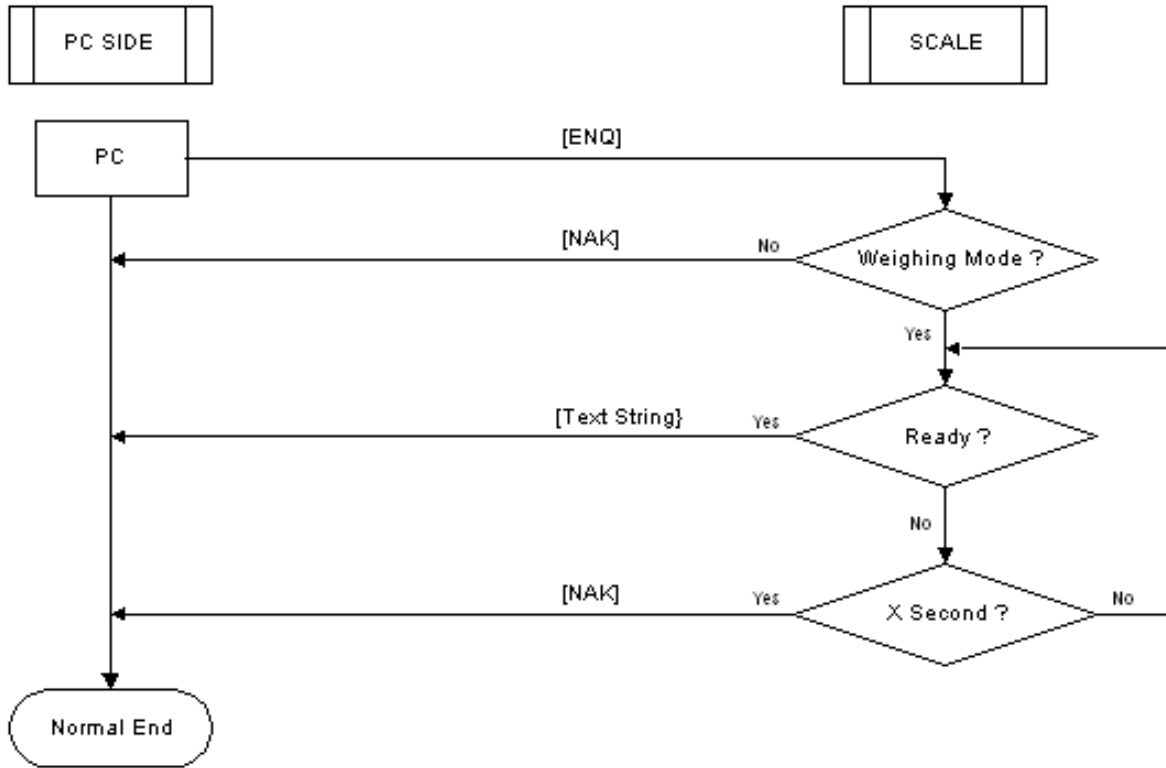


Figure 7-3. Standard Command Data Transmission Flowchart

If handshaking is not required for your RS-232 communication with the computer, the RTS and CTS do not need to be connected in the cable and SPC06, Bit 3 - RTS/CTS Handshaking of RS-232C can be set to 1: Off.

7.5 Characters That Can Be Transmitted by RS-232C

Table 7-1 shows the codes, headers, fields, and commands that can be transmitted from the RS-232C port.

Termination Code	CR	The end of the data	0x0d
	LF	The end of a line of text	0x0a
Data	0 - 9	Numeric data	0x30 ~0x39
	- (Minus)	Minus sign	0x2d
	.(Decimal)	Decimal point	0x2e
	Space	Data error or empty	0x20
	OF	Overflow	0x4f 0x46
	UF	Underflow	0x55 0x46
Header Codes	0	Net Weight	0x30
	1	Unit Weight	0x31
	2	Quantity	0x32
	4	Tare Weight	0x34
	B	Status	0x42

Table 7-1. RS-232C Codes, Headers, Fields and Commands

Command	ENQ	Enquiry	0x05
	ACK	Acknowledge	0x06
	NAK	Not Acknowledge	0x15

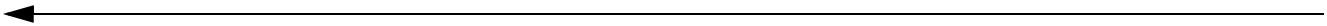
Table 7-1. RS-232C Codes, Headers, Fields and Commands

