



MicroWeigh Tank/Floor Scale

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May 25, 2012

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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 data-sync software.

1.2 MicroWeigh Applications

- Standard weighing
- 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 non-volatile (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 non-volatile (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 Menu

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.)

6 Setup Procedure

Once the load cells and indicator are wired, power up the indicator and set the capacity and resolution. Typical values for capacity with a floor scale or tank scale would be 1000, 2500, or 5000 pounds. Recommended resolution is either 1 or 2 pounds. Display rate setting of 1 may be too fast for a big scale: try 2 or 4 to slow down the display.

Check load cell level and platform rocking: Go into the “Setup menu”, select “Parameters”, then select “Level display”. The indicator will prompt for “gain”—1000 is a good starting value. (Adjust gain as needed—a larger gain will make the level display less sensitive, and a smaller number will make it more sensitive.) The indicator will

then display a live reading of each load cell output. In a perfect world, all four load cells would show the same reading with no weight on the platform. If the platform isn't level, some load cells will read higher or lower than the others. In extreme cases, a rocking platform will force two load cells to read about the same, one much higher, and one much lower. Adjust the feet on each load cell to level the platform. If the load cells are well balanced, the displayed readings should be about equal on all four load cells. You can also use this display function to check that each load cell is wired properly—if any of the four readings appears to be stuck or fluctuates wildly, check the load cell wiring.

Configure “Setup menu” / “Parameters” / “Cells” to the number of load cells connected to the indicator. Most floor scales use four load cells, but some tank scales may use three.

Balance the load cells: Go to “Setup menu”, “Parameters”, “Balance”. Follow the prompts. The indicator will ask you to first remove all test weights from the load platform. Do so and touch the enter button. (Indicator displays “zeroing....”) Next, the indicator will prompt “Weight a corner”. Place a good sized pile of test weights on one corner, as close to the load cell as possible. Touch the “enter” button. (Indicator displays “Balancing...”, then “Cells: ” with an asterisk for each cell that has been correctly balanced so far.) Move the same pile of test weights to another corner and repeat for each load cell. Once the indicator has seen a test weight on each load cell, it will display “Compensating...”. The indicator is now ready for calibration.

Calibrate scale: Go to “Setup menu”, “Parameters”, “Calibrate”. The calibration procedure is the same as for ordinary MicroWeigh scale software.

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” .)

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

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

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

9.2 Setup Menu

<i>Parameters</i>	Scale settings
<i>Weighment</i>	Weighment target and database control
<i>RS-422 stats</i>	Communications counters, IP settings
<i>Info menu</i>	Troubleshooting features
<i>Clock</i>	Set time/date
<i>Contrast</i>	Control display intensity

9.3 Total Menu

<i>Count</i>	Total number weighments
<i>Grs</i>	Total gross weight
<i>Net</i>	Total net weight
<i>Tare</i>	Total tare weight
<i>Clear totals</i>	Clear totals—you will be asked to confirm by pressing “Enter” a second time

