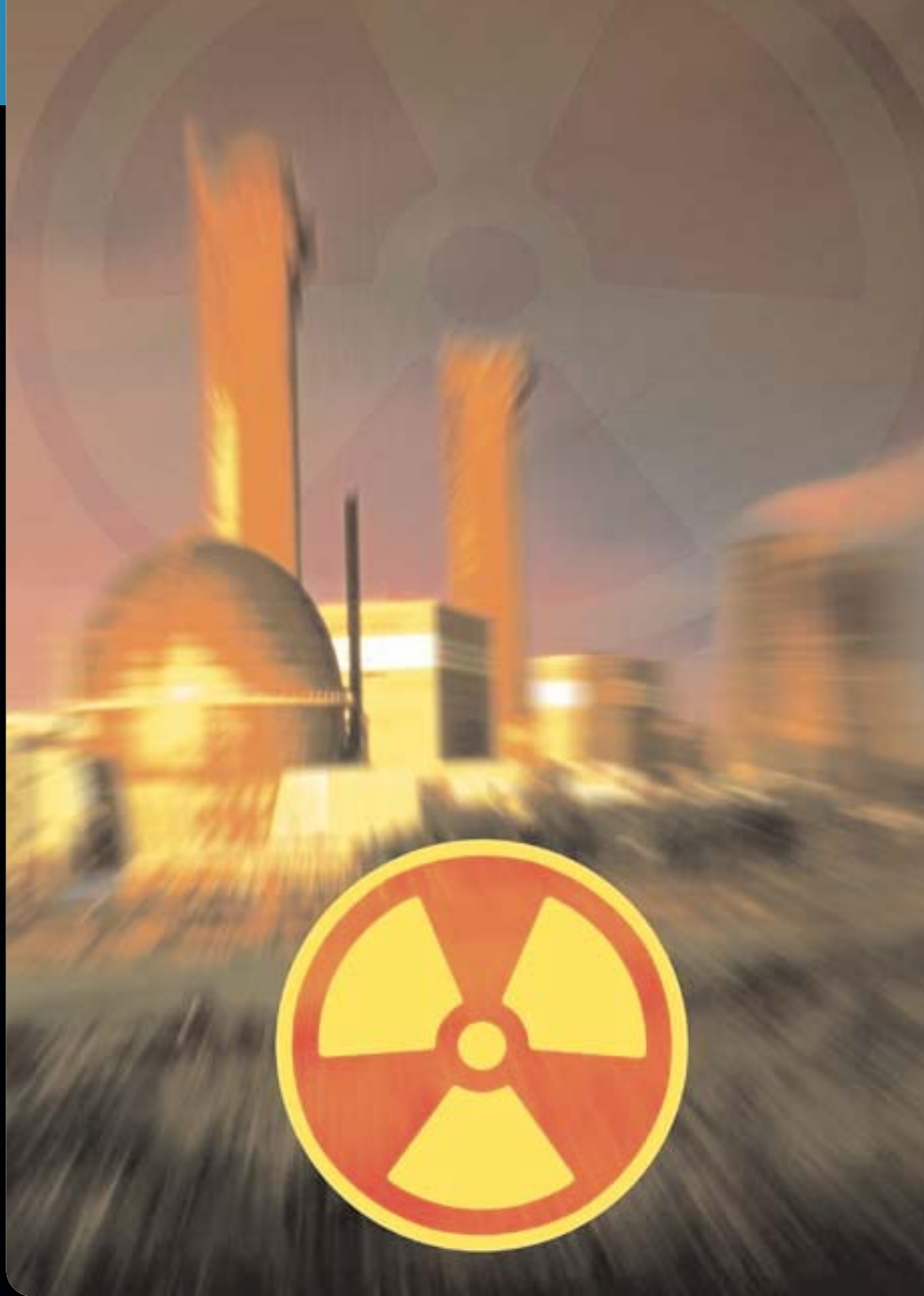


Probes Selection Guide



Thermo Electron Corporation offers a complete line of instruments and probes for a variety of radiation measurement, detection and identification applications.

