



User Guide

The Precious Metal Verifier is a scientific instrument, to get proper readings from your unit please review this manual carefully. There are important special conditions to consider when using the unit and they are outlined in this guide.

Instructions are also available on our website at [www. Sigmametalytics.com](http://www.Sigmametalytics.com)

If you have a QR reader (an app you can get for your smart phone) you can access instructions here

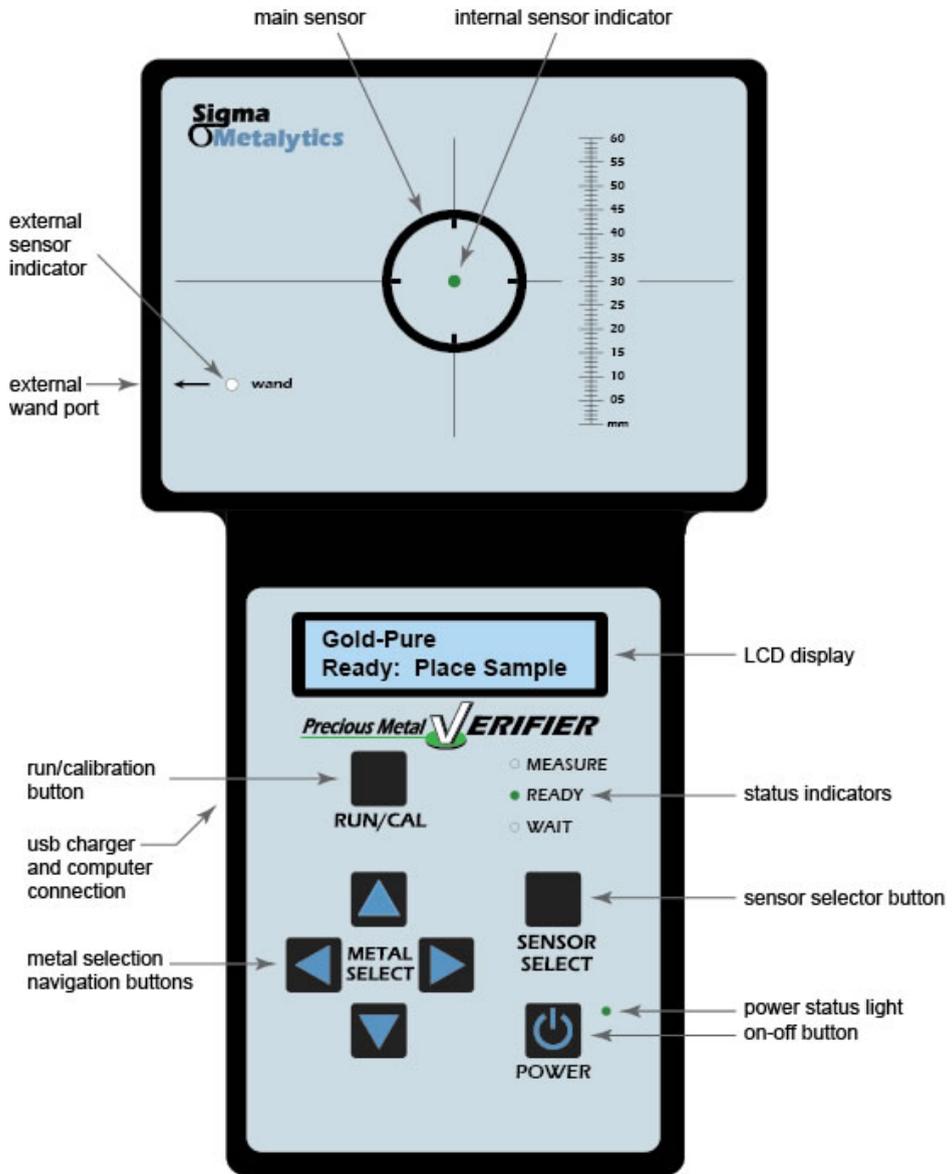


Sigma Metalytics and the Precious Metal Verifier make no claim, guarantee or promise that measurements made by the Precious Metal Verifier indicates any sample is or is not the selected metal or alloy, whether the reading is within or is not within the bounds consistent with the selected metal or alloy. To ensure accuracy, **read the instructions and special conditions** which can alter the reading from outside to within the expected bounds or from within to outside the expected bounds. The readings given by the Precious Metal Verifier are **INFORMATIONAL ONLY** and any judgment about or action taken on any sample is entirely the responsibility of the user.