9.4 Parameters

<i>Setup units</i>	Setup units: used for entering capacity and resolution (defaults to pounds)
<i>Capacity</i>	Scale capacity, in setup units
<i>Resltn</i>	Scale resolution, in setup units
<i>Stability</i>	Number of consecutive readings required for stability
<i>Motion sns</i>	Number of divisions allowed before weight is considered unstable
<i>Anti-jitter</i>	Turn on to reduce display hunting
<i>Disp rate</i>	Control number of updates: larger numbers are slower (recommend 2 to 4 for floor scales)
<i>Filter</i>	Std/Super: Select which weighing filter is used. Default to std
<i>Filter fact</i>	Weighing filter speed: range of 0-0.9. Larger numbers make the filter slower, but weights are more stable
<i>Prefilter</i>	Super filter adjustment—bigger numbers make the filter slower
<i>AZT</i>	On/Off: Autozero tracking on/off, only affects weights near zero
<i>AZT band</i>	Amount of weight (in divisions) that can be zero tracked out
<i>Cells</i>	Number of load cells connected to indicator (1-4)
<i>Balance</i>	Start digital autobalance routine to compensate load cells
<i>Calibrate</i>	Start calibration routine
<i>Level display</i>	Display raw load cell output to check for rocking and leveling
<i>IZ set</i>	Set initial zero at power up (default to off)
<i>lb units</i>	On/Off: Enables the units toggle key to include pound units
<i>kg units</i>	On/Off: Enables the units toggle key to include kilogram units
<i>g units</i>	On/Off: Enables the units toggle key to include gram units
<i>oz units</i>	On/Off: Enables the units toggle key to include ounce units
<i>Remote 1</i>	Zero/Tare/Units/Print/None: Remote input function select (quick press)
<i>Remote 2</i>	Zero/Tare/Units/Print/None: Remote input function select (long press)
<i>Address</i>	Scale communications address/ID number
<i>Cntst</i>	If enabled, the three key quick contrast adjustment is active
<i>Remote cmd</i>	If on, the scale will accept incoming EtherNet/IP zero and tare commands
<i>Defaults</i>	Restore scale to factory default settings (all settings will be lost!)

9.5 RS-422 stats

<i>Rx</i>	Bytes received
<i>Tx</i>	Bytes transmitted
<i>Err</i>	N/A
<i>In</i>	Packets received
<i>Out</i>	Packets transmitted
<i>CRC</i>	Number of corrupt packets received
<i>MAC</i>	MAC address of ethernet gateway module
<i>Link</i>	Ethernet link status
<i>Rate</i>	Ethernet bit rate status
<i>Duplex</i>	Ethernet half/full duplex status
<i>Rev</i>	Ethernet gateway firmware revision
<i>I</i>	IP address
<i>M</i>	IP netmask
<i>G</i>	Internet gateway IP address
<i>Set IP config</i>	Set ethernet gateway IP configuration

9.6 Info Menu

<i>ADC 1</i>	Raw counts display from analog to digital converter on input 1
<i>ADC 2</i>	Raw counts display from analog to digital converter on input 2
<i>ADC 3</i>	Raw counts display from analog to digital converter on input 3
<i>ADC 4</i>	Raw counts display from analog to digital converter on input 4
<i>Offset</i>	Calibration zero offset, in raw counts
<i>App</i>	Name of firmware app (<i>quad_enet.2</i>)
<i>Build</i>	Software revision info (<i>Build 6</i>)
<i>Date</i>	Date firmware was compiled (<i>10/19/2011</i>)
<i>Time</i>	Time of firmware compilation (<i>11:12:45</i>)
<i>Batt</i>	Current power supply/battery input voltage, in V
<i>S1+</i>	Load cell #1 positive signal voltage (should be about half of excite voltage with good load cell)
<i>S1—</i>	Load cell #1 negative signal voltage (should be almost exactly the same as S1+ voltage)
<i>S2+</i>	Load cell #2 positive signal voltage (should be about half of excite voltage with good load cell)
<i>S2—</i>	Load cell #2 negative signal voltage (should be almost exactly the same as S2+ voltage)
<i>S3+</i>	Load cell #3 positive signal voltage (should be about half of excite voltage with good load cell)
<i>S3—</i>	Load cell #3 negative signal voltage (should be almost exactly the same as S3+ voltage)
<i>S4+</i>	Load cell #4 positive signal voltage (should be about half of excite voltage with good load cell)
<i>S4—</i>	Load cell #4 negative signal voltage (should be almost exactly the same as S4+ voltage)
<i>Excite</i>	Load cell excitation voltage (should be about 4.5V)
<i>Debug msg</i>	On/Off: Turn this parameter on for more extensive messages during boot and dump cycle
<i>Off timer</i>	Minutes to automatic shutoff, set to 0 to disable auto-off
<i>Remote dsp</i>	Toggle remote display serial output (RS-232) on/off
<i>Bootload</i>	WeighTech use only

10 Detailed Menu Item Descriptions

10.1 Main Menu Level

Power off Turns off the MicroWeigh controller.

