PAS
SYSTEMS INTERNATIONAL
ALCOHOL SENSOR SYSTEMS

Alcovisor® Jupiter

Operation Manual

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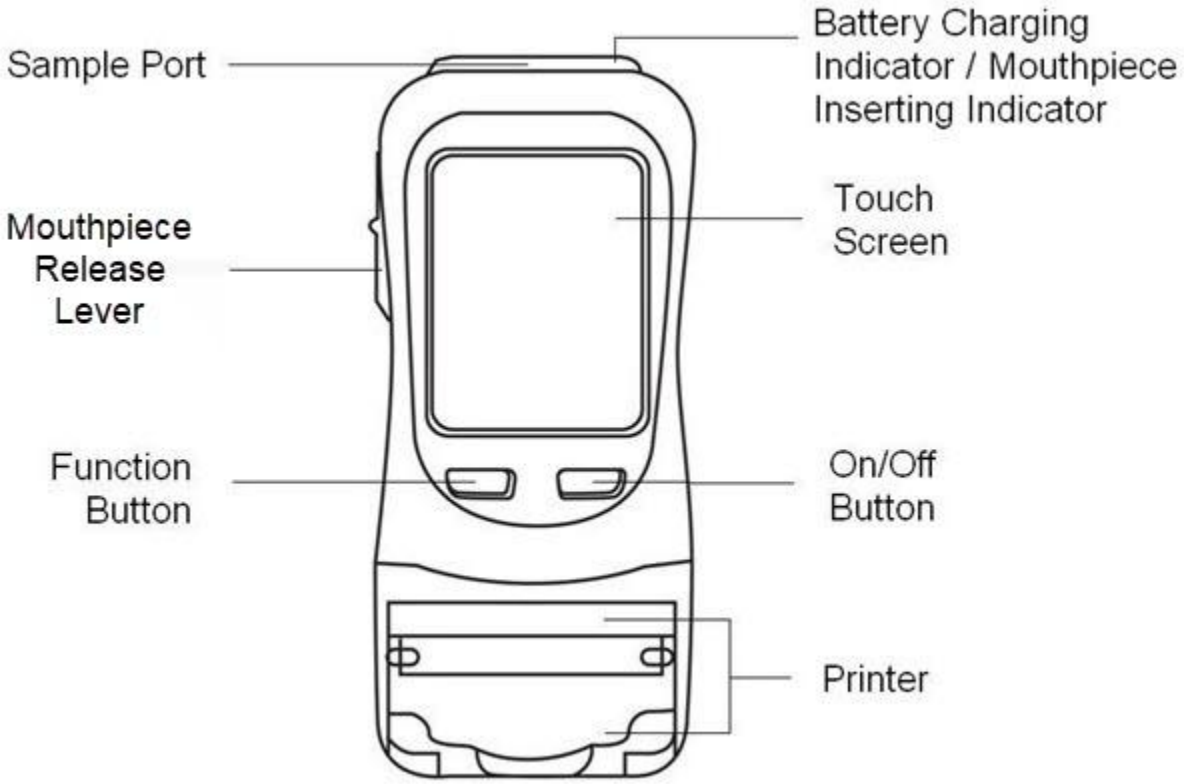
Introduction

The Jupiter instrument is an affordable, professional, handheld quantitative breath alcohol testing instrument. It can be used for law enforcement, schools, workplace safety, or medical purposes. The instrument features easy-to-use automatic or manual sampling, a user-friendly touchscreen display, and a built-in printer.

The Jupiter instrument is accurate and reliable, enabling a complete breath test procedure in about 30 seconds.

This manual describes the operation, maintenance, calibration check, and calibration adjustment of the Jupiter. This manual should be read in its entirety and fully understood by each operator before testing. It is further recommended that operators practice the breath-testing process before administering an actual “in the field” test.



NHTSA APPROVED EVIDENTIAL BREATH ALCOHOL TESTING DEVICE (EBT)

Principles of Operation

The Jupiter uses an electrochemical fuel cell with two platinum electrodes to detect and measure alcohol vapor concentration in expired breath. When breath is drawn into the fuel cell by the sampling system, a small voltage is generated proportionate to the breath alcohol concentration. This voltage is then fed to an electronic amplifier, which displays it on the screen. The user may then print the test results using the built-in printer.

The instrument is simple to operate and may be used as often as required, provided that a suitable delay is allowed between successive tests. This time delay allows the fuel cell to clear itself of alcohol and prevents the possibility of additive readings. If no alcohol is present in a test, a second test may be analyzed immediately, since the fuel cell voltage is already at zero. Unless the breath alcohol level of the subject is very high, the instrument will generally be clear enough to receive and analyze a second sample in less than two minutes.

Features and Components of Jupiter

1. **Mouthpiece Channel** – Located at the top of the device, this channel secures the disposable mouthpiece. The channel contains two breath inlet ports. One port connects to a pressure sensor that detects the presence and strength of a breath sample, while the second port delivers the breath sample to the fuel cell sensor for analysis.
2. **Mouthpiece Release Lever** – Allows the operator to safely remove a used mouthpiece after testing without direct contact, supporting hygienic operation.
3. **Touchscreen Display** – Displays operating prompts, status messages, countdown timers, test results, and menu options. The touchscreen may be operated using the attached stylus or your finger.

4. **Function Button (Left Button)** – Used when reviewing stored test records to move backward through records in increments of ten. This button is also used during the touchscreen calibration procedure.
5. **On/Off Button (Right Button)** – Powers the instrument on and off and allows navigation forward through stored test records in increments of ten.
6. **Built-in Thermal Printer** – Produces printed records of breath tests and accuracy checks. The printer uses approved thermal paper and can automatically print results based on configured settings.
7. **Stylus** – Stored on the back of the device for precise touchscreen interaction.
8. **Device Label** – Displays the instrument's serial number and basic operating information. The serial number must be recorded on alcohol testing forms, calibration logs, and when requesting technical support.
9. **Rechargeable Lithium Battery** – Supplies power to the instrument. The battery may be charged while installed in the device or removed and charged using the external dock.
10. **Mini-USB Port** – Used by authorized service personnel to connect the instrument to a computer and download stored test records.
11. **12-Volt Power Connector** – Used to connect the device to a wall adapter or vehicle power source.

Touchscreen:

A user-friendly touchscreen displays instructions and test results. Select the icons and buttons on the screen using the attached stylus pen, located at the top of the instrument behind the sample port.