Contents

Diagram of Unit.....	Page	1
Instructions for Use.....	Page	2-3
Results Interpretation	Page	4
Selecting and Using the Appropriate Sensor.....	Page	5
Bullion Wand Specifications	Page	6
Sensor Specification Chart.....	Page	7
Conditions that Affect Readings and Accuracy.....	Page	8
Unexpected Readings.....	Page	8
Calibration Disk Use.....	Page	9
Battery Charging and Power Management.....	Page	10
Measurement Mode Use.....	Page	11
Use Considerations.....	Page	12

Unit Diagram



Instructions

1. Clear all samples from the unit. Do not place samples on the unit until metal and alloy have been selected and the display reads:
Ready: Place Sample
2. Turn on the unit. Wait until Display reads, **Remove Sample Push Run/Cal → Start**. If you are using a wand, connect it now. The green LED on the panel will indicate the active sensor. Use the sensor button to select between the main unit sensor and the wand. A wand cannot be selected unless it is connected.
3. Press the Run/Cal Button. You have to press the Run/Cal button whenever the message, **Remove Sample Push Run/Cal → Start** appears, or whenever a change in metal or sensor is made.
4. Select the metal using the up and down arrow keys. Categories available are Gold, Silver, Other, and Bullion.
5. Select the alloy using the left and right arrow keys.
 - a. Gold- lists the following alloys: Pure .999+, 91.7% 22K bal Cu, 90% bal Cu, American Eagle, Krugerrand, and 98.6%.
 - b. Silver- lists the following alloys: 99.99% Pure, 99.9% Pure, 92.5% Sterling, 90%US pre 1900, 90%US pre 1945, 90% Coin 1960, 96% Britannia, and 80% Canadian.
 - c. Other- lists the following: Platinum, Palladium, Rhodium, Copper, and Calibrator.
 - d. Bullion- lists the following: Silver .9999, Gold .9999, Platinum, and Palladium.
6. Once your metal and alloy are selected press the Run/Cal button. The display will then read, **Ready: Place Sample**.
7. Place the sample over the sensor. If you are using the main unit sensor, the sample must cover the round target or beyond. If you are using a wand, hold the wand to the center of the sample.
8. The display will show the results. See page 4 for results interpretation.
9. When you're ready to test a sample of a different metal or alloy begin at step #4 above.

Selecting the Appropriate Sensor for your Sample

To get accurate readings it is important that the correct sensor is paired with the appropriately sized sample. For instance, using the main sensor with 18mm, small coins (e.g. ¼ oz gold coins) will give incorrect readings. **Each sensor is paired with a specific Precious Metal Verifier, do not interchange units and sensors.**

1. MAIN SENSOR

- In its standard mode, the main sensor reads samples of pure gold and silver alloys which are at least 1.1 mm thick. Other precious metals such as gold alloys, platinum and palladium should be at least 2.4 mm thick. Thinner samples can be read using the calibration disk (see page 9)
- The main sensor reads samples with a diameter greater than 24 mm as long as they are not in a case.
- Coins in a case must be at least 30 mm to assure an accurate reading.

2. SMALL & LARGE WANDS

- The small wand has a small 's' on its face. The larger wand is labeled with the word 'large'.
- These wands read samples of pure gold, silver, and silver alloys which are at least 0.8 mm thick, and down to .4mm thick with the use of the calibration disk (see sensor selection chart-page 7, and calibration disk use - page 9)
- Other precious metals such as gold alloys, platinum and palladium should be at least 1.7 mm thick. Samples as thin as 1.0 mm can be read with the use of the calibration disk.
- The small wand can read samples with a width or diameter as small as 8.0 mm. The large wand can read samples with a width or diameter as small as 18.0 mm.
- When cases have a high plastic ridge, the large wand is closer to the sample than the main sensor, and may get a better reading.