Washdown Disable the keypad to prevent the touch sensitive keypad from registering false keypresses during a washdown period. To enable the keypad, play follow the leader and press the lit keys in order. You must get five in a row to exit washdown mode. (The controller will continue to operate normally in washdown mode—it only affects the keypad.)

Calibrate Quick calibration routine. The password required to enter the calibration routine is to touch the Zero/On key (far right side of keypad) three times. The indicator will first prompt for a calibration weight and the calibration weight units, then prompt for all weight to be removed, and finally for the calibration weight to be added. Before calibrating, several tests are run on the load cells and load cell connections. If any of these load cell tests fail, a warning message will displayed before the calibration weight prompt.

Setup menu Enter the setup submenu, where the configuration settings and test functions are located. This menu is password protected to prevent unqualified personnel from accessing the settings. The password is to touch each of the five keys in order, from left to right. (“Units”, “Menu”, “Print”, “Tare”, “Zero”).

Audit cfg Displays the number of times an audited configuration parameter has been changed. There is no way to reset this counter in the field.

Audit cal Displays the number of times the indicator has been calibrated. There is no method to reset this counter in the field.

Tare Displays the current tare weight. A keypad entered tare weight can also be set, if desired.

10.2 Setup menu

Parameters Enter the parameter menu, where all the important (nonvolatile) settings are located. A word of warning—the “Default” option exists to return the settings to the factory defaults. It will prompt for confirmation, but once you’ve defaulted the settings any changes you’ve made are gone forever. If you don’t know why you’d need to return to factory defaults, you don’t.

Info menu Enter the info menu, which contains several interesting and useful nonadjustable parameters, such as the current firmware name and revision.

Clock Display current date and time. Also allows setting the real time clock. (The MicroWeigh controller real time clock is battery operated, so it will keep time even while the controller is powered off.)

Contrast Allows adjustment of the display intensity. Use the up and down arrows to scroll until the display contrast is nice and crisp, then press the Units/Cancel key to exit. This setting is retained through power cycles. There’s an emergency contrast adjustment that’s handy if the display is really washed out and hard to read: touch and hold the Units/Cancel and Menu/Help keys, then touch either the up or down key to adjust contrast. If you can’t tell whether to go up or down, touch the same key repeatedly until the display is easy to read. (It’ll loop around, so it doesn’t really matter if you use the up or down key.)

10.3 Parameters

Setup units Default units for resolution, capacity, and other internal settings. This firmware revision expects the setup units to be in pounds.

Capacity Maximum capacity of scale, in setup units. Must be set during initial installation to remove the “Setup Required” warning message from the display.

Resltn Displayed weight resolution, in pounds. Default is 1.0 pounds.

Stability Number of weight readings required to be within “Motion sns” divisions before the weight is considered stable.

Motion sns Size of band, in divisions, that weights must fall into to be considered stable. See “Stability” .

Filter fact Filter factor. Range is 0.1 to 0.99. Larger values make the weighing filter more stable, but also make it slower to respond. Most applications will be well served by a setting in the 0.2 to 0.5 range.

AZT (Automatic Zero Tracking) On/Off: when on, the scale will automatically zero out minor weight fluctuations need zero weight.

AZT band Number of divisions that AZT can automatically zero out.

Calibrate Perform a load cell test and calibration. (Feel free to enter the routine to do a load cell test, and touch the cancel key to exit without calibrating at the cal weight prompt. This can be a handy troubleshooting feature.)

IZ set Set initial zero. If you have to ask, you probably don’t need to be doing it.

lb units Enable or disable the pound units display. If enabled, the units key will allow the item weights to be displayed in pounds.

kg units Enable or disable the kilogram units display. If enabled, the units key will allow the item weights to be displayed in kilograms.

g units Enable or disable the gram units display. If enabled, the units key will allow the item weights to be displayed in grams.

oz units Enable or disable the ounce units display. If enabled, the units key will allow the item weights to be displayed in ounces.

