

DIGI DSX-1000

*Checkweigher
Version 1*

Operation Manual



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1.0 Introduction

The *DIGI DSX-1000* is an economical, high resolution checkweigher that quickly responds to changes in applied weight and utilizes a splash-proof housing.



Manuals can be viewed and downloaded from the Rice Lake Weighing Systems website at www.ricelake.com

Warranty information can be found on the website at www.ricelake.com/warranties

1.1 Safety

Safety Signal Definitions:



Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death. Includes hazards that are exposed when guards are removed.



Indicates a potentially hazardous situation that, if not avoided could result in serious injury or death. Includes hazards that are exposed when guards are removed.



Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.



Important *Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.*

General Safety



Do not operate or work on this equipment unless this manual has been read and all instructions are understood. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals.



Failure to heed may result in serious injury or death.

Ensure every individual who operates or works with this unit has read and understands the following safety information.

Do not allow minors (children) or inexperienced persons to operate this scale.

Prior to cleaning, make sure the scale is disconnected from the power source.

Do not use near water.

Do not drop the scale or subject it to violent shocks.

Do not use this product if any of the components are loose or cracked.

Do not use in the presence of flammable materials.



Important

For accurate weighing, the scale must be placed on a flat, level surface.

Operating at voltages and frequencies other than specified could damage the equipment.

Avoid contact with excessive moisture.

Do not make alterations or modifications to the scale.

1.2 Dimensions

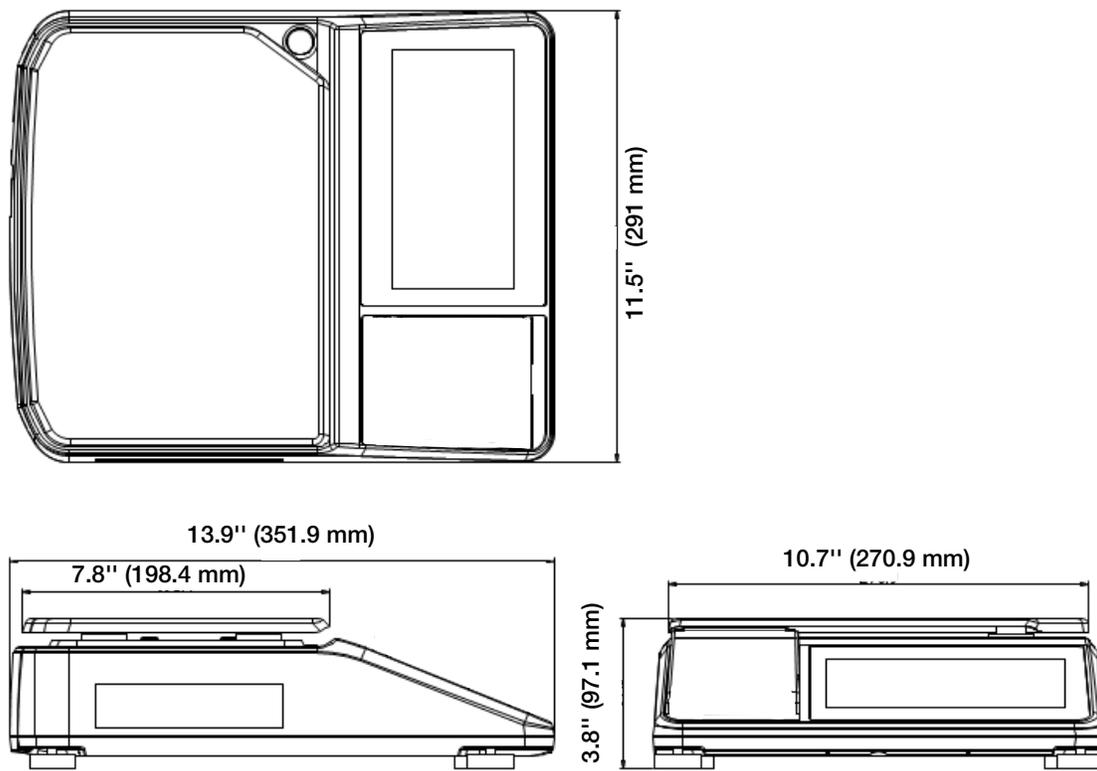


Figure 1-1. Dimensions DIGI DSX-1000

1.3 Electrical Connections

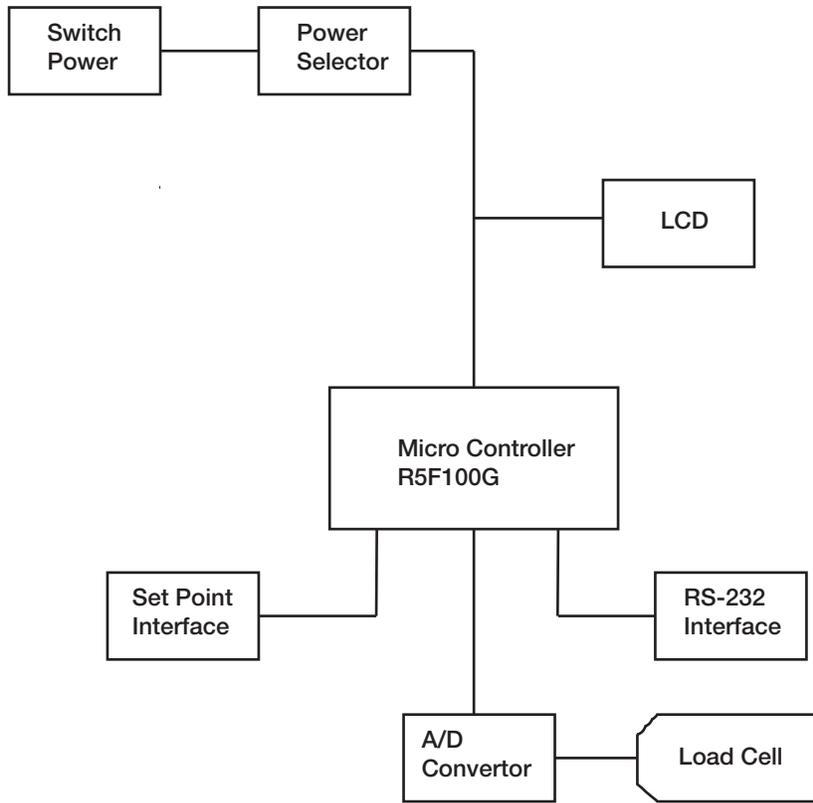


Figure 1-2. Electrical Connections

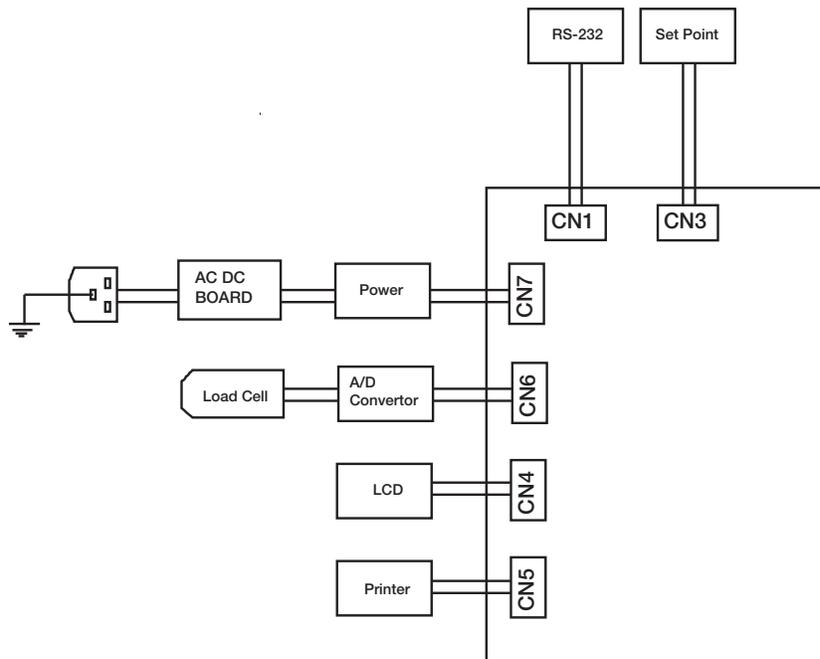


Figure 1-3. Electrical Connections Layout

1.3.1 Capacity/Minimum Graduation/Tare range



Note *IR is the Internal Resolution. e is the Division (Minimal Increment)*
Internal count (full capacity = 300000IR)

