

**SCIENTECH[®]
NTEP CERTIFIED**



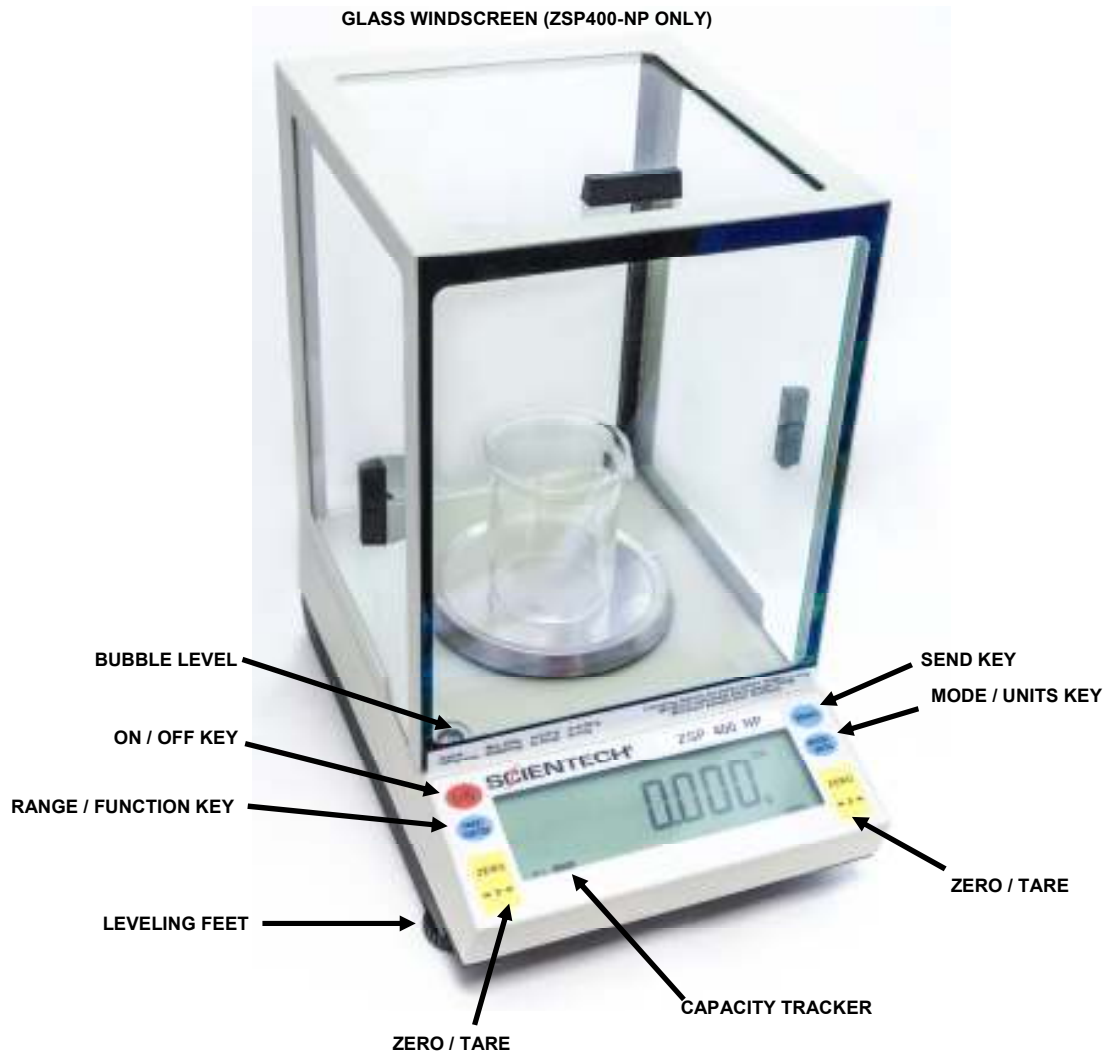
Thank you for choosing a Scientech Zeta Series NTEP Legal for Trade Electronic Balance. Scientech, an ISO9001 registered company, and its employees are pleased to provide you with a balance designed and manufactured for years of reliable service and proudly made in the U.S.A. The quality of Scientech balances has been demonstrated by being certified to carry the “CE” mark of conformity. 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 and void the warranty.

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Unpacking and Setup:

The balance, weighing pan, 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 damage-free shipments.