Address Communications address. Appears as part of the total and parameter information transmitted to the Palm through the IR port.

Cntrst Enable or disable the three key quick contrast feature. This setting does not disable the contrast setting available inside the Setup menu.

Defaults Set all settings back to factory defaults. Will prompt for confirmation before doing its business. “Sure?” touch the Units/Cancel key to abort, or the Print/Enter key to restore factory default settings. Defaulting will erase any changes to the parameters that have been made, so write them down before defaulting just in case!

10.4 Info menu

ADC 1 Live display of current raw unfiltered counts from analog to digital converter for load cell 1. Full scale is +/- 8 million counts, so values of more than several million are suspicious and could indicate a defective load cell or incorrect wiring.

ADC 2 Live display of current raw unfiltered counts from analog to digital converter for load cell 2. Full scale is +/- 8 million counts, so values of more than several million are suspicious and could indicate a defective load cell or incorrect wiring.

ADC 3 Live display of current raw unfiltered counts from analog to digital converter for load cell 3. Full scale is +/- 8 million counts, so values of more than several million are suspicious and could indicate a defective load cell or incorrect wiring.

ADC 4 Live display of current raw unfiltered counts from analog to digital converter for load cell 4. Full scale is +/- 8 million counts, so values of more than several million are suspicious and could indicate a defective load cell or incorrect wiring.

Offset Current zero offset, in counts. Will update during an autozero cycle.

App Firmware application name (*quad_enet_2*). Very handy to WeighTech personnel if you call and expect to receive accurate advice.

Build Firmware revision code (*Build 6*). Again, this is something that's good to know when contacting WeighTech with questions.

Date Date that firmware was compiled (*10/19/2011*). This is not the current date!

Time Timestamp of firmware compilation (*11:12:45*). This is not the current time!

Batt Current battery or power supply input voltage. Not really relevant with floor/tank scale installations, but will generally be between 6 and 8 volts.

S1+ Current load cell 1 positive signal voltage. Should be about half of the excitation voltage, and very close to the negative load cell 1 signal voltage.

S1- Current load cell 1 negative signal voltage. Should be about half of the excitation voltage, and very close to the positive load cell 1 signal voltage.

S2+ Current load cell 2 positive signal voltage. Should be about half of the excitation voltage, and very close to the negative load cell 2 signal voltage.

S2- Current load cell 2 negative signal voltage. Should be about half of the excitation voltage, and very close to the positive load cell 2 signal voltage.

S3+ Current load cell 3 positive signal voltage. Should be about half of the excitation voltage, and very close to the negative load cell 3 signal voltage.

S3- Current load cell 3 negative signal voltage. Should be about half of the excitation voltage, and very close to the positive load cell 3 signal voltage.

S4+ Current load cell 4 positive signal voltage. Should be about half of the excitation voltage, and very close to the negative load cell 4 signal voltage.

S4- Current load cell 4 negative signal voltage. Should be about half of the excitation voltage, and very close to the positive load cell 4 signal voltage.

Excite Current excitation supply voltage, updated at about 1 Hz. Should be in the 4-5 volt range for normal operating. Very low readings could indicate cable damage, incorrect load cell wiring, or an excessive number of load cells connected to the indicator.

Debug msg If on, the unit will display the current dump cycle state at the far left side of the display.

Bootload Enter bootloader for firmware update procedure. WeighTech use only.

11 Troubleshooting

11.1 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.

11.2 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.

12 EtherNet/IP Notes

- This version of firmware supports EtherNet/IP through a Real Time Automation serial/ethernet module.
- The scale provides the current gross, net, and tare weights and the scale status to EtherNet/IP devices through UCMM Explicit Messaging at service code 0x0E (decimal 14), class 0x65 (decimal 101), instance 0x20 (decimal 32), attribute 0x02 (decimal 2). The data values and formats should match those sent by the E1070 indicator.