7.6 RS-232C Data Transmission Formats

The basic data transmission string format output by the DC-782 is as follows (with a more detailed discussion of each element below)

Data Format Without Additional Parity (Total 37 Bytes):

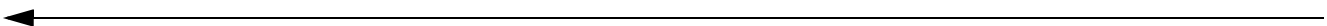
Header Code	Status Flag	Weight Condition Flag	CR	Header Code	Net Weight	CR	Header Code	Tare Weight
1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	6 Bytes	1 Byte	1 Byte	6 Btye



CR	Header Code	Unit Weight	CR	Header Code	Quantity	CR	LF
1 Byte	1 Byte	6 Bytes	1 Byte	1 Byte	6 Bytes	1 Byte	1 Byte

Data Format With Additional Parity (Total 38 Bytes)

Header Code	Status Flag	Weight Condition Flag	CR	Header Code	Net Weight	CR	Header Code	Tare Weight
1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	6 Bytes	1 Byte	1 Byte	6 Bytes



CR	Header Code	Unit Weight	CR	Header Code	Quantity	CR	Additional Parity	LF
1 Byte	1 Byte	6 Bytes	1 Byte	1 Byte	6 Bytes	1 Byte	1 Byte	1 Byte

NOTE: If the additional parity is 0x0d, 0x0a or 0x00, it will be changed to 0x1d, 0x1a or 0x10 respectively.

Status Flag:

Not Used	Fixed to 1	Not Used	Not Used	Not Used	Quantity Overflow	Net	Additional Parity
----------	------------	----------	----------	----------	-------------------	-----	-------------------

Bit 7: Not used; always set to zero.

Bit 6: Fixed to 1.

Bit 5: Not used.

Bit 4: Not used.

Bit 3: Not Used

Bit 2: Quantity Overflow - 0: when no overflow, 1: when overflow

Bit 1: Net - 0: when tare subtraction not performed, 1: when tare subtraction performed

Bit 0: Additional Parity Flag - 0: when additional parity flag not added in text, 1: when flag is added

Weight Condition Flag:

Not Used	Fixed to 1	Not Used	Weight UF	Weight OF	Negative Net Weight	Weight Stable	Zero Sign
----------	------------	----------	-----------	-----------	---------------------	---------------	-----------

- Bit 7: Not used; always set to zero
- Bit 6: Fixed to 1
- Bit 5: Not used
- Bit 4: Weight UF - 0: when no weight underflow; 1: when weight underflow
- Bit 3: Weight OF - 0: when no weight overflow; 1: when weight overflow
- Bit 2: Negative Net Weight - 0: when net weight is not negative; 1: when net weight is negative
- Bit 1: Weight Stable - 0: when weight is stable; 1: when weight is not stable
- Bit 0: Zero Sign - 0: when zero sign is not set; 1: when zero sign is set.

CR:

A carriage return “CR” must appear at the end of the data for each ID Code.

Header Code:

Header codes in the RS-232C data output can be turned on and off using SPEC09, Bit 0 - Header Code in Text of RS-232C (0: No; 1: Yes). For a list of the possible header codes, please see Table 7-1.

ID Code Data:

Data about an ID Code is only transmitted if an ID Code has been recalled from the scale’s memory. The data transmitted (if present in memory and unless modified by the specifications discussed below) is as follows:

- 1) ID Code
- 2) Set Point
- 3) Gross Weight
- 4) Net Weight
- 5) Unit Weight
- 6) Tare Weight
- 7) Quantity
- 8) Total Quantity
- 9) Status

Specifications can be set to turn on and off the transmission of certain data fields in different combinations:

- SPEC09, Bit 3 - Tare Weight in the Text of RS-232C
- SPEC09, Bit 2 - Unit Weight in the Text of RS-232C
- SPEC09, Bit 1 - Quantity in the Text of RS-232C
- SPEC09, Bit 0 - Header Code in the Text of RS-232C
- SPEC08, Bit 0 - Status and Weight Condition Flag in Text of RS-232C
- SPEC08, Bit 1 - Additional Parity Code in Text of RS-232C

Additional Parity:

If needed, additional parity can be added to the RS-232C data string. It is set in SPC10, Bit 0 - Additional Parity Code in Text of RS-232C (0: No; 1: Yes). Note that if the additional parity is equal to 0DH, 0AH, or 00H, it will be automatically changed to 1DH, 1AH, or 10H.

