WeighTech™

MicroWeigh Datascale

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Contents

1 Introduction

With the WeighTech MicroWeigh a combination of state-of-the-art technology with common down-to-earth basics creates a digital indicator that makes troubleshooting and actual maintenance repair so simple that anyone can be trained to make repairs on this indicator in just minutes.

1.1 MicroWeigh Features

- High impact ABS alloy construction.

- Highly visible, easy-to-read display with adjustable contrast and backlight.

- Environmentally sealed touch-sensitive operator control panel.

- Standard units of measure include grams, kilograms, ounces, and pounds.

- RS-232 and Infrared communications are standard with RS-485 option available.

- Wireless data collection using a PDA with WeighTech ScaleTrax software.

1.2 MicroWeigh Applications

- Standard weighing

- Label printing

- Tank or vat weighing

- Checkweighing (boxes, bags, and pieces)

- Bench and floor scales

- Batch weighing

2 Keypad Operation

The WeighTech MicroWeigh keypad is a watertight sealed touch sensitive sensor. The keys are actually sensitive to contact area, not force. Press lightly with the ball of your fingertip as though you were giving fingerprints. Best results come from using the ball of your finger, not the very tip. Most objects will not trigger the keypad–knives, screwdrivers, tools, etc. do not have enough surface area in contact with the key to register as a keypress. (You might get it to trigger with a medium sized conductive bolt head, if you have skin in contact with the bolt.)

One consequence of the design of the touch sensitive keypad is that it is sensitive to water streams. For this reason, WeighTech includes a unique "washdown mode" to prevent unwanted keypad activity during washdown/sanitation/cleanup intervals. When the indicator is in washdown mode, the indicator will weigh normally but the keypad is locked out.

To unlock the keypad, you must play follow the leader. One key will be lit. Press it. Another key will then light up. Press it. Continue until the indicator displays "Exit washdown". The indicator will require that you press five keys in a row correctly before it will unlock the keypad. Any wrong keypress will restart the counter back to five. The odds are extremely slight that random water splashing would ever be able to trigger the correct keys in the correct order to unlock the keypad.

3   Main menu items

3.1   "Power off"

Touch the enter key to select this menu item, which will power down the indicator. If the auto-on jumper is installed on the interface board, the indicator will immediately turn back on.

3.2   "Washdown"

This function puts the indicator in washdown mode to prevent inadvertent keypad activity. See the washdown section of this manual for more information.

3.3   "Totals"

This function leads to the totals submenu.

3.4   "Calibrate"

This function allows you to calibrate the scale. Refer to the calibration section of this manual for details.

3.5   "Setup Menu"

Enter the setup submenu, where scale parameters can be viewed or set.

3.6   "Audit cfg"

Displays the audit counter for configuration. Every time a sealed scale parameter is modified this counter will increment by one. This setting is nonvolatile (it will be retained even if the batteries go dead) and cannot be altered except by modifying an audited configuration parameter.

3.7   "Audit cal"

Displays the audit counter for calibration. Every time the scale is calibrated this counter will increment by one. This setting is nonvolatile (it will be retained even if the batteries go dead) and cannot be altered except by performing a calibration.

3.8 "Tare"

Keypad entered tare: Touch the Enter key to set a new pushbutton tare by scrolling through digits one place at a time. Keypad tare values are entered in the current units, and are limited to be greater than gross zero weight and less than the indicator capacity. Entering a tare of zero will clear any existing tare from indicator.

4 How to Step Through Menus

From the main weight display, press the "Menu/Help" key. You are now in a menu, and the keys now have different functions:

| Cancel | Help | Enter | Down | Up |

- "Cancel" will back you out of the menu one level at a time.

- "Help" will display information about the current choice (option).

- "Enter" has various functions, depending on where you are in the menu.

- The "Down" key will scroll backward through the menu choices.

- The "Up" key will scroll forward through the menu choices.