(FIGURE 5)

Choose the Proper Environment:

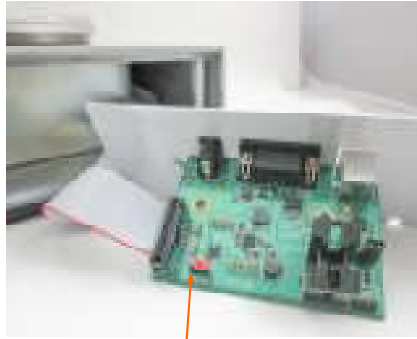
The environment in which your balance is used is very important. Air movement, temperature changes, vibrations, direct sunlight, etc. influences the performance of high precision balances. Therefore, place your balance on a solid, sturdy surface that is free of air currents, vibration and not in direct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

Calibration (CAL1) using an external weight and meteorological sealing.

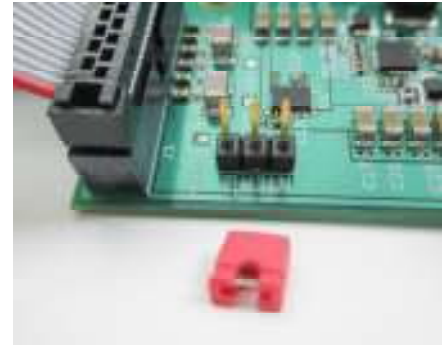
Note: The balance should be connected to an electrical outlet for **at least one (1) hour** prior to calibration and leveled according to the Unpacking and Setup section. The balance was shipped with the calibration seal un-locked. When the scale calibration seal is un-locked the display will show CAL in the upper left corner of the LCD. **The scale is not legal for trade when CAL is displayed.** If CAL is visible you can skip steps 1 & 2.



Disconnect power. Remove two screws. Pull panel out to gain access to calibration jumper. (Figure 1)



Calibration seal jumper. Shown in locked position. Remove to calibrate. (Figure 2)



To seal the calibration install jumper on two adjacent pins. (Figure 3)

1. Gain access to the calibration jumper as shown above. Remove the red jumper, this enables the calibration function.
2. Replace the panel and secure with at least one of the screws. Level the balance and connect power and turn the balance on.

	User Action	Balance Response
3	Remove any containers or weighing samples so that nothing is on the weighing pan, then press the ZERO button.	Zeros are displayed.
4	Press the RANGE/FUNCTION button.	Balance display cycles repeatedly through PCS, HI, LO, CAL 1 and %.
5	Press the MODE button when CAL 1 appears.	CAL 1 and a flashing 0 are displayed.
6	Wait 10 seconds for the balance to stabilize, then press the ZERO button.	Two alternating weights will begin flashing on the display.
7	Place one of the flashing weights in the center of the balance's weighing pan.	The capacity tracker will advance and stabilize. The display stops flashing. The display will momentarily blink, the display will blank, flash "OK", then display the calibration weight including decimal places. The balance is now calibrated and returns to the normal weighing mode.
8	Remove the calibration weight.	The display returns to zero.

9. Turn the balance off and disconnect power. Remove the rear panel as described above and replace the red jumper. Any two pins.
10. Replace the rear panel.
11. Using safety wire and lead tag secure wire through the cross drilled screws as shown in Fig 4 and seal.



(Figure 4)

Good Measurement Practices:

(As quoted from the Mass Standards Handbook by Troemner, 3-015BKT rev 1/03)

There are numerous steps that one can take in order to improve the quality of a mass measurement system. However, they usually fall within three main categories: the equipment, the environment, and the operator. If even one of these areas is neglected, it can have a dramatic negative impact on your results. Although these suggestions are not meant to be all encompassing or all-inclusive, the improvements that can be made following these simple guidelines are extraordinary.

Equipment:

1. Select weights that have a tolerance that is one third or better than the accuracy you require for your application. This way the error of the weight will not dramatically impact the quality of your measurements.
2. The equipment must be of sufficient readability to calibrate or measure the weight or sample under test.
3. The balance should be placed on a stable platform free from the effects of vibration. The most common type of setup involves placing the instrument onto a balance table that is constructed of marble or granite.
4. Never use a balance or scale as soon as it is turned on (plugged in). The internal electronic components need to stabilize and “warm up” for at least 24 hours once the equipment has been energized. Troemner recommends that you leave this instrument plugged in twenty four hours a day, seven days a week.
5. Never use a balance that has been idle for several hours without first "exercising it" and calibrating it. A balance is exercised by repeatedly placing and removing weights from the balance pan. We recommend that this be done at least ten times each with a weight that is 100% of the max capacity of the balance. After exercising, the balance should be calibrated. If these two techniques are consistently employed, a noticeable improvement will result in both linearity and stability of the measurement.
6. When weights are not in use, store them in the case in which they were supplied. If the weights were not supplied with a case, either purchase a case or use a clean container to protect the surfaces. This will keep airborne particles from getting on your weights between uses. Weights should be in thermal equilibrium with the balance so store weights near your balance. Another option is to leave calibration masses commonly used inside the weighing chamber when not in use. This assures your weights are in thermal equilibrium with the balance producing a better measurement.