LF:

A Line Feed (“LF”) must be added at the end as a transmission termination code.

Data Transmission Examples

Example 1:

If the following are true: Net Weight = 3.400 lb
 Tare Weight = 1.200 lb
 Unit Weight = 1.7000 (lb/1000 pcs)
 Quantity = 2000 (pieces)
 Weight Status = Stable
 (with header codes and without additional parity)

The data transmission will be as follows:

Status Flag: 0x42

0	1	0	0	0	0	1	0
---	---	---	---	---	---	---	---

Weight Condition Flag: 0x42

0	1	0	0	0	0	1	0
---	---	---	---	---	---	---	---

By ASCII Code:

0x42	0x42	0x42	0x0d	0x30	0x30	0x33	0x2e	0x34	0x30
------	------	------	------	------	------	------	------	------	------



0x30	0x0d	0x34	0x30	0x31	0x2e	0x32	0x30	0x30	0x0d
------	------	------	------	------	------	------	------	------	------



0x31	0x31	0x2e	0x37	0x30	0x30	0x30	0x0d	0x32	0x30
------	------	------	------	------	------	------	------	------	------



0x30	0x32	0x30	0x30	0x32	0x0d	0x0a
------	------	------	------	------	------	------

Example 2:

If the same parameters are true as above but only transmitting the net weight and quantity.

The data transmission will be as follows:

0x30	0x30	0x33	0x2e	0x34	0x30	0x30	0x0d	0x32	0x30
------	------	------	------	------	------	------	------	------	------



0x30	0x32	0x30	0x30	0x30	0x0d	0x0a
------	------	------	------	------	------	------

Example 3:

In this example there is a weight overflow and only the status, weight condition flag and net weight are transmitted.

0	1	0	0	0	0	1	0
---	---	---	---	---	---	---	---

0	1	0	0	1	0	0	0
---	---	---	---	---	---	---	---

0x42	0x42	0x48	0x0d	0x30	0x20	0x20	0x20	0x20	0x4f
------	------	------	------	------	------	------	------	------	------

0x46	0x0d	0x0a
------	------	------

8.0 Appendix

8.1 DC-782 Specifications

Operating Conditions

- Power Source - AC117/100V
- Operating Temperature- $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ (OIML)
- Operating Humidity - 15 ~ 85% RH
- Power Consumption - 18W when using AC power
1.2W when using rechargeable battery

Charging Conditions (for rechargeable battery only)

- Battery Power - DC 6V 5Ah
- Power Source - AC117/100V
- Charge Current - 800 mA
- Charge Time - 12-14 hours

Analog Specification

- Input Sensitivity - 1mV/V
- Zero Adjust Range - $0 \pm 5\text{mV}$
- Zero Balance Range - $0 \pm 0.5\text{mV}$
- L/C Applied Voltage - DC 3.3V
- Speed of A/D Conversion - 10 times/second
- Internal Resolution - 1,000,000

External Connectors

- AC Receptacle
- RS-232C Interface
- 14 pin female amphenol for external loadcell

Main Components

- Microcomputer - R5F21257 (16 bit, 48K ROM) / R5F21258 (16 bit, 64K ROM)
- Display Device - Back-Lit LCD
- Loadcell Sensitivity - 1mV/V

8.2 DC-782 Error Message List

The DC-782's alphanumeric display allows for detailed error messages. Use Table 8-1 below to find the error message, possible causes for the error and ways to correct the problem. If these suggestions fail to correct the situation, please contact your DIGI dealer for assistance..

Error Message	Possible Causes	Corrective Action
O F	When the displayed weight exceeded capacity+9d, or something is on the platter when the power is on.	Remove the item on the platter.
U F	When the displayed minus weight > = 9d.	Rezero the scale or power the on/off button again.
ERR 01	When the communication between the main board and the A/D board is not complete.	Contact your RLWS Distributor
ERR 02	When there's a data flash erase error	Contact your RLWS Distributor
ERR 03	When there's a data flash program error	Contact your RLWS Distributor
8 8 8 8 8	Happens when the scale is not stable when the power is on.	Place the scale on a firm, flat surface.
tOtAl FULL	When the current total overflows the register	Clear the current total.

Table 8-1. DC-782 Error Message List

9.0 DC-782 Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for two (2) years.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, *Protecting Your Components From Static Damage in Shipment*, available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS'S SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

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