Capacity	Minimum Graduation	Tare Range
600 g (1.5 lb)	0.2 g (0.0005 lb) (1e = 100IR)	299.8 g (0.75 lb)
600 g (1.5 lb)	0.1 g (0.0002 lb) (1e = 50IR)	299.9 g (0.75 lb)
600 g (1.5 lb)	0.05 g (0.0001 lb) (1e = 25IR)	299.95 g (0.75 lb)
6 kg (15 lb)	2 g (0.005 lb) (1e = 100IR)	2998 g (7.5 lb)
6 kg (15 lb)	1 g (0.002 lb) (1e = 50IR)	2999 g (7.5 lb)
6 kg (15 lb)	0.5 g (0.001 lb) (1e = 25IR)	2999.5 g (7.5 lb)
15 kg (30 lb)	5 g (0.01 lb) (1e = 100IR)	7.495 kg (15 lb)
15 kg (30 lb)	2 g (0.005 lb) (1e = 40IR)	7.498 kg (15 lb)
15 kg (30 lb)	1 g (0.005 lb) (1e = 20IR)	7.499 kg (15 lb)
30 kg (60 lb)	5 g (0.01 lb) (1e = 50IR)	14.995 kg (30 lb)
30 kg (60 lb)	2 g (0.005 lb) (1e = 20IR)	14.998 kg (30 lb)

Table 1-1. Single Interval

Capacity	Minimum Graduation	Tare Rang
600 g (1.5 lb)	(0-300 g)-0.1 g (1e=50IR) (300g-600 g)-0.2g (1e=100IR)	0 – 299.9 g (0 - 0.75 lb)
6 kg (15 lb)	(0-3 kg)-1 g (1e=50IR) (3-6 kg)-2 g (1e=100IR)	0 - 2999 g (0-7.5 lb)
15 kg (30 lb)	(0-6 kg)-2 g (1e=40IR) (6-15 kg)-5 g (1e=100IR)	0 - 5.998 kg (0-15 lb)

Table 1-2. Multi-Interval

1.3.2 Keys and Symbols



Figure 1-4. DIGI DSX-1000 Weigh Mode Display

Symbol	Description
	Six-digit weight display
	Six-digit tare weight display
	Six-digit maximum weight display — See Section 4.4 on page 19
	Six-digit minimum weight display — See Section 4.4 on page 19
	Center of zero — displays when the current zero point is at or within 0.25 d of true zero; See Section 4.1 on page 17
	NET — displays when a tare weight is set. See Section 4.2 on page 17
	Tilde — displays when the weight on the scale is stable
	This annunciator illuminates from left to right as the weight increases on the scale if weight limits have been set. The symbol illuminates yellow for weights below the minimum limit set, blue for weights between the minimum and maximum limits set, and red for weights above the maximum limit set. See Section 4.4 on page 19.

Table 1-3. Symbols

Key	Function
	Zero the scale — See Section 4.1 on page 17
	Set a tare weight — See Section 4.2 on page 17
	Add weight in accumulation — See Section 4.5 on page 22
	Not used at this time
	Prints numeric weight data only — See Section 4.3 on page 18
	Enter mode selection
	Set a digital tare weight — See Section 4.2.2 on page 17
	Set upper and lower weight limit data — See Section Table 2-2. on page 10
	Go back one level

Table 1-4. Keys

2.0 Setup

2.1 Calibration

Use the following steps to perform a weight (span) calibration.

1. Power on the scale.
2. Insert a non-conductive tool into the access hole on the bottom of the scale and press the configuration switch to turn on the **SPAN SW**.

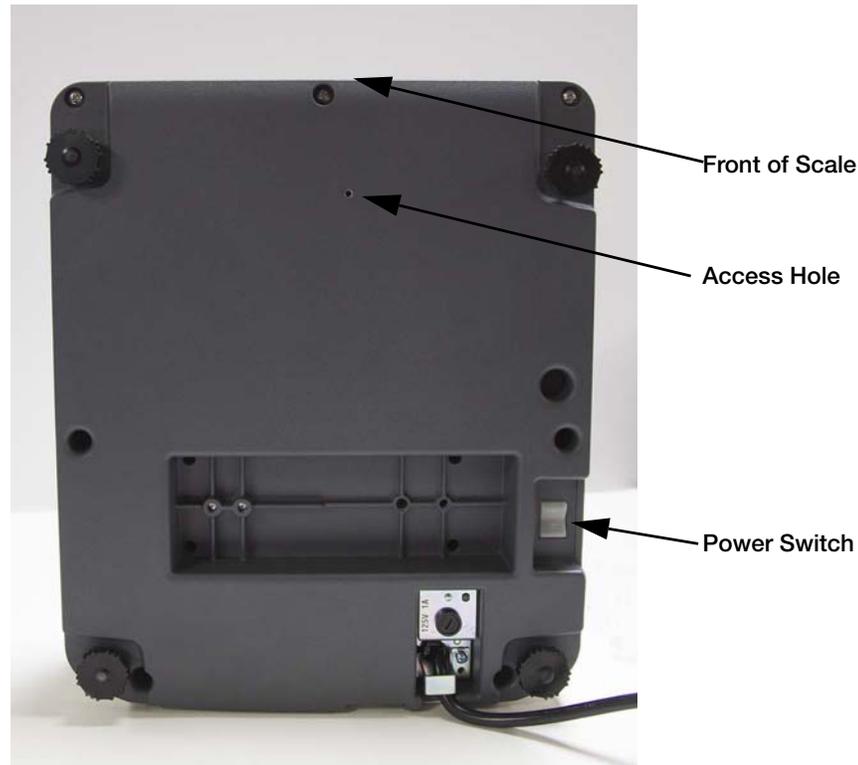


Figure 2-1. Bottom View of Scale

3. Press  to enter mode selection.
4. Press **CALIBRATION** to enter the calibration mode. **A/D COUNT** and **FULL WEIGHT** data are displayed.
5. Ensure there is no weight on the scale.
6. Press . If the zero calibration is good, **SUCCESS** is displayed. If **FAILED** is displayed, repeat the procedure. Contact Rice Lake Weighing Systems Technical Support if unable to obtain a successful zero calibration.
7. Place test weight equal to full capacity on the scale.
8. Press . If the full scale calibration is good, **SUCCESS** is displayed. If **FAILED** is displayed, repeat the procedure. Contact Rice Lake Weighing Systems Technical Support if unable to obtain a successful full calibration.
9. Press  twice to return to weigh mode.

2.2 Date and Time Setting

Use the following steps to set the date and time on the *DIGI DSX-1000*.

1. Power on the scale.
2. Press  to enter mode selection.
3. Press **DATE&TIME**.
4. Press  to display the digital keypad.
5. Enter date and time in order of YY-MM-DD HH:MM:SS.



Figure 2-2. Enter Date and Time

6. Press  to accept or press  to cancel.
7. Press  twice to return to the weigh mode.

2.3 Communication Settings

Use the following steps to configure communication settings on the *DIGI DSX-1000*.

1. Press  to enter mode selection.
2. Press  to enter specification settings.
3. Press  or  to access each specification.
4. Press the option desired for each specification. See Table 2-1.
5. Press  twice to return to the weigh mode.