Environment:

1. The more stable your environment, the better your measurement results. Changes in temperature, pressure, and humidity affect balance performance and weight stability. Ideal room conditions are 20° C with a relative humidity between 45% and 60%. Fluctuations in temperature should not exceed 1° C per hour. Humidity fluctuations should not exceed 10% per hour.
2. Balances should not be placed in close proximity to anything that shakes, vibrates, or stirs violently. Avoid placing your equipment near centrifuges, vortexers, or shakers.
3. Do not place your balance and/or scale near anything that generates heat. Heat will cause the balance chamber to warm and due to the effects of the thermal expansion introduce large errors into your measurement. Do not place the balance near a window. Sunlight can penetrate the window, warm the balance chamber at different rates during the day, and affect the quality of your work.
4. Avoid placing the balance near sources of drafts, extreme air currents, or near air-conditioning vents. These positions can cause your readings to be unstable and can dramatically cool the balance chamber when the air-conditioning system begins to run.
5. The measurement environment should be clean and free of excessive contaminants. Contaminants such as dirt and grease can adversely affect the weight of an object.
6. Static electricity on glass windscreens or flasks can cause erroneous readings. Use a static wipe from time to time.

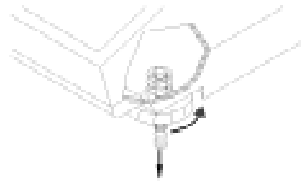
Operator:

1. Never touch a weight with your bare hands. Oils and contaminants from your hand will be transferred to the weight and introduce a significant error. It is recommended that all weights be manipulated with gloved hands or forceps. The two types of gloves that are commonly used and accepted are either latex (powderless) or cotton. Avoid any metal to metal contact when handling or storing weights. This will cause scratches that may introduce error. All weight forceps and weight lifters should be either nonmetallic (plastic or wood) or if metal, covered with a soft protective coating or material to avoid scratches.
2. Place the weight or sample near the center of the balance pan. A small offset from center can have a pronounced effect and introduce undue variation.
3. Take special care not to breathe onto the weight or into the balance chamber. Back away from the instrument. This will prevent any thermal transfer of heat from your breath or body to the balance, the weight, or the sample.
4. Time your measurements. Consistent sample times will provide more consistent measurement.
5. Weigh liquids or gels in a closed container. Moisture or solvent loss can easily be detected by a laboratory balance.

Level the Balance:

Adjust (turn) the front feet (see Figure 6) to level the balance by centering the bubble in the level indicator which is shown in Figure 5. Turning the foot as shown below raises that side of the balance and an opposite adjustment lowers it. 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.

Thumbwheel turns but does not move up or down. A shaft within the thumbwheel is extended or retracted. This prevents “walking” of the scale and prevents marring table tops.



Turning the thumbwheel counter-clockwise will raise that corner.

(Figure 6)

Connect to an Electrical Outlet:

The balance is supplied with a 100/240, 50/60 Hz automatic switching, remote power supply.

Note: First plug the round connector into the balance’s rear panel receptacle. Then, plug the power supply into an AC outlet.

Note: Scientech recommends that the balance be plugged into an electrical outlet at all times. This ensures the balance is always warmed up and ready for use. You can leave the balance on as it consumes < 5 Watts.



Figure 7

Outside temperature range:

If the scales internal temperature is outside the specified range of 12°C to 30°C the display will show dashes and LO (Below 12°C) or HI (Above 30°C)

Excessive rate of change:

The display will show dashes and both HI and LO.

After the balance has been plugged in and turned on, allow it to warm up for at least 1 hour, then follow the Autocalibration instructions to calibrate the balance.

Front Panel Controls:

Refer to figure 5

Note: The annunciators , σ and \bar{X} are shown in Figure 7, but are not available through any front panel controls. However, these functions along with all other front panel functions are available through RS-232 commands. These commands are discussed later in the RS-232 section of the manual.

The ON/OFF (I/O) Button:

The ON/OFF 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 7. During this sequence the balance is doing an automatic systems checkout to insure it is functioning properly.

