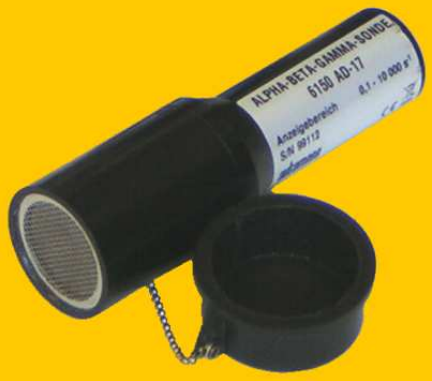
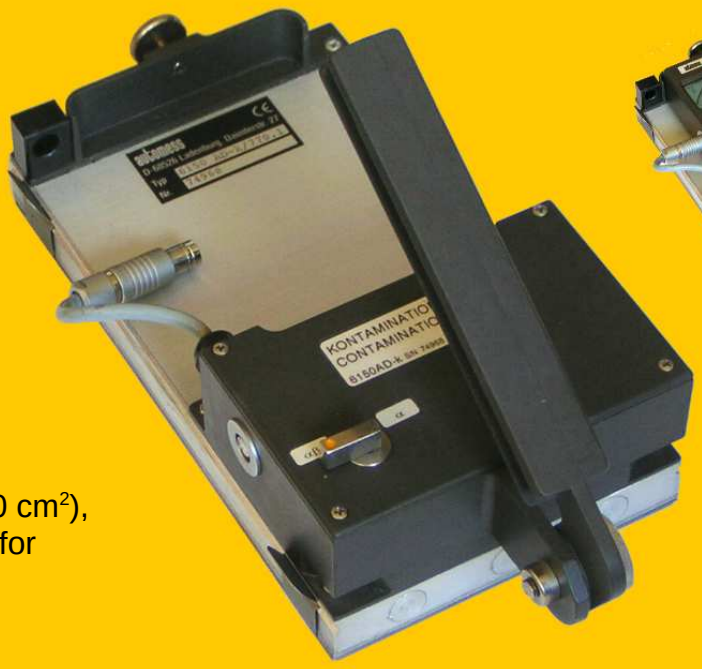
Automation und Messtechnik GmbH

6150AD-17

For small objects
(sensitive area
6.2 cm²)
or wipe tests





6150AD-k

For large objects
(sensitive area 170 cm²),
low detection limit for
alpha radiation

Contamination Monitoring Probes 6150AD-17 6150AD-k

External Probes for the Dose Rate Meter 6150AD® for the Detection of Surface Contamination

- **Detector:**
  6150AD-17: end window GM counter
  6150AD-k: sealed proportional counter
- **6150AD-k: two operating modes to select from: »Alpha« and »Alpha-Beta-Gamma«**
- **Each probe gets all the benefits from the 6150AD:**
  - **Automatic range selection**
  - **Smart time constant**
  - **Simultaneously measures current value, average value, and maximum value of pulse rate, as well as total pulse number**
  - **Alarm thresholds for both pulse rate and pulse number including one freely programmable threshold each**
- **Power supply through probe cable, does not require a battery of its own, low current consumption**

6150AD® is our trademark (German registration number 303 55 582)

The probes serve to detect surface contamination in conjunction **with any 6150AD model.** If connected to the 6150AD, the 6150AD automatically selects the unit S^{-1} (pulses per second, counts per second). All functions as described in the 6150AD's data sheet remain available, where pulse rate and pulse number take the place of dose rate and dose, respectively.

The indication in S^{-1} needs to be multiplied by a calibration factor to convert it into surface related activity (Bq/cm^2). The calibration factor depends on the type of radionuclide. The radionuclide needs to be known or assumed. The probes cannot serve to determine the nuclide. Calibration factors for some nuclides can be found below in the technical data table, and many others are specified in the detailed operating manual.

The detector of the probe **6150AD-17** is a GM counter with a circular end window. With the protective cap removed, it is sensitive to alpha, beta, and gamma radiation thereby allowing to monitor surface contamination including wipe surveys. With the protective cap removed, the probe is also suited to detect (not to measure quantitatively) low energy photon radiation (e.g., »soft« X-rays) down to energies of a few keV.

