

CM-201

High Resolution Integrated Field Measurements



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The CM-201 Larmor Counter combines for the first time a low-power, compact counter assembly for Cesium Magnetic Sensors, with the extreme accuracy required for optimal magnetometer system performance. The signal output from a Cs sensor is a sine wave with a frequency proportional to the magnetic field. Inside the CM-201 module, this signal is preconditioned, digitally over-sampled, counted, scaled for output magnitude in nT, converted to ASCII digital data, and sent to the serial port. Data output rates are selectable up to 100 Hz. Resolution is 0.02nT at 10 Hz and is proportionally better at lower output data rates.

In addition to the counting function, the module will output ASCII data from six 12-bit A/D converters and an elapsed time clock for Julian time/date. The output data format is programmable with simple configuration commands from a remote terminal. The counter module may be synchronized with an external pulse or trigger event. Multiple CM-201 counters may be daisy-chained to output synchronized readings into a single, concatenated serial data stream up a simple cable. The counter module is sized to fit within Geometrics' existing sensor driver electronics assembly, and its power may be derived from the same basic 24-30 VDC supply.

FEATURES

- **Sensitivity** - Better than 0.002 nT at 1 Hz, 0.02 nT at 10 Hz.
- **Stackable Operation** - With up to twenty counters and sensors.
- **Cycle Rates** - Selectable from 100 Hz to 0.1 Hz.
- **Versatile Functions** - Simple setup commands, programmable outputs, multiple A/D channels, Julian date and time.
- **Combined RS-232 Output** - From several sources at up to 19,200 baud.
- **Ultra-small Size, Low Power**
- **Suitable for Airborne, Marine, Land Vehicle and Base Station Applications**



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NEW FUNCTIONS

The ultra small size, low power and versatility of the new CM-201 counter allows many new instrument configurations. Magnetic field, date, time and analog channels can be recorded using any terminal emulation software at selectable sample rates from once each 20 seconds to 100 times per second. Alternatively, the magnetometer can be remotely-controlled in an unattended location with the data sent by radio telemetry to the data logger. Multiple sensor arrays are now possible with simultaneous data from all sensors collected into one concatenated data stream.

APPLICATIONS

Typical applications are in airborne, marine, land vehicle and base station environments. In each case, the counter is supplied fully-integrated with the Cesium sensor from which it receives power and the vapor magnetometer Larmor signal. Sensor, CM-201 counter and associated electronics and cables are supplied complete and installed in the appropriate housings.

SPECIFICATIONS:

Commands/Functions:

Command functions from a terminal or computer include:

1. Set cycle time (sensitivity).
2. Select/enable up to six A/D channels.
3. Set/enable Julian time/date.
4. Select sequence/enable multiple counters.
5. Select internal or external trigger.
6. Set preamble character.
7. Set/interrogate output format.
8. Set baud rate.
9. Save/edit the configuration.

Operating Range: 70 kHz to 350 kHz corresponding to the earth's field strength of 20,000 nT to 100,000 nT.

Accuracy Throughout Range: < 1 nT (exceeds sensor absolute accuracy).

Julian Clock: Time of day, hour, second and fractional seconds may be individually selected for output. Resolution is 0.01 seconds and drift less than 1 second per day. Time/date reset to computer time at power turn-on.

Cycle Rate: Variable from 20 sec. to .01 sec. in 0.005-second increments.

INITIAL DEFAULT UPON POWER-UP

Baud rate: 9600 baud, 8 data bits, no parity, 1 stop-bit.

Cycle rate: 10 Hz.

Analog channels: #0 enabled, 1-5 disabled. Julian Clock: disabled.

Output Format: ASCII.

Configuration changes may be saved.

Sensitivity (Counter LSB)	Noise (RMS) (nT)	Earth's Field (K nT)	Sample Rate (Hz)
0.001	0.003	30	1
0.002	0.004	50	
0.003	0.005	70	
0.003	0.004	30	2
0.005	0.006	50	
0.006	0.008	70	
0.007	0.007	30	5
0.011	0.010	50	
0.016	0.013	70	
0.013	0.015	30	10
0.023	0.020	50	
0.032	0.025	70	
0.027	0.020	30	20
0.045	0.040	50	
0.063	0.060	70	
0.067	0.075	30	50
0.113	0.100	50	
0.158	0.125	70	
0.136	0.100	30	100
0.226	0.150	50	
0.316	0.200	70	

Specifications subject to change without notice.

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