



PEGASUSLIBS[®]

Analyzer for carbon

Operation manual V 1 . 1

Handheld LIBS

Vela Instruments LLC

Tel: +1(617) 299 1550

Email: info@velahh.com

website: www.velainstruments.com www.pegasuslibs.com

Address: 2 Burlington Woods Drive, Suite 100, Burlington, MA 01803

Pegasuslibs analyzer for carbon is a new high-end intelligent detection equipment without harmful ionizing radiation in the field of spectral analysis. In addition to accurate material identification and quantitative analysis of alloy materials, it can also conduct accurate quantitative analysis of the carbon content in alloy steel and stainless steel.

Pegasuslibs analyzer for carbon is more suitable for the different fields of geology, coal, metallurgy, pharmaceutical, environment, scientific research, and other applications.

Reading this operation manual carefully before use will help you to use this product better.

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Pegasuslibs analyzer for carbon

Product Disclaimer & Safety Operation Guidance Manual



Please familiarize the product with the functions of the product before operating. Failure to operate the product properly may cause harm to itself or others, or cause product damage and property damage. This product is more complex, need to take a period of familiarity to use safely, and need to have some basic knowledge to operate. This product is not suitable for children. Do not use parts not provided or suggested by the "VELA INSTRUMENTS", and must strictly follow the Safety Operation Guide Manual issued by the "VELA INSTRUMENTS". This guidance document contains instructions for safety, operation, and maintenance. Be sure to carefully read all the instructions and warnings in the user manual before making use.

1.The analyzer in this document is short for the Pegasus handheld laser Carbonization spectrometer (PEGASUSLIBS) produced by Vela instruments LLC.

2."VELA INSTRUMENTS", "PEGASUSLIBS" and "HHLIBS" are also the registered trademarks of by Vela instruments LLC. and its affiliates.




Product Disclaimer and Warning.

3.This product is not a toy, not suitable for people under the age of 18. Do not let children use the analyzer. Please pay special attention to the operation with children.

4.Please read this document carefully, before using this product. This statement has an important impact on the safe use of the product and your legitimate rights and interests.

5.This analyzer is a professional spectral test instrument that provides the results of the tested alloy material and the main elements under normal operation and without damage to the components. Please visit <http://velainstruments.com> and info@velahh.com gets the latest instructions and warnings. Vela instruments LLC reserves the right to update this disclaimer.



6.Be sure to read this document carefully before using the product to understand your legitimate rights, responsibilities, and safety instructions; otherwise, it may cause property losses, safety accidents, and personal safety risks.

7.Once using this product, you are deemed to have understood, recognized, and accepted the entire terms and contents of this statement. The user promises to be responsible for his actions and all the consequences therefrom. The User undertakes to use the Product only for proper purposes, and agrees to these terms and any relevant policies or guidelines that may be developed by the "VELA INSTRUMENTS".

8."VELA INSTRUMENTS" shall not bear all losses caused by the user's failure to use the product in accordance with the Safety Operation Guide Manual.

9.To the maximum extent permitted by law, in no case shall the "VELA INSTRUMENTS" shall it be liable for any indirect, consequential, punitive, accidental, special, or penal damage, including losses if you purchase, use or cannot use the product (even if the "VELA INSTRUMENTS" has been informed of the possibility of such loss).

10.When using the analyzer to test the alloy material, please fully understand the relevant alloy test specifications and results. It is strongly recommended to use the analyzer, first use the alloy standard sample to verify the instrument, and then confirm that the analyzer is in a normal functional state. The "VELA INSTRUMENTS" is not liable for user losses due to incorrect test results.

11.In compliance with laws and regulations, the "VELA INSTRUMENTS" has the final interpretation of the above provisions. The "VELA INSTRUMENTS" shall have the right to update, revise or terminate the terms of this Note without prior notice. This statement is valid for a long time until the termination of this document download service.



