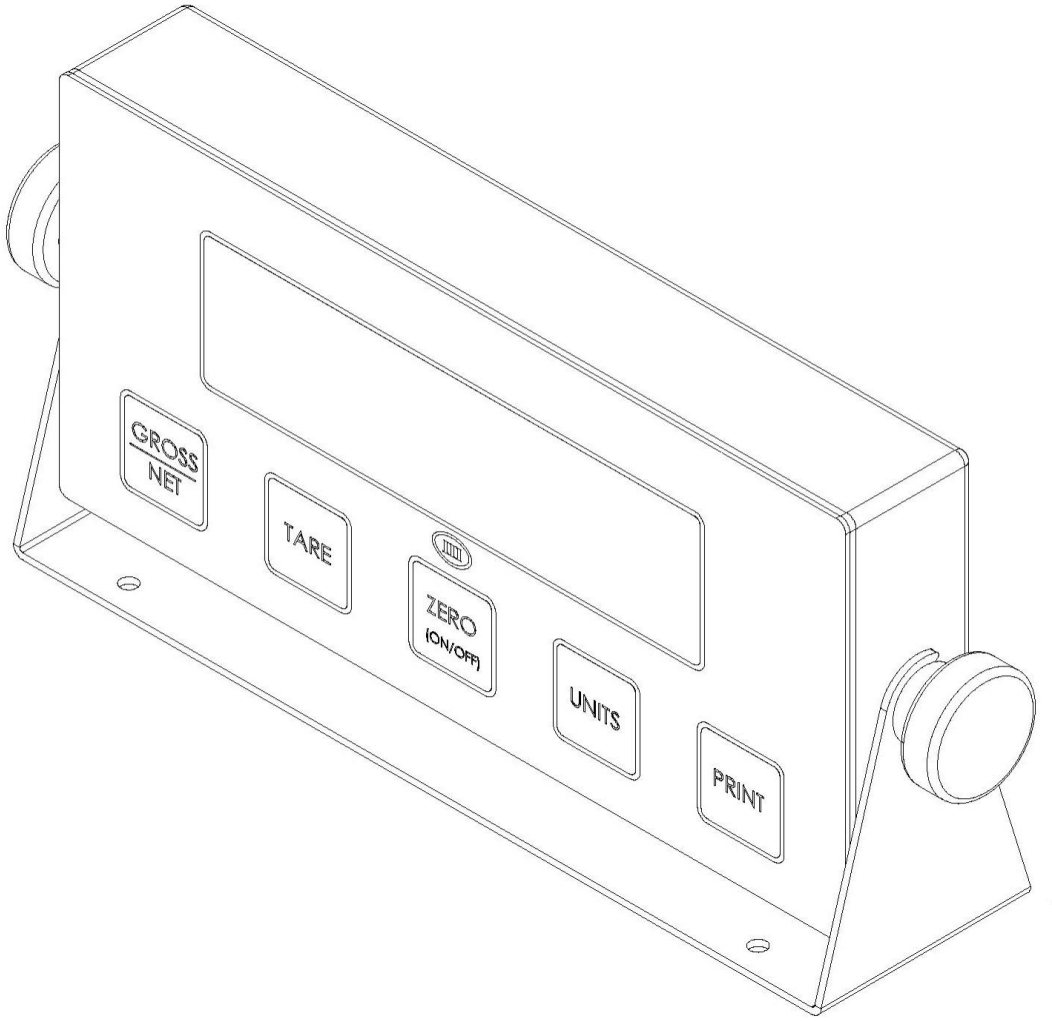
Model DS100
Scale Indicator



Operator's Manual

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MAN0247 Manual Revision 0.1

Section 1. Unpacking and Installation

Unpacking

Before unpacking your Doran scale, please read the instructions in this section. Your new scale is a durable industrial product, but it is also a sensitive weighing instrument. Normal care should be taken when handling and using this product. Improper handling or abuse can damage the scale and result in costly repairs that may not be covered by the warranty. If you notice any shipping damage, notify the shipper immediately. Please observe the following precautions to insure years of trouble free service from your new scale.