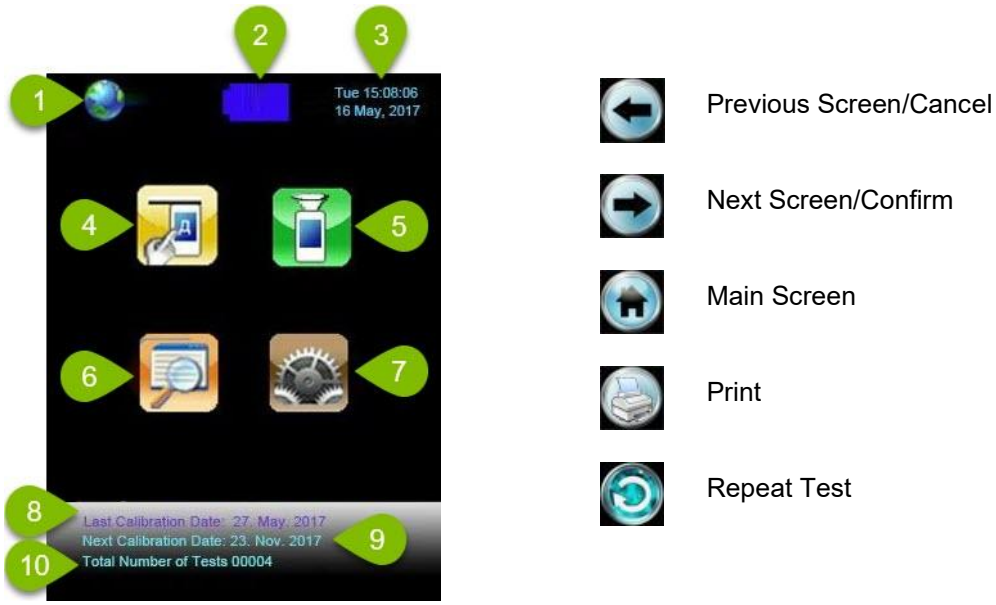


Diagram 1: Touchscreen

1. **GPS Indicator**: Indicates if the Jupiter instrument has acquired a longitude and latitude.
2. **Battery Indicator**: Displays the battery's current charge.
3. **Date and Time Indicators**: Shows the current date and time.
4. **Standard Test**: Performs a standard test where the operator may enter information, such as name, license number, etc., into fields that have been selected.
5. **Passive Test**: Performs a screening test to determine the presence of alcohol.
6. **Test Records**: Stores up to 65,000 test records. Previous tests can be printed.

7. **Settings:** View the Settings Menu section located in the next section for details on what actions can be taken on the Settings menu.
8. **Last Calibration Date**: Displays the date of the last calibration.
9. **Next Calibration Date**: Displays the next calibration date based on settings located in the Advanced Settings.
10. **Test Record Counter**: Shows the total number of tests taken.

Settings Menu:

1. **Auto Off**: Select automatic power-off time (1, 2, 5, or 10 minutes) when the instrument is inactive. Once you have made your selections, select the **Right Arrow** icon to confirm.
2. **Auto Print**: Configure automatic printing behavior based on test results. One setting for a zero reading (0.000) and another for any reading above zero. Use the Auto Print checkbox to turn this feature on or off. You can also add a custom header by selecting the word “Header” and typing the desired text, such as your company name. If the checkbox is selected, the header will appear at both the top and the bottom of the results. Once you have made your selections, select the **Right Arrow** icon to confirm.

If no printout is needed for a test result of 0.000% BAC, select “0” next to (=0) to disable printing for this criterion.

3. **Cal**: Opens the Calibration menu, where you can initiate a calibration, perform an accuracy check, or retrieve the most recent calibration and accuracy check information. A password is required to access these features.
4. **Sound**: Adjust tone duration and pitch.
5. **GPS**: Enable or disable printing of GPS coordinates on test results. Only works outdoors, and it may take the device some time to retrieve the data.
6. **Date & Time**: Set the clock and select the date format
7. **Advanced Setting**: provides access to additional device configurations. Access requires the password **112112**.
8. **Keyboard Checkbox**: Select the *Keyboard checkbox* below the *Advanced Settings* button to enable the on-screen keyboard for entering information into active fields. If left unchecked, only the field name appears on the printed test results, leaving an empty space for handwriting the information.

Advanced Settings Menu:

1. **Blow**: Specifies the minimum duration (“Time”) a donor must blow into the mouthpiece, as well as the minimum required pressure (“Pressure”). This setting is preconfigured to comply with U.S. DOT regulations and measurement standards. Do not change these values when performing breath testing in the United States.
2. **Default**: Pressing the **Yes** button will restore the device to its factory default settings. Warning: The current settings have been optimized for proper operation, so returning to the default settings is not recommended.
3. **Unit**: Allows the operator to choose how alcohol concentration is displayed in test results and accuracy checks. Changing the unit does not require recalibration of the instrument. It is not recommended to change this setting.

4. **Passwords**:
    - **Calibration**: 119119
    - **Advanced Settings Password**: 112112
    - **Blanklock** Password: 118118

The default passwords for advanced settings and calibration can be changed. Select “Cal” or “Advanced Settings” to change the password. Enter the new password and select the **Right Arrow** icon to confirm. The screen will display “Password Setting Succeed.”

- The instrument requires a 6-digit password. If fewer than six digits are used, the password will not be stored properly.
- If you change the password, please write it down. The new password must be sent in with your unit if it needs service.

5. **Delete**: Allows you to remove all saved test records stored in the Jupiter instrument. Please be aware that once you select **Delete All Records**, the data **cannot** be recovered. If you’d like to keep your test records, please send your device in for service.
6. **Field**:
    - Check the box to the left of a field to have it appear on the screen and print on the test result.
    - Check the first box to the right of a field to keep the previous information for that field until the operator updates it.
    - Check the second box to the right if you want the field to be mandatory after the air blank and before the subject provides a breath sample.
    - Select the field name to change it. Field names can be up to 16 characters, including spaces.
7. **Alert Level**: Set a threshold value. Any result above this value will be displayed in red, and the device will emit a beep to alert the operator.
8. **Calibration Period**: Allows you to set the maximum number of days in the left column and the maximum number of tests in the right column that can occur before the device requires calibration. Selecting **LOCK** will prevent the device from being used until a calibration is performed. The default setting is 360 days, 700 tests, and unlocked.
9. **Blanklock**: The password to access the *Blanklock* option is 118118. This optional lockout feature activates a 15-minute countdown whenever a breath sample registers 0.020% or higher. To enable this feature, select **Yes**; to disable it, select **No**.

