



EZ400

Operators Manual



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Panningen, The Netherlands

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TECHNICAL SPECIFICATIONS

SIZE

7.33" long x 5.25" high x 3.38" wide (186mm x 133mm x 85mm)

WEIGHT

2 lbs (.91 Kg)

HELP MESSAGES

Context sensitive help messages in 10 languages

Long messages are scrolled

TRANSDUCER EXCITATION

8 volts D.C. Nominal

Capable of driving eight 350 Ohms transducers

Short circuit proof

ATC

Auto Temperature Compensation of the internal circuitry for high accuracy weighing measurements

TRANSDUCER SIGNAL

Compatible with transducers having full scale

indicator transfer characteristics greater than

0.25 mv/v

"AUTO RANGE"

(Selectable) To increase display counts at weight values of 300 and 600 display counts.

CONNECTOR

AMP plastic weather resistant circular connector. Gold contacts.

POWER REQUIREMENTS

10.5 to 16.0 V.D.C.

160 mA nominal with four 350Ω L.C.

SET UP AND CALIBRATION

Via front panel

GROSS RANGE

999,999 max. display

LOW BATTERY WARNING

Enabled at 10.5V nominal

POUND/KILOGRAM

Selectable

DISPLAY

STD EZ 6 Digit LCD 1.0. high

DISPLAY RESOLUTION

.01, .02, .05, .1, .2, .5, 1, 2, 5, 10, 20, 50, 100

DISPLAY UPDATE RATE

Selectable: 1, 2, 3, 4 times/sec.

MAX. DISPLAY RESOLUTION

Adjustable to 40,000 counts max.

ZERO TRACKING

Selectable, On/Off

SPAN ACCURACY

$\pm (.1\% + .005\% / ^\circ\text{F})$ or $(.1\% + 0.009\% / ^\circ\text{C})$ full scale ± 1 output count

MOTION DETECTION

Selectable, On/Off

ZERO ACCURACY

$(.005\% / ^\circ\text{F})$ or $(0.009\% / ^\circ\text{C})$ full scale ± 1 output count for 0.5 mv/v transducer

ENVIRONMENTAL ENCLOSURE

IP65, IEC 529

WEIGH ALGORITHM

4 internally selectable digital filters to optimize performance

(General, Slow, Fast and Lock-on)

NON-VOLATILE MEMORY

EEPROM for balance

OPERATING TEMP

-29°C to 60°C

-20°F to 140°F

SAFETY DURING USE



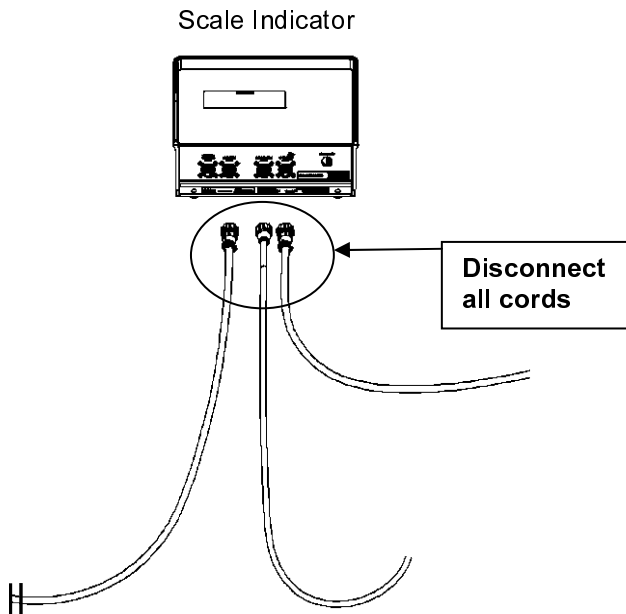
Caution

Cleaning

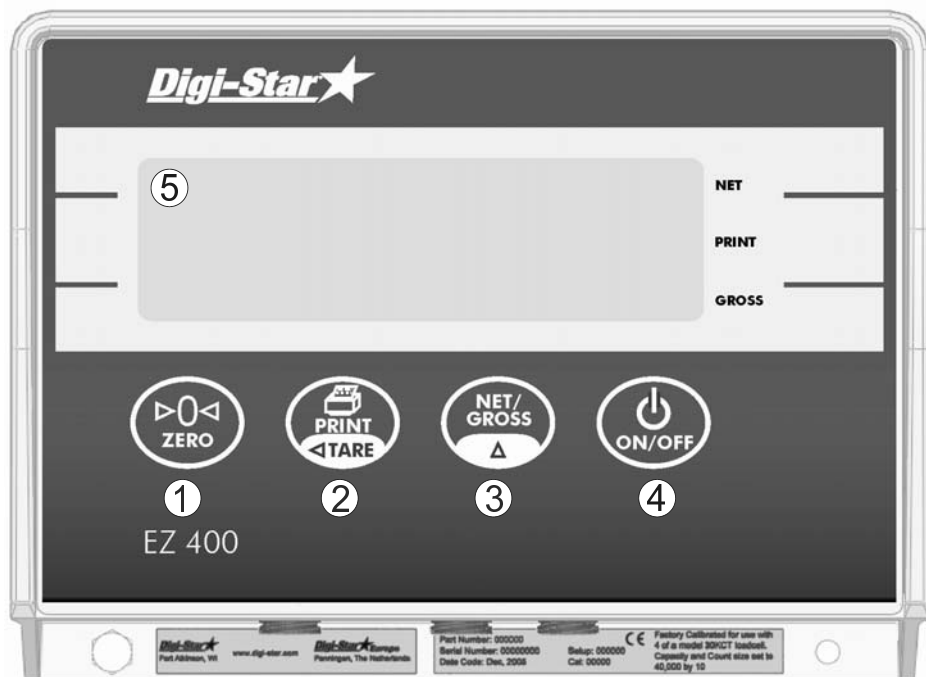
Do not use running water (high pressure cleaners, hoses) to clean the indicator.