The probe **6150AD-k** uses a sealed proportional counter which does not require refilling or flushing from external gas reservoirs. Just like the probe 6150AD-17 it is sensitive to alpha, beta, and gamma radiation, however makes surveying larger areas much easier because of the much larger sensitive area. Moreover, it provides an electronic switch to the operating mode »alpha« where only alpha radiation is recognised and detected very sensitively because the background is much lower in this mode. A removable discriminator plate (stainless steel, 1 mm) allows to distinguish between beta and gamma radiation. The handle has an adjustable joint which can be locked to the most convenient orientation. The handle can be extended, e.g. to survey the floor comfortably in an upright position (the extension tubes are optional accessories).

Please note that the probe **6150AD-17** requires a **probe cable** which is not included and has to be ordered separately. The probe 6150AD-k already has a short cable fixed to it. It only requires an additional cable if it shall be operated remotely from the 6150AD. The following standard cable lengths are available: 1.25m / 3m / 5m / 10m / 20m / 75m / 100m.

TECHNICAL DATA

	6150AD-17	6150AD-k
Detector	end window tube LND 7231 or equivalent, not energy compensated, gamma sensitivity at Cs-137 approximately 5600 pulses per µSv	proportional counter, sealed, does not require external gas reservoirs, gamma sensitivity at Cs-137 approximately 180 000 pulses per µSv
Tube window	dimensions: diameter 2.8 cm, that is 6.2 cm^2 in area. Material: mica, areal density 1.5 - 2 mg/cm^2	dimensions: 17 cm x 10 cm, that is 170 cm^2 in area. Material: aluminium foil, areal density 2.8 mg/cm^2
Range	0.01 S^{-1} to 10 kS^{-1}	0.01 S^{-1} to approx. 80 kS^{-1}
Operating modes, selectable	-	1. »α« (alpha only) 2. »αβγ« (alpha-beta-gamma)
Indication at natural background	approx. 0.07 S^{-1}	»α«:approx. 0.05 S^{-1} »αβγ«:approx. 6 S^{-1}
Calibration factors for some selected radionuclides	Am-241: 1.3 $(Bq/cm^2)/S^{-1}$ C-14: 2.5 $(Bq/cm^2)/S^{-1}$ Sr-90(/Y-90): 0.3 $(Bq/cm^2)/S^{-1}$	Am-241: 0.074 $(Bq/cm^2)/S^{-1}$ C-14: 0.18 $(Bq/cm^2)/S^{-1}$ Sr-90(/Y-90): 0.011$(Bq/cm^2)/S^{-1}$
Detection limits for some selected radionuclides	Am-241: 0.17 Bq/cm^2 Co-60: 0.21 Bq/cm^2	Am-241 in »α«: 0.010 Bq/cm^2 Co-60 in »αβγ«: 0.18 Bq/cm^2
	using the 6150AD's average value indication further decreases the detection limit	
Temperature range (test conditions)	-30°C to +50°C (Cs-137 gamma radiation free in air)	-15°C to +50°C (tested with Am-241, C-14 and Sr-90)
Humidity & pressure	0 to 95% relative humidity, atmospheric pressure 60 to 130 kPa (600 to 1300 mbar)	
Geotropism	none (no change of response as a result of gravitational effects)	
Power supply	4.75 Volt out of Dose Rate Meter 6150AD	
Battery life including the 6150AD	approx. 650 hours	approx. 300 hours
	at low count rates, with the 6150AD's illumination off, with alkaline battery 6LR61	
Dimensions	diameter 40mm, length 132mm	210 x 120 x 90 mm^3
Weight	~ 180 g incl. protective cap	~ 1.7 kg incl. 6150AD
Probe cable	max. 100 m	max. 100 m
Optional accessories	Holder 817.1.1-10 to operate the probe 6150AD-17 at the handle extension 770.1-60 of the probe 6150AD-k	Handle Extension 770.1-60 Tube Extension 770.1-70 Wall Holder 770.1-80 Source 6708 (Am-241 + Sr-90)

- SUBJECT TO CHANGE WITHOUT NOTICE -