Instrument Accessories:

1. **Disposable Mouthpiece**: For sanitary reasons, each mouthpiece is individually packaged and sealed. A new mouthpiece should be used for each test.
2. **Sampling Cup**: A sampling cup is reusable. Attach to the sample port and do not allow the subject to touch the sampling cup while providing a breath sample. Remove and clean with a mild, alcohol-free disinfectant for the next use. The sampling cup ***should not*** be used for DOT testing.
3. **External Power Connectors**: A 12V wall adapter and a 12V auto adapter can be used to recharge the battery

The Alcovisor ® Jupiter Operation

This section details the preparation required to use the Jupiter instrument and the steps for performing a breath test.

Preparing the Jupiter

Before using the instrument, the high-capacity lithium battery pack must be installed, and the unit turned on.

Install the Battery Pack

To insert the battery pack:

1. Unlock the battery cover by turning the plastic screw 90 degrees counterclockwise.
2. With the screw horizontal, the battery cover can now be easily removed.
3. Insert the rectangular battery pack so that the gold connectors on the pack line up with the gold connectors in the Jupiter instrument. The pack should snap in.
4. Replace the battery cover and turn the screw vertically to hold the cover in place.
5. Battery power will display at the top of the screen next to the date and time when the Jupiter instrument is turned on.

Recharge the battery pack:

1. The Jupiter instrument's battery pack can be recharged once installed in the instrument or attached to an external battery charger by using the wall or auto adapter.
2. If charging the battery while still in the Jupiter, plug the headphone jack end of the adapter into the right side of the Jupiter and the other end into the wall or car. If charging the battery with an external charger, place the battery in the charger so that the gold connectors of both the battery and the charger touch. Then connect the headphone-jack end of the adapter to the charger, and the other end to the wall or car.
3. The battery charging indicator at the end of the mouthpiece channel is red when charging and will turn green when the battery is fully charged.

Performing a Breath Test

Before performing a breath test, several conditions for the test site and the test subject must be verified

Conditions for Test Site

- The ambient air should be free from alcohol, solvent vapors, and thick tobacco smoke.
- Working temperature of the Jupiter instrument should be between 14°F - 122°F (-10ºC - 50ºC).

Do not allow an unrealistically high ethanol concentration to reach the sensor, as this can shorten the instrument's lifespan.

Conditions for Providing a Test

1. The testing subject must abstain from drinking, eating, chewing gum, chewing tobacco, smoking tobacco, using mouth spray, or taking any medications for at least 15 minutes before providing a sample. If a positive sample is given in workplace testing, a minimum 15-minute waiting period must occur after the initial screening test.

- The testing subject must breathe evenly and normally before the test. The testing subject must also avoid repeated deep breaths (hyperventilation) as this will temporarily cool down the breath and may lead to a false reading.
- Should the testing subject have diminished lung capacity and be unable to activate the *Auto Test*, a manual override method is provided.

Rinsing out the mouth with water or non-alcoholic drinks does not substitute for the 15-minute interval between a screening test and a confirmation test.

Attaching a Mouthpiece

1. Remove the disposable mouthpiece from its wrapper, making sure not to touch the end into which the testing subject will be blowing.
2. Snap the disposable mouthpiece onto the top of the Jupiter instrument to ensure a secure fit.
3. After use, the mouthpiece can be removed from the Jupiter instrument by using the lever on the left of the instrument. Slide this lever up to disengage the mouthpiece without touching it.

Performing an Air Blank Test

The Jupiter instrument performs an Air Blank test to determine whether ethanol is present in the ambient air or whether any residual alcohol remains from prior testing. The Jupiter automatically performs an air blank whenever the *Standard Test* Icon is selected, before entering *Test Mode*.

If a reading greater than 0.000% is noted on the *Air Blank Result*, return to the *Main Menu*, wait 2-3 minutes, then select the *Standard Test Icon* again and check the *Air Blank Result*.

Measuring Breath Alcohol Concentration (BrAC-BAC)

Standard Test with Input

1. Attach a disposable mouthpiece to the sample port.
2. Select the **Standard Test** icon on the Main Menu (refer to Diagram 1 on page 3).
3. The instrument will display "*Air Blank Processing"* as it checks for residual alcohol in the air or in the fuel cell.
4. The instrument will display the results of the air blank on screen for 6 seconds. When the breath test results are printed, the air blank details will include the time.
5. When input fields are used, enter the information using the stylus pen. ***Each input has a maximum of 16 characters.*** These input fields are optional and may be configured as described in the *Advanced Setting Menu* section above.
6. The instrument will then automatically go into "*test mode"* and display the next *test record number*.
7. When the Jupiter instrument displays "*Please Blow*", have the testing subject take a deep breath and blow into the mouthpiece until the beeping stops. The record number (#) for the test you are about to take is shown just below the "*Please Blow*" message.
8. Once complete, the test results are displayed on the screen.
9. If the testing subject did not blow within 30 seconds, the operator may select "**Refuse**" to confirm the testing subject refused to do the test, or "**Test Again**" to allow the testing subject to do the test again.
10. If the testing subject failed to provide a valid breath sample, the operator may select "**Discontinue**" to end the test, or "**Test Again**" to allow the subject to test again.

The Jupiter will detect if the subject attempts to suck air back through the mouthpiece. In this case, the Jupiter instrument will display "**Discontinue**" or "**Test Again**" instead of displaying a test result.

11. Upon completion of the test, remove the mouthpiece by pushing up on the lever on the left side of the Jupiter instrument to remove the mouthpiece.
12. Select the **Print** icon to print the test result.
13. To take another test, attach a new mouthpiece and select the **Refresh** icon. The instrument will perform another a*ir blank* before returning to *test mode* and displaying a new test record number.

Passive Test

A Passive Test is used solely for screening to determine whether alcohol is in the breath sample and ***should not*** be used for DOT testing. Results of a Passive test are limited to "Alcohol Detected" or "No Alcohol." For test results that include a BrAC level, a Standard Test ***must*** be completed.

1. Attach a sampling cup to the instrument's sample port.
2. Select the **Passive Test** icon (refer to Diagram 1 on page 3) on the Main Menu.
3. When the Jupiter instrument displays "*Please Blow*", instruct the testing subject to take a deep breath and blow towards the sampling cup until the beeping stops.
4. "Alcohol Detected" or "No Alcohol" will display on the screen.
5. Select the **Refresh** icon to start another test.
6. If alcohol is detected, use a mouthpiece to perform a *standard test* to obtain an accurate reading.

