ARIZONA INSTRUMENT LLC

ZSP-150
Electronic Balance

USER MANUAL

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ZSP-150 Electronic Balance

Setup and Operation Manual

Thank you for choosing a Zeta Series SP-150 (ZSP-150) Electronic Balance from Arizona Instrument LLC. AZI is pleased to provide you with a balance designed and manufactured for years of reliable service and proudly made in the U.S.A.

Please read this manual completely before using your balance. This information will enable you to fully utilize your balance and should be located nearby to be used as a quick reference guide. The balance is intended to be used only in the manner outlined in this manual. Misuse of the balance may cause product failure.

PROPRIETARY RIGHTS NOTICE

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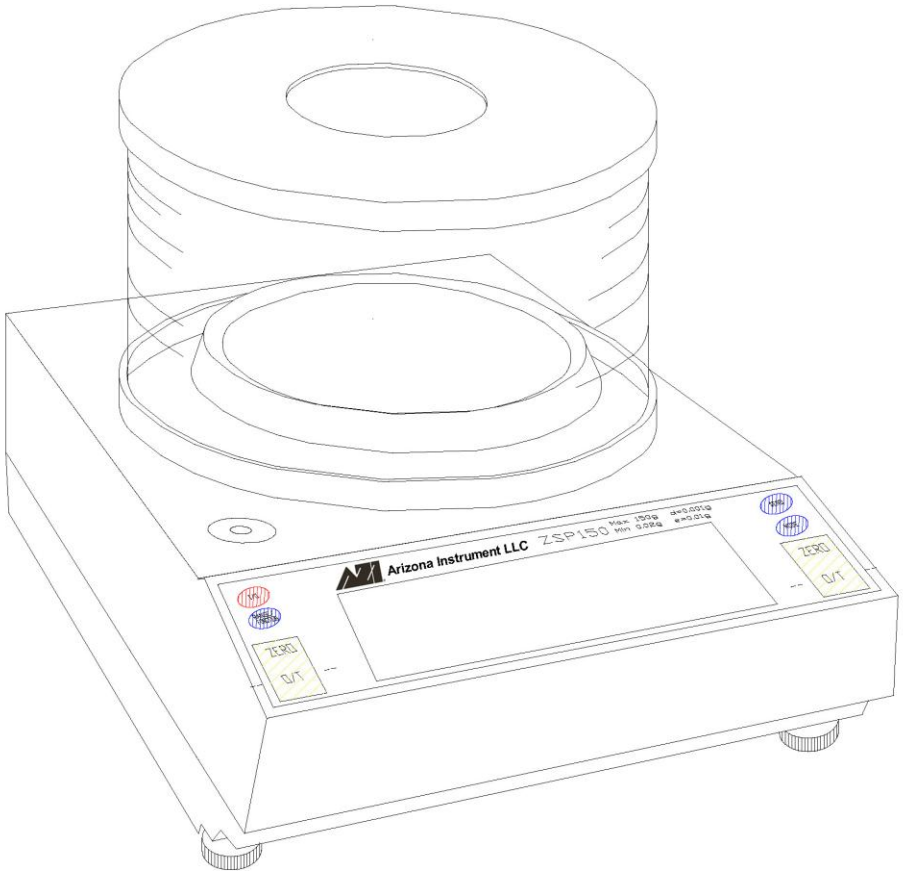

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Unpacking and Setup

The balance, weighing pans, remote power supply and windscreen are packed in a foam support to protect them from shock during shipping and handling. Save and reuse all packing material for future shipments. A null modem cable, a 100g weight and this user's manual are also packed with the balance.