Before use instructions

To enable you to use the product more safely, the "VELA INSTRUMENTS" provides the Pegasuslibs analyzer for carbon Spectrometer User Manual with users



It is recommended that users conduct the first analyzer acceptance check according to the List of PEGASUSLIBS Spectrometer. Carefully read the Disclaimer and Safety Operation Guidelines, follow the PEGASUSLIBS User Manual, read and understand the manual before use, ensure that you are familiar with the functions of the components of the product and the test results. If you have any questions about how to use the product, contact the VELA INSTRUMENTS or its authorized distributor.



Use time instructions

Primary device —PEGASUSLIBS

- 1.It is recommended to wear professional protective glasses when using this analyzer;
- 2.Although the laser of this analyzer is a Class 3B human eye safety laser, we do not pull the trigger when directly targeting the human eye at any time;
- 3.The test panel of this analyzer has a safety switch function, so do not turn it off at will. If the safety switch function needs to be turned off for the test alien sample; turn on (restore) this function immediately after the test is complete. The "VELA INSTRUMENTS" is not liable for any injury caused after closing the safety switch;
- 4.When using the analyzer, please put the safety rope from the analyzer into the wrist to avoid the personal and property losses caused by the accidental fall of the analyzer. If the safety rope is lost or damaged, please contact "VELA INSTRUMENTS" to purchase;
- 5.If the analyzer occurs Software or hardware. Please try to restart the analyzer to see if it will be automatically repaired, or contact the factory or the authorized dealer, please do not try to repair the hardware by yourself, correspond to Do not disassemble the analyzer by yourself, otherwise it will cause warranty failure or other unpredictable losses.

Charger and transportation safety

Please use the original factory-supplied charger and battery.

The charger adaptation voltage is 110V- 240V / 50HZ, and it only works normally within this voltage range. Determine the type of voltage used, consult the authorized dealer or the local power company.



1. When charging, please keep the air circulation around the charger and the battery. It is strictly prohibited to charge in a narrow and closed environment without heat dissipation.
2. Please use a properly grounded electrical outlet and contact your electrical engineer for details.
3. The battery shall be stored in dry and ventilated areas to avoid direct sunlight to prevent overheating. Over three months, the recommended storage temperature range is from 22°C to 28°C. Do not store the battery in places below minus 10°C or above 45°C. If the battery is damaged or scrapped, please dispose of the hazardous waste. Do not disassemble it by yourself.
4. After the analyzer is used, remove the battery, and keep the analyzer in the protective box provided by the original factory.
5. Do not soak the analyzer in water. If you accidentally fall in the water, do not immediately turn on the power supply, and contact the "VELA INSTRUMENTS" or the authorized dealer to repair the analyzer as soon as possible.
6. When carrying the analyzer outside, please put the analyzer in the original protective box for transportation.
7. If there is any abnormal condition in the analyzer, such as hot body, smoke or unable to start up, or large deviation in the test results, please stop using it immediately and contact the "VELA INSTRUMENTS" or the authorized dealer immediately.

Tip: Using a 2A charger takes 3-4 hours to fully charge a battery.

1. Analyzer and components



2. Installation of battery and argon cylinder:

1. Press the battery compartment button to open the battery compartment lower lid.
2. Push the battery into the machine until a slight click, close the compartment to lock. On the contrary, the battery can be removed, holding the handle of the analyzer to avoid slipping when pulling out the battery.
3. After closing the bottom cover of the battery compartment, insert the cylinder into the small hole of the bottom cover, hold the tail of the cylinder tightly, and rotate clockwise. When feeling that the bottle mouth is punctured, the cylinder quickly rotates to the lock, and the vent sound will disappear.
4. The analyzer has a built-in cylinder pressure sensor. When the pressure of the argon cylinder drops, the pressure display sign ( ) on the screen will change from white to yellow to red. If the screen pops up to replace the argon cylinder reminds you, rotate the cylinder counterclockwise to remove it, and then replace the new cylinder according to the above method.





5. Important reminder: Argon cylinder is a high-pressure cylinder, only disposable, it will be locked by pressure after installing the equipment, and must be disassembled until argon is exhausted.