With Thermo, you'll find the innovation, heritage and excellence you've come to know throughout the Thermo portfolio of instrumentation.

About Thermo Electron Corporation

Thermo's Radiation Measurement and Security Instruments business offers a wide range of radiation detection and security instrumentation covering everything from simple Geiger counters to integrated large scale monitoring systems. These instruments are used to actively monitor ambient environmental conditions in and around nuclear facilities, monitor nuclear workers for contamination and track their radiation dose.

Our technologically advanced industrial line is designed to prevent orphan radiation sources from entering the metals recycling process at scrap yards or steel mills. In addition, the same instruments protect foundries and landfills. A well-established derivative of these systems can be found at border crossings, seaports, freight shippers and military bases guarding against smuggling of nuclear materials by terrorists. We also offer a complete line of explosives detection equipment. Our instruments are recognized world-over for their high quality and reliability in protecting lives and property, while ensuring a safer and cleaner environment for everyone.

Radiation detection instrumentation, security products and custom-designed shielding products from Thermo Electron Corporation represent the most complete line of quality products and systems on the market today. Thermo's experience and equipment portfolio uniquely positions us to deliver the critical equipment necessary to address customer requirements for radiation management.

For more details on Thermo's Radiation Measurement and Security solutions, or any of our products and services, consult www.thermo.com/rmp.

How to Use This Guide

Matching probes are arranged by radiation type (α , β , γ or η) on pages 6 to 26. Accessories to complement your selection, such as sample holders and cases, are on page 27 and 28. Cables are on page 28.

On each probe listing, you will see the most commonly used instruments highlighted in bold red type, with members of the same probe family in bold.

Table of Contents

Portable Meters	
ASP-2/2e	.2
E-600	.2
Electra/Selectra	.3
Delta 5	.4
RM-25	.4
Surveyor 50	.5
Surveyor 2000/2000e	.5
GM Detector Probes	
BP1/4A	.6
GP20 Family	.6
GP21 Family	.7
HP-190A	.7
HP-210	.8
HP-220A	.8
HP-270	.8
HP-290	.9
HP-360	.9
IGP24A/Sv	.9
MC71	.9
Mini 6-80 and 6-81	.9
PGM/ ECPGM	.10
SL and SLR	.10
SWGMM	.10
Neutron Detector Probes	
FN1 and TN1	.11
NRD	.11
SWENDI-2	.11
Scintillation Detector Probes	
Alpha	
A50L	.12
AC-3-7 and AC-3-8	.12
AP2 Family	.13
AP4 Family	.13
AP5 Family	.14
AP6 Family	.14
FLP3A, FLM3A, Delta5	.15
HP-380A	.15
Alpha-Beta	
DP2 Family	.16
HP-380AB	.16
DP6 Family	.17
DP8A	.17
Beta	
BP4 Family	.18
BP7 Family	.18
BP13 Family	.19
BP17 Family	.20
BP19 Family	.20
HP-380B	.20
FLP3B and FLM3B	.21
Gamma	
LEG-1	.21
PG-2	.22
SPA-3	.22
SPA-6	.22
SPA-8	.23
SPA-9	.23
Sodium Iodide	
G1 Family	.23
G5 Accessories	.24
G5 "FIDLER" Family	.24
GP13 Family	.24
PP1 Pipe Probe	.25
WP1 Wound Probe	.25
Gas Proportional	
HP-100CGS	.26
HP-330	.26
HP-370	.26
Miscellaneous	
Case: CCAL2	.27
Case: CCPL4 and CCPL8	.27
Detector Cables	.28
SH-4A	.28

ASP-2/2e



The ASP-2 combines user-friendliness, versatility and low cost into one rugged and dependable meter. This instrument is available in two models, the ASP-2 and the ASP-2e. The ASP-2e is identical to the ASP-2 baseline model but includes enhanced features such as integrate and

scaler operating modes plus pulse height analysis capabilities.