! DO NOT drop the scale.

! DO NOT drop objects on the scale.

Carefully remove the scale from the shipping carton. Be sure to retain all shipping materials in case the scale must be shipped elsewhere.

Installation

Place the scale on a stable flat surface. Verify that the bubble level located under the platter shows that the scale is level. Adjust the four feet to obtain a level condition (bubble in center.)

Electrical Connections

The DS100 uses a wall mounted transformer to provide power to the scale. The transformer requires 115 VAC, 50/60 Hz power. Be sure the AC power is not excessively noisy – this can occur if large inductive loads, such as solenoids or motors, are on the same power line. Subjecting electronics to problematic AC power lines may result in damage not covered by the warranty. Also be sure that the power outlet and transformer are not exposed to water while the scale is plugged in.

Care & Cleaning

With reasonable care, this product will last for many years. Here are some tips to care for your DS100 Scale Indicator.

- Hand clean with a damp cloth using mild detergent.
- Do not use strong solvents or abrasive cleaners as this can damage the touch panel or other plastic parts.
- Do not drop or overload the scale.
- Do not use sharp objects to press any of the buttons.
- Do not immerse.

Section 2. Scale Operation

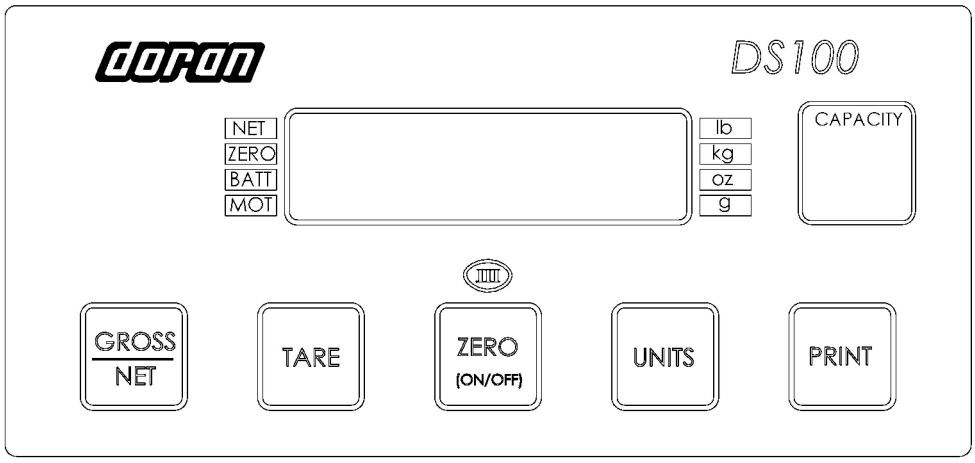

Fig. 1 DS100 Front Panel

Display Functions

The Model DS100 controls consist of GROSS/NET, TARE, ZERO (ON/OFF), UNITS and PRINT buttons located under to the LED display. The display is used to provide weight indications and operator messages describing scale operation.

Power

The DS100 is powered by an AC wall transformer. Turn the scale off by pressing and holding the ZERO (ON/OFF) button for three seconds. Turn the scale on by pressing the ZERO (ON/OFF) button.

Units Select

Press the UNITS button to change weight display units from lb, lb:oz, oz, kg, g. The units annunciator to the right of the LED display will indicate the current weight.

Print

To transmit the selected print string through the standard RS-232 port, press PRINT. This will cause the selected print string to be printed. The scale will not transmit while the scale is in motion. If the scale is in motion when the PRINT button is pressed, the DS100 will transmit the selected print string once the scale becomes stable.

Motion

Motion is indicated by the MOT annunciator to the left of the LED display.

Zero Weighing

1. Empty the scale base or place an empty container on the base and press ZERO to zero the scale. If the scale is in motion when the ZERO button is pressed, the DS100 will zero the scale once the scale becomes stable.
2. Place an item on the scale and wait for the MOTION indicator to go out
3. Read the weight on the display
4. Press ZERO again to weigh additional items

Net / Gross Mode

The NET annunciator to the left of the LED display will indicate the NET or GROSS weigh status of the indicator. The indicator enters the NET mode when the TARE button is pressed with an item on the base. Alternatively, to enter the NET mode, press the GROSS/NET button. The NET mode is not available when a TARE weight is not active.

