

# Model GS-3100 Intelligent Radiometer

## PRODUCT SUMMARY

The GS-3100 Intelligent Radiometer with its own microprocessor represents a dynamic concept in instrumentation for optical radiation measurements. It has no adjustments - no dark current, no zero or high-voltage controls, no range switches, no displays, no indicators, no calibration controls and no shutter and time-constraint selection switches. It is simply a box with an on/off control.

The GS-3100 is computer controlled via a two-way RS-232 interface at rates up to 9600 baud. This unit reflects Gamma Scientific's extensive computer and light measurement experience.

It is designed to work with any of Gamma Scientific's detector assemblies, including photomultiplier and silicon.

The GS-3100 has complete logic and control circuitry for spectral and spatial scanning applications. It will also operate any of Gamma Scientific's NM Series digital holographic monochromators or its GS-2110A digital scanning telemicroscope.

By combining radiometer, microprocessor and scanning control together, the microprocessor can perform more functions more efficiently and can simplify combined operations such as scanning and autoranging.

Functionality, the intelligent radiometer contains an electrometer amplifier, a high-voltage power supply, an A/D and D/A converter, and a microprocessor. This firmware is in machine code, which greatly speeds up system operation. In addition, the digital scan control, calibrator and shutter-control circuits are included.

A simplified command structure allows the GS-3100 to be easily and rapidly controlled by the host computer. Because all radiometer functions are included in this command structure, the host computer's software can tailor test routines to any specialized measurement requirements.



### FEATURES

- *Electronic dark-current suppression*
- *Zero-offset subtraction*
- *Autoranging decisions*
- *Signal averaging*
- *Self-calibration of:*
  - Wavelength scale (spectral)*
  - Displacement scale (spatial)*
  - Amplitude scale*
- *Setting photomultiplier high voltage*
- *Amplitude correction based on internal reference lamp*
- *Shutter and filter insertion*



**GAMMA SCIENTIFIC**

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## SPECIFICATIONS

<b>Electrometer Amplifier</b>	
Sensitivity	1 nA full scale
Linearity	(Single Range) $\pm 0.1\% \pm 1$ count
Zero Drift	$\pm 1$ count after 20-minute warm-up. 0 to 50° C (after warm-up) $\pm 0.01\%$ per °C Normalized by internal microprocessor.
Dark Current Suppression	Greater than 11 nA. Controlled and normalized by internal microprocessor.
Dark Current Suppression Stability	0 to 50° (after warm-up) $\pm 0.01\%$ per °C of full scale.
Time Constant	10 msec
Automatic Ranging	Under microprocessor control. 4 electrometer ranges: 1
<b>High Voltage</b>	
Range	300 to 1650 volts. Controlled by internal microprocessor.
Voltage Variation with temp. (0 to 50 °C)	$\pm 0.06\%$ °C
Voltage Monitor Stability with temp. (0 to 50°C)	$\pm 0.35\%$ over whole range.
Line Regulation from 105V to 125V	@ 300 volts $\pm 0.02\%$ max. @ 1650 volts $\pm 0.02\%$ max.
<b>Microprocessor</b>	
I/O	RS-232C
Baud Rate	110 to 9600
<b>CAL Circuit</b>	
Line Regulation	Better than 0.01%
Temperature Regulation (0 to 50°)	$\pm 0.01\%$ per °C
Warm-up Time	Less than 30 seconds from turn on. Operated by internal microprocessor.
Electric Shutter	Microprocessor controlled
<b>General</b>	
Line Voltage	105/125 VAC and 210/250 VAC 50-60Hz.
Temperature Range	0 to 50 °C
Weight	30 lbs.
Length	18 inches
Height	7.5 inches
Width	18 inches



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