- Microprocessor Based
- Dual Analog/Digital Display
- Computer Setup and Calibration
- Alarm Annunciation
- Selectable Units of Measurement
- Built-in Speaker
- Wide Range High Voltage
- Dead time Correction

E-600

Multi-purpose survey meter accepts all probes featured in this catalog.

- Accepts "Smart" and conventional GM, scintillator and proportional detectors
- Custom backlit LCD display with analog and digital presentation
- Multiple operating modes
- Background subtraction capability
- Data Logging (500 data points)
- Built-in pulse height analysis - 3 channels
- Built-in speaker

- Audio and visual alarms
- Real time clock
- Time saver PC assisted calibrations
- Rugged construction
- Dead time correction



Smart Probes

Thermo Electron offers all of its probes in a "Smart" configuration for use with the E-600. Smart probes include a memory device which contains all pertinent calibration and operating criteria.

Connection of a smart probe to a compatible instrument automatically sets the high voltage, threshold settings, units of measurement, response times, over range limits and other defining characteristics.

Smart probes permit rapid detector replacements or swapping of probe types in the field. This technique also facilitates a more efficient means for calibrating instruments and probes.

Smart probes may be ordered by using the prefix "S" to many Thermo probe model numbers, i.e. **SHP-270**. Existing Thermo probes may also be converted to the smart configuration by sending them in to the Thermo Service Department.

Electra/Selectra

Electra

An advanced microprocessor-based ratemeter with computer-aided responses to radiation, the sturdy, well-balanced Electra is capable of improving the performance of all compatible doserate or contamination probes. Controls: audio, backlight, select radiation channel, upper energy threshold, integrate, background subtract, and alarm thresholds.

Also 'enable/disable' — to match the instrument to the complexity of the task or the proficiency of the user. Settings for external probe: HV, Dead time correction, overload current, units and efficiency factors. Connectors: probe, mains/charger, headset.

The Electra is a digital, microprocessor based, rate meter which is compatible with most GM and scintillation survey probes, and can be calibrated with an external probe for direct readout of dose rate or count rate, in a range of units. Readings are displayed both numerically and on a bargraph, which autoranges across seven decades. Intelligent software discriminates between true rate



changes and insignificant fluctuations. Digitally controlled HV and preset parameters provide outstanding consistency between instruments: the setup does not drift and instruments with identical setups are directly interchangeable.

Selectra

The Selectra includes all the Electra's features plus the extra feature of automatic setup. The setup is stored in a memory chip that is fitted to the probe and read by the Selectra at switch-on. The Selectra also has a 'Supervisory' mode to reprogram the probe's memory chip.

The connecting cable forms part of the upgraded probe.

- Electra/Selectra
0.1 cps to 100 kcps
1 cpm to 1000 kcpm
- HV: 400–1400 V for resistive loads $\geq 66 \text{ M}\Omega$ in value

Intelligent Probes

Intelligent Probes offer the same capability of smart probes but are not compatible with the E-600.

Smart probes may be ordered by adding the prefix "I" to many of Thermo's probe model numbers, i.e. **DP2/4B** becomes the **IDP2/4B** when it is intelligent for use with the Selectra

The Selectra models feature automatic probe setup when used with our "I" style probes.

Delta 5



The Delta 5 has similar specifications to the Electra but is optimized for benchtop and floor monitor use. Available with many different probe holders.

RM-25

The Model RM-25 is a versatile microprocessor-based radiation rate meter, which may be connected to a variety of different radiation detectors to display the activity levels and provide alarm capability. The unit is AC powered with optional battery back-up to facilitate either bench-top or portable applications.

- Computer Setup and Calibration
- Variable High Voltage
- CPM or CPS Scales
- Dead time Correction
- Rugged Construction
- Low Cost
- Works with GM, Scintillator or Proportional type detectors



Surveyor 50



Durable and easy to service, with a fixed 900 V supply for an external probe, these Surveyors have either 3 exposure ranges or 3 count rate ranges, audio switch, NV and battery checks with Dead time compensation and anti-saturation circuitry. There is an audible 'click' for each signal detected and an alarm if over-scale signal rates occur. Simple analogue

meter usable with any 900 V GM probes. A rate meter with a fixed 900 V supply for an external probe and either 3 exposure ranges or 3 count rate changes.