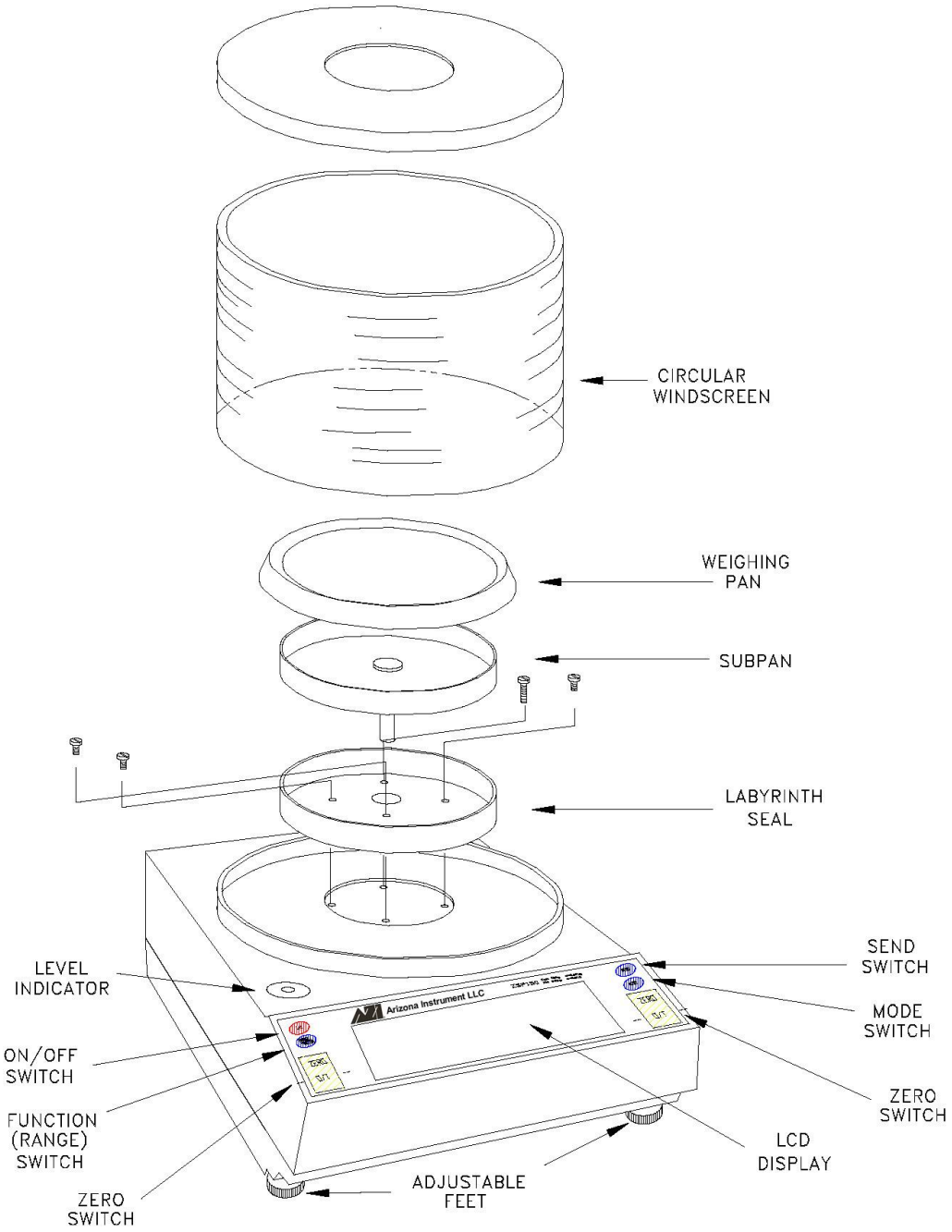


Figure 1 - Balance Full View

Operating Environment

The environment in which your balance is used is very important. Air movement, temperature changes, vibrations, direct sunlight, etc. influence the performance of high precision balances. Therefore, place your balance on a solid, sturdy surface that is free of air currents and vibration and not in direct sunlight. The surface should not be magnetic and should be located away from doors, windows, heaters, air conditioners and fans.

Leveling the Balance

Adjust (turn) the front feet (see Figure 2) to level the balance by centering the bubble in the level indicator, which is shown in Figure 1. Turning the foot as shown below raises that side of the balance and an opposite adjustment lowers it. Turn both feet together to raise or lower the front of the balance. When properly adjusted the metal center shaft of the assembly will protrude from the center of the plastic foot and will support the balance. The plastic foot will be raised up against the bottom of the balance and will not be touching the weighing table.

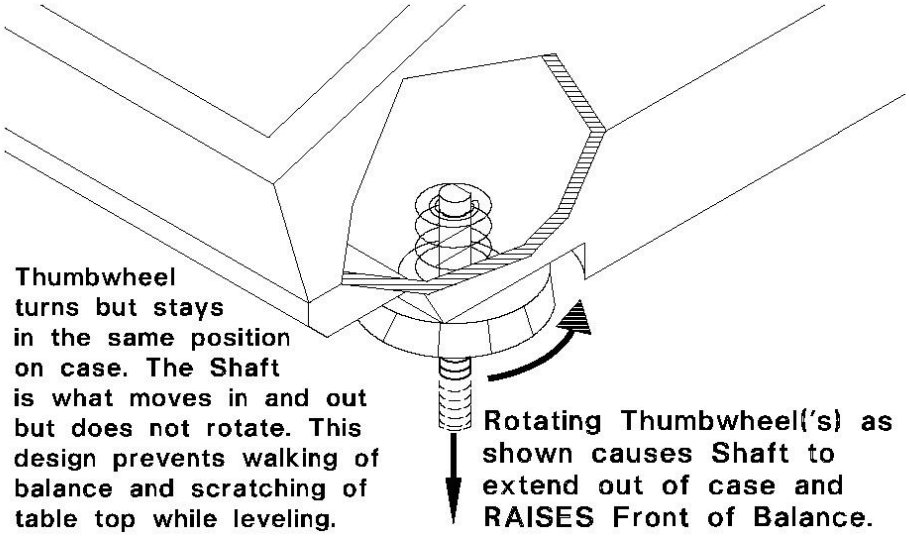


Figure 2 - Leveling the Balance

Connecting to an Electrical Outlet

The balance is supplied with a 115/230 VAC, 50/60 Hz automatic switching, remote power supply. This power supply will work with most electrical outlets. However, before making any connections, verify that the power (VAC) requirement shown on the remote power supply is compatible with the AC power outlet to which the balance will be connected. A standard line cord is provided to connect the power supply to the electrical outlet; however, there are many different outlet configurations. If a different line cord is required it must have an IEC connector to plug into the power supply and whatever plug is appropriate for your electrical outlet.