3. BULLION WAND:

- The Bullion wand is actually the largest of the three wands and has the gold colored label with the word, 'Bullion'.
- The Bullion wand reads samples of pure silver which are at least 4.0 mm thick. Pure gold and silver alloys must be at least 4.5 mm thick. Other precious metals such as gold alloys, platinum and palladium should be at least 7.0 mm thick. Thinner samples can be read using the calibration disk (see sensor selection chart -page 7, and the calibration disk use - page 9)
- Bars and coins must be at least 24 mm in diameter for measurement with the Bullion wand.

Sensor Specification Chart

- To Use This Chart:**
1. Identify the metal category you will be measuring: pure silver, pure gold and silver alloys, or gold alloys-platinum-palladium.
 2. Select the column of your coin or bar thickness from the row of the metal you selected.
 3. Move down in the column until you are in the same row as the correct diameter/width of the item you are measuring.
 4. In the intersection of that row and column is(are) your best choice(s) for sensors to use.

note: There is a millimeter scale on the top of the Precious Metal Verifier that you can use to measure the diameter/width and sample thickness.

Metal Type	Thickness (mm)									
	0.4-0.8		0.8-1.0		1.0-3.3		3.3-4.0		4.0+	
Pure Silver (.999&.9999)	0.4-0.8		0.8-1.0		1.0-3.3		3.3-4.0		4.0+	
Pure Gold & Silver Alloys*	0.4-0.8		0.8-1.1		1.1-3.3		3.3-4.5		4.5+	
Gold Alloys*, Platinum & Palladium	1.0-1.7		1.7-2.4		2.4-6.5		6.5-7.0		7.0+	
Diameter/Width (mm)										
30+	Large, C, N	Large	Main, C	Main	Main, C, N	Main	Main	Bullion, C, N	Bullion	Bullion
24-30	Large, C, N	Large	Main, C, N	Large	Main, N	Large	Main, N	Bullion, C, N	Bullion, N	Bullion, N
18-24	Large, C, N	Large, N	Large, N	Large, N	Large, N	Large, N	Large, N	Large, N	Large, N	Large, N
8-18	Small, C, N	Small, N	Small, N	Small, N	Small, N	Small, N	Small, N	Small, N	Small, N	Small, N
Sensor Choice										
<p>C - use calibration disk. N - Can't make numismatic case (slab) measurements, but plastic bags/packaging are okay. note: A smaller sized sensor can always be used but is subject to greater surface variation effects, and will not penetrate as deeply in the sample.</p>										

*Silver alloys include: 90%-coin silver, Morgan, Peace, and Trade dollars, sterling silver, Britannia silver, and 80% silver.

* gold alloys include: 22K - Krugerrand, American Eagle gold, and 90% gold.

* minimum thickness for rhodium and 99.6% gold is 1.6 times the minimum for pure silver.

Conditions that Affect Readings and Accuracy

1. THIN COINS: Thin coins may give inaccurate readings. To check to see if this is the case:
 - Using the Main Sensor: place your sample on the sensor, and then place the calibration disk on top of your sample. If the reading changes then the first reading is most likely incorrect and the second reading is more dependable. Also retest using a wand.
 - Using a wand: place the wand against the sample, and hold the calibration disk BEHIND your sample. Again, if the reading changes, the reading with the calibration disk is more dependable.
2. HIGH RELIEF COINS: High relief coins can have unusual readings, especially with the wands. Most stamped coins will have no problem with relief, but molded samples can have much higher relief. Here are some suggestions:
 - Try moving the sensor to a flatter area of the sample.
 - Turn the sample over and measure another area.
 - Moving the coin around will give varying readings, but the left-most value will be the more accurate reading.
3. SMALL COINS: It is important to use the appropriate sensor for small coins. Please see section “Selecting the Appropriate Sensor for your Sample” on page 5.
4. BARS: Some contaminated areas can read out of the brackets. Bubbles, cracks and deep stamping can affect the reading. Disregard measurements in those areas.
5. SECURITY CASES: Security cases may have a high plastic ridge around the edge. At times, this makes it difficult for the main unit sensor to read the coin. Try using the larger wand as it will put the sample closer to a sensor.
6. PLATING: Plating generally has very little effect on the reading, typically only 1 box to the right or less.