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

The RANGE/FUNCTION Button:

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

- PCS – Front panel parts counting . ZSP400-NP only.
- HI LO – Checkweighing.
- CAL1— Span Calibration : Only available when calibration seal is deactivated.
- % - percent weighing . ZSP400-NP only.

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

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.

Note: The balance will not zero during a disturbance.

The MODE / UNITS Button:

Pressing the MODE/UNITS button starts the unit of weight cycle as follows:

- For –NP models: grams(g) and milligrams(mg) only.
- For –NJ models:grams(g), carats(ct), pennyweights(dwt), troy ounces(ozt) and ounces(oz)

When the desired unit of weight appears, press the MODE/UNITS button a second time to select that unit of weight.

The SEND Button:

Pressing the SEND button sends the information on the balance's display to an external device via the RS-232 interface.

Note: Scientech balances are DTE (computer) devices. If communicating to another DTE device (ie computer), a Scientech RS-232 cable, PN11897, null modem cable is required. If you are communicating to a DCE device (printer), a 9 pin to 25 pin serial cable #10170 is required, this can be purchased through Scientech.

You may send the time and date along with the weight reading when you press the SEND button or you may send weight readings automatically at user specified time periods (see the Bi-directional RS-232 Command Set section for details). Weight readings may also be sent to a computer or printer continuously every 200 milliseconds (see the RS-232 Front Panel Configuration section for details). Weight readings may be sent automatically when the balance reaches stability (see Selectable Filters section).

Front Panel Parts Counting (PCS): ZSP400-NP only.

Note: The minimum individual piece weight is 30mg. If the initial 10 piece sample size has a cumulative weight less than 300mg when the ZERO button is pressed the display will blank and the LO annunciator will flash for three seconds and the part counting mode will terminate and the balance will return to the normal weighing mode

	User Action	Balance Response
1	Press the RANGE / FUNCTION button.	Display cycles repeatedly through PCS, HI-LO, \bar{T} , and %.
2	Press the MODE/UNITS button when PCS appears on the display.	PCS and 0 flash. This is a prompt to zero the balance with the container that will hold the pieces on the weighing pan.
3	Place the empty container on the pan, wait 10 seconds for the balance to stabilize, and then press the ZERO button.	PCS and 10 flash. This is a prompt to place 10 pieces in the container.
4	Place 10 pieces in the container, wait 10 seconds, and then press the ZERO button.	PCS and 10 appears on the display. You may now add additional pieces and readings may be taken when the stability indicator OK is shown.
5	When you wish to count something else, press the MODE/UNITS button.	You are now back at Step 2 with a flashing PCS and 0.
6	If you want to exit the counting mode, press the MODE/UNITS button twice.	The balance returns to normal operation.

Percent Weighing (%): ZSP400-NP only.

	User Action	Balance Response
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-LO, \bar{T} , and %.
4	Press the MODE/UNITS button when % appears on the display.	Display will indicate % and 100.0 ¹ This means that the weight on the pan now represents 100.0%. 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/UNITS button.	The balance returns to normal operation.

Note 1. Displays three decimal places for weights above ½ capacity of the balance.
 Displays two decimal places for weights below ½ capacity.
 Displays one decimal place for weights below 5% capacity.
 Displays Err below 1% capacity.

Checkweighing / Process Control Limits (HI OK LO):

	User Action	Balance Response
1	Press the RANGE / FUNCTION button.	Display cycles repeatedly through PCS, HI-LO, and %.
2	Press the MODE button when HI LO appears on the display.	HI, LO and 0 flash.
3	Press the ZERO button.	HI flashes and zero is displayed.
4	Place weight on the weighing pan which represents the upper control limit of the acceptable weight range.	HI flashes and the upper weight limit is displayed.
5	Press the ZERO button.	LO flashes and the upper weight limit is displayed.
6	Remove the upper limit weight and place weight on the weighing pan which represents the lower control limit of the acceptable weight range.	LO flashes and the lower weight limit is displayed.
7	Press the ZERO button.	OK and the lower weight limit are displayed.
8	Remove the lower limit weight.	LO appears and zeros are displayed.

The balance is now ready to check weigh samples. The balance displays OK along with the weight of the sample if the sample is within the acceptable weight range. If the sample is too heavy, HI and the weight are displayed. If the sample is too light, LO and the weight are displayed.

To exit check weighing, press the MODE button. The balance then returns to normal operation.

Capacity Tracker:

The capacity tracker provides a graphic display of the used and unused portions of the weighing range and is shown in Figure 7. 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 Filters:

All 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 normal filtering mode (Fil Nor). Low filtering (Fil Lo) can be selected for faster response and high filtering (Fil HI) can be selected for noisier conditions.

