www.aircraftscales.com

WIRELESS WEIGHING INSTRUCTIONS.

M2400 Wireless Laptop Scale System

Kit Information:

IN SERVICE:	**05-08-2020**	**Galaxy Aerospace (M) SDN**
S/N:	**20-FDE7E6**	**M2400-4-25CS**
Red:	**632100**	**FF203A**
Blue:	**583831**	**FF42FF**
Yellow:	**582255**	**FF427B**
Green:	**632105**	**FDB657**

Return for Calibration to:

Jackson Aircraft Weighing Systems, LLC.

2600 N Australian Ave.

West Palm Beach, FL 33407

561-281-6179

Year Revised: 2018

Certificate of Calibration

AIRCRAFTSCALES.COM 2600 N Australian Ave West Palm Beach, FL 33407 561-281-6179

60K: ASTM/NIST Traceable Master Cell: S/N U-8051 Morehouse Report No. U-8051C0119

60K: NIST Traceability: Dead Weight Force Machine S/N M-7471 NIST Lab no. 822/268391-03

Calibration due date according to ASTM E74-13a: March 01, 2021

All readings were taken in compression. Calibrated @ 22.6°C / 58% RH

Customer: Galaxy Aerospace Date of Manufacture: 05/07/20 Kit Calibrated: New

Channel 1

FF ID: FF203A | Cal Cycle: 365 Day
Cell S/N: 632100 | Calibrated on: 05/13/2020 | Mfg. Type: M2400
Kit S/N: 20-FDE7E6 | Calibration due: 05/13/2021 | Cell Type: 25K CELL

Load Applied Lbs	Channel Reads	Accuracy %	Load Applied Lbs	Channel Reads	Accuracy %
1000	1000	0.00%	12000	12000	0.00%
2000	2000	0.00%	15000	15000	0.00%
3000	3000	0.00%	20000	20000	0.00%
4000	4000	0.00%	25000	25000	0.00%
6000	6000	0.00%			
8000	8000	0.00%			
10000	10000	0.00%			

Channel 2

FF ID: FF42FF | Cal Cycle: 365 Day
Cell S/N: 583831 | Calibrated on: 05/13/2020 | Mfg. Type: M2400
Kit S/N: 20-FDE7E6 | Calibration due: 05/13/2021 | Cell Type: 25K CELL

Load Applied Lbs	Channel Reads	Accuracy %	Load Applied Lbs	Channel Reads	Accuracy %
1000	1000	0.00%	12000	12000	0.00%
2000	2000	0.00%	15000	15000	0.00%
3000	3000	0.00%	20000	20000	0.00%
4000	4000	0.00%	25000	25000	0.00%
6000	6000	0.00%			
8000	8000	0.00%			
10000	10000	0.00%			

Channel 3

FF ID: FF427B | Cal Cycle: 365 Day
Cell S/N: 582255 | Calibrated on: 05/13/2020 | Mfg. Type: M2400
Kit S/N: 20-FDE7E6 | Calibration due: 05/13/2021 | Cell Type: 25K CELL

Load Applied Lbs	Channel Reads	Accuracy %	Load Applied Lbs	Channel Reads	Accuracy %
1000	1000	0.00%	12000	12000	0.00%
2000	2000	0.00%	15000	15000	0.00%
3000	3000	0.00%	20000	20000	0.00%
4000	4000	0.00%	25000	25000	0.00%
6000	6000	0.00%			
8000	8000	0.00%			
10000	10000	0.00%			

Channel 4

FF ID: FDB657 | Cal Cycle: 365 Day
Cell S/N: 632105 | Calibrated on: 05/13/2020 | Mfg. Type: M2400
Kit S/N: 20-FDE7E6 | Calibration due: 05/13/2021 | Cell Type: 25K CELL

Load Applied Lbs	Channel Reads	Accuracy %	Load Applied Lbs	Channel Reads	Accuracy %
1000	1000	0.00%	12000	12000	0.00%
2000	2000	0.00%	15000	15000	0.00%
3000	3000	0.00%	20000	20000	0.00%
4000	4000	0.00%	25000	25000	0.00%
6000	6000	0.00%			
8000	8000	0.00%			
10000	10000	0.00%			

Calibration Technician Conducting the Calibration: George Moussavi

INSPECTED BY GM

The results above only relate to the equipment identified as calibrated and documented on this certificate

The accuracy of the equipment as released is stated on this certificate as "Accuracy in %" Uncertainty not stated

As Calibrated

INTRODUCTION

Thank you for your purchase of our wireless scale system please read and understand the entire instructions, as wireless weighing is a little bit different than traditional wired systems. Wireless weighing has evolved in the past few years, it has many good points and applications but first you must consider all the variable conditions and system operation to insure your readings are correct.
This system uses the 2.4 Ghz range to transmit and receive. In standard conditions its range is about 100ft and signal strength is one of the most important considerations. Transmission and receiving is conducted using a "Base Station" USBBS for short and a load cell installed "Receiver Transmitter" RT for short. The system also is capable of being used with a lap top computer or a PC type computer with the proper software installed.