Unexpected Readings

1. Check both sides and different places on the sample.
2. Press Run/Cal button to recalibrate the instrument.
3. Check if the sample is particularly cold or hot. If cold the cursor will appear to the left and if hot it will appear to the right.
4. Check a known good sample of the same metal type and alloy.
5. Try a different sensor.
6. If using wands clean the connector (rubbing alcohol may be used). Check to see that the connector is fitting properly.
7. A coin that is attracted to a magnet will be ignored by the Precious Metal Verifier, it will reset to **Remove Sample Push Run/Cal → Start**.

Calibration Disk

The unit has been provided with a calibration disk. The calibration disk has two uses. First, it allows for measurement of thin samples. Second, it can be used to check to see if the instrument is working correctly.

To Check Thin Samples:

1. To check thinner samples with a wand hold the sample to the wand and then hold the calibration disk behind the sample.
2. To check thinner samples with the main sensor place the sample on the sensor, be sure it covers the black target area. Place the calibration disk on top of the sample. Make sure it is above the target area.

To Check Correct Operation of the Precious Metal Verifier:

1. Using the navigation pad move the down arrow until the display reads "Other", then move the right arrow to "Calibration".
2. Press run/cal with the disk removed and then place the disk on the main unit or on the large or small wand. The reading should be between the brackets.
3. When using the wands if the measurement is not between the brackets unplug and replug the wand to ensure that it is working correctly. Turn the unit off and then back on and try the calibration disk again.
4. The calibration disk cannot be checked with the Bullion wand as the disk is too thin.
5. Contact us at info@sigmametalytics.com if the calibration disk measures incorrectly on your unit.

Measurement Mode

The Precious Metal Verifier Measurement Mode allows the user to see a measured value for the item under test. The value is related (close, but not exact) to the resistivity of the metal being tested. Identical metals will have identical values. In this way different alloys and metals can be characterized. To enable this function:

1. Turn off the Precious Metal Verifier, and then press and hold down the button that says *Sensor Select*, and while holding down this button, press and release the power button.

2. When the display reads:

Remove Sample
Push Run/Cal → Start

- Release the Sensor button
- Make sure the sensor is away from any metal and press the Run/Cal button

3. The display will read:

Measurement Mode
Ready: Place Sample

Place the test sample on the sensor. You will read the measurement of your sample on this screen. Any non-magnetic metal can be read here, as long as it completely covers the sensor circle or wand head. The display will show,

Measurement Mode
Value =

followed by the measurement for your test sample.

4. To return to normal operation, turn the unit off and on again.

Use Considerations

IG9'K:H<'75IH:CB

It is not our recommendation or intention for the Precious Metal Verifier (PMV) to be the sole means for identification of counterfeit coins and bars. Our measurement of a material's electrical characteristic (resistivity or conductivity) is necessary, but not by itself sufficient for such a purpose.

We recommend that you check the item being measured against its specified weight, and size along with the resistivity measurement. You should use your normal visual checks of the material as well.

Other materials have the same resistivity as pure gold, and as such can look like gold on the PMV. These materials will be less dense than gold, so they will be larger or weigh less than the specified value. If you check material that looks good on the PMV, but has the wrong weight or dimensions, then you should not accept the material as consistent with the correct metal.

Do not try to use the PMV to determine what a material is. The PMV will only provide the electrical characteristic (resistivity or conductivity) of the metal, not the atomic structure. Correct use is to have an expectation of the material type (gold, silver, platinum, etc.), and alloy content (22K, coin silver, sterling, .999 pure, etc.), and to verify that the material being tested is consistent with your expectation.

Used in this way, the PMV is a great asset in avoiding counterfeit products.