To clear an active TARE weight:

1. If the scale is in the NET mode, enter the GROSS mode by pressing ZERO.
2. When the scale display reads zero in the GROSS mode, press TARE.

Net / Gross Weighing

1. Empty the scale base or place an empty container on the base and press TARE
2. The indicator will read zero and place the scale in NET mode
3. Place an item on the scale platter and wait for the MOTION indicator to go out
4. Read the weight on the display
5. Press TARE again to weigh additional items
6. Press ZERO, then TARE to clear the tare weight

Section 3. Power and RS-232

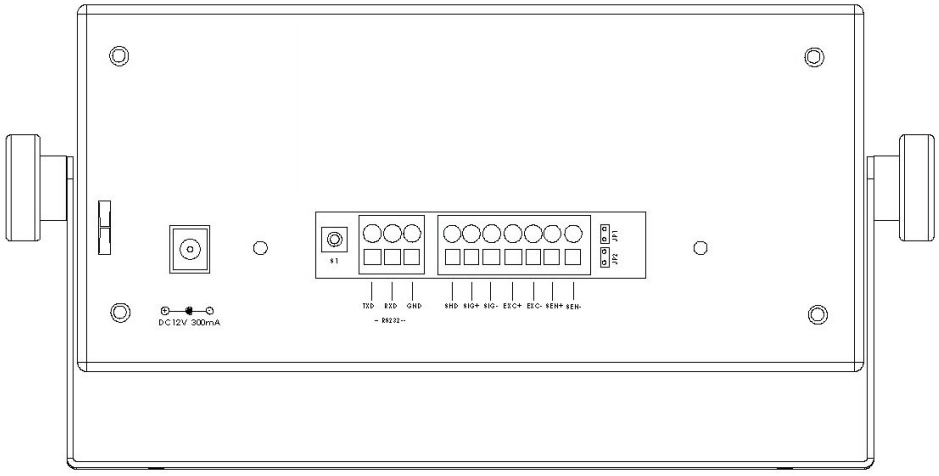

Fig. 2 DS100 Rear Panel

Power connections

The DS100 is powered from a wall mounted transformer. The transformer has a power cord which plugs into the power jack located on the back of the scale. A strain relief is provided to the left of the power jack. The power cord can be looped around the strain relief to prevent accidental unplugging.

RS-232 Connections

The DS100 has a standard RS-232 output. To use this feature, the optional RS-232 cable (P/N DSOPT001 or DSOPT002) is required. To access the RS-232 terminals at the rear of the scale, remove the rear panel from the indicator as shown in Figure 2.

Insert the cable conductors by placing a small flat blade screw driver into the terminal slot and then push the handle of the screw driver upwards towards the top of the indicator. This forces the terminal below to open. Insert the conductor into the terminal and remove the screwdriver.

Section 4. Data Communications

Introduction to data communications

Basic understanding of serial data communications is needed when setting up the DS100 to communicate with a printer or PC.

When setting up a serial communications system, there are two concerns which affect the configuration of that system. These are:

- Baud Rate
- Data Bits and Parity

The baud rate determines how fast the data is sent from the scale. The sending and receiving units must be set to the same baud settings. Typical values are 1200, 2400, 4800 and 9600.

The DS100 is factory set for eight bits, no parity and one stop bit also known as 8n1. The receiving units must be set to 8n1 for proper communications.

See the technical manual for UPS print string configuration.