Micro argon bottle



3. Analyzer opening and system initialization

1. Hold the trigger until the green indicator is on. After a short wait, you will see the boot screen, and eventually you will enter the login page.
2. Log in with the default password of 123456. Later, you can change this password later in the Settings Menu.
3. When you log in, you will see a home page with four ICONS, namely, Test, Data, Alloy Grade Library, and Settings
4. The analyzer will automatically enter the initialization (laser preheating) mode, and the test icon  will have a dynamic turn.
5. Wait for the system initialization to complete ( the identity disappears) to start the test.

System initialization ID





4. Preparation work before the test

1.Analyzer calibration —— analyzer has built in the calibration curve of carbon elements and other main elements in iron-based alloy before delivery, which can conduct element analysis of iron-based materials (stainless steel, high and low alloy steel, carbon steel, etc.). When testing the unknown materials, after obtaining the preliminary results by directly testing, please calibrate the analyzer with a standard sample with similar carbon content, and then test to obtain the test results closer to the accurate value. The calibration function is used on page (23).



The calibration model

2.Sample grinding —— The tested sample surface must be polished before testing. If the sample can be handheld and of appropriate size, it is recommended to polish with a professional grinding machine. If the sample cannot be moved or the abnormal shape cannot be treated with a grinding prototype, a manual grinding machine can be used. The grinding area is only the size of a coin, to remove the oxide and coating to reveal the texture of the material itself.

After the sample is polished, the test shall be completed within 5 minutes, otherwise it shall be repolished. In order to avoid the impact of ordinary grinding sandpaper on the carbon content, it is recommended to choose about 120 mesh of zirconia material.

The grinding quality of the sample has a great influence on the test results of C content, especially the determination of C content in grade L stainless steel.



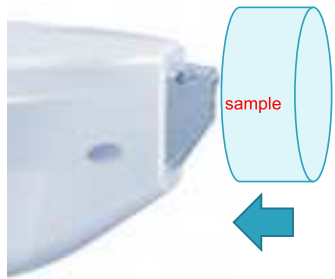
Charging type manual grinding machine

Tip: In cold weather, we recommend using a special equipment insulation jacket to help prevent heat loss. This will shorten the initialization time and greatly extend the battery life.

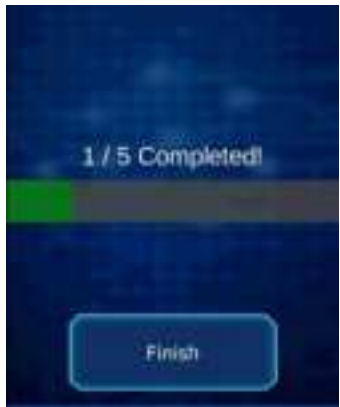
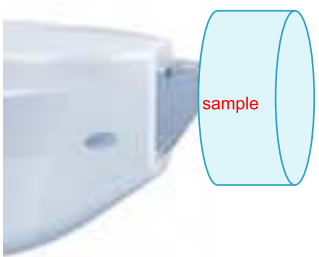
5. Test methods

- 1.During the test, please fit the flat surface of the test sample to the head of the equipment and close to the front panel, and press all the safety thimbles. Pay attention to the safe fitting gap between the head of the analyzer and the test sample. At this time, the yellow indicator light in the middle of the bottom end of the panel is on, indicating that the safety switch function is working normally.
- 2.After pressing the trigger for a second to release the trigger, the laser will trigger a slightly short "tick" sound, while the red indicator below the screen flashes, keep the sample in stable contact with the device for about 6 seconds, the red-light flashing stop indicates the end of a single test, the progress bar on the screen will show the number of a single test.
- 3.Every five single test is a high-precision test, and the test results are displayed on the screen.
- 4.The dot in the middle of the screen, dividend, yellow, green, red indicates the system temperature is high, yellow indicates the system temperature is slightly higher, green indicates the system temperature is normal. The left side of the dot will have a temperature control to complete the countdown reading seconds.