Test results of Passive tests cannot be printed or stored.

Manual Override Test:

This method can be used with either the *Standard* or *Passive* test mode when the test subject has a diminished lung capacity and cannot activate the *Automatic Sampling* system.

1. In either the *Standard* or *Passive* Test modes, when the Jupiter instrument displays "*Please Blow*", instruct the testing subject to breathe in deeply and blow evenly into the mouthpiece without a break for a minimum of four (4) seconds.
2. While the test subject is continuing to blow, and after a minimum of four (4) seconds, select "**Manual**."

The test subject must be actively blowing when the Manual option is selected.

After a few seconds, the results will display.

Access Test Records

1. Select the **Test Records** icon (refer to Diagram 1 on page 3) to view test records. The Jupiter instrument can store up to 65,000 test records, depending on the amount of data collected.
2. Individual test records can be printed by selecting the **Print** icon.
3. Use **left** or **right** arrow icons to move to the previous or next record.
4. Press the **On/Off** button (right button) to move 10 records forward, and press the ***Function*** button (left button) to move 10 records backward.
5. **Search:** Use this feature to search for a particular record number, Date (enter number in 8 digits (YYYYMMDD), Test Mode, or Test Result.

Date and Time Setting

1. Select the **Settings** icon and then the **Date and Time** option.
2. You may update the format of the *Date and Time* by selecting the checkbox on the bottom left of the screen. For example, the default format is *Day/Month/Year*. When the checkbox **is** selected, the format will display as *Month/Day/Year*.
3. Set the correct Date and Time.
4. Select "**Update**" to confirm.

When changing the Date and Time format, you must power off the instrument, then power it back on for the changes to be applied.

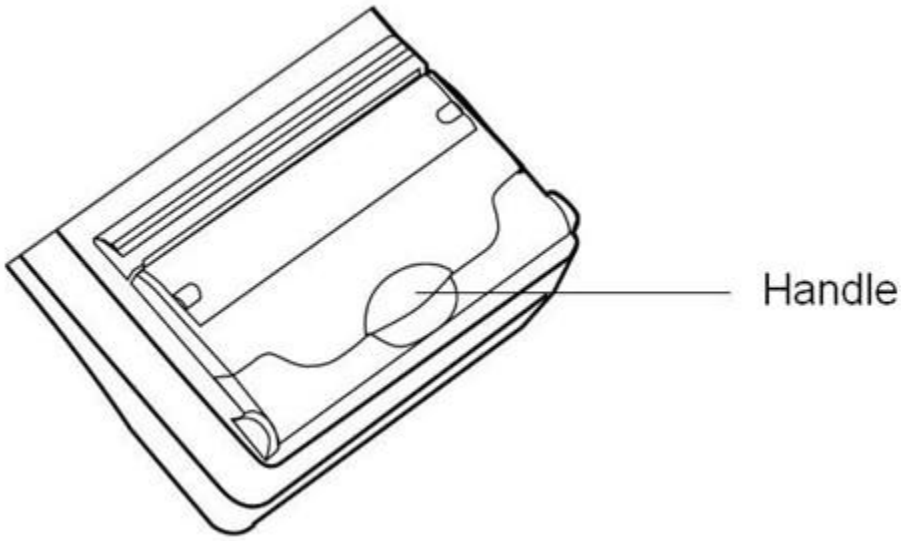
Printer

The Jupiter instrument is equipped with a built-in printer.

Insert Paper

To insert paper:

1. Pull the handle to open the cover.
2. Insert the thermal paper with the glossy side of the paper facing up towards the Jupiter instrument's screen and buttons.



- The Jupiter instrument uses a **standard thermal paper** size of **6 cm x 630 cm**
- After adding paper to the instrument, if nothing prints, flip the paper and try again.
- If the printout is faint or faded, ensure the battery level of the instrument is not almost depleted.

Touch Screen Calibration

If the touch screen does not appear to be responding correctly, it may need calibration.

With the instrument off:

1. Press and hold the **On/Off button** (right button) and then press the **Function** button (left button) immediately.
2. Follow the on-screen instructions by tapping the **arrows** and **plus** signs as accurately as possible to calibrate the screen.

Accuracy Check

Accuracy testing should be performed at least once per month, per the QAP, to ensure BAC readings are reliable. If the accuracy test result is not within the acceptable range, the unit must be recalibrated by PAS Systems International, Inc. or by persons properly trained in alcohol detector calibration.

Accuracy Check and Calibration of the Jupiter instrument **must** be performed using an NHTSA-approved wet bath simulator or certified dry gas standard.

Due to the sensitive nature of BAC testing, it is extremely important to keep detailed records of accuracy tests for each Jupiter instrument. Procedures for recording this information are covered in Breath Alcohol Technician (BAT) training and documentation, when provided.

Only the most recent Accuracy check data is stored in the instrument. Print this record, keep a written record of the accuracy check as **required** in the DOT testing guidelines, and complete a *Standard Test* using the dry gas cylinder after completing every Accuracy check. If needed, the follow-up "Standard Test" may be used to replace a lost Accuracy Check printout.

Reprint Last Accuracy Check

1. Using the stylus, select the **Settings** icon.
2. Then select the **CAL** option.
3. Enter the password **119119**.
4. Select the **Last Calibration** info option.
5. Select the **Print** icon.

It is important to read through this entire process and understand it before beginning a calibration.

Wet Bath Accuracy Checking

Using wet bath simulators for accuracy checking has been the accepted method for many years. Breath alcohol simulators are specially designed water-alcohol instruments that provide equilibration of alcohol between water and air at a controlled temperature.

Accuracy checking of the Jupiter should be performed by authorized persons using any NHTSA-approved breath alcohol simulator.

Perform a wet bath accuracy check:

1. Pour 500 mL of 0.080% Certified Solution into the glass jar.
2. Attach a piece of tubing (6 - 8" long) to the simulator inlet. Attach a regular or check valve mouthpiece to the end of this tubing.
3. Attach a 1 - 2" piece of tubing to the simulator outlet. Attach a mouthpiece to the other end of this shorter tubing. Make sure the connection is airtight.

The length of tubing connected to the simulator outlet should **not be** longer than 2" to prevent condensation.

4. Plug the Simulator in and turn the switch to the **ON** position.
5. Allow the solution to heat.
6. After 15 - 20 minutes, check the thermometer. The thermometer should read 34ºC when ready.