"F0" Example (Negative weight, in motion)

☻- 2.452 lb MOT.♪◙

"F0" Print String Definition for Each Weight Unit:

Pounds
STX | POL | WEIGHT| SP | lb | SP | ST | CR | LF
Ounces
STX | POL | WEIGHT| SP | oz | SP | ST | CR | LF
Kiligrams
STX | POL | WEIGHT| SP | kg | SP | ST | CR | LF
Grams
STX | POL | WEIGHT| SP | g | SP | SP ST | CR | LF
Pounds-ounces
STX | POL | WEIGHTLB| SP | lb | POL | WEIGHTOZ | SP | oz | SP | ST | CR | LF

STX (☻) = ASCII 02
POL = minus sign for negative weight or a space for a positive weight
WEIGHT = 6 character field plus decimal if needed
WEIGHTLB = pound portion of lb-oz weight
WEIGHTOZ = ounce portion of lb-oz weight. (WEIGHTLB and WEIGHTOZ total 5 characters plus decimal)
SP = ASCII space
ST = MOT. if in motion or a space if stable
CR (♪) = Carriage return
LF (◙) = Linefeed

| = Separator, not printed

"F1" Example (Negative weight, in motion)

☻- 2.452 LBM♪◙

"F1" Print String Definition for Each Weight Unit:

Pounds
STX | POL | WEIGHT| SP | LB | ST | CR | LF
Ounces
STX | POL | WEIGHT| SP | OZ | ST | CR | LF
Kiligrams
STX | POL | WEIGHT| SP | KG | ST | CR | LF
Grams
STX | POL | WEIGHT| SP | G | SP | ST | CR | LF
Pounds-ounces
STX | POL | WEIGHTLB| SP | LB | POL | WEIGHTOZ | SP | OZ | SP | ST | CR | LF

STX (☻) = ASCII 02
POL = minus sign for negative weight or a space for a positive weight
WEIGHT = 6 character field plus decimal if needed
WEIGHTLB = pound portion of lb-oz weight
WEIGHTOZ = ounce portion of lb-oz weight. (WEIGHTLB and WEIGHTOZ total 5 characters plus decimal)
SP = ASCII space
ST = MOT. if in motion or a space if stable
CR (♪) = Carriage return
LF (◙) = Linefeed
| = Separator, not printed

"2P" Example (Negative weight, in motion)

☻- 2.452 lb MOT.♪◙

☻(- 1112 kg MOT.)♪◙

The dual print mode provides the DS100 with the ability to print the current scale reading followed by the equivalent value in kilograms.
The weight is first printed using the "F0" format. Then the weight is recalculated in kilograms and is sent as a second line of text. The kilogram data follows the "F0" data format except where parentheses are placed after the STX character and before the carriage return & line feed.

“SP” Example (Negative weight, in motion)

FR"L1"◙

? ◙

- 1.052◙

lb◙

GS◙

MOT. ◙

- 0.478◙

kg◙

P1,1◙

“SP” Print String Definition for Each Weight Unit:

Pounds

FR”L1” | LF | ? | LF | POL | WEIGHT | LF | lb | LF | GS | LF | ST | LF | POL | WEIGHT2 | LF | kg | LF | P1,1 | LF

Ounces

FR”L1” | LF | ? | LF | POL | WEIGHT | LF | oz | LF | GS | LF | ST | LF | POL | WEIGHT2 | LF | kg | LF | P1,1 | LF

Kilograms

FR”L1” | LF | ? | LF | POL | WEIGHT | LF | kg | LF | GS | LF | ST | LF | POL | WEIGHT2 | LF | kg | LF | P1,1 | LF

Grams

FR”L1” | LF | ? | LF | POL | WEIGHT | LF | g | SP | LF | GS | LF | ST | LF | POL | WEIGHT2 | LF | kg | LF | P1,1 | LF

Pounds - ounces

FR”L1” | LF | ? | LF | POL | WEIGHTLB | SP | lb | POL | WEIGHTOZ | LF | oz | LF | GS | LF | ST | LF | POL | WEIGHT2 | LF | kg | LF | P1,1 | LF

POL = minus sign for negative weight or a space for a positive weight
WEIGHT = 6 character field plus decimal if needed
WEIGHT2 = Kilogram weight. 6 character field plus decimal if needed
WEIGHTLB = pound portion of lb-oz weight
WEIGHTOZ = ounce portion of lb-oz weight. (WEIGHTLB and WEIGHTOZ total 5 characters plus decimal)
SP = ASCII space
ST = MOT. if in motion or four (4) spaces if stable
CR (♪) = Carriage return
LF (◙) = Linefeed
| = Separator, not printed