The stability indicator, "OK", is illuminated when the variance of the readings are below the preset stability parameters as selected by the user. The stability indicator is useful in determining the stability of the weighing environment. In normal weighing the OK stability indicator should come on within five seconds after the sample has been placed on the pan and the windscreen is closed. If the stability indicator does not come on or takes a very long time this indicates it is too noisy of an environment for that level. Try improving the environment or raise the filter level to enter the selection mode proceed as follows: To exit the selection mode and return to normal operation, turn the balance off and then back on again at any time.

Selectable Filters:

	User Action	Balance Response
1	Press ON/OFF and MODE/UNITS simultaneously.	The current filter, Fil nor (filtering normal), Fil Lo (filtering low), or Fil HI (filtering high) and OK are displayed.
2	Press the SEND button until the desired vibration filter is displayed. Then press the RANGE/FUNCTION button to save the setting.	Balance shows SAVED and returns to normal weighing. The balance will remain in the chosen filter setting even if turned off and back on

Density Determination:

Scientech does not offer a density determination kit nor do you need one to determine density. Density is mass (grams) per unit volume (cubic centimeters).

In order to determine density of a solid, place a graduated flask with a known volume of water on the pan of the balance, tare the balance, and then place the solid in the flask of water. Divide the displayed weight in grams by the increased volume of water. The result is the mass per unit volume of the solid in g/cc.

To determine the density of a liquid, place an empty graduated flask on the balance weighing pan, tare the balance, then pour the liquid into the graduated flask. Divide the displayed weight in grams by the volume of the liquid. The result is the mass per unit volume of the liquid in g/cc.

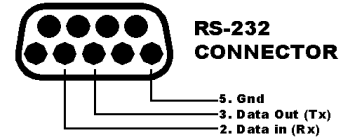
Security Bracket:

A security bracket is provided on the balance's rear panel as a convenient method of securing the balance.

RS-232 Interface:

Note: Scientech balances are DTE (computer) devices. If communicating to another DTE device (ie computer), a Scientech RS-232 cable, PN11897, or normal null modem cable is required. If you are communicating to a DCE device (printer), a serial cable is required. Scientech offers a serial cable, PN11367, for your convenience.

Your balance is equipped with a bi-directional RS-232 compatible interface. The RS-232 connector is a 9 pin D subminiature connector located on the balance rear panel. The pin out and pin descriptions are shown here.



RS-232 Specifications:

Type	EIA-RS-232C, DTE
Method	Half-duplex, Asynchronous Transmission, Bi-directional
Format	4800, 9600 and 19,200 baud rate selectable (default is 9600)
	Code: ASCII
	For parity Even or Odd: Data bit 7, Stop bit 1.
	For parity none: Data bit 8, Stop bit 1.

RS-232 Front Panel Configuration:

Before using the RS-232 feature of your balance, it is necessary to configure the interface properly for your application. The RS-232 Configuration Mode allows you to set baud rate, auto send, continuous send, send when stable and display blanking. The balance is configured with defaults at the factory. The default modes is 9600 baud, no parity.

It is not necessary to follow the entire configuration procedure if only one parameter is to be changed. Use step 1 to enter the menu and press MODE/UNITS to scroll through the different parameters. When the desired parameter is displayed the SEND key will scroll through the settings for that parameter. Pressing the RANGE /FUNCTION at any time will save the settings and return to normal weighing mode.

Your terminal program and the balance must have the same baud rate and parity to work. If you choose NONE for parity please set your terminal program to 8 data bits, 7 data bits for EVEN or ODD parity.

To enter the RS-232 configuration mode via the front panel, proceed as follows:

	User Action	Balance Response
1	Press ON/OFF and SEND simultaneously.	The current baud rate br4800, br9600, or br19,200 is displayed.
2	Press the SEND button until the desired baud rate is displayed.	
3	Press the MODE/UNITS button.	The current parity even, odd or none is displayed.
4	Press the SEND button until the desired parity is displayed.	
5	Press the MODE/UNITS button.	Auto send AS ON or AS OFF is displayed
6	Press the SEND button until the desired auto send mode is displayed.	
7	Press the MODE/UNITS button.	Continuous send CS ON or CS OFF is displayed

	User Action	Balance Response
8	Press the SEND button until the desired continuous send mode is displayed.	
9	Press the MODE/UNITS button.	Send when Stable SS ON or SS OFF is displayed
10	Press the SEND button until the desired Send when stable mode is displayed.	
11	Press the MODE/UNITS button.	Display blinking mode BL ON or BL OFF is displayed
12	Press the SEND button until the desired blinking mode is displayed.	
13	Press RANGE/FUNCTION button.	SAVED is displayed briefly and the scale returns to normal weighing mode.

