



MIRION
TECHNOLOGIES

Avior® 4000 Desktop Dose Rate and Survey Meter

Features

- Measurement of contamination and dose rate
- Rugged and easy to use
- Customizable alarm setpoint
- Scaler/Timer mode
- Backlit digital display
- Analog-like bargraph with digital display
- Back-up built-in rechargeable batteries
- Supports CSP™ probes
- Fast bargraph response
- Easy to decontaminate
- Upgradable product through firmware upgrade

Description

The Avior® 4000 is a versatile alarm desktop dose rate and survey meter. Its large range of associated probes covers numerous applications.

The Avior 4000 is a standalone and resistant device adapted to various environments such as laboratories,

industrial facilities, and open air yards. It is widely used for alpha and beta contamination (hands, clothes, worktops) and nearby nuclear reactors. It is also used for gamma irradiation measurements in nuclear reactors, accelerators, irradiators and Curie therapy instruments.

The Avior 4000 integrates rechargeable batteries to prevent any measurement outage when performing critical controls. It also allows the use of the Avior even when disconnected from its mains power source, in places such as working boundaries.

With its metal housing and rugged keyboard, Avior 4000 is built to resist harsh environment conditions.

Avior 4000 brings key features including a fast-reacting digital readout and analog bargraph, customizable alarm set points, dependent on the probe's features, with many measurement units: CPM, CPS, DPM_{eq} , $DPM_{eq}/100\text{ cm}^2$, rem/h, R/h (depending on the CANBERRA Smart Probe (CSP) connected), and Scaler/Timer mode with 1 to 1000 seconds acquisition time.

With CANBERRA Smart Probes, key components of hardware circuitry (high voltage, amplifier, discriminator, etc.) are located directly inside of the probe's housing rather than the host survey instrument. Also, the intelligence associated with controlling those components is located in the probe – that is, control and storage of key parameters, settings, calibrations, probe ID, alarm settings, etc. Thus the probe is a fully integrated subsystem taking and transmitting the measurement to the instrument, which is used for display.

With high voltage and digitization of the data occurring in the probe rather than the instrument, measurement quality is no longer dependent on cable quality as with older analog systems. Also, the probes can be plugged in "hot" without powering down the instrument – the instrument immediately recognizes the probe and automatically switches measurement mode to the mode required for that specific probe. Calibrations and QA measurements can be performed directly with the probe, without even using the instrument, by connecting the probe to a computer with calibration software, allowing the Avior 4000 to remain deployed in the field.



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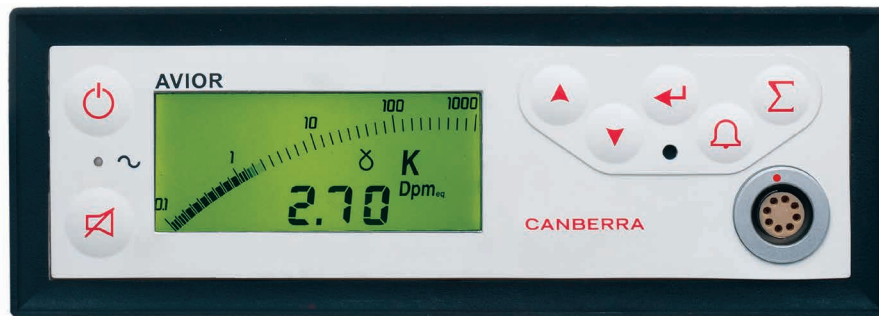


Figure 1: Avior 4000 front panel.

FUNCTIONS

Easy to Use

As soon as the Avior 4000 is powered on, it automatically detects the probe connected, and is ready for measurement.

Avior 4000's internal buzzer enables audio control of radioactive material by indicating the radioactivity level. It can be muted when the application requires it.

Customizable Alarm

The Alarm set points are accessible after entering an access code to prevent any accidental change.

Set points are chosen individually for each probe within 10 preset values which can be changed with CSPS™ and with the appropriate USB cable; alarm setpoint is stored in the probe itself.

Scaler/timer mode is especially useful for measurements of low activity sources, or alpha measurements. The preset time varies between 1 and 1000 seconds.

Power Supply and Battery Management

Avior includes a backup battery that allows usage away from any power source.

A power LED indicates for up to 40 hours if the Avior 4000 is powered by mains and battery is fully charged or if powered by mains and batteries is charging.

When the battery charge is low, the battery pictogram flashes on the LCD screen. If the battery level is too low the Avior automatically shuts down gracefully to prevent false measurement.

A Ruggedized Survey Meter

Avior 4000 has been built to resist harsh environment constraints. Its robust metal housing ensures resistance to shock. Its silicon rubber keypad provides excellent tactile control and compression recovery, shock and vibration absorption and superior resistance to extreme heat and cold unlike classical keypads.