First plug the round DIN connector into the rear panel receptacle. (Note that the TOP indicator on the DIN connector faces down when properly connected to the balance.)

Then, plug the power supply into a grounded AC outlet. Do not alter or bypass the ground plug in any way. Doing so adversely affects the performance of the balance.

NOTE: Your balance must be plugged in and switched on for at least one (1) hour, then calibrated, prior to use. Please see the calibration instructions on page **9**.

AZI recommends that the balance be plugged into an electrical outlet at all times. This ensures that the balance is always warmed up and ready to use.

The On/Off Switch (I/O)

Press the ON/OFF (I/O) switch one time to turn on the balance and observe the turn-on sequence shown below.

During this sequence the balance is doing an automatic systems check to verify it is functioning properly. After the balance has been plugged in and turned on, allow it to warm up for at least 1 hour, then follow the Auto-calibration instructions (page **9**) to calibrate the balance.

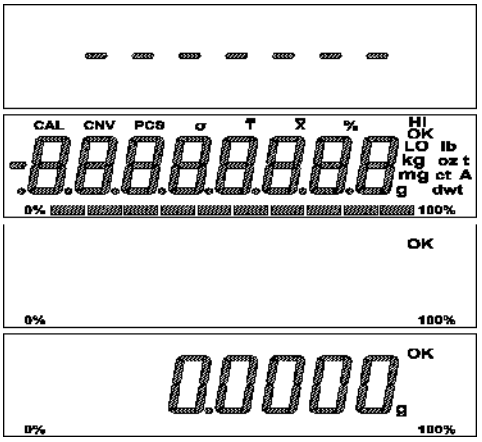


Figure 3 - Turn-On Sequence

RS-232 Interface Cable

Your balance is equipped with a bi-directional RS-232 compatible interface. The included Null Modem Cable (AZI P/N 200-0069) is a custom cable manufactured to the following diagram. Only this cable will provide the connections necessary for the ZSP-150 Balance to communicate with the Vapor Pro Moisture Analyzer.

ZSP-150's Null Modem Cable

Connecting the ZSP-150 to the Vapor Pro

The balance is configured to interface directly with the Vapor Pro series of Moisture Analyzers. Weight readings at the balance can be transmitted directly to the Vapor Pro through the null modem cable connection.

To enable this communication between the balance and the Vapor Pro:

- Power to both units should be switched OFF.
- Connect the null modem cable (AZI P/N 200-0069) to the RS-232 connector at the rear of the balance. Connect the other end of the cable to the balance connector at the rear of the Vapor Pro.
- Switch the power to both units ON.
- On the Vapor Pro, press the **[Menu]** key.
- Use the **[Down]** key to highlight the SETUP MENU.
- Press the **[Selct]** key to access this menu.
- Highlight the EXT BALANCE SETUP option and press **[Selct]**.
- Highlight and select the SELECT BALANCE DRIVER option.
- Use the **[Edit]** key to select AZISP150 as the external balance.
- Press **[Quit]** and then **[Accpt]** key to program this option.
- Select the CHECK BALANCE COMM option to verify the cable is connected and that the Vapor Pro and the balance are communicating.
- Use the **[Esc]** key to return to the MAIN MENU.

If the Communication Check is not successful, the balance's communication settings need to be reset to their factory presets. Refer to **RS-232 Front Panel Configuration** on page **13** for instructions on resetting the balance to the required factory presets.

Using the ZSP-150 with the Vapor Pro

- From the MAIN MENU on the connected Vapor Pro, select the MEMORY START MENU and then ADD/EDIT MEMORY START.
- Access the memory start to be edited using the **[Up]** or **[Down]** keys and the **[Selct]** key.
- At the SAMPLE WEIGHT ENTRY MODE option, select DIGITAL BALANCE.

When a test is run using that memory start parameter, the Vapor Pro will automatically check for data communication. The weight readings from the external balance will be displayed on the Vapor Pro display. Follow the display prompts to proceed through the weighing and testing sequence.