DESCRIPTIONS

Computer:

Our system can use most PC type computers and laptop's running Windows applications such as Windows XP, Vista, Windows 7, 8and 10. The software can be downloaded directly to a computer as well as programing software to set up, configure, calibrate, monitor and read your scale system components. Depending on your order configuration, you may have purchased a laptop with your kit or chosen to have Aircraftscales.com configure your own computer. Either way, the software works the same across the board.

The USBBS uses your computers USB port for connection and power, just load the software for the indication, plug in your USBBS and launch the application. The scale indicator will read on your computer as well as be available for other functions. The beauty of our system and using a laptop computer is that the system becomes completely portable, and can connect to your existing printer.

Software:

Your software will come preinstalled on the laptop if a full system was purchased from Aircraftscales.com. If you provided us with your laptop, it will be preloaded and tested on your machine or a USB key with the software was provided with your kit so it can be loaded by your personnel.

The software package consists of three applications which will in turn make folders and provide shortcuts on your computer; we recommend shortcuts to the Desktop for easy operation.

Your computer or USB key also contains very important files. One for the logging/indicator, one for a quick view indicator, and three or four for the load cells RT's. These files contain the recovery programing to reprogram your system should the need arise and or you decide to change computers.

Back Up your software:

If you system has the software pre-loaded, we advise that you back up your software as soon as possible. Copy the install folder installed in the documents section. Copy the M2400 Log 100 files. Copy the T24 file set which holds your module information.

From this file, you can now copy your software onto another laptop computer for back up and use should your primary computer fail. Keep in mind, the system used must be Windows based, 32 bit or higher and can be a PC, Laptop or a tablet running Windows full 32 bit or higher software.

LOG 100 Program Launch: Plug in the USSB antenna to the USB port!

On the laptop, power up to the desktop screen, on the screen you will see the LOG 100Log24 Icon short cut, click on the short cut to launch the logging indicator.

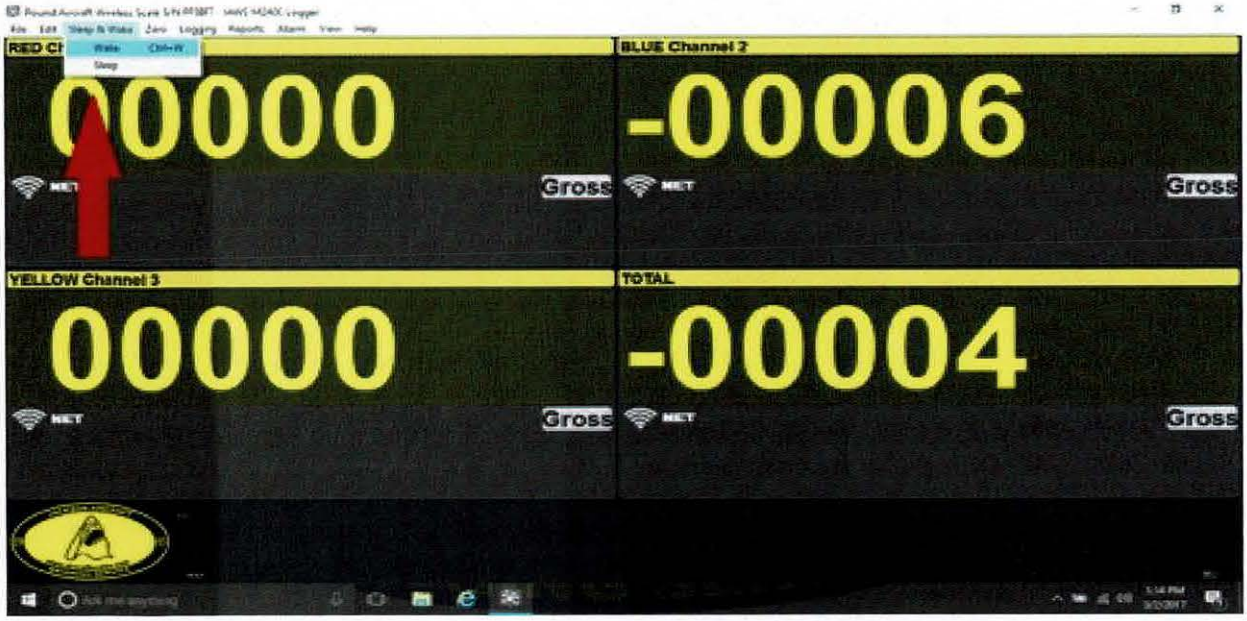
USB Antenna:

Your kit was supplied with a USB Antenna.