Spec. No.	Bit 3	Bit 2	Bit 1	Bit 0
0	RS-232C PC Protocol (Bit 3,2,1,0) 0000 - Inhibit 0001 - stream type 0010 - manual type 0011 - command type 0100 - DS470 manual 1 0101 - DS470 manual 2			
1	RTS/CTS handshaking (Bit 3) 0 - On 1 - Off	Baud Rate of RS-232C (Bit 2,1,0) 000 - 4800 bps 001 - 9600 bps 010 - 19200 bps 011 - 38400 bps		
2	Stop bit of RS-232C (Bit 3) 0 - 1 bit 1 - 2 bit	Data length of RS-232C (Bit 2) 0 - 7 bit 1 - 8 bit	Parity of RS-232C (Bit 1,0) 00 - None 01 - Odd 10 - Even	
3	Interval of Time out error of RS232C (Bit 3,2) 00 - 1 second 01 - 3 second 10 - 5 second 11 - 10 second		Transmission condition of RS232-C (Bit 1) 0 - Weight Stable 1 - Unconditional	Additional parity code in text of RS-232C (Bit 0) 0 - No 1 - Yes
4	Tare Weight in text of RS-232C (Bit 3) 0 - No 1 - Yes	Weight unit RS-232C (Bit 2) 0 - Allow 1 - Inhibit	Header Code in text of RS-232C (Bit 1) 0 - No 1 - Yes	STATUS data in text of RS-232C (Bit 0) 0 - No 1 - Yes
5	One touch tare printing (Bit 3) 0 - No 1 - Yes	Set Point Type (Bit 2) 0 - Act low 1 - Act high	Sequence number print (Bit 1) (not available) 0 - No 1 - Yes	Use Internal Printer (Bit 0) (not available) 0 - No 1 - Yes
6	Buzzer (Bit 3) 0 - On 1 - Off	Set Point Alarm (Bit 2,1) 00 - On (Under/Over) 10 - Off	Set Point Output (Bit 0) 0 - On 1 - Off	
7	Print the status against the target range (Bit 3) (not available) 0 - No 1 - Yes	When stable and weight change >= 10 e, RS-232 stream type output once (Bit 2) 0 - On 1 - Off	RS232C data length of output weight data (Bit 1) 0 - 7 byte fixed 1 - actual length	
8	Weight check bar display when negative weight (Bit 3) 0 - Allow 1 - Inhibit			

Table 2-1. Specifications (SPEC 141)

2.4 Weight and Measurement Settings

Use the following steps to configure weight and measure settings on the *DIGI DSX-1000*.

1. Insert a non-conductive tool into the access hole on the bottom of the scale and press the configuration switch to access the weight and measure settings.
2. Press  to enter mode selection.
3. Press  to enter specification settings.
4. Press  or  to access each specification.
5. Press the option desired for each specification. See Table 2-2.
6. Press  twice to return to the weigh mode.

Spec. No.	Bit3	Bit 2	Bit 1	Bit 0
20	Selection of resolution (Bit 3,2,1,0) 1/1000 1/1500 1/2000 1/2500 1/3000 1/5000 1/6000 1/7500 1/10000 1/12000 1/15000 1/20000 1/25000 1/30000			
21	Minimum display (Bit 3,2,1) 000-1 001-2 010-5 011-10 100-20 101-50 110-100			Weight reset when tare (Bit 0) 0 - Allow 1 - Inhibit
22	Decimal point position on weight display (Bit 3,2,1) 000 - No point 001 - 0.0 010 - 0.00 011 - 0.000 100 - 0.0000 101 - 0.00000			Type of Decimal point (Bit 0) 0 - Standard (.) 1 - Europe (,)
23	Manual Tare Cancellation (Bit 3) 0 - Allow 1 - Inhibit	Tare Subtraction (Bit 2) 0 - Allow 1 - Inhibit	Tare Accumulation (Bit 1) 0 - Allow 1 - Inhibit	AUTO tare clear when rezero (Bit 0) 0 - Allow 1 - Inhibit
24	Zero Tracking when Tare (Bit 3) 0 - Allow 1 - Inhibit	Digital tare (Bit 2) 0 - Allow 1 - Inhibit	Negative weight display mask (Bit 1) 0 - Minus (gross) > 9e 1 - Minus (gross) weight	IR mode protected (Bit 0) 0 - No 1 - Yes
25	Re-Zero range (Bit 3,2) 00 - ±2% F.S. 01 - ±4% F.S. 10 - ±10% F.S. 11 - ±100% F.S.		Start range (Bit 1,0) 00 - ±2% F.S. 01 - ±3% F.S. 10 - ±5% F.S. 11 - ±10% F.S.	
26	System Base Weight Unit (Bit 3,2) 00 - kg 01 - g 10 - lb 11 - oz		Weight single interval or multi-interval (Bit 1,0) 0 - Single Interval 1 - Multi-interval	
27	Weight Range of Data Output (Bit 3) 0 - Always 1 - Over 20e		Tare Range (Bit 2) 0 - 50% 1 - 100%	Digital Tare Print (Bit 1) (not available) 0 - No 1 - Yes
28	Weight Data Print (Bit 3) 0 - Net, Tare 0 - Net	Header code of digital and preset tare in text of RS-232C (Bit 2) (not available) 0 - "9" 1 - "4"		

Table 2-2. Specifications (SPEC142)

3.0 Communication

3.1 RS-232C Interface

3.1.1 Specification

Baud Rate: 4800, 9600, 19200, 38400 bps

Start Bit: 1 Bit

Stop Bit: 1,2 Bit

Data Bit: 7,8 Bit

Parity Bit: Even, Odd, None

3.1.2 Pin Assignment

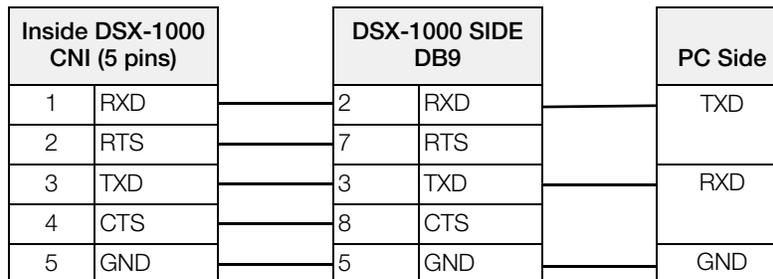


Table 3-1. Pin Assignment

If handshaking is not necessary for the RS-232 equipment being connected to the scale, RTS and CTS do not need to be connected (Spec. 1). See Section 2.3 on page 9.

3.2 Control Code and Characters

Control Code	Character	Description	Hex Values
Termination Code	CR	Carriage return	0x0d
	LF	Line feed	0x0a
Date	0 - 9	Numeric date	0x30 - 0x39
	- (minus)	Minus sign	0x2d
	. (decimal)	Decimal	0x2e
	(space)	Data error or empty	0x20
	OF	Overflow	0x4f 0x46
	UF	Underflow	0x55 0x46
Header Code	0	Net Weight	0x30
	4	Tare Weight	0x34
	B	Status and Weight condition	0x42
	V	Scale Number	0x56
Command	ENQ	Enquiry	0x05
	ACK	Acknowledge	0x06
	NAK	Not Acknowledged	0x15

Table 3-2. Control Code and Characters

3.3 Data Format (Type A, Type W, Type B)

Without additional parity (Total 32 bytes)

Header Code	Status Flag	Weight Condition Flag	CR	Header Code	Net Weight	Weight Unit
1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	7 Bytes	2 Bytes



CR	Header Code	Tare Weight	Weight Unit	Cr	LF
1 Byte	1 Byte	7 Bytes	2 Bytes	1 Byte	1 Byte

With additional parity (Total 33 bytes)

Header Code	Status Flag	Weight Condition Flag	CR	Header Code	Net Weight	Weight Unit
1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	7 Bytes	2 Bytes



CR	Header Code	Tare Weight	Weight Unit	CR	Additional Parity	LF
1 Byte	1 Byte	7 Bytes	2 Bytes	1 Byte	1 Byte	1 Byte



Note

*If the additional parity is 0x0d, 0x0a or 0x00, it will be changed to 0x1d or 0x10 respectively.
If it is the type A with high speed, the data should be less than 30 bytes.*