4.1 Menus can contain several different items

An item with a "*" on the right end will do something when you press the enter key–something might be turn the indicator off, drill down into another menu, clear totals, or start a calibration routine. The item with a numeric value (scale capacity, for instance) at the right side of the display might allow you to change the number by pressing the enter key. An item with text (such as "on" or "off") at the right side of the display might allow you to select from a list of options by pressing the enter key. Some items are just for reference and cannot be changed at all. Examples of reference items would be the software name and revision–these are set when the software is written and cannot be changed.

4.2 How to enter a number

Using the calibration routine as an example: Press the "Enter" key. The indicator display will show "Cal weight ⌄" and the cursor will be blinking. The blinking cursor is the clue that you can enter an arbitrary number using the up, down, right, and enter keys. Pressing the up/down keys will scroll through the list (0 1 2 3 4 5 6 7 8 9 - .) in turn. When the desired number appears, press the right arrow (menu/help) key. The blinking cursor will advance one digit to the right, leaving your selected number in place. Continue this sequence until the desired numeric value is visible on the display. Press the "Enter" key to accept the value, or the "Cancel" key to abort.

   Example: Enter a calibration weight of 25 pounds

- Start with the indicator at a normal weight display (" 0.00 lb")

- Press the "Menu/Help" key

- Scroll through the main menu using the up or down arrow keys until "Calibrate *" is displayed on the indicator

- Press the "Enter" key to start the calibration routine

- The indicator may display "Password" if a calibration password is required. If so, enter it (default calibration password is "Zero" "Zero" "Zero")

- The indicator should now be displaying "Cal Weight" and a blinking cursor.

- Press the up arrow key. The display should now show "Cal weight 1"

- Press the up arrow key again. The display should now show "Cal Weight 2"

- Press the right arrow key to accept the first digit (2) and advance the blinking cursor to the next digit. The indicator should display "Cal weight 2_"

- Press the up arrow key five times to select a 5 as the second digit. The indicator should now display "Cal weight 25"

- Press the "Enter" key to accept 25 pounds as a calibration weight.

- The indicator will display "Cal–zero weight". Press the "Cancel" key to abort the calibration process.

4.3   How to select from a list

This is very much like stepping through a menu. Some settings (such as displayed resolution) must be limited to one of several predetermined values. To edit one of these settings, press the "Enter" key. The currently selected value will move from the far right of the display to the left. This indicates that you may use the up and down arrow keys to scroll through a list of possible values for this setting. Once you've selected a value for the setting, press the "Enter" key to complete the selection process. As always, pressing the "Cancel" key will cancel the selection and restore the setting to the previous value.

5   General Scale Operations

5.1   Scale On Procedure

Touch the "Zero / On" key. Indicator will come on and display will read "MicroWeigh by WeighTech" and then continue to the weigh mode. At this point the scale is ready for product or operator input.

5.2   Scale Off Procedure

To turn the scale off touch the "Menu / Help" key. The indicator will display "Power off *". At this point touch the "Print / Enter" key and scale display will go blank, and the indicator will be off. (If the auto-on jumper is installed on the interface board, the indicator will immediately power up.)

5.3   Zero Procedure

To zero the indicator touch the "Zero / On" key and the indicator will take a new zero. If the current weight reading is unstable, under capacity, or over capacity, no new pushbutton zero will be established.

5.4   Units Procedure

To change the units of measure touch the "Units / Cancel" key. The units will change between pounds, kilograms, grams and ounces (assuming all the units are enabled in the "Parameter" menu) each time that the key is touched.

5.5   Tare Operation

Press and hold the tare button to establish a pushbutton tare reference. If a valid tare is established, the indicator will switch to the net weight display. If the gross weight is equal to or less than gross zero, any existing tare value will be cleared, the display will show "Tare cleared" for about one second, and the display will revert to gross weight display.

   Toggle between net and gross display modes by touching the "Tare" button. If no tare reference has been established, the indicator will not switch to net weight mode.