Using Bi-Directional Communications:

Scientech electronic balances, interfaced to a computer via the RS-232 port, can be controlled by a computer program. Any programming language with access to the RS-232 interface can be used to program this control. The balance expects ASCII character instruction strings and responds with ASCII character data strings. All characters with an ASCII value less than the space character (decimal 32 or hex 20), are ignored by the balances.

USB:

The RS-232 and USB ports share the same internal communication port. All commands described by the RS-232 are valid for the USB as well. The balance utilizes a CP-2102 serial bridge architecture. The USB connector is a type B located on the rear panel of the balance.

Commands – Balance Control Functions:

The following commands can be sent to the balance in any combination of upper and lower case characters. No action is taken by the balance until it receives a carriage return indicating the end of the command string. Type all commands as shown .

↵ = Carriage return

Command	Response	Purpose
CLEAR↵	OK Balance in normal mode	Exit any special weighing mode immediately, clears statistics . Does not tare balance.
GRAMS↵	OK grams selected ¹	Places balance in Grams.
CARATS↵	OK carats selected ¹	Places balance in Carats.
DWT↵	OK pennyweight selected ¹	Places balance in pennyweight.

Command	Response	Purpose
OZT↵	OK troy ounces selected	Places balance in Troy Ounces.
OZ↵	OK ounces selected	Places balance in Ounces (advp)
XAVG↵	#N XX.XXX U ¹	Accumulates the current weight in the XBAR registers.
RESET_XAVG↵	None	Clears the XBAR registers.
RCL_XAVG↵	Mean XX.XXX U ¹ Maximum XX.XXX U ¹ Minimum XX.XXX U ¹ StdDev XX.XXX U ¹ CV XX.XXXX % N Integer Samples	Sends statistics of samples
GLP↵	Sends GLP header	Puts balance in the GLP mode.
ISO↵	Sends ISO header and waits for target weight entry	Puts balance in ISO mode.
TARG XX.XXX↵ ²	XX.XXX g TARGET ENTERED	Enter target weight value in grams.
SEND↵	Sends weight, difference between weight and target, and signature line	Terminates ISO mode.
ASON↵ or ASOFF↵	Output the current weight at the interval specified by ASINT	Turns auto send on or off. When auto send is on, a time interval must be entered. See SETASINT
ASINT n	Auto Send Interval n Seconds	Sets the auto send interval in Seconds
CSO↵ or CSOFF↵	Output the current weight at every 200mS	Turns continuous send on or off.
SSO↵ or SSOFF↵	Output the current weight when the OK annunciator appear in the display.	Turns send when stable on or off.
READCLOCK↵	Current date and time	

1. U = the unit of weight i.e. g grams

2. The target weight should be entered with 3 decimal places of accuracy. i.e. 100.000

STORE TIME_STAMP_ENABLE N↵

N=0 Disables time stamping of weight data. N=1 Enables time stamping of weight data.

Note the single space between STORE and TIME_STAMP_ENABLE and a single space before N.

STORE STABILITY_INDICATOR_ENABLE N↵

N=0 Turns the stability indicator “OK” off. N=1 Turns the stability indicator “OK” on.

Note the single space between STORE and STABILITY_INDICATOR_ENABLE and a single space before N.

When the weight is stable it will be transmitted to the remote interface.

STORE START_OPTION N ↵

N = 0 Requires the ON/OFF button to be pressed to turn on

N = 1 Starts up as soon as power is applied. Balance does self test and then goes into normal weighing.

N = 2 Starts up as soon as power is applied. Bypasses self test and goes idirectly into normal weighing.

Note the single space between STORE and START_OPTION and a single space before N.

SETCLOCK MM/DD/YY HH:MM:SS ↵

Sets the real time clock to the date and time entered. The RTC is battery powered and will keep time for months without external power.

Note the single space between SETCLOCK and MM/DD/YY and HH:MM:SS.

ASINT S ↵

S = Number of seconds between output

Note the single space between ASINT and S.

This is the Auto Send interval in seconds.

Check weighing over the remote operation.

Check weighing is also available from the I/O using the SETCHKWGT <high limit> <low limit> command.

Example:

SETCHKWGT 137.556 135.2 ↵

places the balance in check weighing mode with the high limit set to 137.556 and the low limit set to 135.2

Note there is a space between SETCHKWGT and 137.556 and another space between 137.556 and 135.2

SETCHKWGT uses the current unit of measure. If the balance is in grams the <high limit> <low limit> numbers are expressed in grams as well.