Status Flag	Bit	Data Description
Not Used	Bit 7	Not Used, always 0
Fixed to 1	Bit 6	Fixed to 1
Not Used	Bit 5	Not Used
Not Used	Bit 4	Not Used
Not Used	Bit 3	Not Used
Weight Overflow	Bit 2	1 when weight overflow, 0 when not
Net	Bit 1	1 when tare subtraction is used, 0 when not
Additional Parity	Bit 0	1 when additional parity code is added in text, 0 when not

Table 3-3. Status Flags

Weight Condition Flag	Bit	Data Description
Not Used	Bit 7	Not Used, always 0
Fixed to 1	Bit 6	Fixed to 1
Not Used	Bit 5	Not Used
Weight UF	Bit 4	1 when weight underflow, 0 when not
Weight OF	Bit 3	1 when weight overflow, 0 when not
Negative Net Weight	Bit 2	1 when net weight is negative, 0 when not
Weight Stable	Bit 1	1 when weight is stable, 0 when not
Zero Sign	Bit 0	1 when weight zero sign is set, 0 when not

Table 3-4. Weight Condition Flags

Example 1: Transmit all data (without additional parity)

Net Weight = 3.46 Tare Weight = 1.200 Weight Status: stable

Scale No. = 100 Weight Unit = kg

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	0x30	0x33	0x2e	0x34	0x35	0x36	06b
------	------	------	------	------	------	------	------	-----

0x67	0x0d	0x34	0x30	0x30	0x31	0x2e	0x32	0x30
------	------	------	------	------	------	------	------	------

0x30	0x6b	0x67	0x0d	0x0a
------	------	------	------	------

Example 2: Transmit only Net weight (without Header Code)

Net weight = 3.456

0x30	0x30	0x33	0x2e	0x34	0x35	0x36	0x0d	0x0a
------	------	------	------	------	------	------	------	------

 **Note** Specifications must be set to satisfy this condition. See Section 2.3 on page 9.

Example 3: Weight is overflow data

Net weight = OF

0x20	0x20	0x20	0x20	0x4f	0x46
------	------	------	------	------	------

3.4 Communication Method



Note The communication method is dependent on specification settings. See Section 2.3 on page 9. The data communication methods that can be selected are Stream (continuous), Manual and Command. In each type of data transmission the weight stable check is dependent on the Specification 3 setting.

3.4.1 Type A (Standard Stream)

The data is transmitted to the PC continuously.

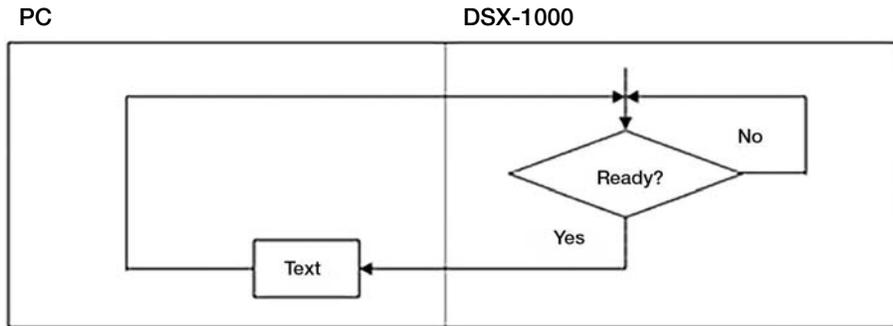


Figure 3-1. Type A (Standard Stream) Communication

3.4.2 Type W (Standard Manual)

The data is sent by pressing *****. Data can be transmitted immediately or held until the weight becomes stable, depending on the Specification 3 setting. See Section 2.3 on page 9.

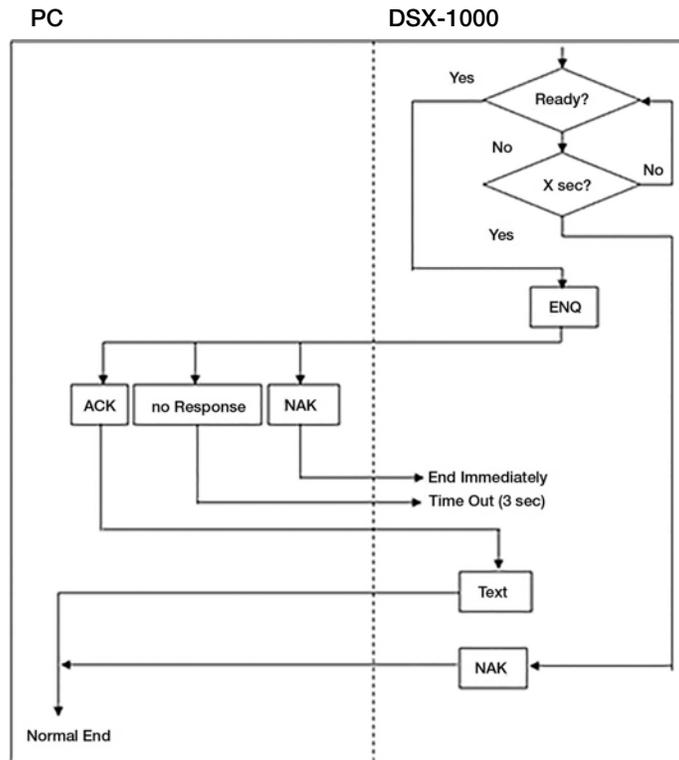


Figure 3-2. Type W (Standard Manual) Communication

3.4.3 Type B (Standard Command)

The data transmission starts when a command is received from an external source (PC).

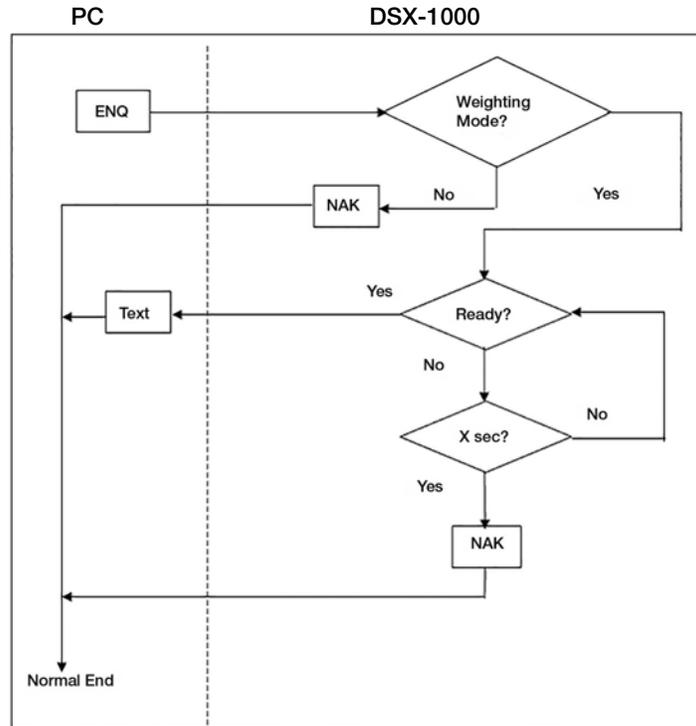


Figure 3-3. Type B (Standard Command) Communication

3.5 Setpoint Interface

3.5.1 Specification

- Interface — Open collector (passive) type
- Max. Rated Input Voltage — 24 VDC
- Max. Rated Current — 50 mA
- External Power (VEXT) — (6-15 VDC) 12 VDC Recommended. Max current draw from external power supply (VEXT) - VDC 100 mA (2 x 50 mA)

3.5.2 Pin Assignment

CN3 (6 pins)	
1	SP1
2	GND
3	SP2

Table 3-5. Internal Pin Assignments of DIGI DSX-1000

3.5.3 Setpoint Signal ON Timing

When the weight display reaches each programmed value, the setpoint signal turns ON. The following figure shows an example of the setpoint signal ON timing.



Note When a programmed setpoint value is zero, the setpoint signal will not be ON.

