

CG-5 AUTOGRAV™ GRAVITY METER



THE CG-5 AUTOGRAV IS THE INDUSTRY STANDARD

APPLICATIONS

- **Oil & Gas Exploration:** Gravity can be used to determine the location of a Salt dome in which oil or gas could be present. Measuring the density change in an oil reservoir can assist in the oil and gas recovery process.
- **Mineral Exploration:** Gravity can detect Volcanic Massive Sulphides deposits associated with nickel deposits, diamond bearing Kimberlites, Banded Iron Formations, and Impact Basins. Gravity can also be used to determine the size of the deposit.
- **Geological Mapping:** Gravity can be used to complement the results of geological mapping.
- **Civil Engineering:** Gravity can be used to study integrity of roads, dams, and dykes, looking for areas of weakness in the sub-surface.
- **Geotechnical:** Gravity can detect Voids or Cavities whether they are tunnels, washouts or sink holes.
- **Regional Gravity Studies:** Gravity can determine the rock type, soil compaction and presence of water.
- **Geoid Mapping:** By measuring gravity changes on the Earth's surface, a more accurate correction can be applied to GPS data to obtain better height location.
- **Archaeology:** Gravity can be used to locate buried walls, buildings, and tombs.



BENEFITS

The CG-5 AUTOGRAV has a standard resolution of 1 microGal with a standard deviation that is < 5 microGals. It is the fastest, lightest, most cost efficient gravity meter on the market today.

Easy to Operate

With minimal training a user can quickly collect and record reliable gravity data.

Excellent Field Repeatability

Field repeatability tests are the best measure of a gravity meter's performance. Documented field tests of the CG-5 AUTOGRAV meters show a standard deviation between individual readings and station values of better than 5 microGals.

Rugged, Robust Sensor, No Clamping Required

The sensing element of the CG-5 AUTOGRAV is based on a fused quartz spring system. The gravitational force on the proof-mass is balanced by a spring, and an electrostatic restoring force. The inherent strength and excellent elastic properties of fused quartz, together with the limit stops around the proof-mass, permit the instrument to be operated without clamping. Additional protection is provided by a durable shock mount system.

Freedom from Tares

Due to low mass and excellent elastic properties of fused quartz, tares are virtually unknown. Even after transport over rough roads and severe temperature shocks, the residual drift is minimal. The CG-5 AUTOGRAV can withstand a shock up to 20 G and the tare will be no more than 5 microGals.

Fully Portable

The CG-5 AUTOGRAV incorporates the gravity sensor, control keypad, electronics, and batteries into one lightweight weather resistant instrument case. No cables to trip over, no handheld devices, just an easy to use and carry, self-contained gravity meter.

GPS Station Referencing

Internal GPS Receiver enables GPS station referencing from a 12 channel smart GPS antenna connected via the RS-232 port. Standard accuracy: $<15\text{m}$; DGPS (WAAS): $<3\text{m}$.

Touch Free Operation

The CG-5 AUTOGRAV is equipped with a radio-frequency remote start transmitter (keyfob) to allow measurement to be taken without disturbing the meter by touch.

Automatic Compensation and Correction

By using the electronic tilt sensors, the CG-5 AUTOGRAV is constantly updating information from the internal tilt sensors. The CG-5 AUTOGRAV can automatically compensate measurements for the errors in instrument tilt. This operator selectable feature ensures that when measurements are taken on unstable ground, errors due to instrument movement are automatically eliminated. Based on operator entered geographical location and time zone data or GPS information, the CG-5 AUTOGRAV can automatically calculate and apply a real time tidal correction to each reading.

BENEFITS

Automatic Noise Rejection

Measurement errors due to locally induced shocks and vibrations are limited by smart signal processing and unsurpassed seismic noise rejection. The CG-5 AUTOGRAV has a very effective seismic filter that removes micro-seismic noise.

Low Residual Drift

The extremely stable operating environment of the quartz spring system allows the long-term drift to be accurately determined and a real-time software correction reduces it to less than 0.02 mGal/day.

Data Transfer

- Transferring the data by either USB memory stick, USB mode, or RS-232C mode
- Onsite software updates

Displayed and Recorded Data

- Corrected gravity
- Standard deviation
- X-axis tilt
- Y-axis tilt
- Gravity sensor temperature
- Tidal correction
- Time of measurement
- Duration of measurement
- Header information (including data and initialization constants)
- Graphic scope of digitized gravity data
- Data in numeric format
- Optional storage of raw analog data for advanced applications
- Observation notes

INSTRUMENT FEATURES

- Standard 1microGal resolution
- Premium rugged sensor
- GPS station referencing
- RF remote starter
- Superlative noise reduction
- The lightest of all automated gravity meters
- Smart long-life batteries
- Flexible data formats
- Large VGA graphics display
- Alpha-numeric keypad
- User-accessible automated instrument alignment
- On-line terrain corrections
- Instrument self-diagnostic upon power-up
- Data transfer using USB memory stick, USB and RS-232C interface

CG-5 AUTOGRAV SPECIFICATIONS

SENSOR TYPE	Fused quartz using electrostatic nulling
READING RESOLUTION	1 microGal
STANDARD DEVIATION	< 5 microGal
OPERATING RANGE	World wide (8,000 mGal without resetting)
RESIDUAL LONG-TERM DRIFT (STATIC)	Less than 0.02 mGal/day
RANGE OF AUTOMATIC TILT COMPENSATION	± 200 arc sec
TARES	Typically less than 5 microGals for shocks up to 20 G
AUTOMATED CORRECTIONS	Tide, instrument tilt, temperature, noisy sample filter, seismic noise filter
GPS ACCURACY	Standard: <15m; DGPS (WAAS): <3m
TOUCH FREE OPERATION	Keyfob transmits up to 30m line of sight
BATTERY CAPACITY	<ul style="list-style-type: none"> • 2 x 6.6Ah (11.1 V) rechargeable Lithium Smart batteries • Full day operation at 25°C (77°F)
POWER CONSUMPTION	6.5 Watts at 25°C (77°F)
OPERATING TEMPERATURE	-40°C to +45°C (-40°F to 113°F) Optional high temperature version to +55°C (131°F)
DIGITAL DATA OUTPUT	USB memory stick, RS-232C and USB interface
DIMENSIONS	30 cm (H) x 21 cm x 22 cm (12 in x 8 in x 9 in)
WEIGHT	8 kg (17.5 lbs) including battery
STANDARD SYSTEM CONTAINS	<ul style="list-style-type: none"> • CG-5 AUTOGRAV Console • GPS antenna • Leveling tripod • 2 rechargeable batteries • Battery charger, 110/240 V • External power, 110/240 V • USB stick adaptor • RS-232 and USB cables • Keyfob • Carrying bag • Transit case

OPTIONS

- **High Temperature Option:** For use in climates that may exceed the operation temperature of +45°C (113°F). Allows operating temperature of up to +55°C (131°F). This option is required to be ordered at the time of instrument purchase.
- **Battery Belt:** Suggested for cold weather operation.
- **External Power Cable:** For 12 VDC input.
- **Tripod Extension** (surveyor's tripod).

COMPLETE GRAVITY SOLUTIONS

Training Programs

Scintrex can provide training programs at our offices in Canada or on-site.

Application Software

Scintrex can provide software packages to support data processing, interpretation and mapping needs.



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