   An arbitrary tare weight can be entered from the tare setting in the main menu (keypad tare). Scroll and select digits one at a time to enter the desired value. The indicator will not accept a keypad tare value in excess of scale capacity, or less than zero. Entering a value of zero will clear any existing tare and return the indicator to the gross weight display mode. Units for the entered weight is the same as the currently displayed units. (To enter a six pound tare, be sure that the display is showing weight in pounds before entering the keypad tare.)

5.6   Data Mode

Press the "Menu" key, then scroll until "Data mode" is visible. Press "Enter". The indicator will then prompt for the kill date, which should be entered in mm.dd.yy format (such as "5.2.02" for May 2nd, 2002). As a shortcut, you can just press the "Enter" key to use the current day as the kill date. Once the kill date has been entered, the indicator will display "Data mode on" for a couple of seconds and enter datascale mode. In datascale mode, the display will show the current product code on the left side, and the current net weight on the right side. Several of the keys will also act differently in datascale mode. Touch the "Print" key while the current weight is stable to print a label.
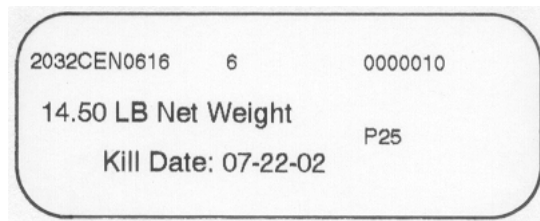
2032CEN0616   6   0000010

14.50 LB Net Weight
                                      P25
     Kill Date: 07-22-02

Figure 1: A sample text-only label

The "Units/Cancel" key will undo the last printed label. The "Menu" key will display a list of product codes and the "Product Exit" option. To switch to another product code, simply scroll using the up and down arrows until the desired product code is displayed and press the "Enter" key. Selecting "Product Exit" will exit the datascale mode and return the scale to normal weighing operation.

Entering the use-by date is optional. If you do not enter a date and instead just touch the "Enter" key, the indicator will calculate the use-by date from the kill date and the use-by interval in the label setup section.

6   Label Setup

First, decide whether a full barcode label or a simpler text label is required. The text label requires less information to be entered–only a product code and tare weight for most applications. Create a new label by pressing the "Menu" key, scrolling to "Label Setup", and entering the label setup password ("Units" "Units" "Units"). The indicator will then allow you to enter the product code, UPC (only used with barcode label), a tare weight, an optional serial number (only used if serializing by product code), an auxiliary field (used in place of the serial number if serialization is disabled), and a pallet size (used only with barcode label).

Once the label information has been entered, the indicator will ask you to confirm before actually storing the new label and product code to memory ("New code...sure?"). Press "Enter" to confirm, or "Cancel" to abort. Once created, the label information is stored in nonvolatile memory and will not be lost when the indicator is powered off.

For example, this text-only label contains:
"2032CEN0616": "203" is the Julian day, "2" is the units digit of the current year (2002), "CEN" is the plant name (Center, TX), "06" is the line number (assigned in the label setup menu), and "16" is the current hour, in 24 hour format.

"6" is the line number.

"0000010" is the serial number.

"14.50 LB Net Weight" is the current weight, using the tare weight (in pounds) for this product code.

"P25" is the product code (the "P" is automatic).

"Kill Date: 07-22-02" is the entered kill date.

Figure 2: A sample full label

7 Calibration Procedure

7.1 Entering the calibration menu

With the indicator on and displaying weight, touch the "Menu / Help" key. The display will read "Power off *". Use the up / down arrows until the display reads "Calibrate *". Touch the "Print / Enter" key and the display should then show "Password". At this point key in the calibration password. (The default calibration password is "Zero" "Zero" "Zero" .)

7.2 Keying in cal weight

The display will show "Cal weight _" and the cursor will be blinking. Using the up, down, and right keys to enter the size of your calibration weight in pounds (i.e. 1, 2, 5, or 10). Press "Enter" to accept the cal weight, or "Cancel" if you make a mistake.