Plug in the USB antenna as shown below:

Logging/indication:

The indication for the system is displayed on the M2400 logger application. Your system is already set up or the USB key software is loaded that has the configuration of the system. When you launch the application, it starts the program and displays the basic indicator with the scales in a "Sleeping" condition. Shown below is the screen shot opening of the system.



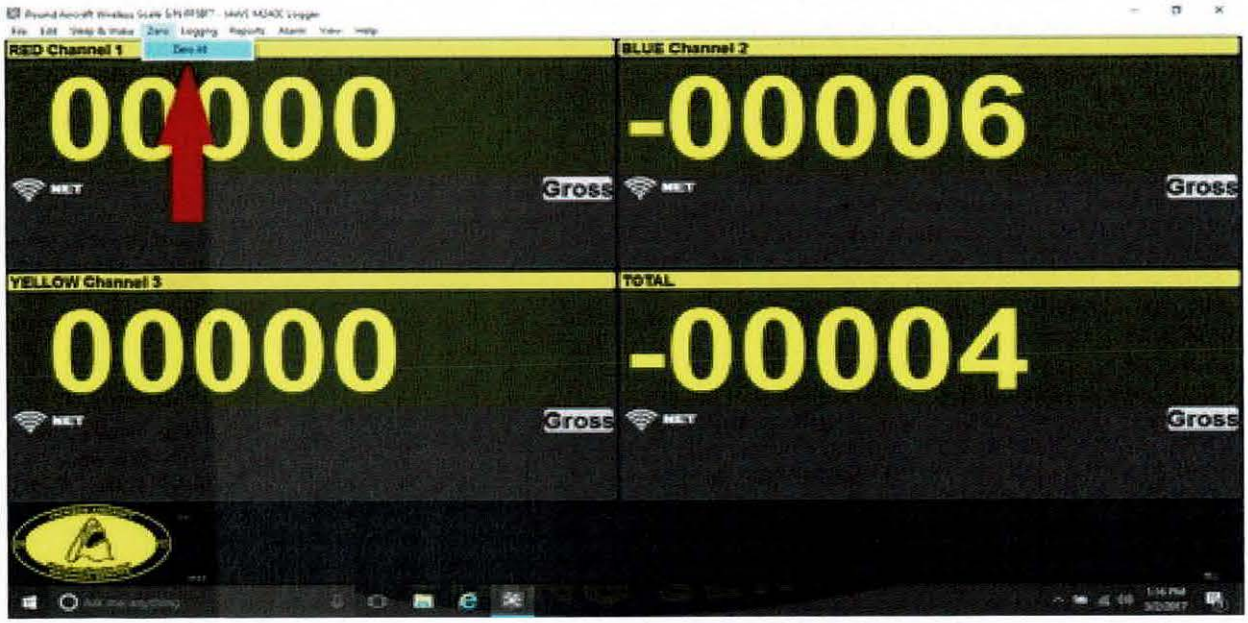
Screen image will change depending on the type of kit

Keep in mind that the USBBS must be plugged in or else your will get a warning that the "Base Station was not found. It's now time to "Wake" your cells RT's and make contact with the base station. On the menu highlight the selection as shown:

If your cells do not wake up, you will have to focus the transmission beam between the cells and the base station, the system is a line of sight type application, keep waking till the display is full.

Each cell RT has a logo on the case, the base station and tripod also has a logo on it. Point the logos at each jack point so as to focus on the base station. This may require you to relocate the base station antenna and tripod to a point in front of the aircraft where all the cells can be seen at the same time. Depending on the length of the aircraft and conditions, you may also be able to place the antenna behind the nose or tail point when weighing.

Zero All Command to "Zero all Channels" Click two times to zero channels and total.



