SILVER MOON COLLOIDAL

CSG10X INSTRUCTIONS FOR USE (IFU)

GLOSSARY

PWT	Pure Water Tester – handheld water conductivity measurement tool
PPM	Parts Per Million
RO	Reverse Osmosis

1. CSG10X FEATURES

1.1. Controls, Indicators and Connections

The **"CSG10X"** is an 120VAC powered Colloidal Silver Generator with 10 independent channels supporting up to ten 99.99% pure silver electrode assemblies. The unit and electrodes need to be setup properly before applying power. This IFU will cover setup, operation, control and status indications.

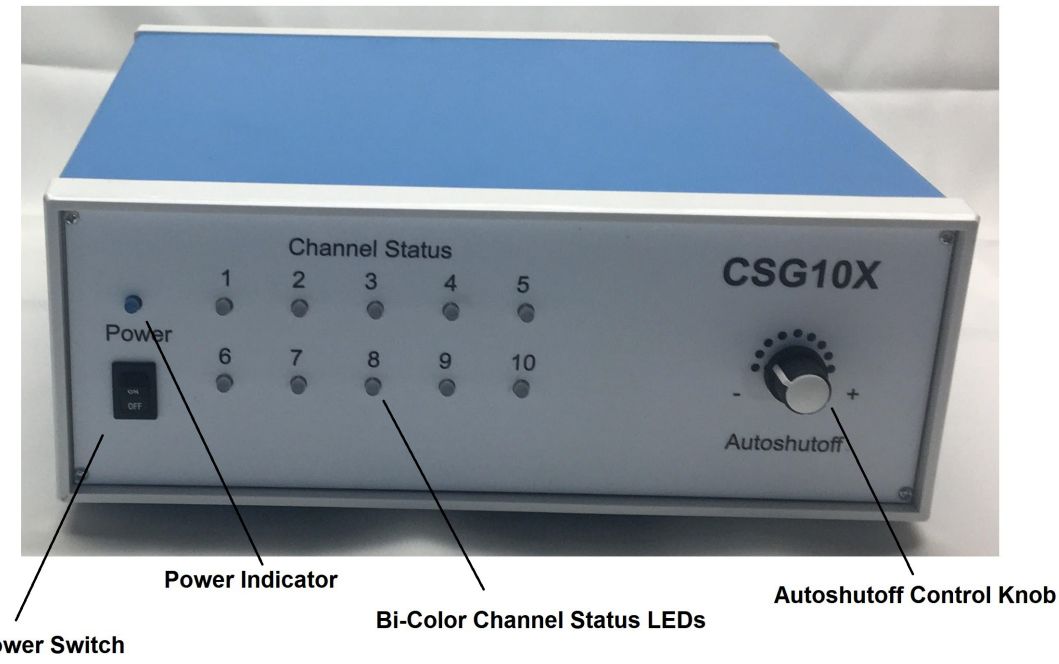


Illustration 1: Front of unit

The front of the unit contains a Power Switch that turns the AC power on and off. When power is first applied the Power Indicator that flashes several before turning on solid blue to indicate that the unit is operating properly. An Automatic shut off (Autoshutoff) control knob sets the desired PPM level for automatically turning the power to the electrodes off. When Autoshutoff is achieved the Power Indicator flashes to indicate the desired PPM has been reached and power to the electrodes has been turned off. There is a bi-color Status Indicator for each of the 10 independent channels that indicate when each electrode is drawing current and the polarity of the Voltage applied to it.