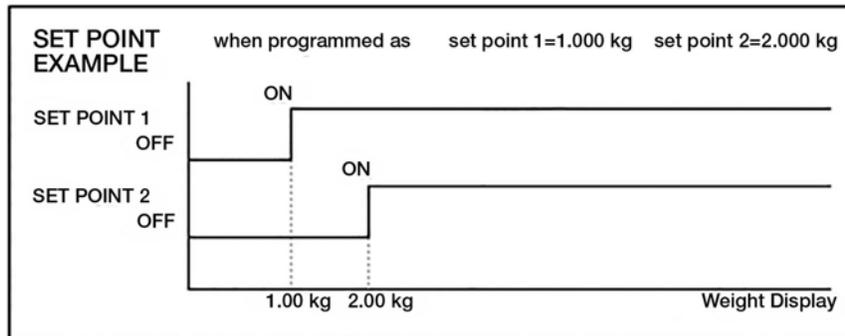


Figure 3-4. Setpoint Signal ON Timing

3.5.4 Setpoint Output Control

By using additional external circuitry the outputs can be triggered by changes in weight. Figure 3-5 is a sample circuit diagram, showing how the outputs would be wired to relays to drive additional loads with other voltage or current requirements, and is for reference only.

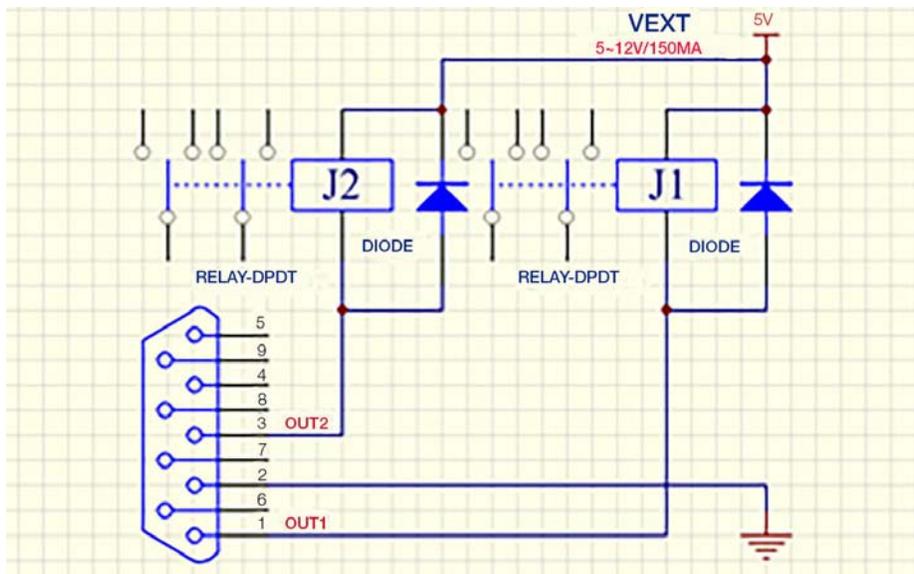


Figure 3-5. Setpoint Sample Circuitry

4.0 Operation

4.1 Zero Setting

1. Power the scale on and wait for it to stabilize. and are displayed.
2. Place a weight on the scale. The weight and are displayed.
1. Press . The scale briefly displays 888888 then returns to zero. and are displayed.
2. Remove the weight. *UF* is displayed.
3. Press . The scale briefly displays 888888 then returns to zero. and are displayed.



Note *If the weight is within the available range of zero resetting, the weight returns to zero. If the weight is out of the available range of zero resetting, the weight remains on the display and an alarm beeps.*

4.2 Tare Setting



Note *If a manual tare is entered, it is not possible to access the digital tare function.
If a digital tare is entered, it is still possible to access the manual tare function and the two different types of tare are added. If is pressed, both the manual tare and the digital tare are cleared.
All manual and digital tare values are lost when the instrument is powered off.*

4.2.1 Manual Tare

1. Power the scale on and wait for the scale to stabilize. and are displayed.
2. Place a weight on the scale. The weight value and are displayed.
3. Press . The weight value returns to zero. and are displayed.
4. Remove the weight. The weight value is displayed as a negative number. , and are displayed.
5. Press with no weight on the scale to clear the manual tare. The weight value returns to zero. and are displayed.



Note *If the tare weight is within the available range of tare reduction (Table 1-1 and Table 1-2 on page 4), the weight returns to zero and displays. If the weight is out of the available range of tare reduction, the weight remains on the display and an alarm beeps.*

4.2.2 Digital Tare

1. Power the scale on and wait for it to stabilize. and are displayed.
2. Press to enter the digital tare mode.
3. Press to display the digital key pad.

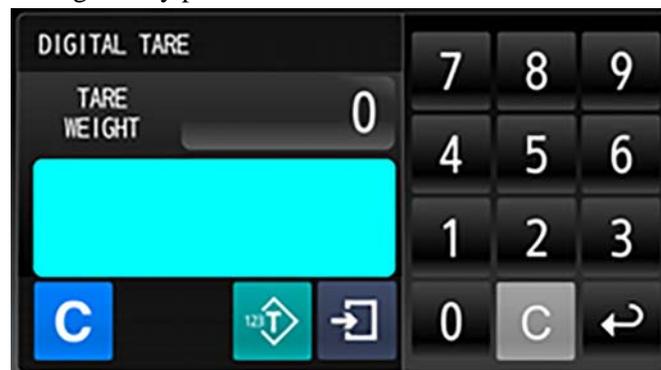


Figure 4-1. Digital Tare Mode Display

4. Press the numbers on the digital key pad to enter the desired tare weight.

 **Note** Pressing  on the digital key pad clears the entered digits in the event of an entry error.

5. Press . The **TARE WEIGHT** displays.
6. Press  to return to weigh mode. The weight is displayed as a negative number. ,  and  are displayed.

 **Note** If the tare weight is within the available range of tare reduction, the weight returns to zero and  displays. If the weight is out of the available range of tare reduction, the weight remains on the display and an alarm beeps.

4.2.3 Clearing a Digital Tare

1. Press  to enter the digital tare mode.
2. Press . **TARE WEIGHT** displays 0.
3. Press  to return to the weigh mode. The weight value is displayed as zero.  and  are displayed.

 **Note** A digital tare can also be cleared by pressing  while in the weigh mode.

4.3 Print in Weigh Mode

1. Place a weight on the scale. The weight and  display. If a tare was previously set,  also displays.
2. Press . The numeric weight data is sent to the serial port.



Figure 4-2. Example of Weight Data Sent Through Serial Port

4.4 Setting Weight Limits



Note It is recommended that after setting weight limits, the scale is tested with known weights at under the minimum limit, between the minimum and maximum limits, and above the maximum limit to ensure the scale is performing as expected.

Minimum and maximum weight settings are held in the instrument memory upon instrument power off.

4.4.1 Setting Minimum and Maximum Limits

1. Press . A current weight briefly displays and then the minimum and maximum weight setting menu.



Figure 4-3. Minimum and Maximum Weight Setting Menu

2. Press to set the minimum weight.
3. Press to display the digital key pad.

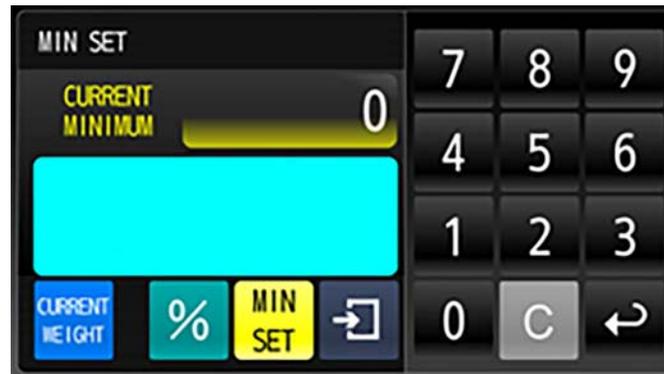


Figure 4-4. Setting Minimum Weight

4. Press the numbers on the digital key pad to enter the desired minimum weight.



Note Pressing on the digital key pad clears the entered digits in the event of an entry error.