ZSP-150 Front Panel Display and Controls

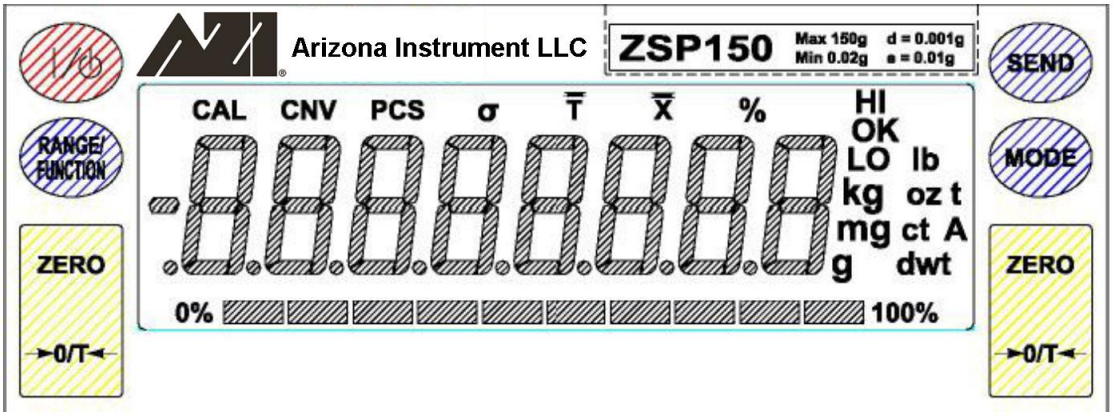


Figure 4 - Balance Front Panel

The ON/OFF (I/O) Button

The ON/OFF (I/O) button is located in the upper left corner of the balance's front panel. When the balance is off, pressing the button will start the turn-on sequence shown in Figure 3. During this sequence the balance is doing an automatic systems checkout to ensure it is functioning properly.

When the balance is on, pressing the ON/OFF button will turn off the balance.

The ZERO Buttons

There are two (2) ZERO buttons. Pressing either button at any time returns the display to zeros. When a weighing that has been zeroed out is removed from the weighing pan, a negative reading is displayed. To return the display to zeros, press one of the ZERO buttons.

The MODE Button

Pressing the MODE button starts the unit of weight cycle as follows: grams (g), carats (ct), pennyweights (dwt), troy ounces (ozt), ounces (oz), pounds (lb), kilograms (kg), and milligrams (mg). When the desired unit of weight appears, press the MODE button a second time to select that unit of weight.

The SEND Button

The SEND button is not normally employed in everyday usage of the balance, although it is used in certain specific configuration procedures, as detailed later in this manual.

The RANGE/FUNCTION Button

Pressing the RANGE/FUNCTION button begins the following menu cycle:

- PCS – Front panel parts counting **See Appendix A (p. 20) for details**
- HI OK LO – Checkweighing **See Appendix B (p. 21) for details**
- CAL 1 – Auto-calibration **See Auto-calibration on p. 9**
- CAL 2 – Linearity – Factory Use Only **DO NOT USE**
- *T* – Live animal weighing **See Appendix C (p. 22) for details**
- % - Percent weighing **See Appendix D (p. 23) for details**

To select the desired function, press the MODE switch when it appears on the display.

CAL 2 is set at the factory and should never require further adjustment. The procedure for CAL 1 begins below. For the other functions listed in the RANGE/FUNCTION menu cycle, refer to the appendices, beginning on page 20.

CAL 1 [Auto-Calibration] - Using an external calibration weight

Perform auto-calibration every time you move your balance. It is extremely important to use high quality weights and verify the balance has been warmed up for at least one (1) hour prior to calibration.

	User Action	Balance Response
1	Remove any containers or weighing samples so that nothing is on the weighing pan, then press the ZERO button.	Zeros are displayed.
2	Press the RANGE/FUNCTION button	Balance display cycles repeatedly through PCS[1], HI OK LO, CAL 1, CAL 2, *T* and %.
3	Press the MODE button when CAL 1 appears.	CAL 1 and a flashing 0 are displayed.
4	Wait 10 seconds for the balance to stabilize, then press the ZERO button.	The display stops flashing and a solid 0 is displayed. In approximately 15 seconds, when this step is complete, a single weight or two alternating weights will begin flashing on the display.
5	Place one of the flashing weights in the center of the balance's weighing pan.	The display stops flashing the alternating weights and the selected weight is displayed.
6	Wait 10 seconds for the balance to stabilize, then press the ZERO button.	The display will momentarily blink, then the selected weight will continue to be displayed. In approximately 15 seconds, when this step is complete, the display will blank, flash "OK", then display the calibration weight including decimal places. The balance is now calibrated and in the normal weighing mode.
7	Remove the calibration weight.	The display returns to zeros.

[1] PCS may or may not appear in this menu cycle, depending on whether Local Control is set to On or Off. See **RS-232 Front Panel Configuration** on page **13** to for more information on the Local Control setting.