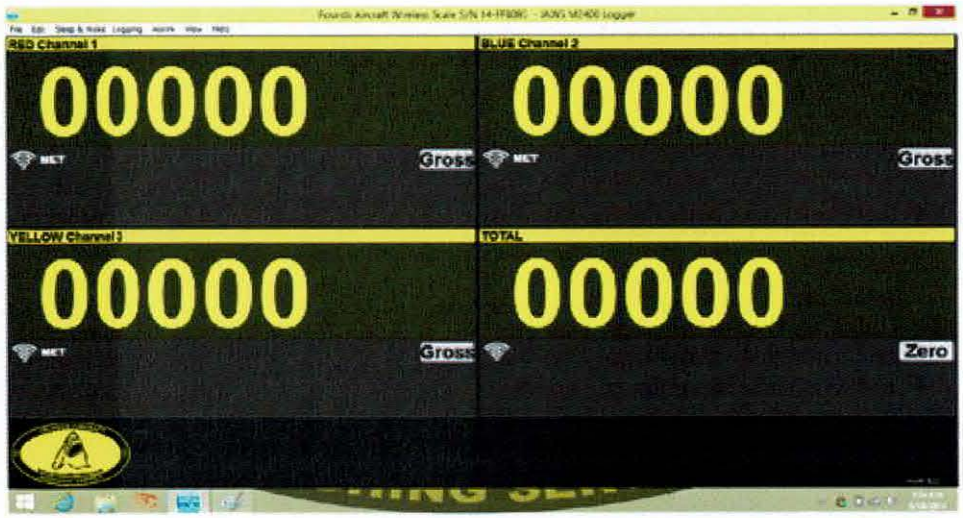
Screen image will change depending on the type of kit

Scale system is now operational and ready to Zero each channel till Gross is displayed.

Use the Zero All dropdown command to zero, click it two times, once to zero the channels and once to Zero the total.

You can always Zero each cell by the Gross to Zero button on each scale box. Click the Gross till Zero is Displayed indicating that the unit needs to be Zeroed. Click the Zero button to turn it back to Gross and the display will read -00000- on the displays.

Here you can see all are now Zeroed and reading Gross, the scale is now ready to use



Screen image will change depending on the type of kit

With the cells in position and contact made and your now in communication with the base station, you will want to check your LQI and strength meter on each cell. Again, you may have to move around to gain the best strength and "Full Bars" is always the best condition to take your readings.

This indication is just like your cell phone, strong signal and full bars are the preferred indication.

Each cell RT has a logo on the case, the base station and tripod also has a logo on it. Point the logos at each jack point so as to focus on the base station. This may require you to relocate the base station antenna to a point in front of the aircraft where all the cells can be seen at the same time. Depending on the length of the aircraft and conditions, you may also be able to place the antenna behind the nose or tail point when weighing.

OPERATION:

You're now reading all the cells and ready to operate the system. Check each channel for 'Zero" and zero the scale using the zero all button or the on screen zero for each channel till the unit reads "Gross". Red cell is channel 1, Blue cell is channel 2, and the Yellow cells are channel 3, Green cell is channel 4.

We advise that you center the cells in position and jack the aircraft onto the cells, loading them with weight. Check your jack centering and position and let the cells sit with a load for 5 minutes to allow the cells to adjust. Lower the aircraft and ensure the cells have air gap from the jack points and then "Re Zero" or check your "Gross" reading is -0- again.

With the aircraft and kit now ready and warmed up, jack the aircraft up and clear the ground with the wheels and check level. You can now read all three channels directly from the indication on your screen. Once the readings are taken you can lower again, check for zero and drift, and that is it, you're complete for the first weighing.

If during any time the indication goes into a "red indication" it means that you temporarily lost signal. If the indication comes back and you establish communication with the unit again, all you have to do is verify that you have LQI signal and that the unit is indeed reading the weight.

Lost communication is not a reason to stop the process or start and stop again. They system will pick up the weight reading from the transmitter and display it in real time. The transmitter at no time stopped with its process nor transmission, so the weight reading is continuously transmitted.

SYSTEM TIME OUT:

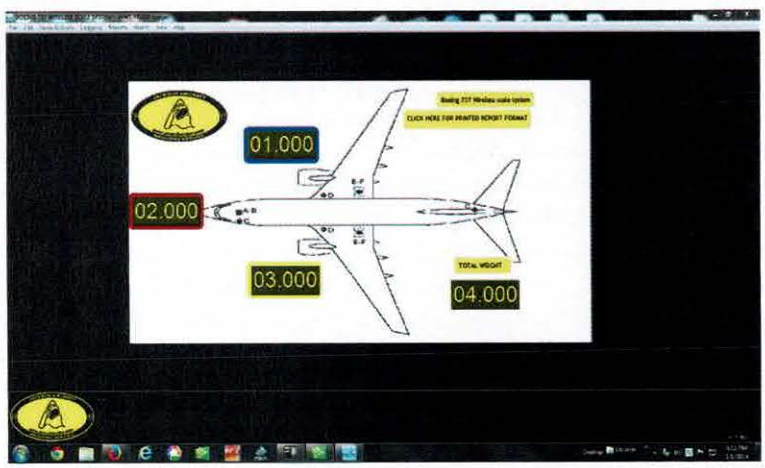
The system is programed to run on a 30 to 60 minute cycle once the unit has been waked up. If you leave the system unattended or take more than 60 minutes to conduct your weighing the system will re-enter the sleep mode and shut down the transmitters to save battery power.

