

GOLDANALYTIX G-01-0013 Gold Screen Sensor Instruction Manual

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GOLDSCREENSENSOR Instruction Manual

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Introduction

Congratulations on your purchase of the Goldanalytix GoldScreenSensor. The Goldanalytix GoldScreenSensor is a handheld tester which determines the electrical conductivity of precious metal objects, especially coins and ingots, without destroying them.

Goldanalytix, established in 2012, is the leading provider of precious metal testing methods in Germany. With the GoldScreenSensor, we offer a testing device for measuring the electrical conductivity through inductive eddy current measurement. This measurement method allows for testing up to a depth of approx. 650 μ m (depending on the alloy) and is thus suitable as the sole method for objects up to 1 ounce/50 g.

By the way: On our homepage at <u>www.gold-analytix.com</u> you will always find the latest version of the instruction manual, so that you can keep up to date with new types of forgery and findings around precious metal testing.

Safety Instructions

IMPORTANT: Please read this instruction manual carefully before using the GoldScreenSensor for the first time. This is for your own safety and to ensure proper operation of the device. Keep the instruction manual in a safe and easily accessible place and, if necessary, pass it on to subsequent users. When using the GoldScreenSensor, please follow the safety instructions. Definition of signal words and warning symbols: Safety instructions are marked with signal words and warning symbols. Disregarding the safety instructions can lead to personal danger, damage, and malfunction of the device, as well as incorrect results.

Signal words:

CAUTION! Indicates a low-risk hazard which, if not avoided, could result in minor or moderate injury and damage to the device or property.

Warning symbols:

General warning: This warning symbol is intended to alert the user to potential hazards. All instructions following this warning symbol must be followed to avoid possible injury or damage to the device.

Product-specific safety instructions:

Intended use:

CAUTION! Do not use the device for any purpose other than the intended use described in this instruction manual.

• This device is designed for the use in precious metals testing and is suitable for measuring the electrical conductivity. Goldanalytix is not liable for damage resulting from improper use.

Device compatibility:

CAUTION! Only use the supplied charger. The use of inferior or incompatible chargers may result in malfunction, damage to the battery and internal electronics, and/or injury.

Repair and modifications:

CAUTION! To avoid damage to the device and/or personal injury, do not dismantle the device or attempt any modifications or repairs. If you encounter any problems with the GoldScreenSensor, please contact Goldanalytix (for contact details, see page 26).

- The device does not contain any parts that can be maintained, repaired or replaced by the user. The device
 does not require any special maintenance.
- Do not open, modify, or rebuild the device. This may invalidate the warranty.
- Repairs by unauthorized persons may endanger the user. Repairs may only be carried out by Goldanalytix itself.

Operating conditions:

- Never use the device near explosive gases, vapors, dust or in a damp/wet environment. Protect the device from moisture and humidity. Make sure that no liquid gets inside the device and wipe off spilled liquids immediately.
- Please operate the device at room temperature and not in direct proximity of heat sources (e.g. next to the fan output of a laptop). Avoid temperature changes. Although the temperature-dependent measured values can be adjusted by calibrating the device, the measurement accuracy is highest at room temperature (22 °C (+/- 2 °C)) of the device and test object. Therefore, also make sure not to hold the coins and bars in your hand for too long before measurement.

Precautions regarding the lithium battery:

CAUTION! Read the precautions regarding lithium batteries carefully. Neglecting to follow the instructions may result in fire, burns, and other hazards or injuries.

- Only use the charger supplied by Goldanalytix to charge the device.
- If possible, charge the device on non-combustible surfaces and do not leave the device unattended while

charging.

- Protect the device from heat (e.g. from continuous sunlight, proximity to hot stoves or microwaves), as well as from water and moisture. There is a risk of explosion if the battery overheats.
- Follow the applicable transport instructions for lithium batteries.
- Before disposing of the device, inform yourself about the applicable guidelines and regulations and follow them. More information on the disposal of the device can be found in Chapter 8: Recycling and Disposal.

Disruptive factors:

We recommend operating mobile devices (smartphones, mobile phones or flash drives with wireless access) at least 1 m away from the testing device due to the inductive eddy current measurement principle of the GoldScreenSensor. The relatively high radiation density of the devices can lead to incorrect measurements, which are noticeable in the form of strong deviations or fluctuations in the measurement result. After restarting, the GoldScreenSensor can be used without any restrictions. WLAN or Bluetooth wireless connections do not affect the measurements and can be operated without hesitation.

Conformity:

The GoldScreenSensor from Goldanalytix complies with the relevant European Directives regarding health, safety and environmental protection.