7.3 Calibration Example
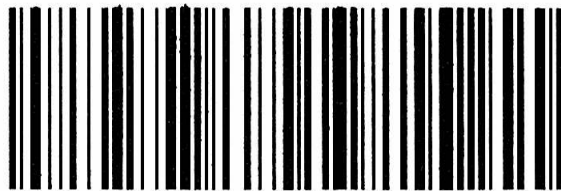
(Entering a 25.00 lb cal weight value.) The blinking cursor is the clue that you can enter an arbitrary number using the up and down keys. Pressing the up/down keys will scroll through the list (0 1 2 3 4 5 6 7 8 9 - .) in turn. When the desired number appears (2), press the right arrow "Menu / Help" key. The blinking cursor will advance one digit to

Figure 3: Neosho label sample

Figure 4: A sample pallet tag

the right (2 ‿), leaving your selected number in place. Continue this sequence until the desired numeric value is visible on the display (25‿) (25.‿) (25.0‿) (25.00). Press the "Enter" key to accept the value, or the "Cancel" key to abort.

7.4 Establishing a zero

The indicator will display "Cal–zero weight". Clear the weighing platform of any foreign objects and once all vibration has died out, press the "Enter" key. Make sure that the platform is not disturbed during this process. Indicator will display "Zeroing..." as it takes an average reading of the zero offset weight (about three seconds).

7.5 Accepting a cal weight

The indicator will then display "Cal–add weight". Add weight to the weighing platform (the weight should be the same amount as the keyed in cal weight) then touch the "Enter" key. The indicator will display "Scaling..." for about three seconds as it performs internal calculations. Finally, the indicator will display "Cal done" for about one second once the calibration cycle is complete.

8 Scale Parameters

To get to the parameters touch the "Menu/Help" key (indicator will display "Power off *"). Use the up or down arrows until the indicator displays "Setup Menu". Touch the "Print/Enter" key and the indicator will prompt for a password. The password for this step will be as follows: starting from the left side of the keypad touch each key in turn from left to right. After entering the password the indicator will display "Parameters *". At this point touch the "Print/Enter" key to access the parameters. Use the up and down arrows to scroll through and view each parameter.

8.1 "Units"

This parameter controls the setup unit of the indicator. Select from pounds (lb), kilograms (kg), grams (g), and ounces (oz). Once set, the indicator capacity, resolution, and calibration weights will be entered in this unit. The units parameter is both sealed and audited.

8.2 "Capacity"

Capacity sets the maximum capacity of the indicator, in setup units. This parameter is both sealed and audited. Factory default is 0, which must be changed before the indicator will weigh.

8.3 "Resltn"

Parameter that sets the resolution of the indicator. Resolution is limited to values available on the scroll list. Resolution is set in terms of the setup units. This parameter is both sealed and audited.

8.4 "Stability"

This parameter controls how many consecutive weight readings are required to be within the motion sense band before the weight indication is considered to be stable. The indicator reads the analog input 7.5 Hz (7.5 times per second), so the default setting of four requires about a half second of stable weight. Either the net or gross light will come on when the weight is stable. This parameter is both sealed and audited.

8.5 "Motion sns"

Amount of motion, in divisions, allowed before the weight is considered unstable. Default is one division. This parameter is both sealed and audited.

8.6 "Prefilter"

Length of the Prefilter buffer. Larger numbers provide slower and cleaner weight readings. Default is 2. This parameter is both sealed and audited. Range?

8.7 "AZT"

Auto zero tracking on/off. This parameter is neither sealed nor audited. When on, stable weights within the "AZT band" of zero will automatically rezero the scale.

8.8 "AZT band"

Amount of weight, in divisions, that can be automatically zeroed out at one time. Default is 1 division. Parameter is sealed and audited.

8.9 "Calibrate"

This function starts the indicator calibration routine. It is sealed and audited. Refer to the calibration section of this manual for details.

8.10 "IZ set"

When this parameter is on, the indicator will attempt to establish a new initial zero every time the indicator powers on. HB44 limits the amount of weight that can be initially zeroed to 20% of scale capacity. (This initial zero does not reduce the indicator capacity.) This parameter is both sealed and audited.