If the system does time out, you may need to close the M2400 logger and then "re-open" the logger and then "Wake" the cells.

Screens

Under "View" in the drop down, select "All Channels" and your system will display all the channels as well as the totalizers for each set of scales.

Here you can see the read out of the scales on your laptop computer. Notice that the scale reads out as a total weight. Each main has two read outs, each tire and then the side totals. The last read out is the total of all scales.



On your drop down "view" select "Visual" here you can see the MAP page; it shows the optional aircraft in picture format and the read outs are displayed as live tiles. The scale totals will be seen in these tiles and the entire page can be printed out as a full report using the report feature in the program.

NOTE Screen Image will change depending on the type of kit

Printing a report

Reports can be printed in two formats: Standard Report and MAP report. These reports are generated in your web browser and are HTML based. You can print your reports by using the print function in your browser. Go to your browser tools, print, select print preview or just print.

In your drop down menu you will see "Reports" while in the "All Channels" mode, select the Standard Aircraft Report, once selected you will be prompted to input your specific data on the weighing. Once complete, click next and your report will be exported to your web browser.

You can save and name your reports, print your reports, and generate as many reports that you like to. When saving your reports make sure you rename your report so you can find it later. Also remember where you saved your report in the files.

Select "Mapping" and you will be sent to the live tile map screen. Once there you will take a snap shot of the weighing using your print report command as above or you can click the print report box displayed in the MAP and your report snapshot will be taken.

Saving your MAP report is the same; it is generated in the web browser and can now be saved or printed.

BATTERY LIFE IS EVERY THING!

It is not recommended to leave the transmitters on for long periods as this will run the battery down in each unit, place the system in sleep mode if it is not being used. However if you are using the system for expected long periods to take your readings it is recommended that you use the wake feature to restart the time out to insure that no sleeping is triggered mid-stream of a weighing process.

Loss contact with a cell will not cause the cell to sleep; the light on the transmitter will stay lit and show that he cell is active. If however a cell is observed as not having the light on, it may have gone into sleep mode, so check each cell's light if sleeping is suspected.

SHUT DOWN SLEEP MODE:

Once you have completed your operation place the cell transmitter into "Sleep Mode". This is very important to save battery life and extend operations. To place the system in sleep mode, select the mode from the menu at the top of the indicator shown as "SLEEP & WAKE" mouse over and select SLEEP to shut down the transmitters.

Once the units are in sleep mode they will remain there till a WAKE signal is sent from the base station to again command operation.

BATTERY LIFE AND OPERATION:

The batteries used are standard AA type batteries that can be found most anywhere in the world. Battery life will be altered by several factors; Amount of times used, settings for transmission data, heat or cold, and quality of type of battery used.

The system is recommended to be used on a Duracell or Energizer brand battery. These are industry proven batteries and their life and output are proven to work with your wireless system to give you the longest and strongest signal. Use of cheap off brand batteries will result with less than expected performance and life.

It the scale is not to be used for long periods of time, we recommend that the batteries be changed every six months to ensure power requirements as well as capability is maintained in a ready state. Battery change will not affect the calibration nor cause any issues with the system.

Always check your strength of signal, if a weak signal cannot be resolved, change the batteries on the transmitters and re-try the system again. Fresh batteries will insure that you have a proper voltage and endurance as well as a stable result while weighing.