Charging Battery and Welding

Disconnect all cables from the weighing indicator before charging the battery or welding on the machine. If cables are left connected, the weighing indicator and connected load cells could be damaged.



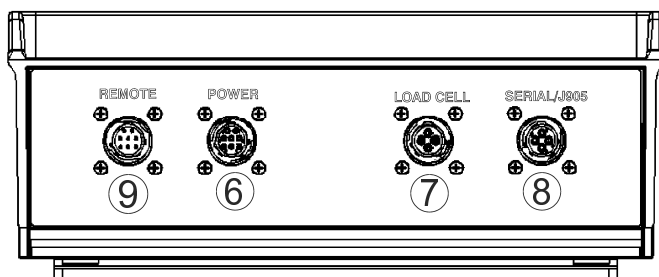
INDICATOR OVERVIEW



Note: See page 20 for installation instructions.

- ①  – press and hold for 3 seconds to zero balance indicator.
- ②  – temporary zero (Net Mode) (Standard EZ400).
-  - Optional: (EZ400 with serial port)
temporary zero (Net Mode)
printer records to memory or prints displayed weight
- ③  – toggles between Net and Gross weights.
- ④  – turns indicator on/off. Press while on runs self test.
- ⑤ Display Window – Displays current actions.

Bottom Panel



- ⑥ - Power Cord Connection – +12 VDC.
- ⑦ - Load Cell Connection – Connect cable from the J-Box.
- ⑧ - Serial/J905 – Optional, to communicate with computer and other digital Input/Output devices.
- ⑨ - Remote Port – Optional, for remote display

Pin	J905 Connector Signals
1	+5VDC
2	Com #1 Out (Tx) - Computer
3	Com #1 In (Rx) - DDL & Computer
4	Com #2 Out (Tx) - Printer
5	+12 VDC
6	Gnd – Available for any Com device
7	Com #2 In (Rx)
8	Ground

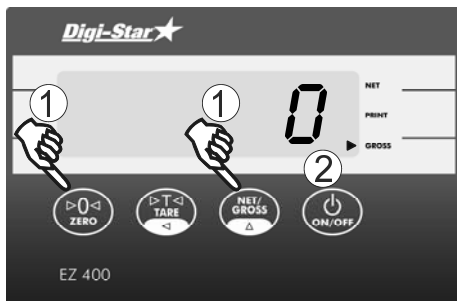
OPERATION

Turn on Indicator



1. Press .

Zero Balance Indicator

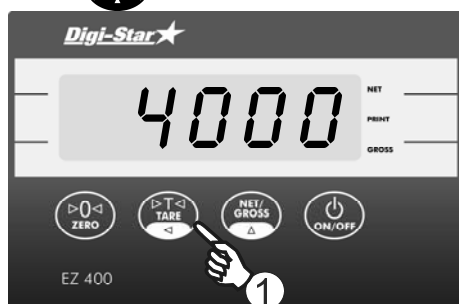


1. Press  for 3 seconds to zero balance indicator.
2. Flashing arrow points to gross next to the display window, indicator ready to weigh.

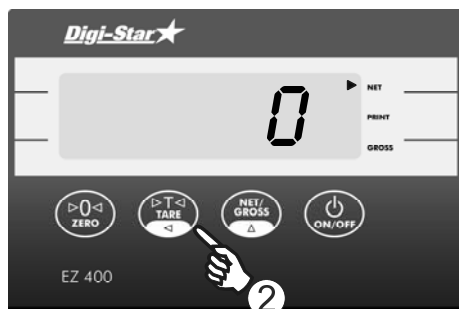
Tare and Net/Gross

Tare is a temporary zero (Net Weight)
to display total weight (Gross Weight)

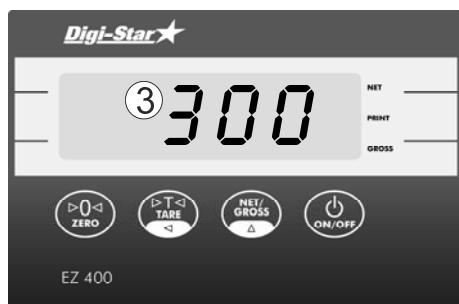
Press .



1. Weight displayed, press  sets zero weight.



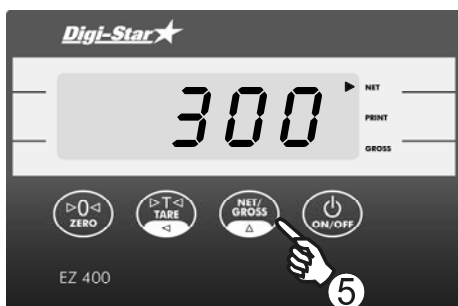
2. Pressing  displays zero weight and flashing arrow on side of display points to NET.