8.11 "lb units"

Select on/off to enable or disable the pounds (lb) units when the Unit key is pressed in weighing mode. This parameter is both sealed and audited.

8.12 "kg units"

Select on/off to enable or disable the kilograms (kg) units when the Unit key is pressed in weighing mode. This parameter is both sealed and audited.

8.13 "g units"

Select on/off to enable or disable the grams (g) units when the Unit key is pressed in weighing mode. This parameter is both sealed and audited.

8.14 "oz units"

Select on/off to enable or disable the ounces (oz) units when the Unit key is pressed in weighing mode. This parameter is both sealed and audited.

8.15 "Defaults"

Restore all configuration parameters to factory default. This function is sealed and audited. Restoring factory defaults will require that the indicator be calibrated and reconfigured before it will weigh.

9 Menus

9.1 Main Level

Power off	Turn off the indicator
Data mode	Go into datascale mode
Washdown	Disable keypad to prevent false keypresses during washdown
Totals	Display total weight, batch count, and average batch weight
Calibrate	Enter quick calibration routine
Label setup	Enter the label setup menu
Setup menu	Bunch of stuff...see below
Audit cfg	Number of times an audited config parameter has been changed (HB44)
Audit cal	Number of times indicator has been calibrated (HB44)
Tare	Current tare weight

9.2 Setup menu

Parameters	Scale settings
Speed keys	Speed key setup
Weighment	Weighment target and database control
Hotkey test	Hotkey communications test
Info menu	Troubleshooting features
Clock	Set time/date
Contrast	Control display intensity

9.3 Parameters

Setup units	Setup units: used for entering capacity and resolution (defaults to pounds)
Capacity	Scale capacity, in setup units
Resltn	Scale resolution, in setup units
Stability	Number of consecutive readings required for stability
Motion sns	Number of divisions allowed before weight is considered unstable
Prefilter	Super filter adjustment–bigger numbers make the filter slower
AZT	On/Off: Autozero tracking on/off, only affects weights near zero
AZT band	Amount of weight (in divisions) that can be zero tracked out
Calibrate	Start calibration routine
IZ set	Set initial zero at power up (default to off)
Address	Communications address
lb units	On/Off: Enables the units toggle key to include pound units
kg units	On/Off: Enables the units toggle key to include kilogram units
g units	On/Off: Enables the units toggle key to include gram units
oz units	On/Off: Enables the units toggle key to include ounce units
Remote 1	Function when remote switch is pressed quickly
Remote 2	Function when remote switch is pressed and held for a couple of seconds
Cntst	Three key quick contrast adjustment on/off
Defaults	Restore scale to factory default settings (all settings will be lost!)

9.4 Totals menu

Clear totals	Clear totals–you will be asked to confirm by pressing "Enter" a second time
Print totals	Print totals for each product code
Print settings	Print all scale settings
Print codes	Print all active product codes and label settings

9.5 Label setup

New label	Create a new product code and label
Edit label	Modify an existing product code and label
Delete label	Delete a product code and label
P-code	Set plant code, which will appear on labels as "P-"
Plant name	Set the three letter plant name code
Line	Two digit production line identifier
Serial	Current serialization number for all products (only used if "Ser Mode" is set to "Code"
Ser mode	"All"/"Code"/"Aux": Select how serial numbers increments for each product code
Label	"Full"/"Text": Select between full barcode label and smaller text-only label
L margin	Fudge factor to move print area away from left edge of label stock (default to 0)
B margin	Fudge factor to move print area away from bottom edge of label stock
Backfeed	Distance past end of label to advance
# labels	Number of labels to print when key is pressed

9.6 New/Edit label

Code	Product code, limited to about 16 characters, no duplicates are allowed
UPC	UPC code, must be 14 digits (shorter codes will have leading zeros added), all numeric
Tare	Tare weight for this product code, in pounds
Serial	Incrementing serial number for this product code only, only used if "Ser Mode" is set to "Code"
Aux	Non-incrementing field number for this product code, used instead of serial if "Ser Mode" is set to "Aux"
Pallet size	Not used
Use-by	Number of days from kill date to use-by date
Wgt	Total net weight for this product code
Cases	Total case count for this product code