7. Attach the instrument to the mouthpiece. The opaque moisture trap can be used if condensation appears in the mouthpiece.
8. Switch on the Jupiter instrument. Choose the **Accuracy Check** feature in the *Cal*. The menu is found in **Settings**. Wait for the instrument to perform the *Air Blank* test.
9. Forcefully blow into the simulator for several seconds and then press the "**Manual**" button on the screen.

After a few seconds, the measured value will be displayed. The display should read 0.080% +/-0.005.

Out-of-Range Result

If the result is not within published specifications +/- .005 of the expected value for the Jupiter instrument, conduct a second accuracy check to eliminate human errors that may have occurred.

Before beginning the re-check:

- Verify that the seal on the simulator is airtight.
- Verify that the outlet tube and mouthpiece are free of condensation.

If the measurement is still not within specifications (+/- 0.005) after eliminating possible human errors, the unit must be removed from service until an internal calibration can be conducted.

Dry Gas Accuracy Check

Intervals for an accuracy check, also known as "c*alibration check"* or "external calibration check," are:

- ***Required*** every 30 days.
- *Recommended* after a positive confirmation test.
- *Recommended* if the instrument fails to air blank to 0.000 after two (2) attempts.
- *Recommended* after the instrument has undergone repairs.

When using dry gas, PAS recommends a dry gas concentration between 0.035% and 0.100% for accuracy checking. The alcohol concentration printed on the gas cylinder label must be corrected for altitude when conducting tests at or above 250 feet above sea level. Please refer to the "Dry Gas at High Altitude" section below for instructions on how to make the appropriate corrections for high altitude testing.

Before beginning your Accuracy Check:

- If you are using a device with nine (9) icons, complete an Accuracy Check using the Standard Test process.
- If you are using a device with four (4) icons, PAS Systems International recommends completing a Standard Test for the Accuracy Check, or you may complete an Accuracy Check from the Settings Menu.

Standard Test as an Accuracy Check

1. Power off the Jupiter instrument and then turn it back on. Wait for the startup process to be complete.
2. Select the **Standard Test** icon.

3. At this time, the instrument will perform an air blank. The instrument will display the air blank results on screen for 6 seconds. The results **must** be zero to proceed

4. When input fields are used, enter the information using the stylus pen. ***Each input has a maximum of 16 characters.*** These input fields are optional and may be configured as described in the *Advanced Setting Menu* section above.
5. Next, you will see a *Regular test* screen. If you have not purged the regulator yet, do that now, ensuring the regulator is pointing away from the Jupiter instrument.
6. Attach a new mouthpiece to the Jupiter instrument.
7. Connect the Jupiter's attached mouthpiece to the regulator, ensuring a tight fit and keeping the mouthpiece straight.

If the mouthpiece is not properly connected or does not remain connected during the procedure, the accuracy check may fail.

8. Press the gas regulator button, starting the flow of gas, allowing gas to flow into the mouthpiece for a total of **eight (8) seconds**.
9. At the **eight (8) second** mark, while continuing to press down on the gas regulator button, select the **Manual** button on the Jupiter instrument to acquire a sample. The gas **MUST** be flowing into the mouthpiece while the sample is taken.

10. Once you hear the "click," indicating the sample has been taken, you may release your finger from the gas regulator button.
11. Remove the device from the regulator.

12. After a few seconds, the measured value will be displayed. If the measured value is within +/- 0.005 BrAC of your expected Dry Gas Standard, the unit is working accurately.

    For example:

    - If the expected value is **.037**, and the result is .**035**, the Standard Test check is successful.
    - If the expected value is **.030**, and the result is **.034**, the Standard Test check is successful.
    - If the expected value is **.066**, and the result is **.060**, the Standard Test check has failed.

13. Print the results using the **Print** icon at the bottom of the screen and record your results per the DOT requirements in your Accuracy Check/calibration Check log.

Perform an Accuracy Check in Settings Menu

1. Connect the regulator to the gas tank, ensure the regulator is not pointed toward the Jupiter instrument, and purge the regulator for two (2) seconds.

> Suitable Dry Gas Standard tanks and Regulators are available from PAS Systems International, Inc. Contact: (855) 754-4433.

2. Check the Dry Gas Adjustment Chart below to identify the expected value based on the dry gas standard of the gas tank and your current altitude.

    For example:

    - Using a **0.038** Dry Gas Standard tank in Chippewa Falls, WI, at 820' elevation, your expected value is 0.037.
    - Using a **0.040** Dry Gas Standard tank in Santa Fe, NM, at 7,199' elevation, your expected value is 0.030.
    - Using a **0.080** Dry Gas Standard tank in Fort Collins, CO, at 5,003' elevation, your expected value is 0.066.

ALTITUDE		FACTOR	DRY GAS STANDARD					
			0.035%	0.038%	0.040%	0.080%	0.082%	0.100%
0	499	1000	0.035	0.038	0.040	0.080	0.082	0.100
500	999	0.981	0.034	0.037	0.039	0.078	0.080	0.098
1000	1499	0.962	0.034	0.037	0.038	0.077	0.079	0.096
1500	[illegible]	[illegible]	0.033	[illegible]	0.038	0.075	[illegible]	0.094
[illegible]	4499	0.854	0.030	0.032	0.034	0.068	0.070	0.0[illegible]
4500	4999	0.837	0.029	0.032	0.033	0.067	0.069	0.084
5000	5499	0.820	0.029	0.031	0.033	0.066	0.067	0.082
5500	5999	0.804	0.028	0.031	0.032	0.064	0.066	0.080
6000	6499	0.787	0.028	0.030	0.031	0.063	0.065	0.079
6500	6999	0.771	0.027	0.029	0.031	0.062	0.063	0.077
7000	7499	0.755	0.026	0.029	0.030	0.060	0.062	0.076
7500	7999	0.740	0.026	0.028	0.030	0.059	0.061	0.074
8000	-	0.724	0.025	0.028	0.029	0.058	0.059	0.072

3. Place a new mouthpiece onto the Jupiter instrument.
4. Turn on the instrument. Using the stylus, select the **Settings** icon.

5. Then select the **CAL** option.

6. Enter the password **119119**.

7. Select the **Accuracy Check** option.

8. At this time, the instrument will perform an air blank check. The results **must** be zero to proceed.

9. Next, you will see a regular test screen. If you have not purged the regulator yet, do that now, ensuring the regulator is pointing away from the Jupiter instrument.
10. Connect the Jupiter's attach mouthpiece to the regulator, ensuring a tight fit and keeping the mouthpiece straight.