AN INTEGRATED SCALER/TIMER

Avior 4000 incorporates a Scaler/Timer mode which allows you to select the integration time between 1 s and 1000 s. It displays the average value on the selected period of time and gives the result in the pre-selected unit (CPM, DPM, DPM/100 cm², or R/h).

OPTIONS

Avior 4000 can be fixed on a pedestal for use as a control survey meter. For example, at exits of working areas.

The Avior 4000 pedestal is 1 m high, and incorporates a hook for probes. Its base ensures efficient stability.



Figure 2: Avior 4000 on its pedestal with CSP probe support (option).

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Example of Compatible Probes for Avior 4000

Name	Emitter Displayed	Detector Size	Units Displayed						Cable		Alarm setting ¹	
			CPM	CPS	DPM _{eq}	DPM _{eq} /100 cm ²	rem/h	R/h	Straight 1.5 m 77336	Straight 20 m 80653		
CSP3	SG 1R	γ, X	1" Ø x 1"	•	•				•	•	•	I
	SG 2R	γ, X	2" Ø x 2"	•	•				•	•	•	I
	SAB 100	α, β	100 cm ²	•		•	•			•	•	I
	SA 100	α	100 cm ²	•		•	•			•	•	I
	SB 100	β	100 cm ²	•		•	•			•	•	I
	SA 20	α	20 cm ²	•		•	•			•	•	I
	SB 20	β	20 cm ²	•		•	•			•	•	I
	SX 2R	X	1.5" Ø x 3 mm	•		•	•			•	•	I
	SPAB 15	α, β	15 cm ²	•		•	•			•	•	I
Other	SFDE	γ	Dose rate					•	•	•	•	P
	SHDE	γ	Dose rate					•	•	•	•	P
	STHF-R	γ	Dose rate					•	•	cf. ²		P
	STHD	γ	Dose rate					•	•	•	•	P
	SABG 15	α, β, γ	15 cm ²	•		•	•			•	•	I
	SB29	α, β, γ	6 cm ²	•						•	•	P

¹ P = Alarm value set per probe, stored in Avior 4000.

I = Individual alarm value per probe chosen among 10 predefined values, stored in the probe.

² For STHF-R, cable provided with probe connects directly to CSP input; STHF requires adaptor EM39987.

³ Non-exhaustive list of compatible probes.

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Specifications

NUCLEAR

- UNITS DISPLAYED (depending on probe) – CPM, CPS, DPM_{eq}, DPM_{eq}/100 cm², rem/h, R/h.
- ALARM THRESHOLD – 10 values for each unit to display, stored in probe memory. Each value is editable via PC setup software.

RESPONSE TIME

- As fast as 1/4 s for bargraph display depending on probe connector, on a four decades semi-logarithmic scale.
- 1 s for digital readout display.

ERGONOMIC

- DISPLAY – Large LCD display with constant backlight.
- Alarm –
 - Audible piezoelectric buzzer sound.
 - Visual – Flashing alarm pictogram.
- KEYBOARD – Ruggedized keyboard with 7 buttons: power, audio mute, up (increment), down (decrement), enter, alarm mode, integration mode.
- OPERATING CONTROLS – Complete and automatic self test when switching on. Periodical control of main functions when in use.

ELECTRICAL

- Buffer rechargeable batteries.
- Built-in charger.
- Universal Mains power input, 100–240 V ac, 50/60 Hz. Rear-panel IEC-type connector. Cordset included.
- Display of remaining charge when switching on; permanent test of voltage, display of 'low battery' pictogram when battery life is <10%.
- BATTERY LIFE – >40 hours with external probe.

MECHANICAL

- HOUSING – Metal frame and painted duralumin covers.
- WEIGHT – 1.8 kg (3.9 lb).
- DIMENSIONS – 2.4 x 8.4 x 8.9 in. (L x W x H).
- CONNECTOR FOR EXTERNAL PROBES – S 104 A066 137+ Fisher socket (CSP).

ENVIRONMENTAL

- OPERATING TEMPERATURE LIMIT – -10 °C to +50 °C (14 °F to 122 °F).
- STORAGE TEMPERATURE – -25 °C to +60 °C (-13 °F to 140 °F).
- INGRESS PROTECTION – IP 40.

NORM

- Built to comply with ANSI 42-17A – Health Physics Instrumentation.

ORDERING REFERENCES

- Avior 4000 – EM83213.
- Pedestal for Avior – EM18364.
- CSP Probe Support for Pedestal – EM86510.
- Carrying Case for Avior – EM18310.
- Cable (CSP, 1.5 m length) – EM77336.
- Cable (CSP, 10 m length) – EM85920.
- Cable (CSP, 20 m length) – EM80653.
- CSPS-R – EM80642.
- PC/Meter Cable – EM88940.
- PNK-R 900 Pancake Dongle – EM83118.



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