9.7   Info menu

ADC	Raw counts display from analog to digital converter
Offset	Calibration zero offset, in raw counts
App	Name of firmware app (*datascale_1*)
Build	Software revision info (*Build 66*)
Date	Date firmware was compiled (*03/30/2011*)
Time	Time of firmware compilation (*08:28:31*)
Batt	Current power supply/battery input voltage, in V
S1+	Load cell #1 positive signal voltage (should be about half of excite voltage with good load cell)
S1—	Load cell #1 negative signal voltage (should be almost exactly the same as S1+ voltage)
Excite	Load cell excitation voltage (should be about 4.5V)
Deadload	Display platform deadload weight (assumes load cell has no offset)
232 audit	Transmit audit trail through RS-232 port (experimental)
IZ autoset	Force a new initial zero
IZ	Current initial zero setting
Debug msg	On/Off: Turn this parameter on for more extensive messages during boot and dump cycle
Off Timer	Minutes to automatic shutoff, set to 0 to disable auto-off
Bootload	WeighTech use only

10   Troubleshooting

10.1   Load cells

Go to the "Info menu" and verify that the "Excite" voltage is about 4.5V. A reading of less than 1V probably indicates a short from excite to ground. Confirm by removing the load cell connections. If the excite voltage reads normal with the load cell disconnected, you've got a short in the cable or a bad load cell.

Check to see that the signal voltage in the "Info menu" are about half of excite and equal. If one signal voltage is near zero, or near 4V, you may have a disconnected signal wire. Check that connection at the interface board. If the signal voltages are not near zero or 4V, but are more than a 0.5V different, you may have the load cell miswired, or a bent load cell.

If the indicator constantly shows "OVERLOAD" or "UNDERLOAD", follow the instructions above. In addition, go to the "Info menu" and watch the "ADC" reading (raw counts). It shouldn't vary more than 100-300 counts with a good load cell and a stable environment. With no load on the cell, it should be within +/- 10,000 counts of zero. (Deadload can cause the no load reading to shift.) If the no load reading is really large (say, greater than one million counts or less than negative one million counts) and the connections are solid, you probably have a bent load cell.

Unstable or noisy weights? Perform all the steps listed above. A really good test is to temporarily disconnect the load cell and substitute a known good load cell simulator

(available for purchase from WeighTech), or a known good load cell. Calibrate the scale with a convenient test weight and check to see if the weight reading is stable. If so, the noisy load cell has probably been damaged or water-soaked. If the indicator still displays a noisy weight with a load cell simulator, the problem may be in the indicator. Contact WeighTech for further assistance.

10.2   Before calling WeighTech...

Write down a few key pieces of information. Gather the indicator serial number from the front panel, the software application name and build number from the "Info menu", and grab the current settings if you have access to a Palm. If anything on the indicator has changed, been replaced, or been modified, mention that to the service technician too. If the problem involves fill rates, hangs, or questions regarding machine capabilities, be ready to describe the product, product flow rate, and any bag/box/tote/combo sizes. If you're calling about unstable weight readings, over/underload, or other load cell related problems, have the ADC, excite, and signal readings from the "Info menu" handy. When calling, be prepared to describe what is wrong ("it doesn't work!" isn't a good description–"hopper gate doesn't shut in off mode" is much better) and what you expected to see.