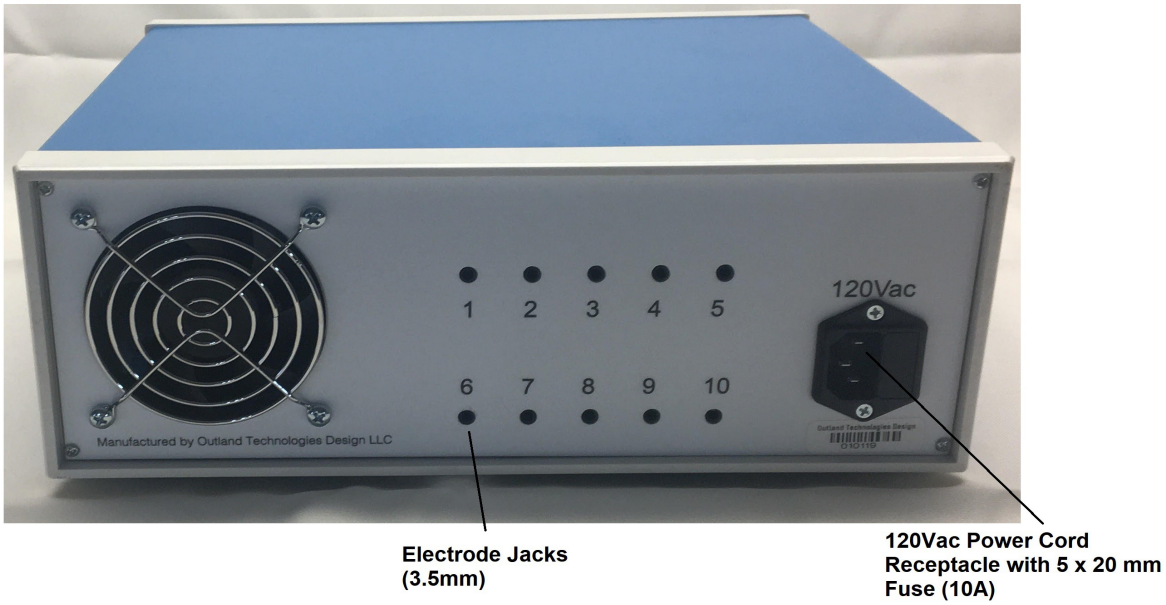


Illustration 2: Rear of unit

The rear of the unit contains connections to the10 independent electrodes, a cooling fan and the 120Vac power cable receptacle. A 5 x 20mm 10 amp glass fuse is inside the power cable receptacle and can be accessed from the outside of the unit by removing the sliding fuse holder assembly on the left side of the receptacle by pulling it out and replacing the fuse.

Each Electrode Assembly has a 6 foot cable with a 3.5mm jack to connect to the CSG10X connectors on the rear of the unit. The 99.99% Silver Plates are corregated to provide strength and durability and are mounted in an epoxy form. Two 2” Studs extend from the top of the electrode and are used to suspend the electrode assembly in the