"Gn" Example (Negative weight, in motion)

☻ 25.15 lb GR MOT.♪◙

☻ 20.05 lb NT MOT.♪◙

☻ 5.10 lb TR MOT.♪◙

"Gn" Print String Definition for Each Weight Unit:

Pounds

STX | POL | WEIGHTGROSS | SP | lb | SP | GR | SP | ST | CR | LF
STX | POL | WEIGHTNET | SP | lb | SP | NT | SP | ST | CR | LF
STX | POL | WEIGHTTARE | SP | lb | SP | TR | SP | ST | CR | LF

Ounces

STX | POL | WEIGHTGROSS | SP | oz | SP | GR | SP | ST | CR | LF
STX | POL | WEIGHTNET | SP | oz | SP | NT | SP | ST | CR | LF
STX | POL | WEIGHTTARE | SP | oz | SP | TR | SP | ST | CR | LF

Kiligrams

STX | POL | WEIGHTGROSS | SP | kg | SP | GR | SP | ST | CR | LF
STX | POL | WEIGHTNET | SP | kg | SP | NT | SP | ST | CR | LF
STX | POL | WEIGHTTARE | SP | kg | SP | TR | SP | ST | CR | LF

Grams

STX | POL | WEIGHTGROSS | SP | g | SP | GR | SP | ST | CR | LF
STX | POL | WEIGHTNET | SP | g | SP | NT | SP | ST | CR | LF
STX | POL | WEIGHTTARE | SP | g | SP | TR | SP | ST | CR | LF

Pounds-ounces

STX | POL | WEIGHTLBGROSS | SP | lb | POL | WEIGHTOZGROSS | SP | oz | SP | GR | SP | ST | CR | LF
STX | POL | WEIGHTLBNET | SP | lb | POL | WEIGHTOZNET | SP | oz | SP | NT | SP | ST | CR | LF
STX | POL | WEIGHTLBTARE | SP | lb | POL | WEIGHTOZTARE | SP | oz | SP | TR | SP | ST | CR | LF

STX (☻) = ASCII 02
POL = minus sign for negative weight or a space for a positive weight
WEIGHT[GROSS/NET/TARE] = 6 character field plus decimal if needed
WEIGHTLB[GROSS/NET/TARE] = pound portion of lb-oz weight
WEIGHTOZ[GROSS/NET/TARE] = ounce portion of lb-oz weight. (WEIGHTLB and WEIGHTOZ total 5 characters plus decimal)
SP = ASCII space
ST = MOT. if in motion or a space if stable
CR (♪) = Carriage return
LF (◙) = Linefeed
| = Separator, not printed

Remote Scale Commands

The scale will respond to the following single letter ASCII commands.

"W"	Initiates transmission of current weight data (if in motion, scale will wait until stable, then print).
"U"	Changes the displayed weight units.
"Z"	Zeroes the scale (if in motion, scale will wait until stable, then zero).

Section 5. Specifications

Resolution	200 to 12500 divisions
Indicator Load Cell Input Range	0.35 mV/V to 3.0 mV/V
Excitation	5 V
Power Supply	Wall Transformer output: (scale input) 12VDC, 300mA Neg. (-) center
Display	0.56” high red LED
Displayed Units	lb, oz, kg, g and lb-oz
Indicator Capacities	1 to 99,999 lb 1 to 45,000 kg
Printer Interface	Bi-directional RS-232
Calibration	Zero and Span (Minimum Span = 5% of Capacity)
Controls	GROSS/NET, TARE, ZERO(ON/OFF), UNITS AND PRINT buttons
Construction	Painted Mild Steel
Options	RS232 cable (Female) P/N DSOPT001 RS232 cable (Male) P/N DSOPT002 230 VAC Transformer P/N DSOPT003