CAL 2 - Linearity

Linearity is set in the balance's software at the factory during the manufacturing process. It requires a special set of weights that are not available commercially. When a CAL 1 function is performed the linearity is automatically reset as well. Unless the balance is damaged the linearity will not change. Therefore, CAL 2 should never be performed by the user.

Capacity Tracker

The capacity tracker located between the 0% and 100% at the bottom of the front panel display provides a graphic display of the used and unused portions of the weighing range. Each segment represents 10% of the balance's total capacity. As 10% of the balance's capacity is used the first segment will illuminate. As 20% of the balance's capacity is reached the second segment will light and so on.

Selectable Vibration Filters and Stability Indicator

Balances are equipped with three user-selectable vibration filters, which reduce nervous readings in varying weighing conditions. The balance was delivered to you set in the high filtering mode (Fil HI). This is the most aggressive filtering mode. Normal filtering (Fil nor) and low filtering (Fil Lo) can be selected for quieter conditions and faster response.

The stability indicator, OK, is illuminated when the balance has determined that all readings are within the stability parameters as selected by the user. The balance was delivered to you with stability set at ±2 display counts. You may select stability from ±1 to ±10 display counts manually in step 5 below. If the weight readings are outside the acceptable limits, the stability indicator will not light. The stability indicator can be disabled, if desired.

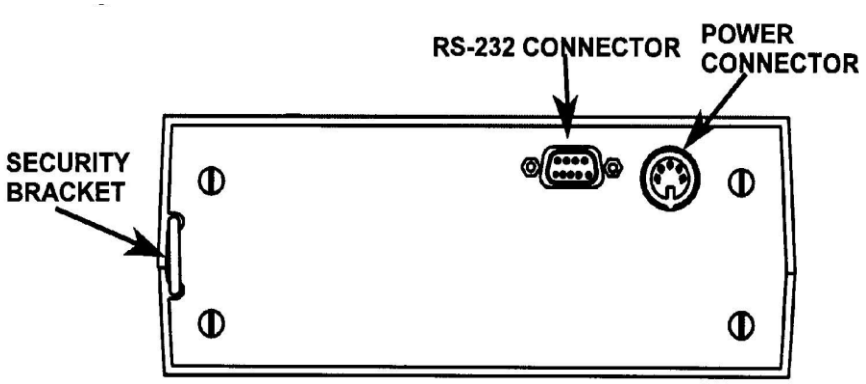
To enter the filter selection mode, proceed as follows:

	User Action	Balance Response
1	Turn the balance off using the ON/OFF button.	Display blanks.
2	Hold the MODE button down while turning the balance on using the ON/OFF button.	OK and the current filter, Fil nor (filtering normal), Fil Lo (filtering low), or Fil HI (filtering high) are displayed.
3	Press the SEND button until the desired vibration filter is displayed. Then press the ZERO button to save the setting.	OK SAVEd is displayed followed by the current stability indicator setting, Si on (stability indicator will turn on when reading is stable) or Si oFF (stability indicator will always be turned off).
4	Press the SEND button until the desired stability indicator Si setting is displayed. Then press the ZERO button to save the setting.	OK SAVEd is displayed followed by the current stability sensitivity setting SEnS (the default is ±2 display counts).
5	Press the SEND button until the desired stability sensitivity display counts setting is displayed. Then press the ZERO button to save the setting.	OK SAVEd is displayed followed by the current SS setting. (oFF is the default). **Note: this setting should not be changed from the default value of SS oFF**
6	If SS oFF is not displayed, press the SEND button until SS oFF is displayed. Then press the ZERO button to save the setting. If SS oFF is already displayed, just press the ZERO button.	OK SAVEd is displayed. Then the balance cycles back to Step 2 and shows the current filter setting.
7	Press the ON/OFF button.	The display blanks.
8	Press the ON/OFF button.	The balance goes through the turn on sequence and returns to normal operation with the new vibration filter and stability indicator settings in place.

To exit the selection mode and return to normal operation, turn the balance off and then back on again at any time.

ZSP-150 Rear Panel

The rear panel of the ZSP-150 provides the power connector, an RS-232 connector, and a security bracket. The security bracket may be used to provide a convenient method of securing the balance. The location of the security bracket may vary slightly from the figure below.



ZSP-150 Rear Panel

RS-232 Interface Cable

Your balance is equipped with a bi-directional RS-232 compatible interface. The Null Modem Cable included (AZI P/N 200-0069) is a custom cable manufactured to the following diagram. Only this cable will provide the connections necessary for the ZSP-150 Balance to communicate with the Vapor Pro Moisture Analyzers.

ZSP-150's Null Modem Cable

RS-232 Front Panel Configuration

The RS-232 Configuration Mode allows changes to the baud rate, front panel control, software protocol, parity and auto send parameters. The balance is preconfigured at Arizona Instrument to communicate with a Vapor Pro.