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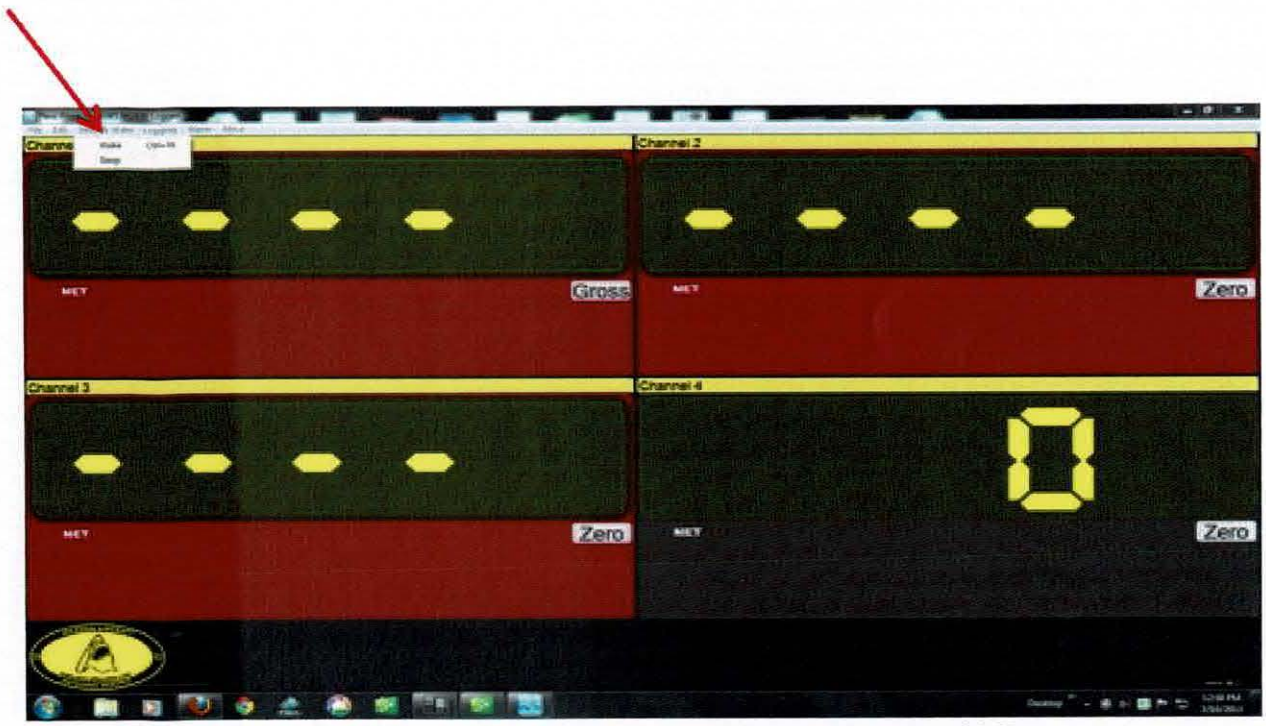
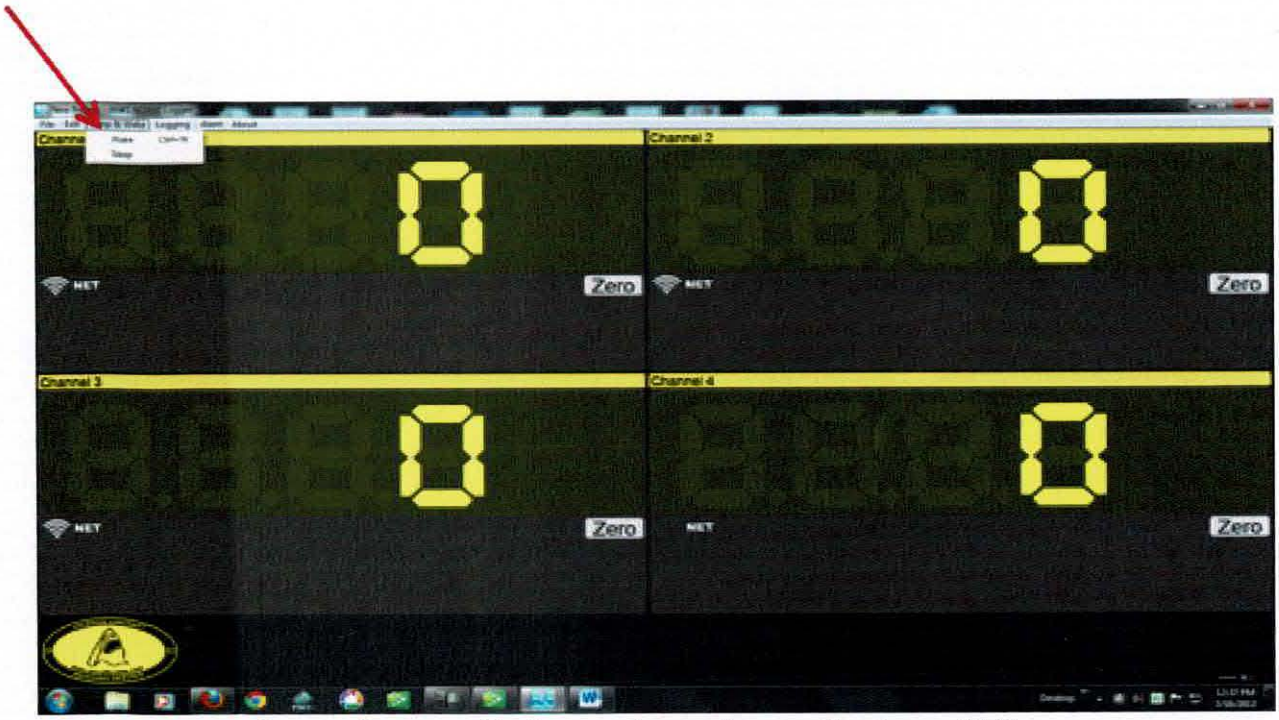


Screen image will change depending on the type of kit

Don't forget to put the modules to SLEEP when finished!