The ples to the front of the device



Stay still for 6 seconds during testing



S31600				
El	Min	%	Max	±%
Fe	61.84	69.98	72.00	0.00
Cr	16.00	16.71	18.00	0.00
Ni	10.00	10.22	14.00	0.00
Mo	2.00	2.11	3.00	0.00
Mn	0.00	0.590	2.00	0.000
Cu		0.347		0.000
Ti	0.00	0.049	0.05	0.000



Tip: Keep the front panel of the equipment in stable contact with the test sample until the red light stops. If the sample is moved in the middle of the test, the test is invalid.

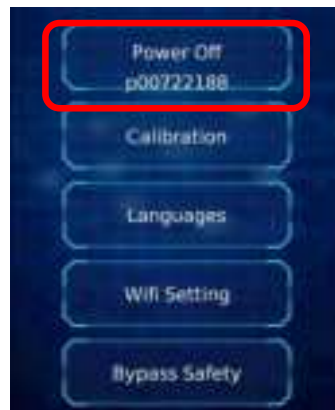
6. Turn off the analyzer

1.Under the Settings menu, click the Shutdown button, and then click OK.

2.If you click restart, you can restart the analyzer.

3.If the touchscreen does not respond, or fails, hold the trigger for 20 seconds, which forces the analyzer off; pull the battery from the battery compartment (only if other methods are invalid, directly plugging the battery may damage the circuit components)

4.The analyzer is turned off in about 20 seconds. Please put the analyzer in the protective box after the screen indicator light is completely off.



Click on the shutdown



Confirm shutdown



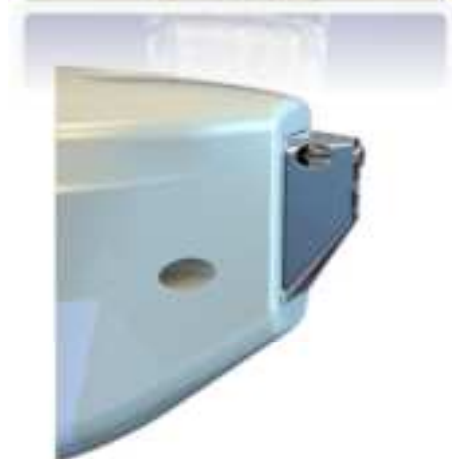
Press the trigger for 20 seconds

7. Clean the panel and the sampling bin

1. During the test, trace amounts of the alloy material dust were ablated by the laser and accumulated in the sampling chamber of the head of the analyzer. As time passes, more dust is deposited on the optical window, which will gradually reduce the laser power and thus have an impact on the test results.

2. Preventive maintenance, such as regular cleaning of sample chambers and internal optical windows, is essential to ensure long-term stability of performance.

3. When popup a clean prompt window on the screen, whenever possible, use a clean and dry swab to clean the optical window, which is made of sapphire glass and is very scratch resistant.



Tip: Use the inner hexagonal wrench in the random attachment to remove the panel screws and clean the sampling room completely.

8. Battery and charger

1.The analyzer is equipped with three sets of high-power lithium batteries, after access to the charger, the four green LED beads on the front of the battery will be on, the four beads are fully bright to indicate that the power is sufficient, press the circular button on the surface of the battery, can show the battery power, when only one light and flashing, indicating that the power is insufficient, please charge.

2.Plug in the adapter and connect to the 110V-220V2A charger to charge the battery, when the green light on the charger will turn red and turn green after the charging ends.

3.We provide two kinds of charging transfer sockets, a single group of charging transfer seats can charge one set of batteries, and three sets of charging seats can charge three sets of batteries at the same time.

4.The plug connecting the charger to the AC power supply can be selected with various specifications.



110V-220V Charger

European rules and American regulations



Single set of charging transfer seat



Three-bit charging transfer seat

9. Battery power

1. Click on the right side of the analyzer screen header to pop the drop-down menu, where the power is displayed. If the battery power lamp is less than 20%, the equipment will pop up a low power reminder, please replace the new battery in time.
2. Please remove the 110V-220V charger and the charging transfer socket from the protective box, insert the battery into the transfer socket, and connect the AC power supply to start charging. When the power light flashes on the battery, the charging is charging, and when the four LED indicators on the battery are often on, the charging is completed.
3. Lithium battery pack is a consumable material. With the increase of use time and charge and discharge times, the battery will gradually age. Please pay attention to replace the battery pack that cannot work normally in time.
4. The accessory provides three sets of high-performance lithium-ion batteries with a single capacity of 3,350 m A H (more than 43WH / set), which can basically meet a day's workload.