Optional RS-232 Printers:

Please contact Scientech or one of our representatives for more information. A comprehensive manual is included with each printer when purchased. All printers are set for a 9600 baud rate and even parity. To change these settings please see the printer manual and the RS-232 Front Panel Configuration section. The balance display contents can be sent to the printer at any time by pressing the balance front panel SEND button.

Many other accessories are available. Please contact Scientech at 303-444-1361 or 800-525-0522 or email us at inst@scientech-inc.com for more information.

Troubleshooting Guide.

Problem	Possible Cause	Possible Solution
The display is blank	<ul style="list-style-type: none"> *Balance not turned on *Power cable not plugged in *No power from AC outlet 	<ul style="list-style-type: none"> *Press ON/OFF switch *Plug in cable, press ON/OFF switch *Turn on circuit breaker *Change AC outlets
OL appears in display	<ul style="list-style-type: none"> *Maximum capacity exceeded 	<ul style="list-style-type: none"> *Reduce container weight *Weigh sample in smaller increments
UL appears in display	<ul style="list-style-type: none"> *Pan is not in place *Balance is out of range 	<ul style="list-style-type: none"> *Insure pan is positioned properly *Press ZERO switch
The display is unstable	<ul style="list-style-type: none"> *Drafts (air currents are present) *Vibrations are present 	<ul style="list-style-type: none"> *Install windscreen, relocate balance *Isolate balance from vibration, relocate balance
Weight readings are incorrect	<ul style="list-style-type: none"> *Balance is out of calibration *Balance is not level *Display was not zeroed before weight was placed on pan *Object being weighed is touching windscreen or balance case top *Unit of weight selection is incorrect 	<ul style="list-style-type: none"> *Recalibrate balance *Level balance *Press ZERO switch before weighing *Reposition object *Select proper weighing mode
Display stays in turn on sequence	<ul style="list-style-type: none"> *Pan not in place *Drafts or vibrations present *New windscreen has been installed *Power supply connected to wall outlet before balance connector 	<ul style="list-style-type: none"> *Place pan on balance *Isolate or relocate balance *Unplug power supply from wall then replug into wall

NCWM—NTEP Certificate Number 07-017

Weighing Units and Specifications:

	ZSP150-NJ (Capacity, d, e)	ZSP400-NJ (Capacity, d, e)	ZSP400-NP (Capacity, d, e)
Grams	150g, d = .001g , e = .01g	400g, d = .001g , e = .01g	400g, d = .001g , e = .01g
milligrams	N.A.	N.A.	400000mg, d = 1mg , e = 10mg
Carat	150c, d = .001c , e = .01c	400c, d = .001c , e = .01c	N.A
Pennyweight	96.4dwt, d = .001dwt , e = .01dwt	257dwt, d = .001dwt , e = .01dwt	N.A
Ounce T	4.8ozt, d = .0001ozt , e = .001ozt	12.8ozt, d = .0001ozt , e = .001ozt	N.A
Ounce avdp.	5.3oz, d = .0001oz , e = .001oz	14.1oz, d = .0001oz , e = .001oz	N.A

Specifications for:

Model	ZSP150-NJ	ZSP400-NJ	ZSP400-NP
Weighing Mode	Single Range		
Tare Range (grams)	150	400	
Repeatability (grams) (standard deviation)	0.0015g		
Linearity (grams)	±0.0015g		
Stabilization Time	User Selectable		
Weighing Speed	Adaptive		
Weighing Units	Grams, Carats, Pennyweight, OzT, Oz		grams, milligrams
Display Update Interval (ms)	200ms		
Date Interface	Bidirectional RS-232 & USB with baud rates of 4800, 9600 and 19,200		
Weighing Pan Size	Circular 4.5 inch diameter		
Operating Temperature	12°C to 30°C		
Relative Humidity	80% for temperatures up to 31°C decreasing linearly to 50% at 40°C		
Power Supply	Automatic switching 115/230 Volts, 50/60 Hz ± 10%		
Windscreen	Optional		Analytical Windscreen
Calibration Weight (grams)	150 / 100	400 / 200	
Housing	7.5"W x 11.25"D x 3.25"H		
Weight (pounds)	≈9.5		

Limited Warranty:

All Scientech Zeta Series Electronic Balances and their accessories are warranted against defects in materials and workmanship for five (5) years from the date of shipment. During the warranty period, Scientech will repair, or at its option replace at no charge, components that prove to be defective. The equipment must be returned, shipping prepaid, to Scientech'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 a Scientech service facility. The foregoing warranty is in lieu of all other warranties expressed or implied including but not limited any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. Scientech, Inc. shall not be liable for any special incidental or consequential damages whether in contract, tort or otherwise.