Screen image will change depending on the type of kit

Jackson Aircraft Weighing Systems

Scale instructions for set up and use of the wireless digital system:

1. Connect the base station USB plug to your lap top or PC computer.

2. Screw in the cell to jack pad adapter and cell to jack one inch adapter or position platforms.

3. Power up the computer and locate the indication M2400 Logger software in the center of the desktop, launch the software to show the indicator on the computer screen.

4. The unit is now ON and displays all available channels. Wake the transmitters by using the wake command. All channels should wake and now indicate on the indicator, check LQI signal strength and make adjustments in the transmitter to receiver locations as needed to obtain the highest strength number of bars.
   Press the Zero all function to "0" the indicator for each channel, or press Zero till GROSS is indicated; The scale should now display GROSS and "0" with no weight on the cells.

5. The scale is now ready for use; place the load cells on top of the jacks, jack and level the aircraft as per the aircraft manufactures instructions. Lower the aircraft and recheck the scale zero, jack and level the aircraft again as per the aircraft manufactures instructions.

6. Safety note: Use extreme caution jacking with these cells for large jets. No misalignment or side loading.

7. Read the weight of each channel as indicated. Red is channel #1, Blue is Channel #2, Yellow is Channel #3, (optional Green is Channel #4) (optional Orange is Channel #5).

8. Ensure that during the process that all channels remain on and the LQI signal strength is strong with bars showing like your cell phone.

9. After recording the weight of the channels, lower the aircraft and check for "scale drift" on each channel. If the scale does not return to "0"

10. Positive number should be deducted from the total weight of each channel

11. Negative number should be added to the total weight of each channel.

12. Repeat the above procedure at least once to confirm weight readings.

13. Turn the unit OFF and return all item to the case

Do not attempt to make any adjustments to the scale, only use the functions as noted above.
If you have any questions please contact Jackson Aircraft Weighing Service.
www.aircraftscales.com Bus: 561-281-6179 larryjackson@jawsscales.com

Scale troubleshooting for use of the wireless digital system:

Unit powers up, display reads large weight numbers:
Allow the unit to initialize, numbers may run down toward -0- if the unit must be zeroed <0>. Press the <0> function and check for a 0 reading. The zero reading may be unstable at first and drift, wait for the cell to completely power up and stabilize and check zero. Do not move the cell from the top of the jack; let the cell stabilize prior to jacking the aircraft. Check for signal strength on the LQI indication (bars like your cell phone), move the transmitters and or receiver so that the logo stickers are towards each other.

Unit powers up, but still drifts and will not hold a zero reading:
This can be caused by several factors:
Check transmitter location and or receiver location, this is a line of sight system, ensure all transmitters have a clear line of sight to the receiver.
Cell transmitters are too far away or have interference with the base station receiving them, relocate base station antenna, retest LQI signal.
Cells came from cold to hot or hot to cold storage; let the cells stabilize to the temperature of the area being used for at least one hour. Place cells in "Sleep" mode during this time to conserve battery life.
Batteries in transmitters are low. Replace batteries in all transmitters and restart the system.
Too much RF in the area and or interference with signal in the 2.4 Ghz range. This may require reposition to another hangar or weighing location, or waiting for the RF to stop (wireless telephones)

Unit indicator became unstable while the aircraft was on the cell:
The system must be allowed time to adjust to the current temperature. Large drifts or changes are signs that the system must be allowed to adjust to the local climate.
Let the aircraft down and check zero, if the indicator has more than 3x the division (1lb division x3=3lbs) re zero and re weigh. If not add negative numbers to the total or subtract positive numbers from the total and record as "scale drift"
Loss of signal, check LQI meter and or make adjustments to the antennas for line of sight.
Low batteries; change all transmitter batteries.

Unit weighs heavy or light:
The 25K and 50K per cell scale kit is designed for use with large aircraft; this system is not intended to be used for small aircraft with small jack points, and weighs less than 5,000lbs total.
Check all jack mounting and cell to jack point contact points, side loading and or jacks that are not properly aligned or level in the vertical can cause false readings.