Battery power=46%





10. Daily maintenance of the analyzer

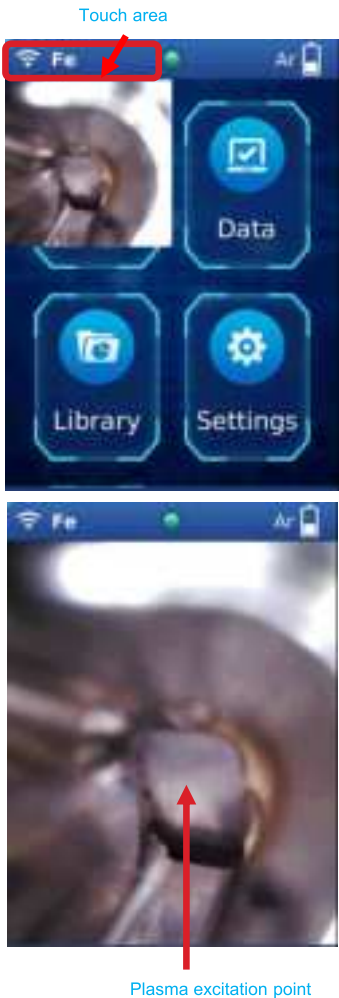
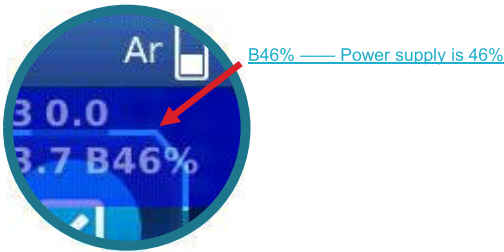
- 1.Please clean the front panel and sampling bin of the analyzer with the screen tip. In order to prevent damage to the sapphire glass in the sampling bin, please avoid inserting other hard and sharp objects except cleaning the cotton swab into the head of the analyzer.
- 2.Check to see whether the analyzer safety rope falls off regularly, and please put the safety rope on the wrist during the operation.
- 3.Avoid the equipment from falling and hitting. After the use or when changing the work space, place the analyzer in the protective box and move after the box lid lock is closed.
- 4.When the analyzer is stored in the protective box, remove the lithium battery from the analyzer and put it to the battery storage position.
- 5.Do not remove the analyzer housing by yourself, please contact us in fault.
- 6.Analyzer has IP54 level of waterproof and dust-proof function, can prevent the general water droplets splashing, do not put the analyzer into the water to avoid serious damage, the damage caused by the analyzer water may not be guaranteed.
- 7.If the analyzer moves frequently in a humid environment with large temperature difference, open the analyzer for a period to give the analyzer more time to prevent condensation inside and may damage electronic components and optical components.
- 8.Before each use, please verify the accuracy of the analyzer. If the test value of the standard sample is greatly different from the standard value, please check the analyzer until the test results are normal. If the test value cannot be restored to the normal value, please contact the after-sale service engineer of the factory.



11. Menu home page


There are four function options on the menu home page, each click to enter:

- 1.Test-Click to enter the working mode of the alloy test.
- 2.Data — View the tested data.
- 3.Brand library-common alloy number retrieval.
- 4.Settings — Actions of various options (very useful functionality)
- 5.Below the main interface is the current date and time.
- 6.Touching the left side of the screen header brings up a built-in camera screen that enlarges both sides to the full screen.
- 7.Touching the right side of the screen header gives a drop-down menu with system parameters and power percentage.