Word	Format	Description
0 + 1	32 bit floating point	gross weight, in displayed units
2 + 3	32 bit floating point	net weight, in displayed units
4 + 5	32 bit floating point	tare weight, in displayed units
6	16 bit unsigned integer	scale status

Scale status value	Description
0xFFFF	weight is unstable (motion)
0x00FF	weight is stable and valid
0x00DE	weight is over scale capacity (overload)
0x00BE	weight is under scale zero (underload)

- To set a new tare value, send the desired tare weight (in pounds) using a UCMM Explicit Message with service code 0x10 (decimal 16), class 0x64 (decimal 100), instance 0x20 (decimal 32), attribute 0x02 (decimal 2). The scale will also respond to remote tare, zero, and print commands. (The “Setup menu” / “Parameters” / “Remote cmd” setting needs to be set to “on” for the scale to accept these incoming commands.) Commands are only accepted if the value is different than the last value sent. Incoming commands must contain an even number of data bytes.

Byte	Format	Description
0 - 3	32 bit floating point	tare weight, in displayed units
4	8 bit unsigned char	remote tare command
5	8 bit unsigned char	remote zero command
6	8 bit unsigned char	remote print command

- If the IP addresses need to be changed (or if DHCP needs to be enabled), the modules support a web interface. Point your browser at the IP address and you'll be able to reconfigure the module to fit your network. You can also view and set the IP address, netmask, and gateway from the front panel of the scale in the "RS-422 stats" menu. Type in the new IP address ("I"), netmask ("M"), and gateway address ("G"), then hit the "Set IP config" item. The new settings will take effect once the gateway module has rebooted (about 60 seconds).
- The web server also has a diagnostic function. Click on the "Diagnostics" button, enter "64" for the node, and "00001" for the starting address and hit the "Change Starting Register" button. Every time the page is refreshed, the current net weight, gross weight, and scale status will be updated. It's a bit hard to read because the diag page presents the data in hexadecimal, but you can at least verify that the numbers change when the load changes. There's no way to send a new tare weight to the scale through the web interface.
- The system also supports a Modbus/TCP server (port 502) in addition to the web server and the EtherNet/IP server. All are active and can be used simultaneously. To use the Modbus/TCP server, look at device address 64, registers 1-7.
- The serial configuration for the module is set at the factory, but should you need to check it, use username "root" and password "Netsilicon" to log in. (Some modules will use username "root" and password "password" instead.) This firmware requires that the serial configuration be set to 19200 baud and Modbus RTU slave mode.

13 Replacement Parts

Part Number	Description
EF0009	Strain relief, MicroWeigh
EP0004	Detachable load cell connector, MicroWeigh interface board
HW0018	MicroWeigh housing screw (pack of 4)
HW0019	Screw, 6-19 x 0.375, trilobe PPH, MicroWeigh (pack of 10)
HW0020	Lobed knobs, MicroWeigh
WE0028	Main gasket, MicroWeigh
WE0029-1	Power cord, detachable, MicroWeigh
WE0031	Front housing assembly, MicroWeigh (specify firmware name and revision)
WE0032-1	Back housing, w/o interface board (detachable power)
WE0081-106	Interface board, quad input, EtherNet/IP
WF0806-3	Micro armor, stainless steel, MicroWeigh



JOB: QUAD SCALE WITH ETHERNET/IP

PLANT:

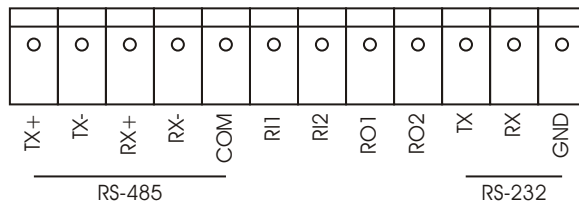
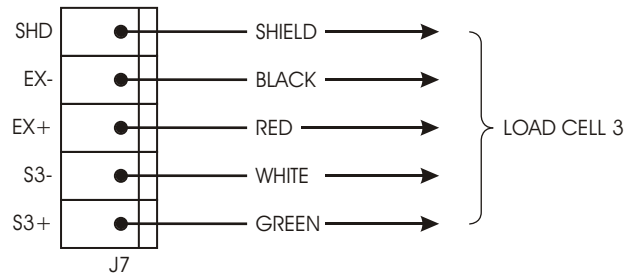
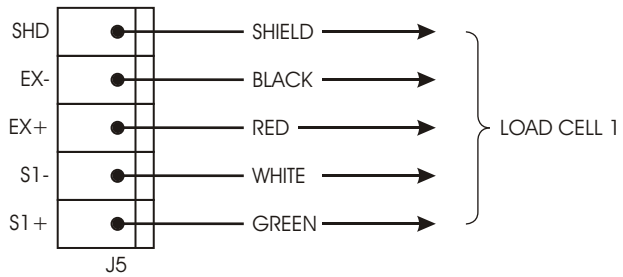
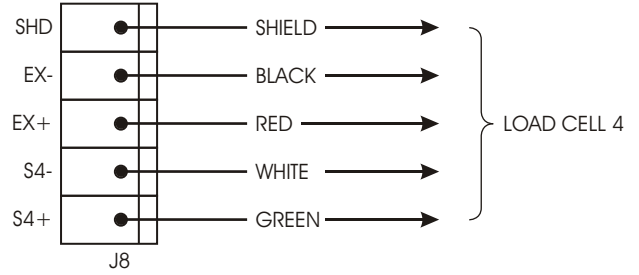
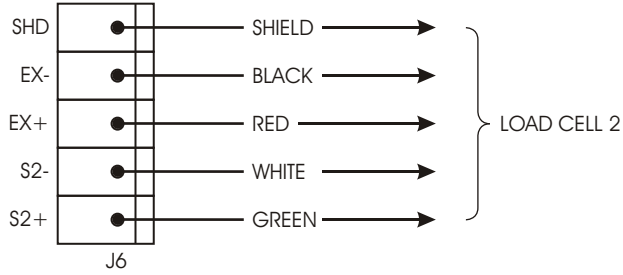
LOCATION:

PAGE: 1 OF 1

DRAWN BY: NEWELL

DATE: 06-10-2010

FIRMWARE: QUAD_ENET_2



15 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 LPS HOC MOC	Green Green Red	White White White	Red Red Green	Black Blue Black	Bare wire Bare wire Bare wire		
Dillon	Canister Tension Compression Z-cell	Black Black White	Red Red Green	Green White Red	White Green Black	Orange Orange 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 BBS PLC B35 SP4	White White Green White	Red Red White Red	Green Green Red Green	Black Black Black Black	Yellow Bare Yellow 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 92CC 93CC 42U 43U 263D 462 5102 5103 5123 5223 5723 6762 9102 9103 9123 9363 392B 642 652 692B2 BSP HPS USP1 792 933 SHB SSB CP1 CSP1	Green Green	White White	Red Red	Black Black	Bare wire Orange		
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 RLMK1 RL1521	Green Green	White White	Red Red	Black Blue	Bare wire Bare wire	Yellow	Blue
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 60007 60064 65088-1000 65088-1114	Green White White	White Red Red	Red Green Green	Black Black Black	Bare wire Orange		
Tedea Huntleigh	4158 3411 3421 240 1010 1022 1040 1042 1140 1250 1260 1320 9010 605 1030 1240 1241 355 620 3510	Green Green Red	White White White	Red Red Green	Black Black Black	Bare wire Bare wire Bare wire	Blue Blue	Brown Brown
Toledo		White	Red	Blue	Black	Bare wire	Green	Grey
Weigh-Tronics		White	Red	Green	Black	White/Orange		

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