



Trusted
radiation
protection.

897A

Series Geiger-Mueller (GM) Detectors

The 897A Series GM Detectors are designed to detect ionizing radiation utilizing the pulse conversion technique. Although all the 897A Series GM Detectors are functionally identical, the detectors differ in the tube type employed, sensitivity, and housing. The GM detector has preamplifier circuitry located in the interior of the overall protective housing. The preamplifier provides pulse conditioning and cable driving capabilities to match the input characteristics of the ratemeter.

Applications

Area monitoring is used for the detection of X-ray or gamma radiation in a selected area. The monitor should be used in any location where personnel may be exposed to an adverse amount of radiation. Applications include nuclear reactors, accelerators, hot cells, irradiators, and any area where radiation sources are handled. These monitors can be used as single

channel monitors or grouped together as a multichannel area monitoring system.

Technical specifications

Physical

Dimensions

7.133 long x 3 in \varnothing
(181 x 76.2 mm)

Weight

1 lb (0.45 kg)

Housing material

Aluminum: 897A-210/220/230
Stainless steel: 897A-211/221/231

Fill gas

Halogen quenched

GM tube life expectancy

Exceeds 1000 hours at full scale

Electronics life expectancy

Approximately 10^5 rads

Wall thickness

- 40 mg/cm²: 897A-210/211
- 100 mg/cm²: 897A-220/221/230/231

Environmental

- Operating temperature: 32 °F to 122 °F (0 to 50 °C)
- Storage temperature: 32 °F to 122 °F (0 to 50 °C)
- Relative Humidity: 0 to 100 %

Maximum external pressure

30 psig



Key features

- For use with the 955A GM Area Monitor
- 3 ranges available. Each covers 5 decades from 10^{-2} to 10^5 R/h
- Energy response: +15 % for 80 keV to 1.5 MeV
- Preamp integral with detector
- Seismically qualified
- Life expectancy: approximately 105 rads
- All power supplied from ratemeter
- Ratemeter may be remotely located up to 1700 feet
- Single cable between ratemeter/detector
- 8 μ Ci ³⁶Cl check source

Electrical

Radiation Detected

Gamma rays

Range

- 0.01 to 10³ mR/h: 897A-210/211
- 0.1 to 10⁴ mR/h: 897A-220/221
- 1 to 10⁵ mR/h: 897A-230/231

Typical Energy Dependence

± 15% from 80 keV to 1.5 MeV

High Voltage Input

- 600 V dc: 897A-210/211/220/221
- 550 V dc: 897A-230/231

Plateau Length

- 100 V dc: 897A-210/211
- 150 V dc: 897A-220/221/230/231

Dead Time

- 45 microseconds: 897A-210/211
- 15 microseconds: 897A-220/221
- 11 microseconds: 897A-230/231

Check source type (all)

8 μ Ci, ³⁶Cl

Check source power

+15 V dc @ 20 mA

Power requirements

+15 V dc or +10 V dc/115 @ 150 mA max load (supplied from ratemeter)

Unterminated output signal

+10 V dc square wave

Output coupling

DC

Output impedance

50 ohms

Maximum field cable length

1700 ft (518 m)

Options

Model 848-8 Field Test Source—source: ¹³⁷Cs; activity: 100 mCi (nominal), with adapter

Ordering information

Model

897A-210: Geiger-Mueller (GM) Detector—Aluminum 40, mg/cm²

897A-220: Geiger-Mueller (GM) Detector—Aluminum, 100 mg/cm²

897A-230: Geiger-Mueller (GM) Detector—Aluminum, 100 mg/cm²

897A-211: Geiger-Mueller (GM) Detector—Stainless Steel, 40 mg/cm²

897A-221: Geiger-Mueller (GM) Detector—Stainless Steel, 100 mg/cm²

897A-231: Geiger-Mueller (GM) Detector—Stainless Steel, 100 mg/cm²



6045 Cochran Road
Cleveland, OH 44139-3303 U.S.A.

For more information, please contact us at:

Phone: 440-542-3628

Email: Sales@Victoreen.com

Web access: www.victoreen.com

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