Any changes to the recommended configuration will affect communication with the Vapor Pro.

It is not necessary to follow the entire configuration procedure if only one parameter is to be changed. Follow steps 1 and 2, and then use the MODE switch to cycle through the different parameters. When the parameter to be changed is displayed, toggle the setting using the SEND switch until the desired setting is displayed. Save the setting using the ZERO switch, and the balance will confirm by displaying "SAVEd". Then, turn the balance off and then on again with the ON/OFF switch to return to normal operating mode.

To enter RS-232 configuration mode, proceed as follows:

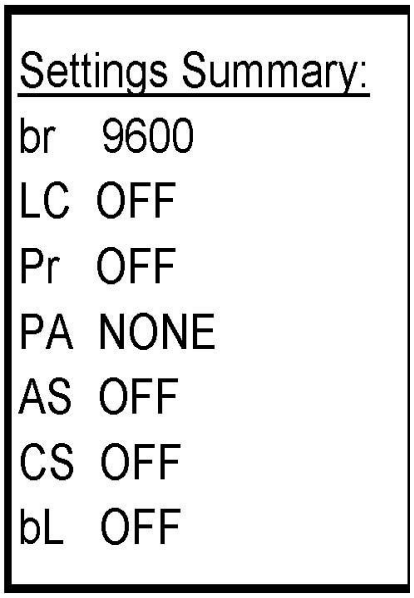
	Procedure	**Display Reading**
1	Turn balance off using the ON/OFF switch	Display blanks
2	Hold the SEND switch down while turning balance on using ON/OFF switch	The current baud rate is displayed
3	Press the SEND switch until br 9600 is displayed.	**br 9600**
4	Press the ZERO switch to save br 9600 as the BAUD RATE.	**SAVEd** is displayed followed by **br 9600**.
5	Press the MODE switch to move to the next parameter: LOCAL CONTROL	The current LOCAL CONTROL setting, LC on or LC oFF is displayed.
6	Press the SEND switch until LC oFF is displayed.	**LC oFF**
7	Press the ZERO switch to save LC oFF as the LOCAL CONTROL setting.	**SAVEd** is displayed followed by **LC oFF**.
8	Press the MODE switch to move to the next parameter: SOFTWARE PROTOCOL	The current SOFTWARE PROTOCOL setting, Pr oFF or Pr on is displayed.
9	Press the SEND switch until Pr oFF is displayed.	**Pr oFF**
10	Press the ZERO switch to save Pr oFF as the SOFTWARE PROTOCOL setting.	**SAVEd** is displayed followed by **Pr oFF**.
11	Press the MODE switch to move to the next parameter: PARITY	The current parity setting, PA EVEn, PA odd or PA none is displayed.
12	Press the SEND switch until PA none is displayed.	**PA none**
13	Press the ZERO switch to save PA none as the PARITY setting.	**SAVEd** is displayed followed by **PA none**.
14	Press the MODE switch to move to the next parameter: AUTO SEND	The current auto send setting, AS oFF or AS on is displayed.

15	Press the SEND switch until AS oFF is displayed.	**AS oFF**
16	Press the ZERO switch to save AS oFF as the AUTO SEND setting.	**SAVEd** is displayed followed by **AS oFF**.
17	Press the MODE switch to move to the next parameter: CONTINUOUS SEND.	The current continuous send setting, CS oFF or CS on is displayed.
18	Press the SEND switch until CS oFF is displayed.	**CS oFF**
19	Press the ZERO switch to save CS oFF as the CONTINUOUS SEND setting.	**SAVEd** is displayed followed by **CS oFF**.
20	Press the MODE switch to move to the next parameter: DISPLAY BLANKING.	The current display blanking setting, bL on or bL oFF is displayed.
21	Press the SEND switch until bL oFF is displayed.	**bL oFF**
22	Press the ZERO switch to save bL oFF as the DISPLAY BLANKING setting.	**SAVEd** is displayed followed by **bL oFF**.
23	Press the ON/OFF switch	The display blanks.
24	Press the ON/OFF switch	The balance is ready for use.

Changing any of these settings from the AZI factory presets is NOT recommended, and will affect communication with the Computrac Vapor Pro.

If any of the preset values are changed, use the above instructions to restore the balance's ability to communicate with the Vapor Pro by resetting the values to the preset AZI defaults listed.

Verify the balance's ability to communicate with the Vapor Pro as detailed in **Connecting the ZSP-150 to the Vapor Pro** on page **7** above.



Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
The display is blank	Balance not turned on	Press ON/OFF switch
	Power cable not plugged in	Plug in power cable
	No power from AC outlet	Turn on circuit breaker or change AC outlets
OL appears on display	Maximum capacity exceeded	Reduce container weight
		Weigh sample in smaller increments
UL appears on display	Pan is not in place	Ensure pan is positioned properly
	Balance is out of range	Press ZERO switch
Display is unstable	Drafts/air currents present	Install windscreen or relocate balance
	Vibrations present	Isolate or relocate balance
Weight readings are incorrect	Balance is out of calibration	Re-calibrate balance
	Balance is not level	Level balance
	Balance was not re-zeroed	Press ZERO before weighing
	Unit of weight set incorrectly	Select desired weighing unit (p. 8)
	Sample touching windscreen	Reposition sample
Display stays in turn-on sequence	Sub-pan and/or weighing pan not in place	Place pan(s) on balance
	Excessive draft or vibration	Isolate or relocate balance
	Power supply connected to wall outlet before balance	Unplug from wall outlet, wait 5 seconds, re-plug into wall outlet.
Partially lit display, “weird”/”garbage” characters on the display	“Live” cord plugged into balance	Unplug from wall outlet, wait 5 seconds, re-plug into wall outlet.

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Err 1 appears in display	Calibration weight is incorrect	Use calibration weight that appears in display
Err 2 appears in display	Balance not warmed up	Plug in and turn on balance for 1 hour before use
Err 3 through 14 appears in display	Service is required	Call AZI Customer Service at 1-800-528-7411 or 602-470-1414

Environmental Requirements

This product is intended for indoor use at altitudes up to 2000 meters, Pollution Degree 1 or 2 in accordance with IEC 664 and transient overvoltages according to Installation Categories (Overvoltage Categories) I, II and III. For main supply, the minimum and normal category is II.

ZSP-150 Specifications

Weighing Mode	Single Range
Capacity	150 g
Readability	0.001 g
Tare Range	0-150 g
Repeatability (Standard Deviation)	0.0015 g
Linearity	±0.0015 g
Stabilization Time	User Selectable
Weighing Speed	Adaptive
Update Interval	200 ms
Data Interface	RS-232 bidirectional interface is standard. Baud rates are 300, 600, 1200, 2400, 4800, 9600 and 19,200
Pan Size	Circular 4.5 inch diameter
Operating Temperature	5 °C to 40 °C
Relative Humidity	80% for temperatures up to 31 °C decreasing linearly to 50% at 40 °C
Power Supply	Automatic switching 115/230 Volts AC, 50/60 Hz ± 10%
Windscreen	Circular 6 inch diameter x 3.5 inches high
Housing (W x D x H)	7.5" x 11.25" x 3.25"
Weight	≈ 9.5 lbs

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. The equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Shielded interconnect cables and shielded power cords must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device.

Changes or modifications not expressly approved by Arizona Instrument could void the user's authority to operate the equipment.

Limited Warranty

This Arizona Instrument Electronic Balance and its accessories are warranted against defects in materials and workmanship for one (1) year from the date of delivery. During the warranty period, Arizona Instrument will repair, or, at its option, replace at no charge, components that prove to be defective. The equipment must be returned, shipping prepaid, to Arizona Instrument's product service facility. This limited warranty does not apply if the equipment is damaged by accident or misuse or as a result of service or modification by other than an Arizona Instrument LLC service facility. The foregoing warranty is in lieu of all other warranties expressed or implied including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. Arizona Instrument LLC shall not be liable for any special, incidental or consequential damages whether in contract, tort or otherwise.

Extended Warranty

Extended warranty coverage can be purchased in a one, two or three year term at the time of balance purchase. Details are included on a separate information sheet accompanying the balance or by calling Arizona Instrument at 1-800-528-7411.

Returned Goods Policy

Should it become necessary to return any item to Arizona Instrument for any reason, please contact our Customer Service Department at (800) 235-3360 or (602) 470-1414 to obtain a Return Materials Authorization (RMA) Number. When you call, please be ready to provide the serial number and a description of the problem. Frequently we can provide self-help information that will eliminate the need for returning the unit(s). You may also obtain an RMA Number by contacting Customer Service by e-mail at support@azic.com or through the AZI Home Page at http://www.azic.com.

If equipment return is required, please pack the item in the original box and packing material. As an alternate, place equipment in a snug-fitting box, then pack that box in a larger box with at least four inches of packing material between the two boxes. Arizona Instrument does not assume responsibility for under-packed items.

Please include the RMA# and the name and phone number of the person we should contact regarding repair question(s).

Appendix A - Front Panel Parts Counting

Access to the counting function via the front panel is not available if bi-directional RS-232 communication is enabled, i.e. if the front panel local control is off, which is the default. Turning local control on in order to use the parts counting feature will disable communication with the Vapor Pro. Refer to **RS-232 Front Panel Configuration** on page **13** for more information on setting local control on or off.