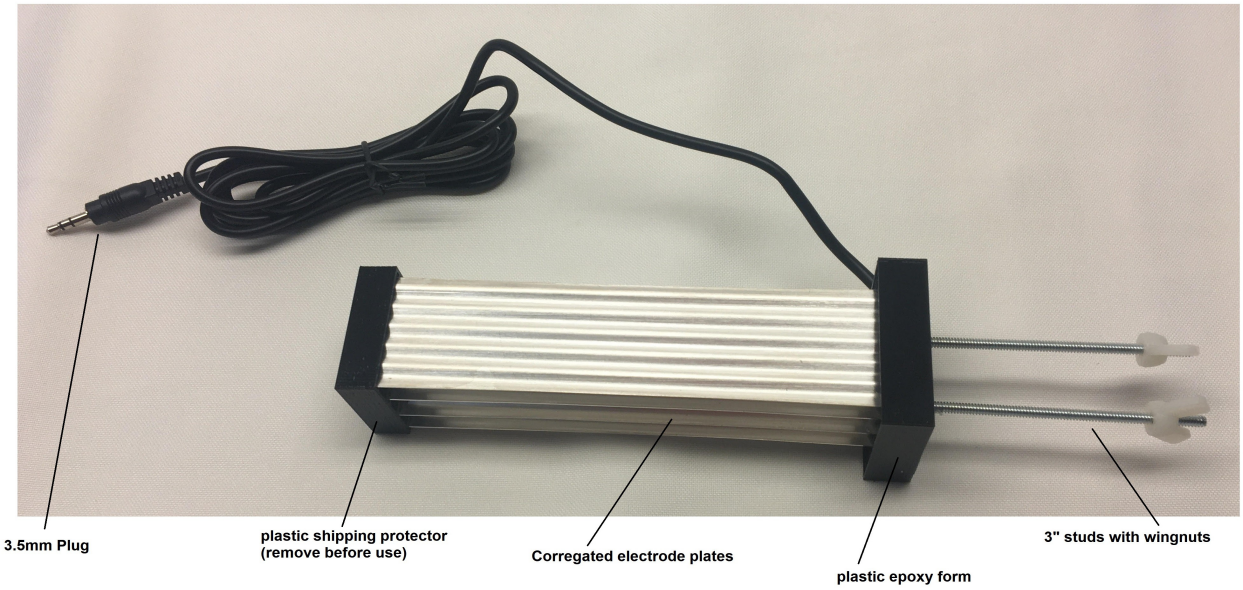


Illustration 3: Electrode Assembly

distilled water. The Electrode Assembly comes with a protective plastic shipping cover that needs to be removed before use but re-installed during cleaning or storage of the electrode assembly.

2. ELECTRODE SETUP

2.1. Before applying Power

Do not apply power to the unit until the electrodes are mounted and suspended in the container with distilled (or RO) water at the correct depth and plugged into the connectors on the rear of the enclosure of the CSG10X.

Electrode assemblies consist of 4 corrugated silver plates mounted in epoxy and are very fragile. To ensure the proper gap between the plates is maintained each Electrode Assembly is shipped with a plastic protector that needs to be carefully removed before use. Do not dispose of the plastic shipping protector, it should be reused when electrode assemblies are cleaned or stored. Two 2” studs come out of the top of each electrode assembly and are used along with spacers and wingnuts to suspend the assembly in distilled water to generate the colloidal silver. Mount the Electrodes Assemblies so that most of the electrode plates are covered in distilled water. Use the appropriate spacers and adjust the water level until it reaches about 0.25” from the plastic epoxy form around the assembly. It is best to keep the water level below the epoxy form so there is never any silver buildup on the epoxy. Extreme care needs to be taken with the electrodes so the plates do not get bent and the plates remain parallel (about 0.42” apart).

3. CSG10X SETUP

3.1. Before applying Power

Ensure the Power Switch on the front of the CSG10X is in the “Off” position. Plug the AC Power Cord into the AC receptacle on the rear of the unit. Plug the 10 electrodes cables into the jacks on the rear of the unit. The water pump in the container needs to be on and circulating water around the all of the electrode plates. Set the Autoshutoff control knob fully clockwise to set the conductivity threshold to the maximum level and prevent premature shutdown.

Before powering the unit the conductivity of the circulating water should be measured with a PWT and recorded.

4. CSG10X POWER UP

Once the electrodes are setup and submersed in distilled water then switch the Power Switch on the front of the CSG10X to the “On” position. The blue power indicator will flash and then stay on. There is a bi-color (red/green) Channel Status LED for each of the 10 channels. The LEDs will begin to illuminate once the electrode for that channel draws about 13mA. The amount of current that each electrode draws is a function of the conductivity of the water. Several factors influence whether the Channel Status LEDs will illuminate immediately upon power up. With a new clean container, a new pump, fresh distilled water and new electrodes the water may measure < 1 uS/cm so may not initially draw 13 mA. It may take several minutes for the conductivity to increase to the point where the LED begins to illuminate. In cases where a batch is started and there is CS residue in the container and pump and the electrodes have been previously used and not cleaned it may increase the initial conductivity of the water and cause the LEDs to illuminate immediately after power up.