If the mouthpiece is not properly connected or does not remain connected during the procedure, the accuracy check may fail.

11. Press the gas regulator button, starting the flow of gas, allowing gas to flow into the mouthpiece for a total of **eight (8) seconds**.
12. At the **eight (8) second** mark, while continuing to press down on the gas regulator button, select the **Manual** button on the Jupiter instrument to acquire a sample. The gas **MUST** be flowing into the mouthpiece while the sample is taken.

13. Once you hear the "click," indicating the sample has been taken, you may release your finger from the gas regulator button.
14. Remove the device from the regulator.
15. After a few seconds, the measured value will be displayed. If the measured value is within +/- 0.005 BrAC of your expected Dry Gas Standard value, the unit is working accurately.

    For example:

    - If the expected value is **.037**, and the result is .**035**, the accuracy check is successful.
    - If the expected value is **.030**, and the result is **.034**, the accuracy check is successful.
    - If the expected value is **.066**, and the result is **.060**, the accuracy check has failed.
16. Print and record your results in your Accuracy Check/Calibration Check Log.

- As a reminder, only the most recent Accuracy check data is stored in the instrument.
- As a best practice, PAS Systems International recommends completing a "Standard Test" at this time.

Tips to Prevent Out-of-Range Accuracy Check Results

Before beginning the re-check:

- Verify that the seal on the simulator is airtight.
- Verify that the mouthpiece is properly and securely attached to the device.
- Verify that the outlet tube and mouthpiece are free of condensation.
- Ensure there is adequate gas in the canister. If the regulator shows a low gas level, replace it.
- While conducting the process, ensure that gas flows for a minimum of eight (8) seconds when the test is taken.
- Ensure the gas is flowing for eight (8) seconds *and* press the **Manual** button on the count of eight (8).

If the measurement is still not within specifications (+/- 0.005) after eliminating possible human error, the unit must be removed from service until a certified Calibration Technician completes an on-site internal calibration. If a certified Calibration Technician is not available, return the instrument to PAS Systems International, Inc. for service and calibration.

Calibration

Due to the sensitive nature of BAC testing, it is extremely important to keep detailed records of calibrations for each Jupiter instrument. Procedures for recording this information are covered in Breath Alcohol Technician (BAT) training and documentation, when provided.

- Accuracy Check and Calibration of the Jupiter instrument **must** be performed using an NHTSA-approved wet bath simulator or certified dry gas standard.
- Because precise calibration is crucial, the Jupiter instrument **must** be calibrated by PAS Systems International, Inc. or a certified Calibration Technician.

Suitable Dry Gas Standards and Regulators are available from PAS Systems International, Inc. Contact: (855) 754-4433.

When to perform a calibration:

- When an accuracy check fails, for example, outside the +/- .005 tolerance limits.
- At least every 360 days, or more often as required by state and local regulations.
- When the *Calibration Alert Timeframe* setting is reached (the default setting is 360 days, unlimited number of tests), the instrument will produce a reminder alert upon the instrument's power-on.

The Calibration alert will appear as a black screen with red text that reads "**Calibration Needed**," accompanied by an audible tone. To acknowledge this alert and continue the startup process, simply tap the touchscreen. This will "snooze" the alert until the next power-on.

After a successful calibration, the alert will be dismissed, and the calibration timeframe will reset.

It is important to read through this entire process and understand it before beginning a calibration, as failure to do so could result in a Failed/Improper Calibration.

Begin a Calibration

1. Connect the regulator to the gas tank, ensure the regulator is not pointed toward the Jupiter instrument, and purge for two (2) seconds.
2. Check the Dry Gas Adjustment Chart below to identify the expected value based on the dry gas standard of the gas tank and your current altitude.

   For example:

   - Using a 0.038 gas tank in Chippewa Falls, WI, at 820’ elevation, your expected value is 0.037.
   - Using a 0.040 gas tank in Santa Fe, NM, at 7,199’ elevation, your expected value is 0.030.
   - Using a 0.080 gas tank in Fort Collins, CO, at 5,003’ elevation, your expected value is 0.066.

ALTITUDE		FACTOR	DRY GAS STANDARD					
			0.035%	0.038%	0.040%	0.080%	0.082%	0.100%
0	499	1000	0.035	0.038	0.040	0.080	0.082	0.100
500	999	0.981	0.034	0.037	0.039	0.078	0.080	0.098
1000	1499	0.962	0.034	0.037	0.038	0.077	0.079	0.096
1500	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.075	[illegible]	0.094
[illegible]	4499	0.854	[illegible]	0.032	[illegible]	0.068	0.070	[illegible]
4500	4999	0.837	0.029	0.032	0.033	0.067	0.069	0.084
5000	5499	0.820	0.029	0.031	0.033	0.066	0.067	0.082
5500	5999	0.804	0.028	0.031	0.032	0.064	0.066	0.080
6000	6499	0.787	0.028	0.030	0.031	0.063	0.065	0.079
6500	6999	0.771	0.027	0.029	0.031	0.062	0.063	0.077
7000	7499	0.755	0.026	0.029	0.030	0.060	0.062	0.076
7500	7999	0.740	0.026	0.028	0.030	0.059	0.061	0.074
8000	-	0.724	0.025	0.028	0.029	0.058	0.059	0.072

3. Place a new mouthpiece onto the Jupiter instrument.
4. Turn on the instrument. Using the stylus, select the **Settings** icon.
5. Then select the **CAL** option.

6. Enter the password 119119.

7. Select the **Dry Gas Calibration** option.

8. Enter the gas tank's concentration to one decimal place, corrected for your elevation. Once entered, hit the **Right Arrow** icon to confirm.

Remember to use the ***High-Altitude Correction*** Chart on page 22 to adjust for altitude if needed based on **your** elevation and **your** dry gas canister's label.