Suspect one cell of weighing too heavy or light:
Rotate cells from point to point and confirm weights in rotation. Aircraft was jacked improperly, jack legs are lifting or load cells are being cocked, check for air gap between the load cell and top of jack ram.

One cell confirmed bad:
Continue to rotate cells and record readings, after 3-rotation average the readings of the known good cells and record weights.

Scale readings from rotation are different at the same point weighed:
Jacking the aircraft level is very important. A load cell can become "cocked" on the jack ram and the angle of deflection can cause errors. Ensure the aircraft jacks are "set" in position and all legs are on the ground. Jack legs "lifting" are signs of a jack not properly located under the jack point.
Jacking the aircraft on un-level ground can also produce error. If necessary "shims" may need to be placed under a jack leg to "level the jack" then jack the aircraft in a level position. Some aircraft have excessively high nose conditions when level on jacks. Make sure the nose is brought up first to a level position, and then jack the mains to raise the aircraft evenly.

Cell reads low:
Ensure the wheels are off of the ground, jacks do sometimes "bleed down" allowing contact before the reading can be made.

I have a three wheel aircraft, how do I weigh it?
Follow the helpful hint page and set up instructions included with the set. Follow the aircraft manufactures instructions for weighing and configure the aircraft. Once the aircraft is on the scale, record the weights and apply them following the manufactures weighing form and formulas for determining weight and balance on your aircraft.

I have a five wheel aircraft, how do I weigh it?
For five wheel aircraft it will be necessary to have one wheel hang off the side of the scale. Locate the platform so that the inside wheel is off of the platform and the outside wheel is centered on the platform. Make sure that the hanging tire does not contact the floor as this will result in a false reading at reduced weight. If this procedure cannot be accomplished it may be necessary to remove one wheel by normal maintenance procedures. Weigh the wheel and record its weight. Weigh the aircraft and add the removed wheel weight to the final weight. Reinstall the removed wheel following the manufacture's procedures.

The aircraft does not pull onto the scales easy.
Do not force the aircraft onto the scale! Only trained and qualified personnel are to be used to place the aircraft onto the scale system. Insure that the proper tow bar and tug size are used to perform the process.

I still can't get the aircraft onto the scales.
Jack the aircraft and place the platforms under each wheel. Use of chocks is mandatory for this procedure, both in front and in back of the wheel to prevent roll off.

Aircraft weighs more or less than the old recorded weight.
Always check into why the aircraft weighs more or less than the previous weight. Changes in weight of more than ¼ of 1% require examination of the records to account for the weight change. If a large weight change occurs, you must account for the weight change or have the scales inspected for calibration and correct weight readings.

The aircraft tires are too big for the scale.
Keep in mind, the scale has its size limits. All weight must be placed on the live weighing surface, centered lengthwise. Scale handles are always positioned to the outside of the tire. Never roll the aircraft tire over the handle as the scale may flip or the handle may break off.

I can't get the aircraft onto the scale in the center of the platforms when towing.
You must drag or pull the aircraft in a straight line prior to placement of the platforms. Once the platforms are in line, drive the tug straight and pull the aircraft onto the platforms. If necessary jack the aircraft to place the platforms.

I lined up the aircraft straight and still can't get it on the platforms straight.
Check the platforms for skidding. Sometimes the platforms will slide on very slick painted floors. If so, place a piece of cardboard box under the platform and ramp to stop the platform from skidding out.

I still can't get it on the platforms straight.
Jack the aircraft and place the platforms under the wheels. Use of chocks is mandatory for this procedure, both in front and in back of the wheel to prevent roll off.

Considerations:

Only use trained personnel in weighing an aircraft. Aircraft can be damaged or incorrect readings can be obtained by improper use of jacks and load cells.

Use of the proper size scale system and cell rating is required to achieve the desired results, do not use a large jet 50,000lb per cell, 150,000lb kit to weigh a 5,000lb aircraft.

Consider the weight of the aircraft and its expected weight; determine a target weight within +/- 50lbs for light aircraft or +/-100lbs for larger aircraft. If the aircraft weight is not within the target limits the aircraft and its inventory must be checked for condition. Extra weight or missing weight must be explained and accounted for. If the conditions do not explain the increase or loss suspect improper jacking or scale damage. Load cells are delicate instruments, if dropped they must be returned for inspection and calibration.
Large weight changes and center of gravity changes must be explained and understood. Only trained personnel should be used to calculate the weight, CG and release the aircraft after weighing. If you are not getting the result you expect and your jacking application is correct, suspect that the scale has been damaged or is out of calibration limits. Return the scale for inspection and calibration to Jackson Aircraft for service; do not send the unit to a un-knowledgeable scale facility.