3. Add more weight.



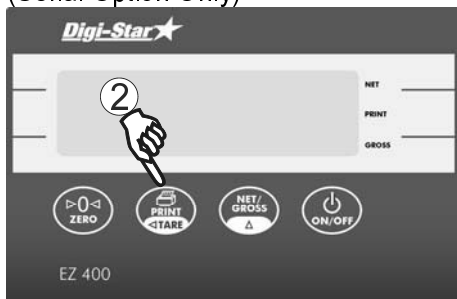
4. To know total of original weight of 4000 pounds plus added 300 pounds, press  to show 4300 pounds, flashing arrow points GROSS.



5. Press  300 pounds displayed flashing arrow points NET.

Store Data to DDL

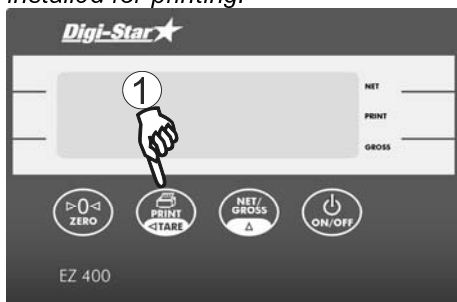
(Serial Option Only)



1. Connect the DDL to the SERIAL port on the bottom panel. See page 4.
2. Press and hold  to save print data to the DDL.

Printing Gross Weights

Note: Optional serial port must be installed for printing.



1. Press and hold  3 seconds to send displayed weight to serial port. Each time this command is executed the value displayed is added to the "PRTACC" which is the accumulated weight. Weight is accumulated until cleared.

Print Formats

Three print formats are available to output *PRTACC* value and *SCALE ID* to DDL or printer.

PRTAC1: *FIELD ID, 4856, GR, 274575, PA, 05FE08, 1:44P*

PRTAC2: *FIELD ID, 05FE08, 1:44P*
 4856, GR, 274575, PA

Includes following information:

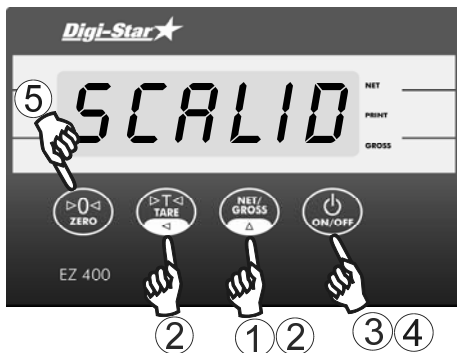
- Scale ID (*SCALEID*)
- Weight
- Weight Tag (Net, Gross, Load/Unload)
- Accumulated Weight
- Print Accumulator Tag
- Date and Time

PRTAC3: *FIELD3, 5977, LB, GR, 309719, PA, 05FE08, 4:42P*

Includes above and adds "Unit of Measure" and "Lock-On Status" (for animal weighing).

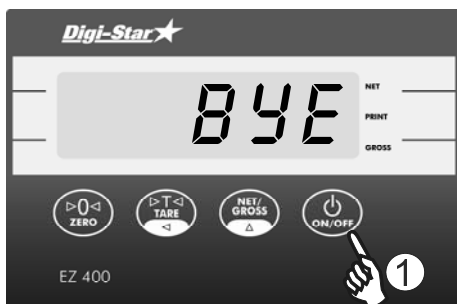
See "Setting Options" (page 13) to change print format (*PRTFMT*).

Changing Indicator ID Name & Clearing Accumulated Weight



1. Press and hold  3 seconds.
SCALID is displayed followed by
current ID name.
2. Use  and  to enter new
Scale ID.
3. Press  to view accumulated
weight.
4. Press  to resume weighing.
Or
5. Press  to clear accumulated
weight total.

Turning Off the Indicator



1. Press  until "BYE" is displayed.

WEIGH METHODS

Select weigh method #1 for general weighing.

General Weigh Method #1

All purpose weigh method for stable loads.

Slow Weigh Method #2

Higher accuracy for weighing stable loads.

Fast Weigh Method #3

Determines new weight quickly when weighing stable loads.

Lock-on Weigh Method #4

Weighing active animals and displays stable accurate weight. Set to “OFF” for weighing stable weights. Lock-On sensitivity can be adjusted using “LOCKON” menu.

Once weight displayed, scale “Locks-On” to weight. Weight does not change, even if motion never stops. Small ‘L’ appears on left side of the display indicating weight “Locked-On.” Animal’s weight must be greater than 2.5% of scales “capacity” weight before system “Lock-On.”

Break lock, 50% of displayed weight added or removed from scale. “Locked-On” weight can be “rechecked” by pressing . This breaks “lock” and scale recalculates weight.

WEIGHING ERRORS

Over-Capacity Limit (*OVRCAP*)

The display shows the message "OVRCAP" if the weight on the scale system exceeds the capacity limit. The capacity value is entered in SETUP to warn of overloading the scale system.

Over Range (*+RANGE*)

The display shows the message "*+RANGE*" if the weight on the scale system exceeds the maximum weight measurable by the scale system. The over range value is always the system's maximum A/D counts multiplied by the scaling factor. The actual weight at which over range occurs depends on the calibration, zero, and display count size.