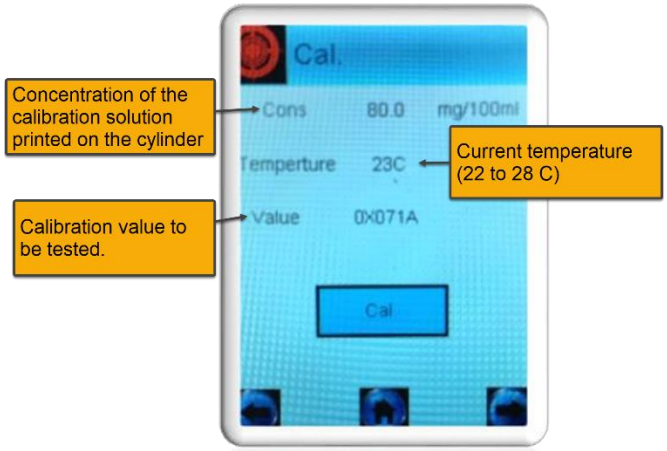
Note that your device is asking you to enter the % BrAC concentration in mg/ml, whereas the gas tank is g/L.
This means the decimal point of your expected value that you need to enter shifts; see the examples below:

2. Using a 0.038% gas tank in Chippewa Falls, WI, at 820' elevation, your expected value is **0.037,** and you have to enter it as **37.0.**
3. Using a 0.040% gas tank in Santa Fe, NM, at 7,199' elevation, your expected value is **0.030,** and you have to enter it as **30.0.**
4. Using a 0.080% gas tank in Fort Collins, CO, at 5,003' elevation, your expected value is **0.066**, and you have to enter it as **66.0.**

Remember to use the ***High-Altitude Correction*** Chart on page 22 to adjust for altitude if needed based on **your** elevation and **your** dry gas canister's label.

Example Label

9. The calibration screen will appear.



10. Connect the Jupiter's attach mouthpiece to the regulator, ensuring a tight fit and keeping the mouthpiece straight.

If the mouthpiece is not properly connected or does not remain connected during the procedure, the calibration may fail.

11. Press the gas regulator button, starting the flow of gas, allowing gas to flow into the mouthpiece for a total of **eight (8) seconds**.
12. At the **eight (8) second** mark, while continuing to press down on the gas regulator button, select the **Cal.** button on the Jupiter instrument to acquire a sample. The gas **MUST** be flowing into the mouthpiece while the sample is taken.

13. Once you hear the pump “click,” indicating the sample has been taken, you may release your finger from the gas regulator button and remove the instrument from the regulator.
14. A “Wait” screen will briefly flash, and then the Calibration Completed screen will display. The calibrated value in the third line will be changed. This value is a mixture of letters and numbers.
15. Write down the resulting hex value for your logbook entry. Click the **Right Arrow** icon to accept the new calibration.

If the resulting hex value has more than one zero after the leading “X”, the calibration has failed and must be repeated following the instructions provided in the Out-of-Range Calibration Results section on page 21.

For example:

- 0X01BC: successful calibration
- 0X1B63: successful calibration
- 0X00CB: failed calibration
- 0X0072: failed calibration
- 0XFFFF: failed calibration, null value returned - return the instrument to PAS Systems International to be serviced.

After a **successful calibration**, PAS Systems International, Inc. recommends turning your instrument off and back on before completing the required follow-up Accuracy Check process outlined in this guide.

After a **failed calibration**, follow the instructions provided in the **Out-of-Range Calibration Results** section.

Ensure you give the instrument ample time for the alcohol to dissipate from the fuel cell between the calibration and the follow-up accuracy check, and always use a new mouthpiece.

Out-of-Range Calibration Result

If the resulting hex value indicates a failure, conduct a second calibration to eliminate human errors that may have occurred.

Before beginning the re-check:

- Verify that the seal on the simulator is airtight.
- Verify that the outlet tube and mouthpiece are free of condensation.
- Verify that the mouthpiece is properly and securely attached to the device.
- Ensure there is adequate gas in the canister. If the regulator shows a low gas level, replace it.
- While conducting the Calibration process, the gas must be flowing for a minimum of eight (8) seconds when the Cal button is pressed.
- Ensure that the mouthpiece was not removed from the outlet tube during the eight (8) seconds of gas flow and at the eight (8) second mark when the Cal button was pressed.
- Ensure the % BrAC value on the Jupiter device readout matches the Dry Gas Concentration value on the canister label. Remember to use the High-Altitude Correction chart on page 22 to adjust for altitude if needed, based on your location's elevation and your dry gas canister's label. Do not rely on the examples provided in this guide.

If the instrument's hex value result still indicates a failure after eliminating possible human errors, the instrument **must** be removed from service and returned to PAS Systems International, Inc. for servicing and calibration.

Dry Gas at High Altitude

The concentration of alcohol in a dry gas standard is carefully controlled to yield the correct vapor concentration at sea level. At higher elevations (altitudes), the concentration of the alcohol in the vapor leaving the cylinder will be less. This change in concentration at sea level is negligible, but at higher altitudes, significant errors would result without corrections. Multiply the standard concentration on the gas cylinder label by the factor shown for the appropriate local altitude listing in the *High Altitude Correction Chart*. For example, if you have a dry gas standard of 0.045% and you are using it at 500 feet, you would multiply the value at sea level by the correction factor. The corrected value would be 0.045 x 0.981 = 0.044% BAC.

High Altitude Correction Chart

ALTITUDE		FACTOR	DRY GAS STANDARD					
			0.035%	0.038%	0.040%	0.080%	0.082%	0.100%
0	499	1.000	0.035	0.038	0.040	0.080	0.082	0.100
500	999	0.981	0.034	0.037	0.039	0.078	0.080	0.098
1000	1499	0.962	0.034	0.037	0.038	0.077	0.079	0.096
1500	1999	0.943	0.033	0.036	0.038	0.075	0.077	0.094
2000	2499	0.925	0.032	0.035	0.037	0.074	0.076	0.093
2500	2999	0.907	0.032	0.034	0.036	0.073	0.074	0.091
3000	3499	0.889	0.031	0.034	0.036	0.071	0.073	0.089
3500	3999	0.872	0.031	0.033	0.035	0.070	0.072	0.087
4000	4499	0.854	0.030	0.032	0.034	0.068	0.070	0.085
4500	4999	0.837	0.029	0.032	0.033	0.067	0.069	0.084
5000	5499	0.820	0.029	0.031	0.033	0.066	0.067	0.082
5500	5999	0.804	0.028	0.031	0.032	0.064	0.066	0.080
6000	6499	0.787	0.028	0.030	0.031	0.063	0.065	0.079
6500	6999	0.771	0.027	0.029	0.031	0.062	0.063	0.077
7000	7499	0.755	0.026	0.029	0.030	0.060	0.062	0.076
7500	7999	0.740	0.026	0.028	0.030	0.059	0.061	0.074
8000	-	0.724	0.025	0.028	0.029	0.058	0.059	0.072

Quality Assurance Plan

Under the U.S. Department of Transportation workplace testing program (see 49 CFR Part 40), transportation employers are required to test employees in certain safety-sensitive positions for alcohol under specific conditions. The DOT workplace testing program requires that breath test instrument manufacturers provide employers with this *Quality Assurance Plan (QAP)*, which, together with the operation instructions provided with the Jupiter Evidential Breath Tester (EBT), will help ensure that breath testers are calibrated to the required degree of accuracy.

