

## HIGH RANGE UNDERWATER MONITOR

- Model # CP-MU-D1 (includes DMU-1 probe to 10<sup>6</sup>R/hr)
- Model # CP-MU-D1000 (includes DMU-1000 probe to 10<sup>3</sup>R/hr)
- Model # CP7-MU-D1 (includes DMU-1 probe to 10<sup>7</sup>R/hr)

### FEATURES:

- FOUR LINEAR RANGES UP TO 1,000,000 R/hr with DMU-1
- COVERS 100 mR/hr to 1,000 R/hr with DMU-1000
- WATERPROOFED DETECTOR SYSTEM
- STABLE AND DEPENDABLE
- FAST RESPONSE
- LIGHTWEIGHT AND PORTABLE
- 6 AA CELL
- CP - MU - 7 READS UP TO 10<sup>7</sup> R/hr
- 2-WAY SERIAL PORT-STANDARD



•**APPLICATION:** Because of the extremely high range capability of this instrument and the waterproof construction of the ion chamber detection system, underwater monitoring (and in hot cell monitoring) of Reactor Spent Fuel Elements, Reactor components and dose rate measurements of irradiated objects can now be made easily and at the ranges called for at moderate cost.

**GENERAL DESCRIPTION:** The Underwater Monitor consists of a lightweight single 6 AA cell operated, solid state and MOSFET driven electronic package (Model CP-MU) coupled to a High Range DMU-1 or Mid Range DMU-1000 Detector System consisting of 60 feet of special low noise cable with a waterproof coupling to a 8" long x 1/2" diameter aluminum tube containing an ion chamber (in Model DMU-1) or 7-1/2" long x 5-3/4" diameter aluminum ion chamber (in Model DMU-1000). A "handle" consisting of 8 foot sections of free draining 5/8" stainless steel tubing is available as an option. Up to 16 feet may be used with DMU-1 in any position. Twenty-four feet or more may be used vertically with DMU-1 or DMU-1000 chamber downward.

Four linear ranges on the electronic package provide readings up to 1,000,000 R/hr. DMU-1000 and DMU-1 probes, when used with CP-MU readout, extend the sensitivity of instrument so that levels of 100 mR/hr to 1 million R/hr can be read. Both the high range and low range probe can be used with the same readout. The scale multiplier for the low range probe is 1 R/hr and for the high range probe is 1 kR/hr. A "set" position on the Range Switch permits the meter to be adjusted to read zero by the zero adjust knob.

•Calibration is fully adjustable.

The instrument case is made of drawn aluminum with epoxy lettering for easy decontamination. Case openings are sealed by gasket or screw closure for protection of electronics.

•A reliable MOSFET electrometer circuit and improved solid state electronics assure long uninterrupted service. Mechanical switching of the high impedance circuit has been eliminated.

•Protection against influence by magnetic fields up to 60 gauss has been built into the instrument. A top handle and four rubber feet achieve a more stable base with no loss of display visibility.

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## HIGH RANGE UNDERWATER MONITOR

- Model # CP-MU-D1 (includes DMU-1 probe to 10<sup>6</sup>R/hr)
- Model # CP-MU-D1000 (includes DMU-1000 probe to 1000<sup>3</sup>R/hr)
- Model # CP7-MU-D1 (includes DMU-1 7 probe to 1000<sup>7</sup>R/hr)

### SPECIFICATIONS:

#### Ranges:

#### CP-MU Ranges:

DMU-1000	0.1 R/hr	to 1000.0 R/hr
DMU-1	0.1 KR/hr	to 1000.0 KR/hr

#### CP-MU-7 Ranges:

DMU-1000	1R/hr	to 10,000 R/hr
DMU-1	1KR/hr	to 10 <sup>7</sup> R/hr

#### •Model Numbers:

CP-MU: CP-MU-D1 electronic package plus DMU-1 Probe with 60-foot cable.

CP-MU-D1000: Same electronics with DMU-1000 Probe and 60-foot cable.

For full 100 mR/hr to 10<sup>6</sup> R/hr coverage, specify CP-MU-D1 plus DMU-1000 probe

•**Accuracy:** ± 15% F.S.

•**Calibration:** Cs-137 Gamma (Co-60 Optional)

•**Time Constant:** 2 seconds fast, 12 seconds slow

•**Temperature Range:** -30°C to +57°C

•**Drift:** At room temperature - less than 0.5% per °C

•**Battery:** 6 "AA" cells, carbon-zinc, alkaline, Li or nimh type batteries can be interchanged without instrument adjustments. Use alkaline batteries below 0°C

•**Battery Check:** Pushbutton with LED indicator

•**Range Adjusts:** 4 internal screwdriver adjusts

•**Zero Adjust:** Knob

•**MOSFET Protection Circuit:** Prevents damage to MOSFET when coupling or decoupling detector system.

•**Serial Port:** 2 way RS-232 communications for data collection or remote computer readout.

•**Dimensions:** 6-1/2" long x 3-1/2" x 9" tall including handle

•**Weight:** electronics 28 oz.

•**Detector System:** DMU-1 - Sealed Air ion chamber 0.5" dia x 8" long. Internal 1.0 cc

•**Detector System:** DMU-1000 - Sealed Air ion chamber 5.75" dia x 8" long. Internal 1000 cc

•**Readout:** LCD 8 digits.

•**Indicator Lamp:** Green LED 1 pulse/sec R/hr. Red Over-range Indicator

•**Electrometer:** Solid State MOSFET input

•**Electronics** A-D converter LCD drivers

#### Options:

Readout in Si units: Sv and Sv/h

WIN-W -- RS-232 Software

Cable length 100ft (30 meters)

Alarm settable visual alarm LED

Lighter weight chamber is MODEL # DMU-1000LW, non-submersible probe and optional wand/handle.



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