Section 6. Troubleshooting

General Problem Resolution

Problem	What to Do or Check
Weight reading will not repeat or scale does not return to zero when weight is removed.	Make sure that the scale platter is not rubbing or touching the scale cover. Verify that there is nothing caught in the platform, under or around the load cell.
Scale overloads early	Verify scale calibration is correct. If problem persists, recalibrate the scale.
Scale will not come to zero when the ZERO button is pressed.	Make sure that the scale is becoming stable (Motion annunciator is off). After pressing the ZERO button, the scale should zero as soon as it becomes stable. If problem persists, there may be a problem with the touch panel or motherboard.
Weight readings don't seem to be correct.	Verify the scale calibration with an accurate test weight. If the readings are not correct, recalibrate.
Scale drifts off zero.	Check for air currents and/or vibration around the scale. If that is the cause, it may be necessary to set the AzT and nnA parameters to wider settings to compensate (see the parameter section.) Verify that no mechanical restrictions exist, i.e. platter rubbing, something caught under or around the load cell.
Scale shuts itself off or will not turn on.	Press the ZERO button to turn on the indicator. The transformer may be bad or the power connector at the rear of the scale may have an intermittent connection. Check the power connector at the rear of the scale.

Error Messages

Error Message	What to Do or Check
Er EP	The setup parameters loaded in nonvolatile memory have become corrupted. Verify scale parameters and calibrate.
Er Ad	The A/D communication is not detected. If problem persists, recalibrate. If problem still persists, the motherboard will need to be replaced.
AD of	Verify load cell wiring connections. Ensure the load cell is wired properly. Ensure that all load cell conductors are inserted into the terminal properly and that the conductor jacket in not interfering. Verify that JU1 and JU2 have the jumper inserted for a four wire load cell or removed for a six wire load cell. If problem still persists, the motherboard will need to be replaced.
rg Err	The calibration zero is out of range. Error is displayed after a ZERO calibration attempt. Press zero to clear this error. Refer to the analog setup section for additional information. Motherboard or load cell may need to be replaced.
Ldg 0	The scale is attempting to zero on power-up. This message will remain until the scale is stable. Air currents or vibration may be the cause. If problem persists, the pcb or load cell may be damaged. NOTE: This message will not appear if parameter Suo = no.
ov-Ld	The scale is in overload. The load on the scale platform exceeds the scale capacity by more than 105%. Remove excess weight from scale platform. If problem persists, recalibrate. If problem still persists, the motherboard or load cell may need to be replaced.

Error Message	**What to Do or Check**
gS-oL	The scale is in gross overload. The load exceeds the scale rating and might result in damage to the scale. Remove excess weight immediately. If problem persists, recalibrate. If problem still persists, the motherboard or load cell will need to be replaced.
SPnL	Raw counts for the span calibration is too low. Refer to the Calibration Troubleshooting section for raw count ranges.
SPnH	Raw counts for the span calibration is too high. Refer to the Calibration Troubleshooting section for raw count ranges.
SPn E	The span calibration weight must be between 5% and 100% of full capacity.
ERR 0	Load on the scale exceeds 20%. Remove excess weight. This error only occurs when the Start Up Zero Suo parameter is set to 20. Change this parameter for FS to allow for automatic start up zeroing up to 100% of capacity.
CAP E	The capacity has a zero value or the value exceeds 45,000 kg. Adjust capacity and ensure the capacity is defined in the desired unit.

Limited One Year Warranty

Doran Scales, Inc. warrants its products to be free from defects in material and workmanship for a period of one (1) year from date of shipment. Any product found to be defective within this time period may be returned to Doran's factory, freight prepaid, with prior return authorization and proof of purchase showing date of original sale, for repair or
replacement at no charge.

Doran's liability under this warranty is limited to the repair or
replacement of the defective product and in no event shall Doran Scales, Inc. be liable for consequential or indirect damages to equipment or personnel. Nor shall Doran Scales. Inc. be liable for damages to equipment or for personal injury caused by misuse, overload, accidental damage, alteration, improper installation, or unauthorized opening of the equipment. Under no circumstances will Doran Scales, Inc. be responsible for any indirect or consequential damages due to errors in weighing or failure of a Doran Scales, Inc. product to perform properly.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. THIS WARRANTY CONSTITUTES DORAN'S EXCLUSIVE WARRANTY. THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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