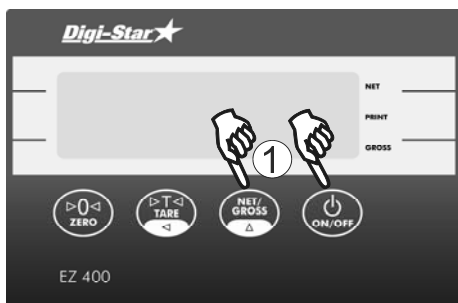
Under Range (*-RANGE*)

The display shows the message "*-RANGE*" if the weight on the scale system is less than the minimum weight measurable by the scale system. The under range value is always the system's minimum A/D counts multiplied by the scaling factor. The actual weight at which under range occurs will depend on the; calibration, zero, and display count size.

Low Battery Indication (*LO BAT*)

If the supply voltage drops below the (10.5 Volts), the message *RECHARGE BATTERY - TURNING OFF*" and *LO BAT*" will periodically show on the display to alert the operator of the low battery condition.

RUN SELF TEST



1. Press  then  during normal system operation to start self-test.

MENUS AND CALIBRATION

The Indicator has optional settings that allow flexibility in the way that the scale is used and data is collected.

Changing Options Using Long Form Setup

Enter Long Form Setup by holding  and  for three seconds.

Press  to select menu 1, 2, 3 or 4.

Press  to advance to desired parameter.

Press  to select proper setting.

Press  to save setting and advance to next parameter.

Hold  and press  to return to indicator operation.

Default settings from the factory vary with options and due to customer preferences.

SETTING [display]	OPTIONS [displayed] BOLD=DEFAULT		DESCRIPTION
MENU 1. BASIC FEATURES IN MOST INDICATORS			
LANGUAGE (LANGAG)	English Dutch French German Italian Portuguese Spanish Danish Hungarian Spanish	(ENGLISH) (NEDERL) (FRANCS) (DEUTSH) (ITAL) (PORT) (ESPAÑ) (DANSK) (MAGYAR) (VESTA)	Select language to be displayed.
DISPLAY RATE (D RATE)	1,2,3,4		Update display times per second.
ZERO TRACK (ZTRACK)	ON/OFF		If ON -zero track adjust balance for buildup of snow & mud.
WEIGH METHOD (W MTHD)	1=GENERAL, 2=FAST, 3=SLOW, 4=LOCK-ON		Select weigh method

SETTING [display]	OPTIONS [display] BOLD=DEFAULT	DESCRIPTION
LOCK-ON (LOCKON)	1-7, 8 , 9	Use the lowest setting that still allows the system to lock on consistently. A low value allows the system to be more sensitive to animal motion. A high value allows the scale to lock on faster.
SCALE ID SETUP (SCALEID)	NEW EZ	Identity of scale (truck id or Mixer number).
LOCK-N-HOLD (LKNHLD)	ON/OFF	Weight is held until next animal is weighed.
AUTO OFF (AUTOFF)	15, 30, 45, 60, OFF	Indicator automatically shut OFF after specified time of inactivity.
LOCK-ON-STORE (LSTORE)		For animal weighing only.
LOCK-ON-STORE SEND (LSEND)		For animal weighing only.
1 PRESS ZERO (1 ZERO)	ON/OFF	If ON -press and hold Zero key to Zero/Balance scale.

MENU 2. CLOCK, PRINTER, COMMUNICATIONS & ESTIMATED WEIGHT FEATURES

TIME FORMAT (TIME F)	24 HR AM/PM	Select time format -AM/PM or 24 hour
1 TIME (TIME)	XX:XX:XX	Select key changes time, function key chooses hh:mm:ss.
DATE FORMAT (DATE F)	1-mm-dd 2-mm/dd/yy 3-mm/dd/yyyy 4-dd-mm 5-dd/mm/yy 6-dd/mm/yyyy 7-ddmoyy 8-ddmoyyyy.	Select date format
DATE (DATE)	Enter XXXXXX	Select key changes date -function key chooses mm/dd/yy .
TARE AUTO PRINT (TAREAP)	ON/OFF	If ON -tare auto-prints displayed weight.
ONE LINE PRINT (1L PRT)	ON/OFF	If ON -indicator data prints on one line.

SETTING [display]	OPTIONS [display] BOLD=DEFAULT	DESCRIPTION
(SCOREM)	1,2,3,4,5,6,	Select scoreboard output mode 1-1/sec 2-2/sec 3-3/sec 4-every conversion 5-display rate 6-display weight change 7-send status 1/sec, 8-send status 1/5sec, 9-Reserved & 10-send EID 1/2 sec.
AUTO PRINT (APRINT)	ON/OFF	If ON -pressing keys auto-prints weight values.
(COM IN)	DOWNLD, EZ CMD, EZ2CMD	Com port interface selections DOWNLD for Data Down Loader, EZ CMD = Original EZ Commands, EZ2CMD = EZII Escape Commands.
PRINT FORMAT (PRTFMT)	AUTO WTONLY DOWNLD DT+TM ID+TM IDWTTM ANIMAL 3200-A 3200-B 32-TMR DATEI FDINFO WTRCTM EIDINF EID EIDVID PRTAC1 PRTAC2 PRTAC3	Select alternate & comma (CSV) formats.
(ZEROUT)		
(C1 DLY)	OFF, .10, .25, .50, .75, 1-5	Choose the number of seconds the printer will delay before advancing to the next print line.
(C2 DLY)	OFF, .10, .25, .50, .75, 1-5	Choose the number of seconds the printer will delay before advancing to the next print line.
(PRTACC)		
(TARPRT)	TARE	
ESTIMATED WEIGHT (ESTWT)	0,1,2,3,4,5,6,7,8,9	Allows operator to adjust Gross weight of scale by changing the zero/balance.
MENU 3. SCALE CALIBRATION SETTINGS		
DISPLAY COUNT (COUNT)	.01,.02,.05,.1,.2,.5,1,2,5,10,20,50,100	Count set too small, readings unstable and indicator not accurate
AUTO-RANGE (ARRANGE)	ON/OFF	Scale increases display count size for weights over 300 again at 600 lbs/kgs.