11   Replacement Parts

Part Number	Description
1000-10	Load cell, 200 lb capacity
1001-40	Datamax printhead assembly
BB-2020-200	Bench base, 20"x20" w/ 200 lb capacity load cell
EF0009	Strain relief, MicroWeigh
HW0018	MicroWeigh housing screw (pack of 4)
HW0019	Screw, 6-19 x 0.375, trilobe PPH, MicroWeigh (pack of 10)
HW0020	Lobed knobs, MicroWeigh (pack of 2)
WE0028-101	Datamax I class label printer w/ internal rewind
WE0028	Main gasket, MicroWeigh
WE0029-1	Power cord, detachable, MicroWeigh
WE0031	Front housing assembly, MicroWeigh (specify firmware name and revision)
WE0032	Back housing assembly, MicroWeigh
WE0035-101	Interface board assembly, MicroWeigh
WE0059	Printer cable

JOB: DATASCALE
PLANT:
LOCATION:
PAGE: 1 OF 1
DRAWN BY: NEWELL   DATE: 03-30-2011
FIRMWARE: DATASCALE_1

WeighTech™

Terminal	Wire	Device
TX+		
TX-		
RX+		
RX-		
COM		
RI1		
RI2		
RO1		
RO2		
TX	BLACK	PRINTER
RX	RED	PRINTER
GND	CLEAR	PRINTER
S1+	WHITE	LOAD CELL
S1-	RED	LOAD CELL
EX+	GREEN	LOAD CELL
EX-	BLACK	LOAD CELL
SHD	SHIELD	LOAD CELL
S2+		
S2-		
EX+		
EX-		
S3+		
S3-		
EX+		
EX-		
S4+		
S4-		
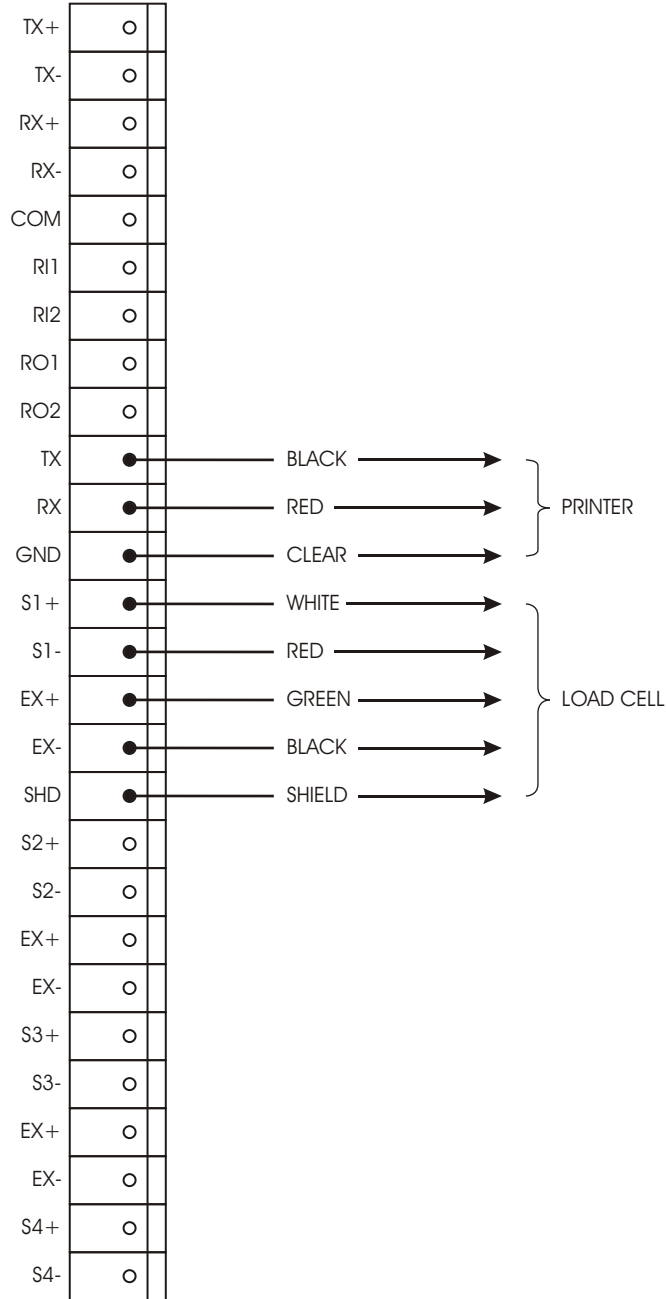
13 Load Cell Color Codes