Tip: The screen of the analyzer is an industrial resistance touch screen. Different from the mobile phone capacitor touch screen, the mobile phone capacitive screen is operated by using the current induction of the human body, so any non-conductive object such as nails and gloves can not be recognized by the capacitive induction system below the screen. The resistor screen works through pressure sensing, and can be touched with anything, such as wearing gloves and using a normal pen.

12. Setting up-1

- 1.Shutdown-Click to power off the analyzer, or select to restart.
- 2.The p00122026 is the device factory sequence code.
- 3.Calibration Mode — allows user to correct the working curve at any time.
- 4.Select Language-Click to enter to select various languages.
- 5.“Shield Safety Switch” — users can temporarily bypass the safety switch device to test on irregular samples with large flat surfaces; once the shield safety switch function is activated, the triangle warning icon  will be displayed on the top status bar of the device screen to remind you that the safety switch is currently shielded.
- 6.Please reset (restore) the safety switch function immediately when the shield safety switch is no longer required.



- 7.Wi-Fi Settings-Click to enter and select SSID to join the LAN.
- Line 1: searched WiF network SSID, font color indicates the signal strength, white is the strongest.
- Line 2: WiFi's " Basic Service Set Identifier, the Mac address of the wireless router.
- Line 3: The wireless frequency is 2.4G or 5G, and the smaller the dBm value, the stronger the signal.
- Line 4: After WiFi, the LAN IP address is displayed. This IP address is required when using VNC or (vela soft)



Web Search Refresh button

13. Setting up-2

1.Lock screen-click to enter the boot password before entering.

2.Modify password-The analyzer has two sets of passwords, namely, the boot password and the delete data authorization password, if you want to change the login password, please enter the login password and enter the new password as prompted; similarly, if you want to change the data delete authorization password, please enter the password and change it in the same method; please secure and properly protect the password.

3.Click "screen disabled" - "screen enable" to wireless project the analyzer screen display to the PC or phone via WiFi; on PC, we recommend TightVNC, on iPhone, we recommend VNC Viewer; on Android phone, we recommend RealVNC; you can download the corresponding APP program by scanning the QR code below.

4.Update system time — You can synchronize the analyzer built-in clock with the user's time.

5.Reset the test serial number — Reset the sort (serial number) displayed by the test results.



TightVNC



RealVNCfor Android



VNC Viewerfor iPhone

14. Setting-up-3

1.Argon purge — Clean the argon pipe built into the analyzer and remove trace impurities in the pipe to improve the test accuracy of the carbon content. Purge time can be selected from 30 seconds- 180 seconds.

2.Test Mode — The default is high precision mode, the number of tests can be customized (3-6 times)

3.Screen brightness — You can adjust the screen display brightness arbitrarily, depending on the usage scenario.

4.Select Units — The test results can either percentage or PPM.

5.Bluetooth Settings-The Bluetooth function can support the printer or Bluetooth data transmission, if you do not need to use the Bluetooth function can choose to turn off to save power.



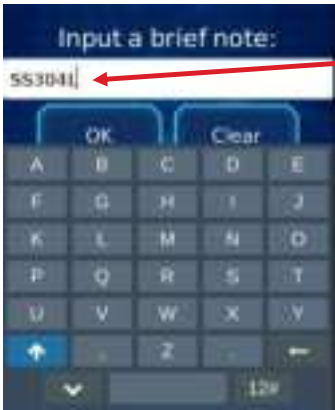
15. Add the test note information

Before starting the test, users can directly add a short note to the analyzer, such as a part number or sample name abbreviation, and attach it to the note column of the test results; this comment information remains in the test information when the data is exported.

- 1.Click the "icon in the lower right corner" of the screen, and then enter a short comment in the pop-up dialog box, and click" OK " to save;
- 2.Note that this note will be retained for each next test result until the user removes or changes it, or is cleared after the shutdown.
- 3.The note information is displayed in the test results.