SETTING [display]	OPTIONS [display] BOLD=DEFAULT	DESCRIPTION
DISPLAY UNIT (LB-KG)	.01,.02,.05,1,2,5,10,20, 50,100	Select display count size of weigh values.
CAPACITY (CAP)	LB/KG	Display pounds -lb or kilograms -kg
WM1 ADJUST 1 (WM1-1)		Enter MAXIMUM weight measurable on scale.
WM1 ADJUST 2 (WM1-2)		0=OFF Use values less than WMA 1-1 for quick weight response.
WM1 ADJUST 3 (WM1-3)		Enter weight to activate quick weight response.
WM2 ADJUST 1 (WM2-1)		Increase number to smooth weighing
WM2 ADJUST 2 (WM2-2)		0=OFF Use values less than WMA2-1 for quick weight response.
WM2 ADJUST 3 (WM2-3)		Enter weight activate quick weight response.
MENU 4 – NOT USED		

SHORT FORM CALIBRATION

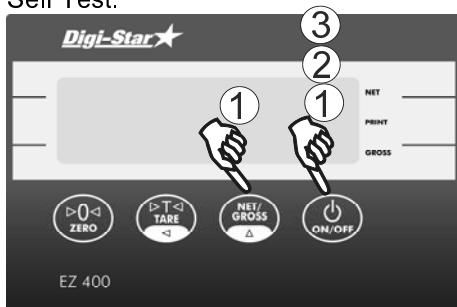
The Short Form Setup & Calibration procedure allows you to change "SETUP" and "CAL" numbers of indicator.

Do not attempt to calibrate scale if indicator is not reading stable weights. Calibration procedure will not fix instability, inconsistencies, or flashing "RANGE" messages.

Obtain Current Set-up and Calibration Number

Write down current SETUP and CAL numbers of your EZ 400 indicator.

These numbers are displayed during Self Test.



To run self test with indicator ON:

1. Press  then  to start Self Test.
2. Press  to "pause" the Self-Test while numbers are displayed.
3. Press  again to allow self-test to complete normally.

SETUP # _____

CAL # _____

SETUP NUMBER

Following is a list of functions that are controlled by the "SETUP" number:

Weigh Method (*W MTHD*)

Display Units (*LB-KG*)

Display Counts (*COUNT*)

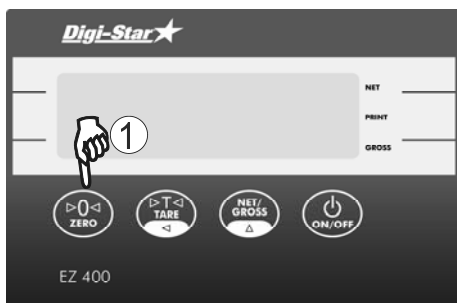
Gain

Scale Capacity

Calibrating Scale For Maximum Accuracy

Note: To accurately calibrate scale, you need a large amount of weight that has a known value. For best results you should have at least as much weight as largest load you plan to weigh.

Determining New Setup and Calibration Numbers



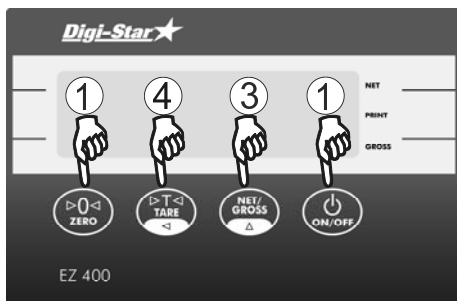
1. Press  to Zero-Balance. See page 5.
2. Put KNOWN WEIGHT on scale platform and write down WEIGHT DISPLAY.

Perform following equation to find ACCURATE CAL #.

$$\frac{\text{Known Weight}}{\text{Displayed Weight}} \times \text{Existing Calibration Number} = \text{Accurate Calibration Number}$$

The setup number does not change.

Enter A New Setup And Calibration Number



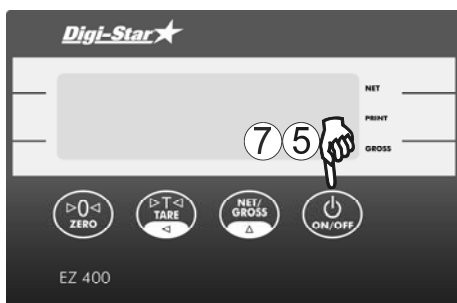
1. Press and hold  then press  for 3 seconds to enter short form calibration.

2. The display will flash “*SETUP*” and then display the 6-digit setup number with the right digit flashing.

3. Press  several times to increment digit to it proper value.

4. Press  to advance digit left.

Repeat steps 3 and 4 for each digit as required.



5. Press  to enter new setup number and display calibration number.

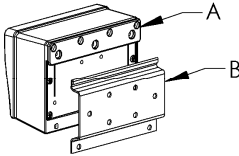
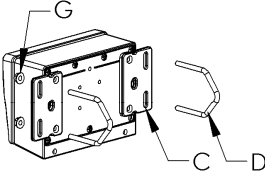
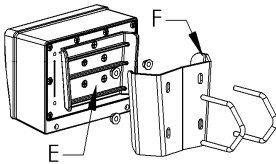
6. Repeat steps 3 and 4 to modify the calibration number.