Returned Goods Procedure:

Should it become necessary to return any item to Scientech for any reason, please contact our Product Service Department at (800) 525-0522 or (303) 444-1361 or Fax (303) 444-9229 or E-mail inst@scientech-inc.com. When you contact us, please be ready to provide the model number, serial number and a description of the problem. Frequently we can provide self-help information that will eliminate the need for returning the unit.

If equipment return is required, please pack the items 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. Scientech does not assume responsibility for under packed items.

Please include the name and phone number of the person to contact regarding repair question(s).

Normally, products are repaired and shipped within 5 working days after their arrival at the product service facility. This is an average time and could vary depending on the workload.

Shipping Address: Scientech, Inc.
 5649 Arapahoe Avenue
 Boulder, CO 80303
 U.S.A.

Disposal of Electrical and Electronic Equipment:

Scientech, Inc. recommends the following for disposal of electrical and electronic equipment:

1. The best option is to reuse the equipment in its entirety.
2. Where the equipment can not be reused in its entirety, priority should be given to reuse of its subassemblies and components.

Where reuse is not appropriate, electrical and electronic equipment, including batteries, should be recycled according to local ordinances. It should never be mixed with municipal waste.

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 mains supply, the minimum and normal category is II.

CE Mark:

All Scientech Electronic Balances carry the CE Mark and conform to the requirements of the following standards:

EN 55011: 2009 + A1 :2010 (Class A, Group 1) Limits and Methods of Measurement of Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-frequency Equipment

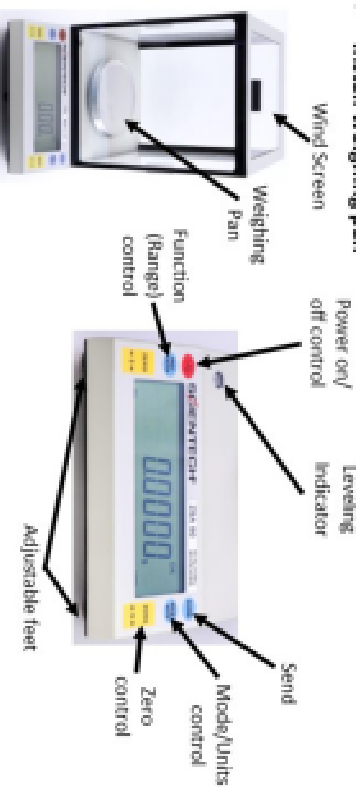
EN 61326-1: 2013 EMC Requirements for Electrical Equipment for Measurement, Control and Laboratory Use

EN 61010-1: 2010 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use

QUICK START GUIDE: ZETA SERIES BALANCES

1. Unpack Balances

- Do not drop balance or orient upside down or on its sides
- Do not push sideways on installed weighing pan
- Install weighing pan



2. Place in Proper Environment

- Operate indoors in a dry environment free from air flow, vibration sources,



variations in temperature (no greater than $\pm 10^{\circ}\text{C}$), and with no static electricity.

3. Level

- Adjust leveling



Level Balance

Rotating thumbwheel
counter-clockwise raises front of balance,
clockwise lowers front of balance.

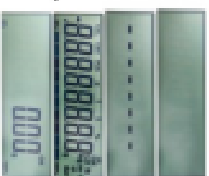
Level Indicator

feet to center the leveling indicator



4. Connect Balance to Electric Power

- Make sure AC power adapter voltage and plug type are compatible with local AC power



- **EN-ATTN** Press ON/OFF switch, sure power cord is not hazardous
- **Display** Display sequence will be as shown in 4 pictures connect balance from power when cleaning

5. Power On Balance

6. Allow 1 hour Warmup and Then Calibrate

- Calibration for internal weight balance: Refer to Operating Manual
- Calibration using external weight: Refer to Operating Manual

8. Filter Settings

- (see Operating Manual) use low for faster response, high if vibration is an issue and normal for most applications.

7. Where to Get Operating Manual

Download online at: www.scientech-inc.com/event-knowledge-center/

8. Support

- If product support is needed call Scientech Inc. at:
Tel: 303 444 1361 or 1 800 525 0522
or
Email: inst@scientech-inc.com
- If service is required, contact authorized Scientech service center. F 12457