Scope of Supply

Your GoldScreenSensor set includes the following components:



GoldScreenSensor
Charger
Copper calibration piece
Instruction manual
Carrying case with inlay
Shipping carton

Before initial start-up, please check that the components mentioned above are included in the scope of delivery of the GoldScreenSensor set and that there is no obvious transport damage. In case of any defects, please contact Goldanalytix immediately (for contact details, see page 26).

Operation and Display Elements



#	Description
1	LCD color display
2	Sensor field (yellow measurement circle, Ø 20 mm)
3	Control knob for operation of the device
4	Charging socket
5	Indication of battery charge
6	Display of the measured value in MS/m and assignment to the corresponding metal / alloy
7	Additional information (only for selected alloys): blue: composition of the alloy, black: other possible metals/alloys in the respective conductivity range

Starting and Operating the Device

Starting the device: In order to switch on the device, please push the control knob ③ into the direction of the case.

Main menu and performing measurements: After activating the device, you will get to the main menu:

Display	Description
GOLDANALYTIX GOLDSCREENSENSOR * Measurement mode Language selection Calibration Information Switch off	The main menu offers you five options: Measurement mode Language selection Calibration Information Switch off
	By turning the knob, you can select a menu option and confirm your selection by pushing the knob. This will take you to the corresponding submenu.



In order to test your object, please choose "Measurement mode". As an example, we have selecte d 1 ounce of fine gold (Au 999;

nominal value: 44.7 MS/m). Different factors like embossing depth, fluting, scratches, air gap, etc. have the effect that the measured

value does not always correspond exactly to the nominal value. The tolerance ranges can be foun d in the conductivity overview on page 28.



45.0 MS/m Gold 999+ (44.7) 'Special case' Ap500-750, copper/nickel materials



Place the test object from above (see left) as centered as possible on the measurement circle ②. This is especially important for smaller objects that do not completely cover the sensor coil (diame ter of 2 cm.)

The determined conductivity value is displayed as a number in the upper section of the display in the unit Megasiemens per meter (MS/m). The GoldScreenSensor determines which metal or alloy corresponds to this conductivity value and displays it underneath the conductivity value in the mid dle of the display (only fine gold and silver, their alloys and copper). Additionally, a graphical overview of the conductivity value's position on the scale of 0-65 MS/m is shown thanks to a cursor on the scale in the lower part of the screen. For the metals and alloys mentioned above, the nominal value is additionally highlighted in green. Further (precious) metals and alloys stored in the device, especially of typical fakes such as tungsten / tungsten-copper, are displayed in the section "Additional information" above the scale in grey letters.

In the case of a counterfeit (e.g. made of a tungsten alloy), the result could be shown as in the fig ure on the left.

In addition, the GoldScreenSensor detects ferromagnetic objects, which you can identify by the o utput "Ferromagnetic" (figure on the left).



Please note: Within the first five minutes of operation, it can happen that the displayed value does not remain constant (whereby a certain fluctuation of about \pm 0.3 MS/m is normal). In addition, the re may be some fluctuations of the measured values of the same object in several consecutive measurements. This is due to the fact that the coil must first stabilize itself after switching on the d evice in order to ensure a homogeneous magnetic field.

Addition: If the shown conductivity value seems strange to you, (e.g. you know from previous mea surements that your object is real and now the device shows a significantly lower conductivity value), then the device has probably zeroed itself at this moment. This happens automatically after a certain number

of measurements. Please wait a short moment (about 5 seconds) and place your object again on the device. Now you should receive the correct result.

By pushing the knob, you will get back to the main menu.

IMPORTANT INFORMATION:

In case of uncertainties, you can also compare the measured values to the conductivity value tables in the annex of this instruction manual or with other sources (see also Chapter 6:

Evaluation and Interpretation of the Results). In the measurement mode, the device always displays the measured conductivity value, as well as the material that it MIGHT be.

A 50 Euro cent coin, for instance, has a similar conductivity as the Krugerrand Gold (alloy 916(A), see on page 28), platinum or palladium. When measuring the 50 cent coin, the GoldScreenSensor can therefore output Gold 916 as the measurement result, even if it is not the alloy in question. If one compares dimensions and weight, it quickly becomes clear that no Krugerrand. The test objects must be at least 0.8 mm to 1 mm thick; blisters and capsules can be up to 3 mm thick. It is important to always wait 2 to 3 seconds between each measurement so that the device can calibrate itself. If you place the coins too quickly one after the other, there may be deviations in the measured values.