5. AUTOSHUTOFF CONTROL

Once the unit is operating the PPM concentration of Colloidal Silver will increase over time. Once the conductivity of the distilled water is high enough to cause current limiting the drive voltage will decrease as the conductivity continues to increase over time. There is a rough correlation between the drive voltage and the conductivity and the PPM measurement. The Autoshutoff Control Knob is used to set the drive voltage threshold for powering down the electrode drive circuits for all 10 electrodes allowing the unit to stop producing Colloidal Silver once the desired PPM has been reached. The drive voltage for all 10 circuits is independent but all 10 should be very close since all electrode assemblies are submersed in the same distilled water and so should see the same conductivity. The Autoshutoff circuit is comparing the Channel 1 drive voltage with the knob setting and will power down all 10 channels once the threshold is met. Therefore the unit can support 1-10 channels but channel 1 must always be used. Good water flow through the electrodes is required for proper operation of the Autoshutoff feature. If water flow is insufficient then Colloidal Silver build up around the electrodes causing the drive voltage to reduce to the point where it may shut off prematurely.

If multiple instances of the CSG10X are used in the same container then the Autoshutoff may occurs at slightly different times since they all operate independently.

For initial batches it is recommended to start with the Autoshutoff Control fully clockwise and to monitor the PPM by PWT measurement during initial generation. Once the desired PPM is achieved slowly rotate the Autoshutoff knob

counterclockwise until all 10 channels shut off (LEDs go out). This setting (knob position) is the approximate threshold for Autoshutoff for that PPM value.

Cycle the power to reset the Autoshutoff

The Autoshutoff feature operates somewhat like a circuit breaker. Once the conductivity has increased to the point where the channel 1 drive voltage is lower than the knob setting voltage then all 10 channels shut off (LEDs go out). The only way to turn the drive voltage back on is to turn the power switch off and then back on. If the the channel 1 drive voltage is still lower than the knob setting voltage then all 10 channels shut off again (Channel Status LEDs go out). To achieve a higher PPM once Autoshutoff has occurred it is necessary to turn the control knob more clockwise and then cycle the power off and back on. It would then run until the PPM increases and the channel 1 drive voltage reduces to the knob setting voltage where it would then shut off all 10 channels.

If a manual approach to stopping production at the desired PPM value is preferred over Autoshutoff then the unit power is just manually turned off once the desired PPM has been measured and achieved. The Autoshutoff feature can essentially be disabled by just leaving the control knob in the full clockwise position since it will not shutoff until it reaches over 30 PPM.

6. CHANNEL STATUS LEDS

The 10 channel status LEDs are used to indicated the current flow to each electrode as well as the polarity of the electrode plate pairs. If an electrode assembly is drawing less than 13 mA then the status LED for that channel may be completely off or just slightly illuminated. Once the conductivity of the water increases to the point where electrodes are drawing 13mA or more then the LEDs begin to illuminate. The Channel Status LEDs are green when the outer electrode plates are positive and the inner electrode plates are negative. The Channel Status LEDs are red when the outer electrode plates are negative and the inner electrode plates are positive. The polarity of each electrode plate changes 30 seconds. The polarity of the 10 electrode assemblies are switched in sequence where every 6 seconds two electrode assemblies swap polarity. Toggling the electrode polarity reduces build up on the electrode plates and minimizes the need to clean electrodes after use.

If the Autoshutoff function shuts off drive current to all of the electrodes then all 10 of the channel status LEDs are off. The blue power indicator flashes once a second to indicate that the Autoshutoff has been triggered and the desired PPM has been achieved.

7. ELECTRODE CLEANING

Periodic cleaning of the electrode plates will ensure consistent colloidal silver generation. Removing electrode assembly from the container and reapplying the plastic shipping protector will reduce the risk of damaging the electrode. Extreme care should be taken to make sure the plates do not get bent or misaligned. Cleaning the Electrode Assembly between batches in an Ultrasonic Cleaner filled with distilled water is highly recommended. 5-10 minutes is sufficient. Do not exceed 35 degrees C

The Electrodes can be washed by hand to remove excess residue if an Ultrasonic Cleaner is not available but extreme care needs to be taken to avoid damaging the plates. The plastic shipping protector should be installed first and then the plates can be washed with isopropyl alcohol and then all surfaces of the plates wiped with paper towels followed by rinsing in distilled water.