7. Press  to enter new calibration number and display will go back to normal.

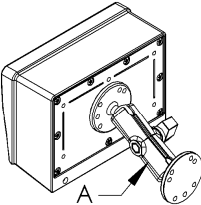
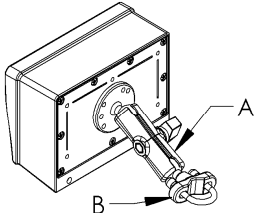
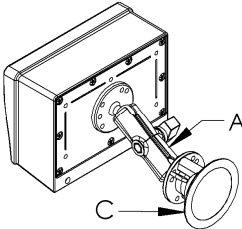
8. Verify the accuracy of scale.

INSTALLATION

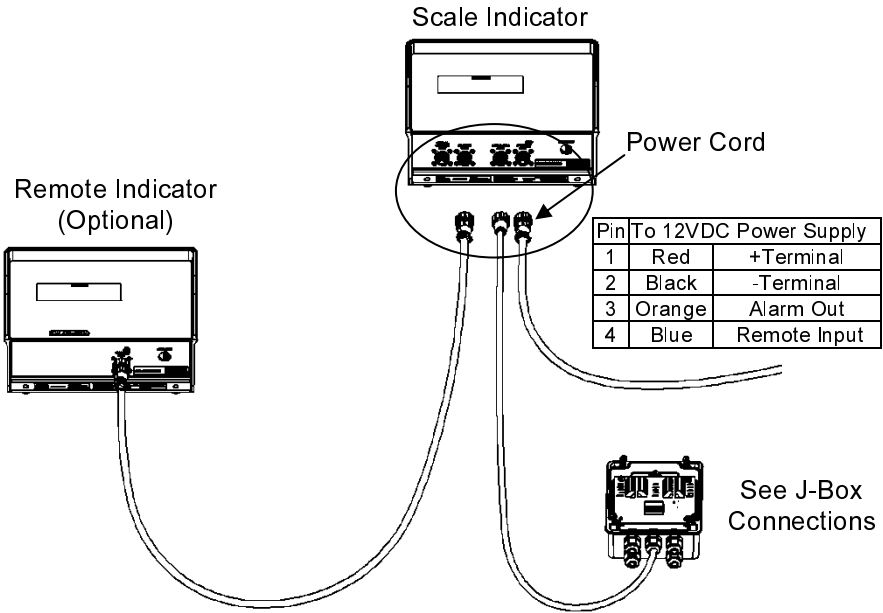
Indicator Mounting

								
RAIL MOUNT			WING MOUNT			WEDGE MOUNT STANDARD		
KEY	PART NUMBER	DESCRIPTION						
A	403769	BRACKET – STR TOP MOUNT						
B	403980	BRACKET – ROBO MOUNTING						
C	403770	BRACKET – WING MOUNT						
D	405069	U-BOLT, 1/4-20 X 3.25 ZP						
E	403771	MODIFIED PLASTIC WEDGE MOUNT						
F	405124	WEDGE MOUNT BRACKET, INCLUDES U-BOLTS & NUTS						
G	405084	NUT, 1/4-20 TOP LOCKING FLANGE						

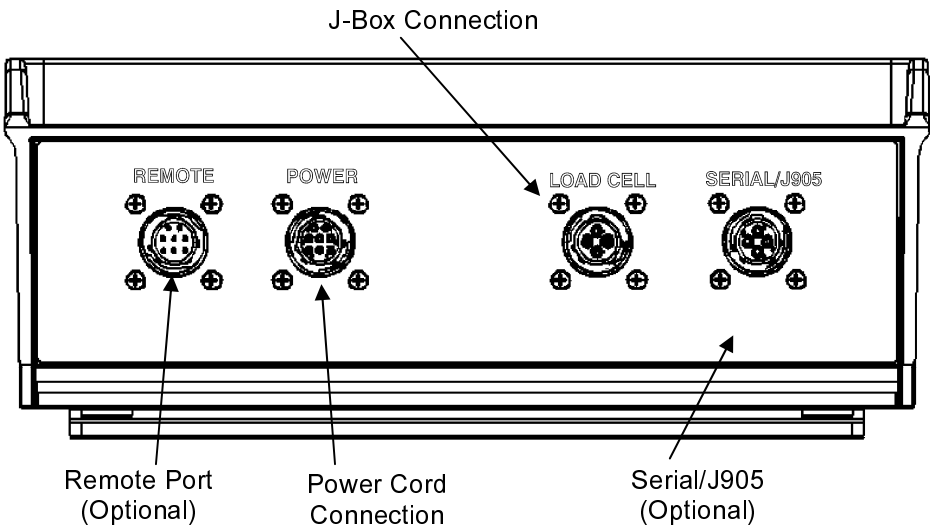
Optional Ram Mounting

								
RAM MOUNT STANDARD			U-BOLT BASE			TWIST LOCK SUCTION CUP		
KEY	PART NUMBER	DESCRIPTION						
A	403180	RAM MOUNT						
B	403179	MOUNT BASE-1" BALL U-BOLT						
C	404230	RAM SUCTION CUP W/TWIST LOCK						

Cable Connection



Indicator Connection Diagram

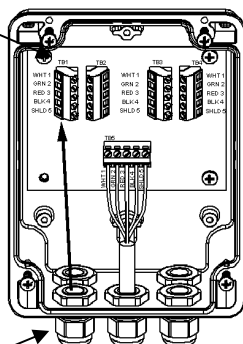


Bottom Panel Cable Connections

Connect Load Cells to J-Box

Connect load cell wires to terminal blocks. See Wire Color Key

Wire Color Key		
	Color	Description
1	White	Signal +
2	Green	Signal -
3	Red	Excitation +
4	Black	Excitation -
5	Shield	Shield



J-Box Illustrated for 4 Load Cell Installation

Tighten Nuts

J-Box Cable

Load Cell Cable

Connect to Indicator bottom Panel.