5. Press . The **CURRENT MINIMUM** weight displays.
6. Press to return to the minimum and maximum weight setting menu.
7. Press to set the maximum weight.
8. Press to display the digital key pad.
9. Press the numbers on the digital key pad to enter the desired maximum weight.
10. Press . The **CURRENT MAXIMUM** weight displays.
11. Press twice return to the weigh mode.

4.4.2 Setting Minimum and Maximum Limits Within a Percentage

1. Press . A current weight briefly displays and then the minimum and maximum weight setting menu.
2. Press  to set the minimum weight. (If a minimum weight was previously set, proceed to step 6 after completing step 2.)
3. Press  to display the digital key pad.
4. Press the numbers on the digital key pad to enter the desired minimum weight.
5. Press . The **CURRENT MINIMUM** weight displays.
6. Press  to display the digital key pad.
7. Press the numbers on the digital key pad to enter the desired percent allowed below minimum weight.
Example: Enter 10 for a value of 10 percent below the minimum weight.
8. Press . The **CURRENT MINIMUM** weight displays. *Example: For a minimum weight limit set at 1.000 lb and the percent set at 10, the **CURRENT MINIMUM** displays 0.900 for a minimum weight equal to 0.900 lbs.*
9. Press  to return to the minimum and maximum weight setting menu.
10. Press  to set the maximum weight. (If a maximum weight was previously set, proceed to step 14 after completing step 10.)
11. Press  to display the digital key pad.
12. Press the numbers on the digital key pad to enter the desired maximum weight.
13. Press . The **CURRENT MAXIMUM** weight displays.
14. Press  to display the digital key pad.
15. Press the numbers on the digital key pad to enter the desired percent allowed above the maximum weight.
Example: Enter 10 for a value of 10 percent above the maximum weight.
16. Press . The **CURRENT MAXIMUM** weight displays. *Example: For a maximum weight limit set at 2.000 lb and the percent set at 10, the **CURRENT MAXIMUM** displays 2.200 for a maximum weight equal to 2.200 lbs.*
17. Press  twice return to the weigh mode.

4.4.3 Setting Minimum and Maximum Limits with Weights

1. Place a weight on the scale equal to the desired minimum weight.
2. Press . A current weight briefly displays and then the minimum and maximum weight setting menu.
3. Press  to set the minimum weight.
4. Press . The **CURRENT MINIMUM** weight displays equal to the current weight on the scale.
5. Press  twice to return to the weigh mode.
6. Place a weight on the scale equal to the desired maximum weight.
7. Press . A current weight briefly displays and then the minimum and maximum weight setting menu.
8. Press  to set the maximum weight.
9. Press . The **CURRENT MAXIMUM** weight displays equal to the current weight on the scale.
10. Press  twice return to the weigh mode.

4.4.4 Clearing Minimum and Maximum Weight Limits

1. Press  to enter minimum and maximum weight setting mode.
2. Press . The **CURRENT MINIMUM** and **CURRENT MAXIMUM** display 0.
3. Press  to return to the weigh mode.

4.4.5 LED Indicator for Weight Limits

The LED indicator at the top of the display can be used as a visual indicator of where the weight on the scale lies in relationship to the minimum and maximum weight limits. When weight limits are set, this symbol illuminates from left to right as the weight increases on the scale. The symbol illuminates yellow for weights below the minimum limit set, blue for weights between the minimum and maximum limits set, and red for weights above the maximum limit set. An audible beep for weights under the minimum and over the maximum can be set up in Spec 6. See Section 2.3 on page 9.

The quantity of weight represented in each gradation is determined by subtracting the minimum limit from the maximum limit and dividing the result by 5.

Example: If the maximum weight is 2.000 lbs and the minimum weight is 1.000 lbs the weight represented by each gradation is 0.200 lbs. ($2.000 - 1.000 = 1.00/5 = 0.200$). In figure 4-5, the lower numbers represent the amount of weight that illuminates each gradation. In this example, a weight of 1.4 lbs on the scale, would illuminate from left to right eight gradations.

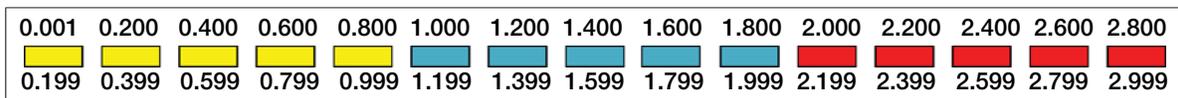
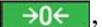


Figure 4-5. Example LED Gradations

4.5 Weight Accumulation

1. Place a weight on the scale. The weight and  are displayed. If a tare was previously set,  is also displayed.
2. Press  and remove the weight from the scale. The weight returns to zero. ,  and  are displayed.
3. Repeat steps one and two for all items to be accumulated.
4. Press . The **TOTAL WEIGHT** menu displays the number of items weighed and the total accumulated weight of the items.

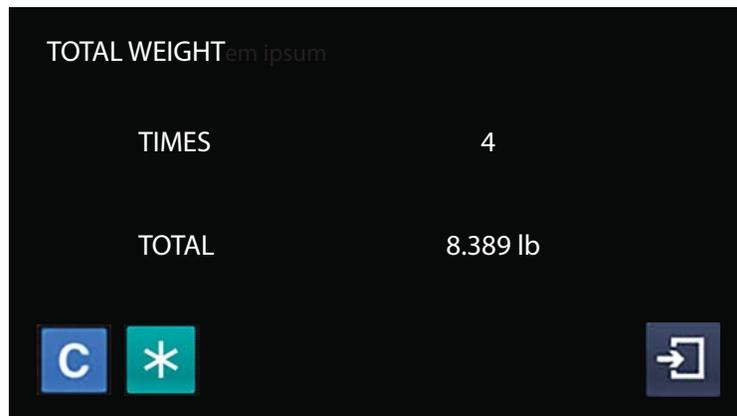


Figure 4-6. Total Accumulated Weight Menu

5. Press  to clear the total accumulated weight.
6. Press  to return to weigh mode.

4.6 Internal Count Mode

The internal count mode is used to check that the A/D is working correctly, based on the raw counts coming back from the A/D.

1. Press  to enter mode selection.
2. Press . The internal count and AD count display.
3. Put a weight on the scale.
4. Press . The internal count displays as zero.
5. Press  twice to return to weigh mode.

5.0 Maintenance and Troubleshooting

5.1 Maintenance

Before the first use of the scale, and after periods of non-use, check the scale for proper operation and function. If the scale does not operate correctly, contact qualified service personnel.

Perform the following steps for basic maintenance.

1. Check the overall appearance of the entire scale for any obvious signs of damage.
2. Inspect the condition of the power cord for a cracking or fraying cord, as well as for broken or bent prongs.

5.1.1 Cleaning

Proper care and cleaning of the scale is essential to extend the life of the scale and to ensure accurate operation. Before beginning the cleaning process, disconnect the scale from the AC power source.

1. Clean all external surfaces with a soft, clean, damp cloth or tissue. A mild soap and water solution may be used.
2. Dry with a clean, soft cloth.
3. Do not immerse the scale into cleaning or other liquid solutions.
4. Do not use isopropyl alcohol or other solvents to clean the display surface.

5.2 Troubleshooting

Refer to the following to check and correct any errors. Contact Rice Lake Weighing Systems Technical Support if the issue persists.

Symptom	Possible Cause	Corrective Action
The display shows 888888 (lock-up)	The zero point is out of range.	Recalibrate the scale.
The display shows OF	A weight exceeded the scale capacity by more than 9 d (deviations?). This can occur when there is weight on the scale when the scale is powered on or if the scale platter is impeded.	Ensure there is no weight on the scale and that the scale platter is not impeded in any way. Power the scale off and then back on. Rezero the scale.
Display shows UF	A negative weight of greater than 9 d (deviations?) is displayed. This can occur when there is weight on the scale when the scale is powered on and the weight is then removed or if the scale platter is impeded.	Ensure there is no weight on the scale and that the scale platter is not impeded in any way. Power the scale off and then back on. Rezero the scale.
After powering on, the opening screen with the DIGI Logo continuously displays. NOTE: Applies to software versions 1.00 to 1.02 only.	Interruption of a software upgrade or an incomplete software upgrade.	See section 5.3 on page 24 for software upgrade instructions. Although, steps cannot be performed on the scale, make the appropriate connections to the PC and follow all on screen prompts from the PC. Contact Rice Lake Weighing Systems Customer Support if unable to perform the software upgrade,

Table 5-1. Troubleshooting Table for the DIGI DSX-1000

5.3 Software Upgrade

The *DIGI DSX-1000* must be connected to a PC via an RS-232 interface to perform a software upgrade. A cable with two nine Pin D-Sub Female connectors is necessary for connecting the scale to a PC.