8. DEVICE OPERATION

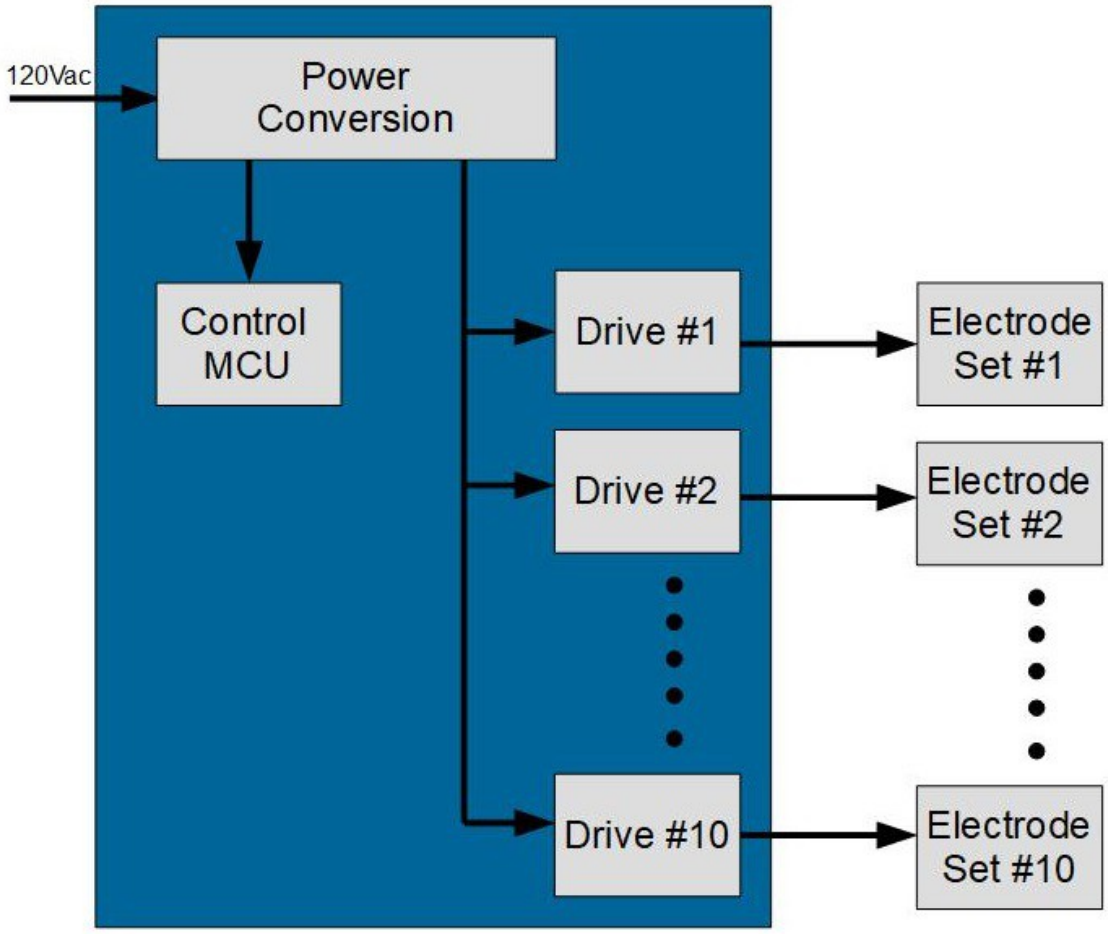
Easy to use, just Plug and Play – no configuration required

Automatic Shutoff when desired PPM is achieved

Current limited electrode drive for consistent nano particle size

Electrode Assemblies with four corregated 99.99% pure Silver plates

Electrode Assemblies are Compatible with CSG1X, CSG5X and CSG10X Colloidal Silver Generators


120Vac
Power Conversion
Control MCU
Drive #1
Drive #2
Drive #10
Electrode Set #1
Electrode Set #2
Electrode Set #10

CSG10X