Click on the icon to add comments



Remarks information

S304L					
S304 (75%)					
S304L					
El	Min	Conc	Max	±%	
C	5.00	0.026	0.03	0.000	
Fe	66.30	69.271	74.00	0.000	
Cr	18.80	18.819	20.00	0.000	
Ni	8.00	8.575	10.00	0.000	
Mn	0.00	1.541	1.00	0.000	
Cu		0.781		0.000	
Mo	0.00	0.412	0.05	0.000	

16. Read back, print, and delete the data

- 1.In the home screen, click Data to enter and view the past test records.
- 2.You will be able to view the available disk space and the number of test files already saved.
- 3.You can search for the test records after entering the search criteria.
- 4.If the Bluetooth printer has been configured and turned on, it will automatically connect, and the printer icon will appear on the screen;
- 5.Click the icon in the lower left corner of the Analyzer screen to delete the data, (delete the authorization password: 121212)
- 6.Click the icon in the bottom-left corner to print the test results directly.



Click to delete the data

Handheld Bluetooth printer

Tip: The analyzer provides a large capacity of data storage space, which can store millions of test results, but too much data will increase the retrieval time, please enter the data backup function in the menu option, which can automatically backup and clear expired data for you.

17. Alloy library

- 1、Click the library on the home page to search and view the system alloy library;
- 2、You can search for any available sign and view its detailed element definition;
- 3、The default alloy library is based on American standard UNS.
- 4、If it is not available in the default alloy library that you need, you can add and customize it through the vela software . For details, please contact the Vela after-sale service or your local sales representative.



18. Data calibration

1. One of the most powerful functions built into the analyzer is the ability to easily perform a single-point calibration;

2. Enter the Calibration feature through the Settings menu. Depending on the test matrix patterns, you will see the available calibration profiles;

3. For example, by clicking "304L C0.021", you can view the elements and their concentration standard values to make sure they are correct, and that you have the correct CRM (standard sample) to perform the calibration;

4. Click "Continue" and follow the operation prompts to complete the calibration function setting, and you can also choose to reset the existing calibration data by "Calibration Reset".

5. You can also click: "Select Data" to select the corresponding data in the test results for calibration.

6. Click Reset Deactivate to suspend the current calibration usage, or to reactivate the calibration file.

7. Click Calibration Reset to delete all calibration files and restore to the factory working curve.

8. For more setting methods and using techniques of calibration functions, please contact the original engineer for more detailed information.



Tip: The calibration function is particularly important for the detection of low-carbon alloy, especially the L-grade stainless steel, when the calibration samples also need to be polished.

19. Definition of the test results

GB 35# GB 25# (63%)				
El	Min	Conc	Max	+/-
Fe	97.41	98.480	99.01	0.194
Mn	0.50	0.562	0.60	0.073
C	0.32	0.353	0.40	0.034
Si	0.17	0.285	0.37	0.002
Cr	0.00	0.079	0.25	0.003
W	0.00	0.071	0.02	0.043
Co	0.00	0.046	0.02	0.000

GB 10# GB Q345 (81%)				
El	Min	Conc	Max	+/-
Fe	98.30	99.132	99.58	0.181
Mn	0.35	0.250	0.65	0.117
Si	0.17	0.203	0.37	0.007
Cr	0.00	0.111	0.12	0.008
C	0.07	0.093	0.13	0.028
Cu	0.00	0.047	0.25	0.002
Co	0.00	0.046	0.01	0.000


S316L				
El	Min	Conc	Max	+/-
Mn	0.00	1.150	2.00	0.003
Cu	0.00	0.335	1.00	0.006
Si	0.00	0.308	1.00	0.007
Co		0.186		0.008
W	0.00	0.085	0.02	0.011
Al	0.00	0.084	0.01	0.017
C	0.00	0.021	0.03	0.000

- 1."35 #" is the most matching alloy number grade;
- 2.Elements are the elements in the alloy tested by the analyzer
- 3.The Minimum and Maximum values are the matching level UNS definitions for each element;
- 4."Error" means that multiple single tests are performed in the "high precision" mode, calculating the standard deviation and showing the 95% coverage rate under the "error";