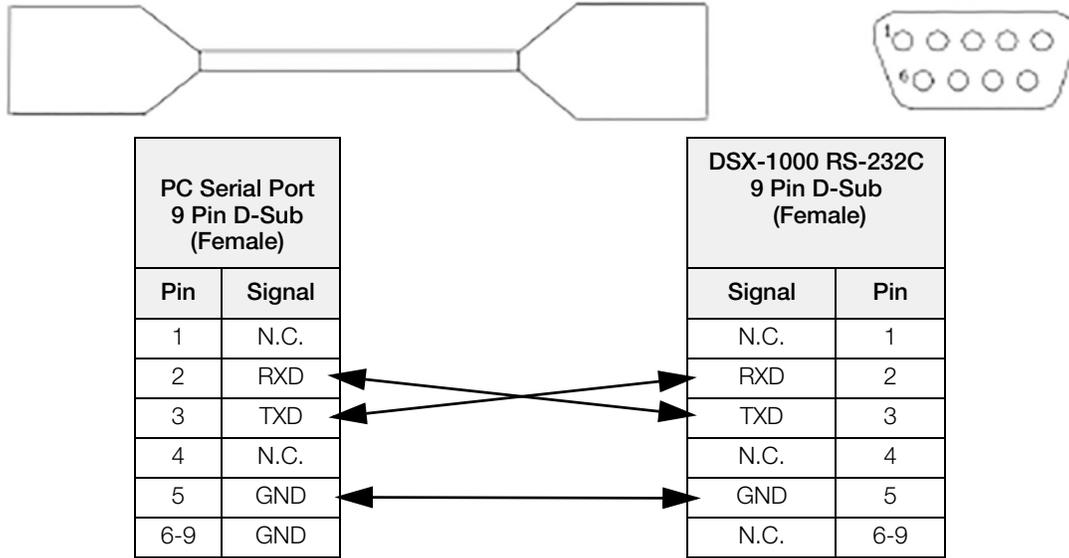


Table 5-2. RS-232 Interface Cable

The *DIGI DSX-1000* software is updated through the software program Mini R16. This program can be downloaded from the Rice Lake Weighing Systems website. Once the software has been downloaded and installed to the PC, it can be found by clicking on the Windows® Start button, *All Programs*, then *Mini R16* in the program list.

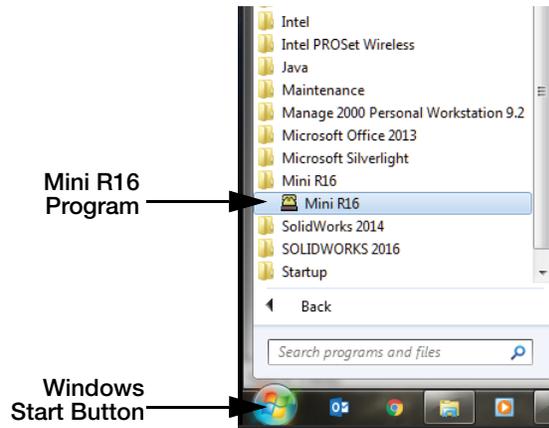


Figure 5-1. Mini R16

1. Download the software upgrade file from the Rice Lake Weighing Systems website.
2. Power off the *DIGI DSX-1000* and connect the unit to the PC with the RS-232 cable.
3. Power the unit on.
4. Select *DSX-1000* and press .
5. Click on  to open the Mini R16 program on the PC.
6. Press  to put the *DIGI DSX-1000* in upgrade mode.
7. Press .
8. Press .

9. Press . The numeric keypad displays.

10. Enter the password 009 and press . The *DIGI DSX-1000* displays a warning that the software version will be updated.

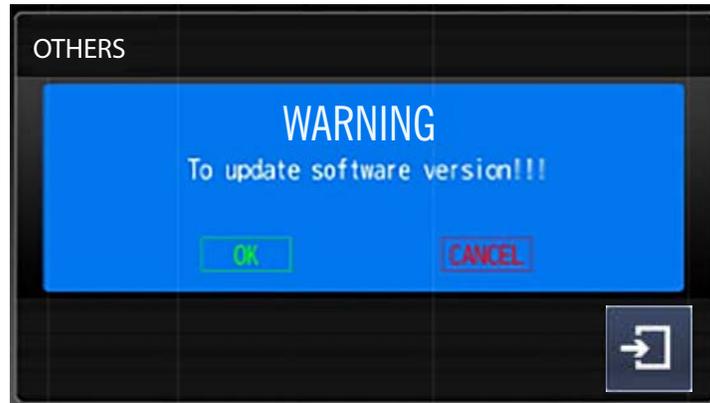


Figure 5-2. Software Update Warning

11. Press  to continue. The *DIGI DSX-1000* the following notification displays and the unit is ready to upgrade. Pressing  returns the unit to the previous menu.

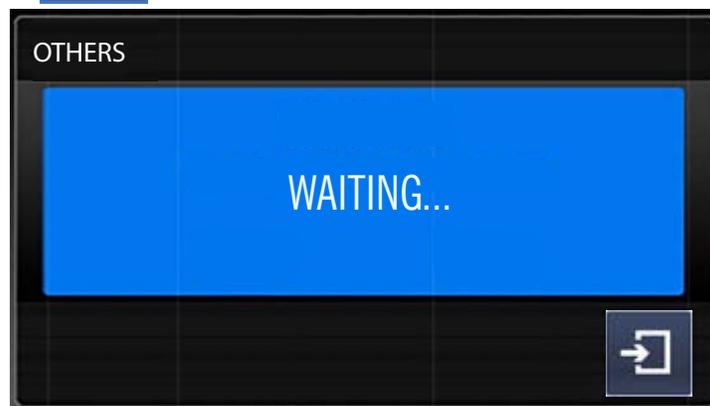


Figure 5-3. DIGI DSX-1000 in Upgrade Mode



Note The *DIGI DSX-1000* remains at this display until the unit is power cycled at the end of the upgrade process.

At the PC, the Mini R16 status light changes from red to green.