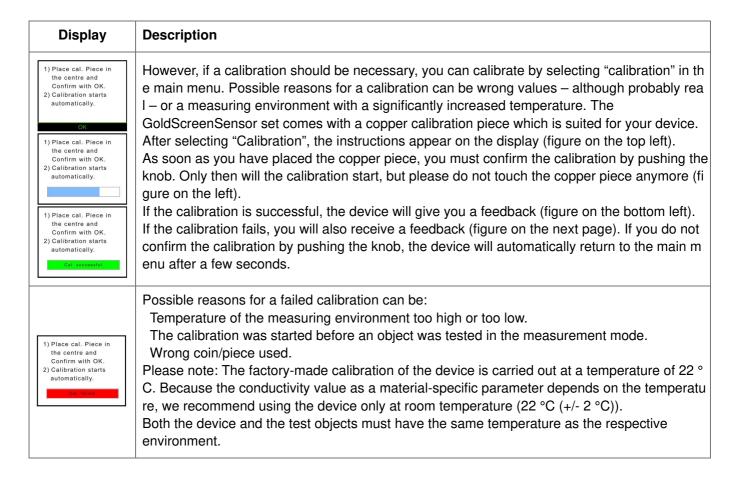
Sometimes the auto-calibration can take a little longer. If you are unsure whether the displayed value is really correct, remove the test object and wait a few seconds later before placing the object on the device again.

Please also note the further important information on measuring with GoldScreenSensor on our website at www.gold-analytix.com/goldscreensensor!

These instructions are particularly relevant when measuring the following coins and bars:

- · Old coins and bars, as well as medals
- Silver coins (especially fine silver coins and coins with a fineness of less than 985)
- · Krugerrand Silver 1 ounce
- 5 DM commemorative coin

Calibrating the device: Your GoldScreenSensor is calibrated before delivery, so a calibration before the first measurement is normally not necessary!



Changing the system language:

Display	Description
Sprache/Language: Deutsch English	Please enter the "Language selection" by selecting the option in the main menu and p ushing the knob. Now you can select the desired language. You will then be automatically returned to the main menu.

Evaluation and Interpretation of the Results

In the following, you will find information on how to interpret the determined conductivity values. Please keep in mind that this device only shows the conductivity of the object and deduces from this value, which material it could be amongst others. Since the

GoldScreenSensor only measures the electrical conductivity, we recommend using a conductivity value reference table (see annex) in case of doubt. However, the following factors can also falsify the electrical conductivity:

- Scratches
- · Blisters & capsules / other packaging
- Temperature effects (different temperatures of device and test object)
- Embossing on coins or bars
- Bends / deformations
- · Uncommon coins or impurities with ferromagnetic material

IMPORTANT: A correct conductivity value alone is of course no guarantee that your object is not a fake. After all, an alloy that has, for example the same electrical conductivity as gold, can definitely be produced (e.g. copper alloys). However, in such a case, the dimensions or weight of the coins o bars is usually not correct. After all, it is relatively easy to imitate one physical property (conductivity, density, sound, etc.) of a precious metal. To imitate two or more physical properties at the same time, however, is more difficult or almost impossible. Therefore, for the same conductivity, another physical property such as the density does not match. We therefore strongly recommend the use of several testing methods in order to exclude counterfeits with certainty. This is because no single non-destructive method for testing precious metals can on its own detect any kind of counterfeit.

For coins, the following procedure is recommended:

Step 1: Determine the weight with the help of a precision balance – does the determined weight correspond to the target weight? In many cases, fakes can already be detected in this step.

Step 2: Compare the dimensions (thickness & diameter) with the nominal values of the respective coins with the help of a digital caliper (can be purchased for a reasonable price in our online shop or at specialist shops) or stencils.

If 1 and 2 correspond exactly to the nominal values (can be found on the internet, e.g. on the websites of the manufacturers), it can only be a counterfeit with materials of the same density – these are for example metals like tungsten or uranium for fine gold or for silver, for example, lead-tin alloys or molybdenum.

Step 3: Detection of sub-alloys and counterfeits made of e.g. molybdenum, tantalum or tungsten, tungsten alloys, tungsten carbide, brass, copper, etc. up to a penetration depth of about 250 μ m (for fine silver) over 350 μ m (fine gold) up to 650 μ m (Gold 916, e.g. Krugerrand) with the GoldScreenSensor.

The penetration depth of the GoldScreenSensor determines the size up to which precious metal objects can be measured. In principle, you can also measure 1 kg silver ingots with the device – there will be a conductivity value. However, with such large objects, there is a risk that the forgers apply thicker layers of precious metal around the fake metal core. Therefore, one should always combine several suitable testing methods, especially for objects over 1 ounce. For bars from approx. 50 g, we recommend the additional use of the ultrasonic method (Goldanalytix BarScreenSensor). For objects up to 1 ounce, however, the penetration depth is sufficiently high to detect counterfeits.