QAP

- **Allowed Calibration and Accuracy Check Units**: Any wet bath simulator listed on the NHTSA Conforming Products List of Calibration Units for Breath Alcohol Tests is allowed for unit calibration. When calibration or an Accuracy check is needed, the Wet Bath simulator should be used with a certified BAC solution at a concentration between 0.035% and 0.100%, in accordance with the manufacturer's operating manual. Alternatively, a dry gas standard with a concentration between 0.035% and 0.100%, approved by NHTSA, may be used.
- **Interval for Accuracy checks, also known as calibration check or external calibration check, is:**
    a. ***Required*** every 30 days.
    b. *Recommended* after a positive confirmation test.
    c. *Recommended* if the instrument fails to air blank to 0.000 after two (2) attempts.
    d. *Recommended* after the instrument has undergone repairs.

There is no limitation on the number of tests that may be conducted between accuracy checks, provided that the monthly accuracy checks are completed.

- **Accuracy Check Tolerance**: +/- 0.005%.
- **Calibration, also known as calibration adjustment**: Is required:
    a. At least every 360 days, or more often as required by state and local regulations.
    b. When an Accuracy Check fails the +/- .005 tolerance limits.
- **Intervals for Periodic Inspection**: Self-diagnostics and visual inspection by the operator are required before every use. Routine maintenance and service are recommended every two (2) years.
- **Events which require the instrument to be taken out of service and returned to PAS Systems International for repair**:
    a. Self-diagnostic failure or indication by error code.
    b. The power supply is not providing the necessary power to the Jupiter instrument.
    c. The Jupiter does not display “Please Blow” after selecting a Standard or Passive test.
    d. A calibration failure as defined in the “***Out-of-Range Calibration Result***” section of this guide.
    e. An Accuracy Check failure as defined in this guide, and an on-site certified Calibration Technician is not available.
    f. General servicing and annual calibration purposes, which require a Factory Certificate of Calibration.

Follow the operating instructions provided by the dry gas manufacturer for the proper procedure for using dry gas in calibration checks.

Instruments indicating any of the above ERRORS should be returned to PAS Systems International, Inc. for repair. Please call the PAS Systems International, Inc. Technical Service Team and provide the instrument’s serial number, describe the problem, and obtain information on sending the instrument in for service.

This QAP is subject to change and should neither be considered a final requirement nor a contractual term in any agreement to purchase the Jupiter installation.

Troubleshooting

The troubleshooting table that follows is provided to help eliminate confusion and prevent downtime by supplying corrective procedures. If problems persist, call PAS Systems International, Inc. technical service at (855) 754-4433.

Problem	Cause	Solution
The touch screen is dimly lit or slow to respond.	The unit's power supply is completely exhausted.	Replace the battery pack with a fully charged one, or charge it inside the Jupiter instrument using a wall or auto adapter.
The Jupiter instrument does not display "please blow when a standard or screening test is chosen.	Instrument malfunction.	Contact PAS Systems International, Inc at (855) 754-4433.
Jupiter activates a different Icon than what the stylus pen touches	The touchscreen needs calibration.	Follow the instructions on page 9 to recalibrate the touchscreen.
Printout is faded.	Low Battery/Printer malfunction	Charge or replace the battery. If it remains faded after a full charge or replacement, contact PAS Systems International.
Displays Calibration Needed	Calibration is out of date.	Tap the screen to go to the main menu and perform a calibration when able.

Technical Specifications

Product Name	Alcovisor - Jupiter
Sensor	Platinum Electrochemical Fuel Cell
Accuracy	Meets DOT specifications +/- 0.005% up to 0.100 % BrAC and +/- 5% above 0.100% BrAC
Sample Accuracy	0.001%
Detection Range	0.00 to 0.400 BrAC
Response Time	5 seconds or less
Recovery Time	Less than 1 minute
Start-up Delay	Less than 1 minute
Sampling System	Automatically takes a deep lung sample or tests manually.
Breath Sample Time	Up to 10 seconds continuous breath – minimum 2.5 seconds
Unit of Measure	% BrAC, mg/l, mg/100ml, or any other units.
Working Temperature	14 °F to 122 °F (-10 °C to +50 °C)
Storage Conditions	-13 °F to 158 °F (-25 °C to +70 °C); not more than 90% relative humidity.
Touch Screen Size	3.2”
Dimensions	7.5” X 3” X 1.5” (190mm X 76.2mm X 38mm)
Weight	433 g with battery
Self Diagnostics	Programmed self-checks assure the unit is operational upon power-up.
Power Supply	High-capacity rechargeable lithium battery pack.
Battery Life	Not less than 500 tests (100 tests with printouts)
Memory	Capable of saving up to 65,000 test results.
Pump	Automatically actuated electronic pump – No cocking required.
Mouthpiece	Affordable, sanitary, and individually wrapped.
Calibration	At least once every 360 days or as required, and/or after a failed Accuracy Check as outlined in the *Out-of-Range Accuracy Check Results* section. Use Wet Bath or Dry gas methods for calibration as referenced in this document.
Printer	Built-in printer. Uses Standard Thermal Paper, size 6 cm x 630 cm.
USB	Computer interface connection.

Safety, Maintenance, & Warranty

Safety

For correct and effective use of the Jupiter instrument, it is essential to read and strictly follow the instructions contained in this document. The Jupiter instrument is to be used only for the purposes specified herein.

Maintenance

Repairs of the Jupiter instrument may only be performed by PAS Systems International, Inc. or an authorized service technician. Only original Jupiter instrument parts may be used.

To keep the instrument clean, periodically wipe the outside of the case with a mild disinfectant and a soft cloth. **DO NOT** use alcohol to clean the unit.

Warranty

The Jupiter comes with a one (1) year limited parts and labor warranty, effective on the date of purchase. The warranty does not cover batteries or accessories. The warranty does not cover freight to the service facility, misuse, or abuse of the product. Warranty is void if the unit is found to have been tampered with.

Contact Information

PAS Systems International, Inc.

4920 S. Alston Ave

Durham, NC 27713

PASSupport@scramsystems.com

(855) 754-4433

DATIA Member

US DOT Approved

CE Approval

Notes