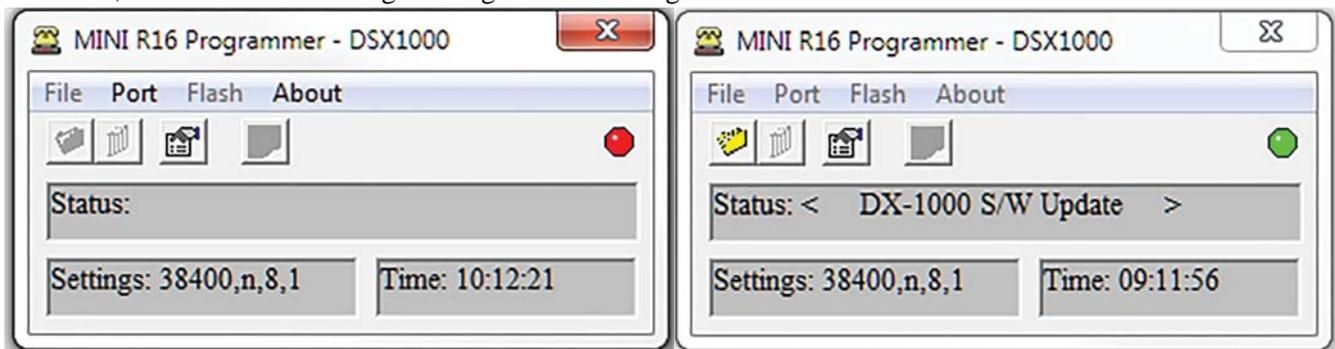


Figure 5-4. Mini R16 Status

12. Press  on the Mini R16 utility and navigate to the software upgrade file downloaded and saved in Step 1.

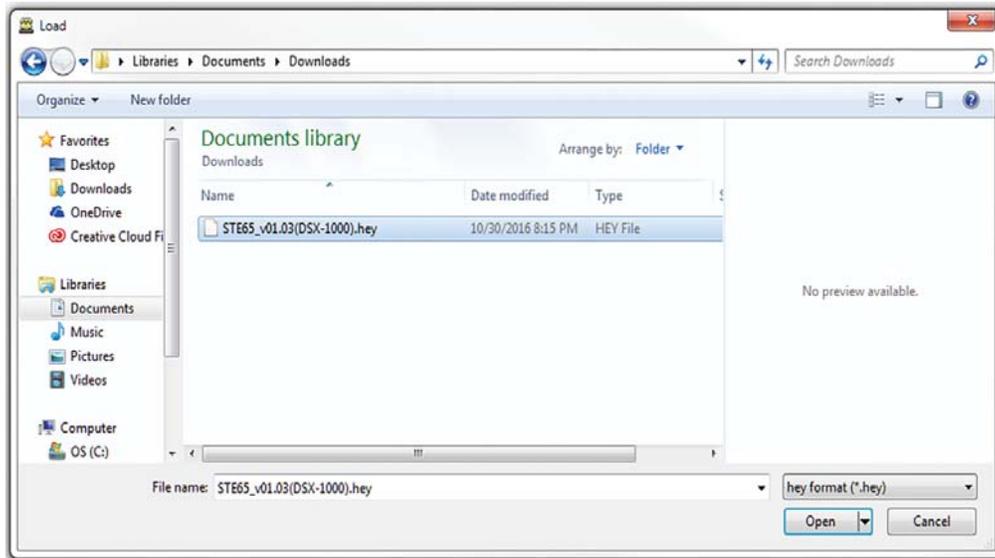
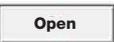


Figure 5-5. Locate Firmware Upgrade File

13. Press . A file opened message displays briefly and then the **Status:** display line is blank.

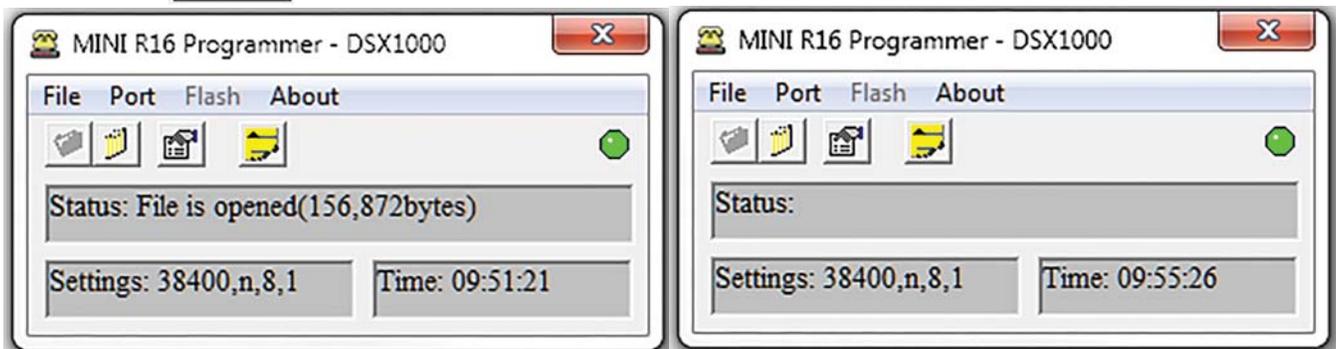


Figure 5-6. File Open Menus

14. Press . The following menu displays.

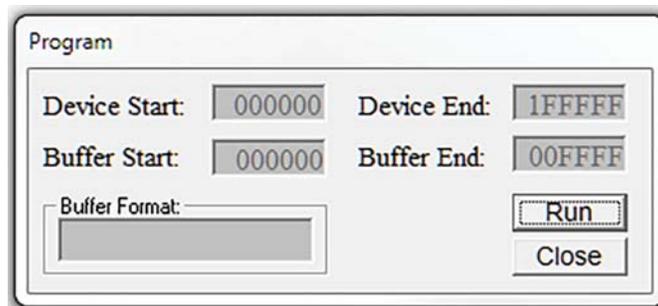


Figure 5-7. Program Menu

15. Press . The send file menu displays and the firmware upgrade is sent to the *DIGI DSX-1000*. Once the file transmission is finished, a transmission complete notification displays.

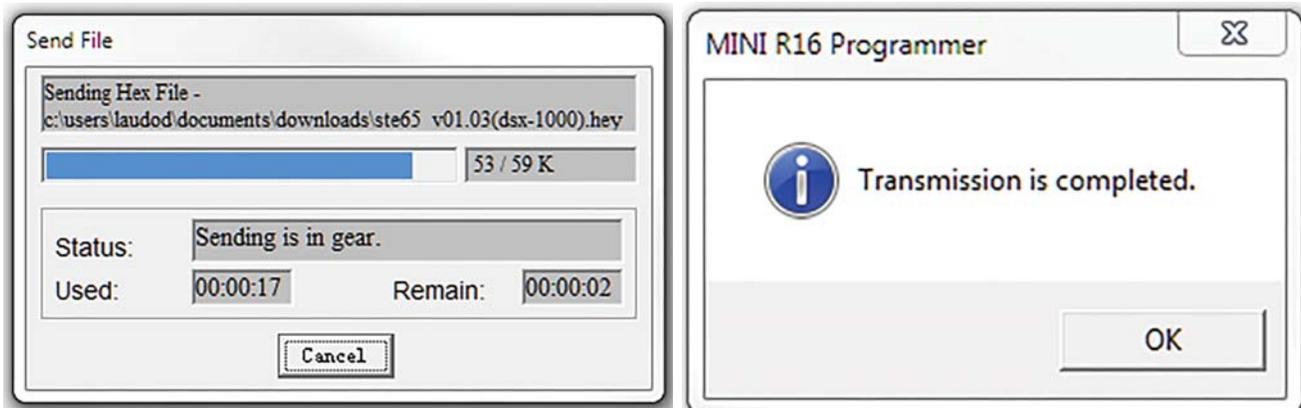


Figure 5-8. Files Transmission Menu and Transmission Complete Display

16. Press .
17. Power the *DIGI DSX-1000* off.
18. Disconnect the RS-232 cable.
19. Power the unit on.

6.0 Specifications

Power

AC	100 V ~ 240 V
Power Consumption	22 W when using AC power

Operator Interface

Display	TFT LCD Operator touchscreen display with backlight 800 x 400 pixel resolution 65,000 colors 7.0 in viewing area
Display Resolution	1/3000, 1/6000, 1/7500, 1/12000, 1/15000

Analog Specification

Input Sensitivity	1 mV/V
Zero Adjust Range	0 ± 5 mV
Zero Balance Range	0 ± 0.5 mV
L/C Applied Voltage	DC 5 V
Speed of A/D Conversion	10 times per second
Internal Resolution	300,000

Enclosure

Dimensions	13.85 in x 9.88 in x 3.82 in (351.9 mm x 251mm x 97.1 mm)
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External Connectors

RS-232 Interface — DB9 Male Connector
Setpoint Interface — DB9 Female Connector

Communications RS-232C interface

Load Cell K-Type

Set point interface (Lower/Upper)

Calibration by software

Microcomputer RENESAS R8CLA
(16 bit, 64 K Flash, 3.5 K RAM)

Environmental

Operating Temperature 14°F to 104°F (-10°C to 40°C)
(OIML)

Humidity 15 to 85% (Non Condensing)

Parts

Case DSX-1000
Load Cell DSX-1000



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