Please also have a look at our website <u>www.gold-analytix.com/knowledge</u> for more information about the correct procedure for the non-destructive testing of precious metals. However, absolute certainty, especially regarding the exact composition of the test objects, can only be provided by a destructive, chemical analysis.

Jewellery and other precious metal objects with uneven surfaces – unlike coins and ingots – cannot be analyzed by the GoldScreenSensor. A correct result is only obtained when the measurement circle is completely covered by the object. If you want to test smaller objects, we recommend the Goldanalytix GoldScreenPen and for the jewellery, we recommend the Goldanalytix CaratScreenPen because it allows to establish the gold content of jewellery alloys.

Warranty and Support

Do you need more information about our devices, support in using the GoldScreenSensor or the customer service? Feel free to contact us through one of the following channels:

Homepage: www.gold-analytix.com
E-Mail: gold-analytix@marawe.eu

Phone: +49 941 29020439

Our high quality precious metal testers are designed for a long lifetime. However, if any problems should occur with a device, it is good to know that we offer a legal warranty of 2 years. The warranty period starts with the receipt of the product. In case of a warranty claim, after repair or replacement of the device, the warranty period starts again with the receipt of the product.

IMPORTANT: The warranty applies only to devices that have been properly used as described in this instruction manual and have not been misused, repaired by unauthorized persons, or modified.

The GoldScreenSensor is a good tool for verifying the authenticity of precious metals – however, in the end you are responsible for your own transactions. We assume no liability for any possible financial losses that may result from the use of the GoldScreenSensor.

Recycling and Disposal

The GoldScreenSensor is marked in accordance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE). This symbol indicates that this electrical or electronic device must not be disposed of with normal household waste at the end of its lifetime, but must be taken for separate collection by the end user. Please follow your country's rules for the separate collection of electrical and electronic equipment. For more information on recycling, please contact your local authority.

Li- paly 1200mAh The GoldScreenSensor is marked in accordance with the European Directive 2006/66/EC on batteries and accumulators. This symbol indicates that this device contains a built-in battery or accumulator which must not be disposed of with normal household waste at the end of its lifetime, but must be taken for separate collection by the end user. Please follow your country's rules for the separate collection of batteries and accumulators. For more information on recycling, please contact your local authority. The following batteries or accumulators can be found in this electrical device: Rechargeable (secondary) battery [glued-in accumulator] with the chemical system [Li-Ion-Polymer]. Instructions for safe removal: This accumulator can NOT be removed from the device by the end user, but can be replaced by Goldanalytix in the course of repair. Thank you for your contribution to the protection of the environment!

Technical Data

Technical Data:

Article number:	G-01-0013, G-01-0013-ES, G-01-0013-FR
Dimensions (L x W x H):	15.8 x 7.2 x 3.1 cm
Dimensions incl. packaging (L x W x H)	29.5 x 26.2 x 11.0 cm
Weight:	160 g
Weight incl. packaging:	1105 g
Power:	5 W
Voltage:	5 V
Frequency:	120 kHz
Battery type:	Li-Polymer Battery 1200 mAh 3.7 V
Plug type:	5.5 x 2.5 mm DC plug

A1. Conductivity overview of typical alloys for investment precious metals

Designation	Туре	Electrical con ductivity [MS /m]	Tolerance range conductivity	Fineness [‰]	Density [g/cm 3]
Gold 999	А	44.7	43.5-48.4	999/999.9	19.3
Gold 995	В	35.2	34-36.5	995	19.2
Gold 986	С	25.5	25-29	986	19
Gold 916 (A)	D	9.7	9.5-10	916	17.5
Gold 916 (B)	Е	11.1	10.8-11.4	916	17.8
Gold 916 (C)	F	11.8	11.5-12.1	916	17.8
Gold 900	G	8.9	8.5-9.4	900	17.2
Silver 999	Н	61	59-64	999/999.9	10.5
Silver 958	I	52.5	52-55.5	958	10.41
Silver 925	J	51	49.5-52	925	10.37
Silver 900	К	50.2	49.5-52	900	10.3
Silver 835	L	48.5	48.5-49.5	835	10.17
Silver 625	М	47	46.4-48.5	625	9.8

Please note the additional information on our homepage at www.gold-analytix.com.