J-Box Connections

Load Cell Direction



Observe direction of arrow when installing load cell.

Indicator Calibration

If you connect an indicator to a different weighing implement, the calibration and setup number may need to change. Refer to calibration procedures (see pages 17-19) or contact your Digi-Star representative for assistance.

OPTIONAL EQUIPMENT

Data Transfer Options



Kit Data Down Loader

Allows transfer of data from indicator to PC. (Optional Serial/J905 port must already be installed in indicator)

Remote Indicators



RD440 small remote display

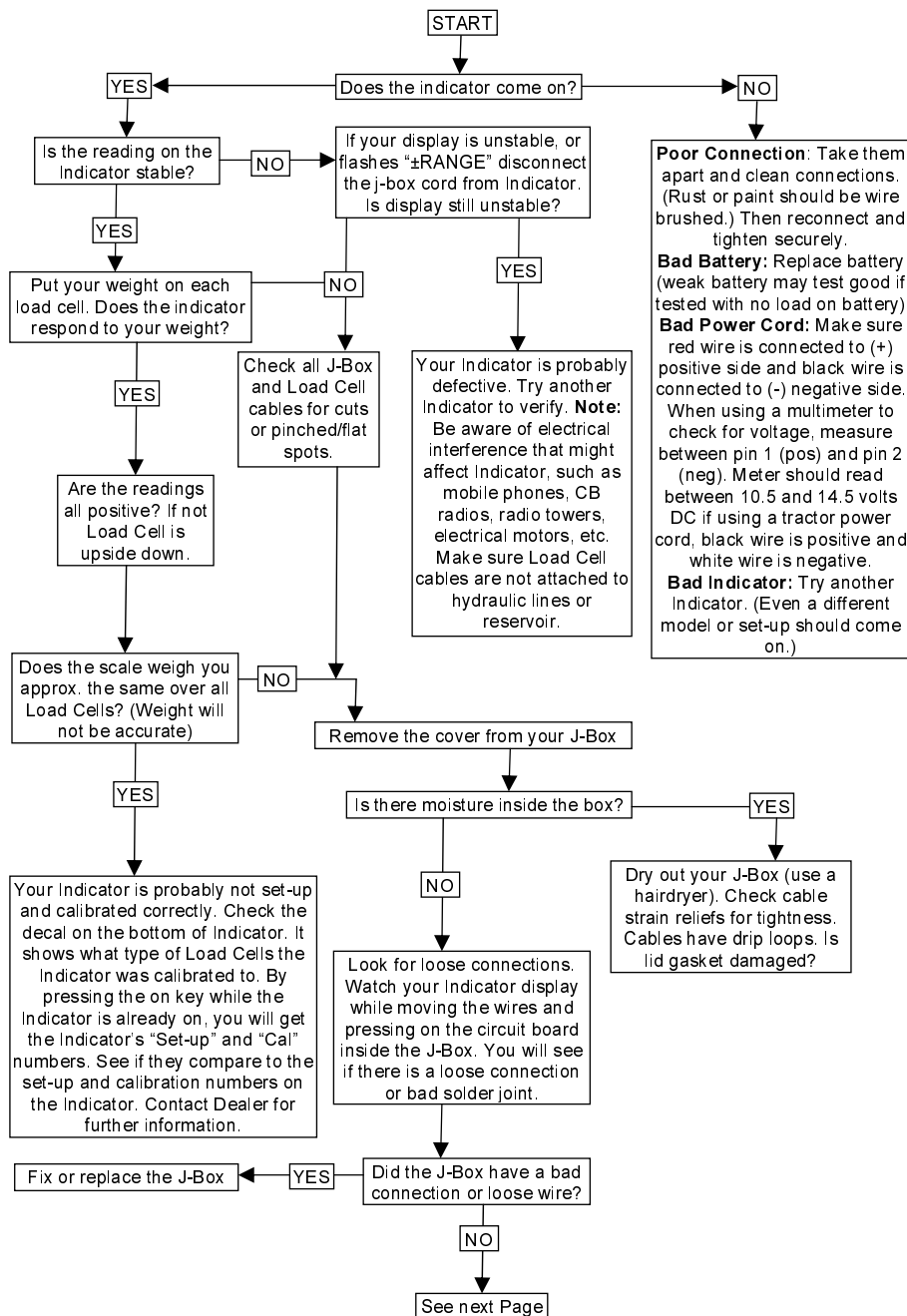
RD2400V backlit remote display with 1.7" high numbers