	Procedure	**Display Reading**
1	Press the RANGE/FUNCTION switch.	Display cycles repeatedly through PCS, HI-OK-LO, CAL1, CAL2, *T*, and %.
2	Press the MODE switch while PCS appears on the display,	PCS and 0 flash. This is a prompt to zero the balance with the container you will be using to weigh the initial sample.
3	Place the empty container on the pan, wait 10 seconds, then press the ZERO switch.	PCS and 10 flash. This is a prompt to place 10 pieces in the container and press zero.
4	Place 10 pieces in the container, wait 10 seconds, then press the ZERO switch.	PCS continues to flash and OK appears on the display while a stable weight is obtained. Then 10.000, or something very close to it appears on the display. The number of decimal places depends on the weight. PCS continues to flash. This prompts you that you may now increase the size of the sample if you wish. The decimal places are an aid. When adding more samples, if the decimal part approaches .5 you cannot be sure of the exact count.
5	If you need a larger sample, add pieces (the balance will count them) until the decimal part is near 0.7 or 0.3. Then press the ZERO switch.	The balance will round to the nearest whole number but still show the decimal places. This step may be repeated as many times as you wish.
6	When you are satisfied the sample is large enough, press the ZERO switch once again.	The balance rounds to the nearest whole number, the decimal places disappear, and PCS lights steadily.
7	When you wish to count something else, press the MODE switch.	You are now back at step 2 with a flashing PCS and 0.
8	If you want to exit the counting mode, press the MODE switch again.	You are now in the weighing mode you used just before selecting pieces.

Appendix B - Weight Checking

The following procedure checks the weight of individual parts against user-programmed upper and lower weight limits.

	Procedure	**Display Reading**
1	Press the RANGE/FUNCTION switch.	Display cycles repeatedly through PCS, HI-OK-LO, CAL1, CAL2, *T* and %.
2	Press the MODE switch when HI-OK-LO appears on the display.	HI, LO and O flash.
3	Press the ZERO switch.	HI flashes and zeros are displayed.
4	Place weight on pan that represents the upper limit of the acceptable weight span.	HI flashes and weight is displayed.
5	Press the ZERO switch.	LO flashes and upper limit weight is displayed.
6	Remove upper limit weight and place weight on the pan that represents the lower limit.	LO flashes and weight is displayed.
7	Press the ZERO switch.	HI-OK-LO briefly appears then OK and the low limit weight are displayed.
8	Remove low limit weight.	LO appears and zeros are displayed.

The balance is now ready to check the weight of parts. The balance displays OK along with the weight of the part if the part is within the selected limits. If the part is too heavy, HI and the weight are displayed. If the part is too light, LO and the weight are displayed. The limits are stored until the balance is turned off. To exit weight checking, press the MODE switch and the balance will return to normal operation.

Appendix C - Live Animal/Severe Environment Weighing (*T*)

Note: At any time during the *T* procedure you can reach the final reading more quickly by pressing the RANGE/FUNCTION button. This resets the time averaging and allows the balance to reach the final weight faster.

	Procedure	**Display Reading**
1	Press the RANGE/FUNCTION button.	Display cycles repeatedly through PCS, HI-OK-LO, CAL 1, CAL2, *T,* and %.
2	Press the MODE button when *T* appears on the display.	*T* appears in the display and the balance is now in the time averaging weighing mode.
3	Place a container/cage on the pan.	*T* appears in the display as well as a slowly increasing weight of the container/cage.
4	When the balance has stabilized, press the ZERO button to zero out the container/cage weight.	*T* appears in the display as well as zeros.
5	Remove the container/cage and place the sample/animal in the container/cage.	*T* and a slowly decreasing negative weight are displayed.
6	Replace the container/cage with the enclosed sample/animal on the weighing pan.	After the sample/caged animal is placed on the pan, the weight reading will slowly stop decreasing and then slowly start increasing as the weight reading is averaged over time. When the weight stops drifting upward, you have reached the final time averaged weight reading.
7	If you want to reach the final time averaged weight reading more quickly, press the RANGE/FUNCTION button This resets the time averaging mode.	The final time averaged weight reading is reached more quickly.
8	If you want to exit the time averaging weighing mode, press the MODE button.	The balance returns to normal operation.

Appendix D - Percent Weighing (%)

	Procedure	**Display Reading**
1	Place an empty container on the weighing pan and press the ZERO button.	Zeros are displayed.
2	Place the sample which represents 100% in the weighing container.	Display indicates the weight of the sample in the unit of measure you have selected.
3	Press the RANGE/FUNCTION button.	Display cycles repeatedly through PCS, HI-OK-LO, CAL1, CAL2, *T,* and %.
4	Press the MODE button when % appears on the display.	Display will indicate % and 100.00. This means that the weight on the pan now represents 100.00%. You are now in the percent weighing mode with all weight readings displayed as a percent of the weight of the sample used in Step 2.
5	If you want to exit the percent weighing mode, press the MODE button.	The balance returns to normal operation.

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If you have any questions regarding the operation of this instrument, please call our toll free number (800) 528-7411 or (602) 470-1414. You may also send a fax to (480) 804-0656.

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