Manufacturer	Models	Signal +	Signal -	Excite +	Excite -	Shield	Sense +	Sense -
Advanced Transducers		Green	White	Red	Black	Bare wire		
Allegany Technology		Red	White	Green	Black	Bare wire		
Artech		Green	White	Red	Black			
Beowulf		White	Red	Green	Black			
BLH	C2P1 C3P1 T2P1 T3P1	White	Red	Green	Black	Yellow		
Cardinal		White	Red	Green	Black	Bare wire		
Celtron	CSB DSR LOC SQB STC STC-SS DSR CLB HED DLB	Green	White	Red	Black	Bare wire		
	LPS	Green	White	Red	Blue	Bare wire		
	HOC MOC	Red	White	Green	Black	Bare wire		
Dillon	Canister Tension	Black	Red	Green	White	Orange		
	Compression	Black	Red	White	Green	Orange		
	Z-cell	White	Green	Red	Black	Orange		
Force Measurement		Green	White	Red	Black	Bare wire		
GSE		White	Green	Red	Black	Bare wire		
HBM	BLC BLF JRT PWS RSC SBF SB3 USB U1T Z6	White	Red	Green	Black	Yellow		
	BBS	White	Red	Green	Black	Bare		
	PLC B35	Green	White	Red	Black	Yellow		
	SP4	White	Red	Green	Black	Yellow	Orange	Blue
Interface	SSM 1200 3200	Green	White	Red	Black	Bare wire		
Kubota		Green	Blue	Red	White	Yellow		
National		White	Red	Green	Black	Yellow		
NCI		White	Green	Red	Black	Bare wire		
Pennsylvania		Green	White	Orange	Blue	Bare wire		
Phillips		Green	Grey	Red	Blue	Bare wire		
Revere Transducer	62HU 63HU 363 953 9523	Green	White	Red	Black	Bare wire		
	92CC 93CC 42U 43U 263D 462 5102 5103 5123 5223 5723 6762 9102 9103 9123 9363	Green	White	Red	Black	Orange		
	392B 642 652 692B2 BSP HPS USP1	White	Red	Green	Black	Bare wire		
	792 933 SHB SSB	White	Red	Green	Black	Clear		
	CP1 CSP1	White	Red	Green	Black	Orange		
	RLC	Brown	White	Pink	Grey	Bare wire		
Rice Lake	RL20000 RL20000SS RL20001 RL20001HE RL30000 RL35023 RL35023S RL35082 RL35082S RL35083 RL39123 RL39523 RL50210 RL65044 RL70000 RL75016 RL75016SS RL75040A RL75058 RL75060 RL75223 RL90000 RLETB RLETS RLHSS RLMK4 RL50500 RL70000SS RL71000HE RL75016HE RLMK15 RLMK21 RL75061	Green	White	Red	Black	Bare wire		
	RLMK1	White	Green	Red	Black	Orange	Yellow	Blue
	RL1521	Green	White	Red	Blue	Bare wire		
Sensotec	White	Green	Red	Black	Bare wire			
Sensortronics	60001 60008 60018 60030 60036 60040 60048 60048SS 60050 60051 60060 60060-0101 60063 65007 65016 65016SS 65016W 65023 65023S 65023SS 65024 65040A 65040S 65058 65058S 65061A 65083 65083S 65114	Green	White	Red	Black	Bare wire		
	60007 60064	White	Red	Green	Black	Bare wire		
	65088-1000 65088-1114	White	Red	Green	Black	Orange		
Tedea Huntleigh	4158	Green	White	Red	Black	Bare wire		
	3411 3421	Green	White	Red	Black	Bare wire	Blue	Brown
	240 1010 1022 1040 1042 1140 1250 1260 1320 9010 605 1030 1240 1241	Red	White	Green	Black	Bare wire	Blue	Brown
	355 620 3510	White	Red	Blue	Black	Bare wire	Green	Grey
Toledo		White	Red	Green	Black	Yellow		
Weigh-Tronics		White	Red	Green	Black	White/Orange		

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