Type A	Investment gold bars (Degussa, Umicore, Heraeus, Agosi etc.), Vienna Philharmonic, American Buff alo, Kangaroo Nugget, Maple Leaf, China Panda, Mexico Libertad, Australian Lunar, Coins Germany (10 0 marks collector coins etc.), UK Gold Britannia (since 2013), Spain 5000 to 80000 pesetas
Туре В	Mainly in Turkey (Nzp, Nadir, Altin) and India (RSBL) known alloy; special case: Austria 1000 shilling s 1997/98
Type C	Please note: This is the target value of the 986 alloy for objects thicker than 1 mm (25.5 MS/m). The 1&4 ducat Austrian coins and their restrikes (0.71-0.75 mm), which are almost exclusively found in pr actice, have a slightly higher conductivity (27-29 MS/m).
Type D	South Africa Krugerrand, UK Gold Britannia (1987-89), Canada 100 dollars, Turkey 100 piasters, Australia 200 dollars Gold Koala, UK Sovereign, Chile 5 pesos (1895-1980), 20 pesos (1896-1917), Peru Libra (1898-1969), Peru 50000 & 100000 soles (916 Au + 84 Cu)
Type E	American Gold Eagle from the US Mint since 1986, nominal value in US dollars (916 Au + 54 Cu + 30 Ag)
Type F	UK Britannia (1990-2012), 916 Au + 42 Cu + 42 Ag
Type G	Germany Reichsmark, Austria Crown Emperor Franz Joseph until 1915 & restrikes, Greece Drachm a, Austria Babenberger, Austria Florin, Swiss Vreneli (10-100 FR, 1897-1949), Netherlands Wilhemin a, France Marianne/Napoleon/Republic, Italy Umberto I, Vittorio Emanuele II, Denmark Frederik VIII, Belgium Albert/Leopold II, Russia Ruble Alexander III/Nikolaus II, Russia Tscherwonetz, Gold Liber ty Head US / Double Eagle, Chile Peso (exceptions see type D), Mexico Centenario, Peru 5 to 10 sol es (1956-1979), Spain 10 to 100 pesetas
Type H	Canada Maple Leaf, Austria Philharmonic, American Silver Eagle, Australian Koala / Kookaburra, UK Britannia Silver (from 2013), Armenia Noah's Ark, China Panda, Lunar, Mexico Libertad (from 1996)
Type I	UK Britannia Silver (1997-2003)
Type J+ K	Austria Maria Theresia Taler, many medals, 10 € commemorative coins 2002-2010 and 20 € 2016-to day, the values are only valid for 900 and 925 silver or copper-alloys & coins after 1945, older coins s ometimes consist of silver-nickel alloys – these are 35-38 MS/m!
Type L	Latin Monetary Union, francs, lira, etc.
Туре М	DM & € commemorative coins FRG e.g. 5 DM 1953-1979, 10 DM 1987-1997 & 10 € 2011-2015
	,

A2. Conductivity overview of more precious / foreign metal (alloys)

Precious metals	Electrical conductivity [MS/m]	Density [g/cm³]
Platinum 999	9.1	21.45
Palladium 999	9.3	11.99
Osmium	10.9	22.59
Ruthenium	about 14.1	12.37
Rhodium (sintered)	18.5	12.38
Iridium	about 19.7	22.56
Foreign metals and alloys	Electrical conductivity [MS/m]	Density [g/cm³]
Copper (pure)	58	8.96
Copper alloys	41-57	Depends on the alloy
Aluminium (pure)	3650.00%	2.7
Brass	13-33	about 8.5
Magnesium	23	1.74
Molybdenum	19	10.2
Aluminium alloys	15.9-30.5	Depends on alloy
Tungsten (pure)	about 18.8	19.3
Tungsten alloys	20-28	Depends on alloy
Zinc	17	7.14
Tin	7.9	7.3
Chromium	7.8	7.19
Tantalum	7.6	16.6
Lead	4.8	11.34
Nickel silver	3.2-5.7	about 8.1 - 8.7
Antimony	2.4	6.68
Tungsten (sintered)	<2	about 19.3
Titanium	0.5-2.5	4.45
Bismuth	0.9	9.8
Iron	Ferromagnetic	7.87
Nickel	Ferromagnetic	8.9
Cobalt	Ferromagnetic	8.9

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Documents / Resources



GOLDANALYTIX G-01-0013 Gold Screen Sensor [pdf] Instruction Manual G-01-0013, G-01-0013-ES, G-01-0013-FR, G-01-0013 Gold Screen Sensor, Gold Screen Sensor, Screen Sensor

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- Tifoo Selber galvanisieren, vergolden, brünieren & eloxieren | Tifoo Shop

Manuals+,