T10 GB GCr15(0.00)				
El	Min	Conc	Max	
Fe	97.10	98.17	99.33	
C	0.85	1.01	1.04	
Mn	0.35	0.324	0.65	
Si	0.17	0.186	0.37	
Cr	0.00	0.129	0.25	
Cu	0.00	0.059	0.30	
Al	0.00	0.045	0.01	

GB 65Mn GB 8MnSi(0.45)				
El	Min	Conc	Max	
Fe	96.96	97.69	98.33	
Mn	0.00	1.10	1.20	
C	0.62	0.684	0.70	
Si	0.17	0.228	0.37	
Mo	0.00	0.078	0.01	
Cr	0.00	0.072	0.15	
Cu	0.00	0.070	0.25	

20. Quick troubleshooting

1. "During startup or use, if the screen enters the white screen" - the white screen indicates that the device enters the program protection mode, you can hold the trigger for about 20 seconds to force the shutdown and restart, if the problem still exists, please turn off the power again and please contact the factory engineer or your local sales representative;
2. "Press the trigger, but the test is not start" - check the yellow LED indicator at the lower end of the screen if it remains on. The flashing yellow LED indicator indicates that the safety switch is not in stable contact. Please try to keep the front end of the equipment against the test sample stable after the yellow indicator is always on, or try to test the "shield safety switch" in the setting; also check whether the pressure identification of argon cylinder is normal and the analyzer screen is normal
3. "Analyzer is on, but automatically off shortly after login" - check the battery and make sure it is fully charged. The battery load is high when the system is initialized, so we recommend using fully charged batteries as much as possible;
4. "The laser will not stop and the test will not stop" - Please click the icon on the lower right side of the screen  This is the return button to quickly return to the home page. The laser should be turned off immediately. If the laser is still not stopped working, power off the analyzer immediately and point the analyzer front end far away from you or anyone else. And then please contact our after-sale service personnel or your local sales representative;
5. "Abnormal test results" - Please check whether the window glass is dust and clean, replace the argon cylinder, turn on the argon cleaning function, and polish the test samples. If the problem still exists, please contact our after-sale service staff or your local sales representative.

21. "VELA INSTRUMENTS" after-sale service contact information:

1. after-sale service hotline: +1 (617)299 1550 (working days AM8:00- -PM5:00)
2. after-sale service Address: 2 Burlington Woods Drive, Suite 100, Burlington, MA .
3. Contact number of the authorized service provider: _____
4. Our professional engineers will solve any problems encountered during the use of your equipment.
5. Or you can email our service email: info@velahh.com to request the related product information.



The copyright of this user manual belongs to Vela instruments LLC. Without the written permission of the company, any enterprise, website, individual shall not reprint, excerpts, mirror images and other ways to use the contents of this manual. The Company also declares that:

1. This operation manual is used only as guidance, and it does not constitute any form of guarantee.
2. If the product models are different, the parameters will be slightly different, and the actual product specifications shall prevail.
3. The product parameters and pictures in this manual are for reference only.
4. Please contact the company directly for information not mentioned in this manual or necessary to add or correct.

The Company has the right of final interpretation of all product materials.

FCC& ISDE Statement

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la partie 15 des règles de la FCC et aux normes RSS exemptées de licence d'Industrie Canada. Le fonctionnement est soumis aux deux

conditions suivantes : (1) cet appareil ne doit pas causer d'interférences nuisibles, et (2) cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant entraîner un fonctionnement indés

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

cet appareil est conforme à l'exemption des limites d'évaluation courante dans la section 2.5 du cnr - 102 et conformité avec rss 102 de l'exposition aux rf, les utilisateurs peuvent obtenir des données canadiennes sur l'exposition aux champs rf et la conformité.

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

Radiation Exposure Statement for camera

This equipment should be installed and operated with minimum distance 0cm between the radiator & your body.

Cet équipement doit être installé et utilisé à une distance minimale de 0 cm entre le radiateur et votre corps.

The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

L'appareil destiné à fonctionner dans la bande 5150-5250 MHz est uniquement destiné à une utilisation en intérieur afin de réduire le potentiel d'interférences nuisibles aux systèmes mobiles par satellite cocanaux.