RD2400V backlit remote display w/transmitter and installed receiver

RD4000 remote display

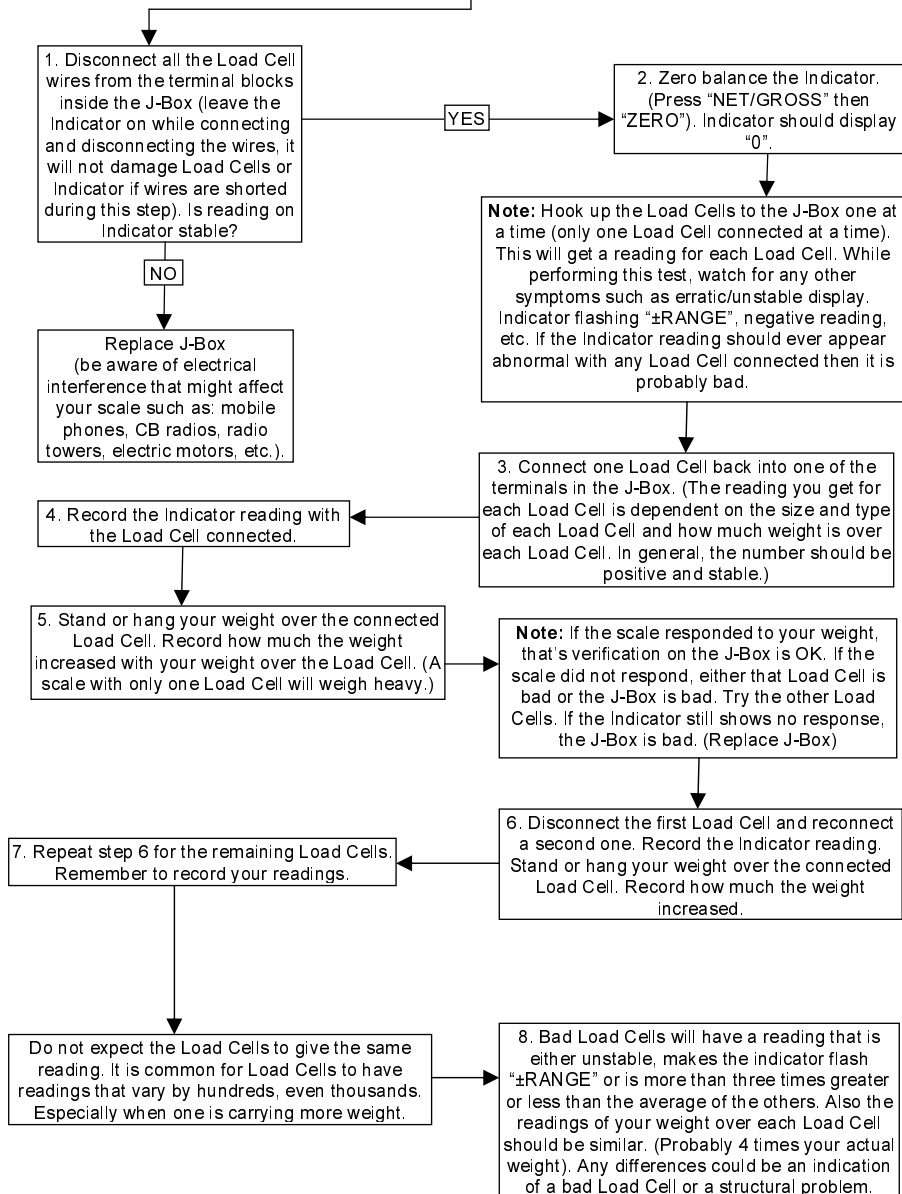
TROUBLESHOOTING

FLOW CHART



FLOW CHART

Continued



LEGAL-FOR-TRADE CERTIFICATION

United States

In the US, the Legal-for-Trade certification is regulated by the National Type Evaluation Program (NTEP). The NTEP certificate number is 08-40.

Canada

Measurement Canada is the Canadian agency that regulates Legal-for-Trade scales. The approval number from Measurement Canada is AM-5678C.

Legal for Trade Features

Digi-Star Legal-for-Trade indicators are modified to comply with US and Canadian regulatory agencies. Some of these modifications are:

Load Cell Disconnect Sensor

Indicator displays *+RANGE* or *-RANGE* without flashing load when cells are disconnected.

Printing

Printing weight values is not allowed while in motion, during self-calibration, or if any error conditions such as *+RANGE*, *OVRCAP* or *OVRFLW* are active.

Lock-On Weigh Method

Lock on weigh method (for animal weighing) cannot be enabled.

Tare

Cannot tare a negative weight.

Labeling

The capacity and division information is shown on the front of the indicator.

Sealed to Prevent Unauthorized Modifications

The scale indicator is sealed by a Category 1 Audit Trail. To access the audit trail in the normal weighing mode, press [NET/GROSS] and then press [ON] within three seconds. This will display the current parameter and calibration event count values. Pressing any key will return the indicator to the weighing mode. The audit trail system is always active and cannot be altered. Audit trails are stored in flash memory and do not require batteries to maintain the audit trail values.

Changing any of the following parameters will change the Calibration event count value or parameter audit event count value. This will void your Legal-for-Trade certification unless performed by properly trained personnel.

- Setup
- Calibration
- Capacity
- Display Count
- Display Units
- Weigh Method
- Motion
- WMA1-1 through WMA2-3
- LFT Option Setting

On Legal-For-Trade Units Only

Perform the following procedure on an empty and clean machine before the unit is to be “site-certified”.

- Install the LFT indicator on the machine and connect all load cells.
- Zero/balance the scale with no load on the machine.
- Hold  and press .
- Press  and  to return to normal weighing.