Surveyor 50 Ranges

- 0–0.5 mR/h 0–600 cpm
- 0–5 mR/h 0–6000 cpm
- 0–50 mR/h 0–60,000 cpm

Surveyor 2000/2000e

Surveyor 2000 is compact, with dose rate and count rate scales and controls for response time and audio. X-ray and gamma ray exposures are measured by an internal GM detector, and alpha, beta, X- or gamma count rates using a suitable external probe operating at 900 V. High voltage check, anti-saturation and Dead time compensation are included.

The Surveyor 2000 is scaled in count rate and in exposure for the SWGM probe. Instruments scaled in microsieverts are also available

Surveyor 2000e

Exposure accuracy within 10% (per NRC Reg. Guide 10.8). Meets or exceeds 10 CFR35 for nuclear medicine. For use only with ECPGM Probe for energy compensated ($\mu\text{Rem/hr}$ / $\mu\text{Sv/hr}$) readings.



Surveyor 2000 Ranges

- 0-0.2 mR/h to 0–2000 mR/h
- 0–240 cpm to 0–240,000 cpm

• Exposure accuracy within 10% (per NRC reg. guide 10.8) Meets or exceeds 10CFR35 for nuclear medicine

GM Probe Data										
Model number	App.	Sensitivity cpm/mR/h ¹³⁷ Cs	Energy comp.	Efficiency				Dead time (μs)		
				²³⁰ Th	Alpha ²⁴¹ Am(4π)	¹⁴ C	Beta(4π) ¹⁴⁷ Pm ⁹⁹ Tc ⁹⁰ Sr/ ⁹⁰ Y			
GP20B/R			Y							
GP21B/R										
HP-190A	Cont.	2500	N		6%	10%	25%	35%	200	
HP-210	Cont.	3600	N		25%	6%	15%	32%	50	
HP-220	Exp.	19 (⁶⁰ Co)	N						30	
HP-270	Exp.	1200	Y						100	
HP-290	Exp.	80	Y						100	
HP-360	Cont.	3600	N		25%	6%	15%	32%	50	
IGP24A/Sv		137	Y							
MC71			Y							
SL,SLR										
SWGGM		1600	—			—		15%	100	
PGM/ECPGM		3600		50%		10%	20%	30%	45%	50

BP1/4A



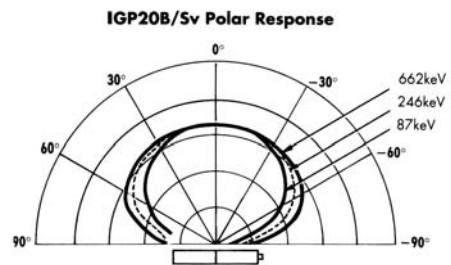
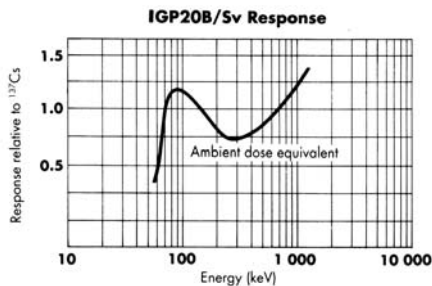
BP1/4A

A small, end window GM probe with an integral cable, designed to detect high-energy beta, x-rays

and gamma rays. Suitable for teaching and demonstration purposes and also used to pinpoint x-ray shield leakage. This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** Series.

- Connector: PET

GP20 Family



• Sv versions measure Ambient Dose Equivalent

• R versions measure exposure

• Energy range: 60 keV–2 MeV

• HV: 450 V

An energy compensated GM detector in a rugged light alloy housing, used for low-level surveys. Sensitivity is equivalent to industry types **MC71** and **TGM 5368**. This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** Series.

- Doserate range: 0.1 μSv⁻¹, (10 μR/h) to 200 μSv⁻¹, (20 mR/h) when used with the Electra or Delta5 with Dead time correction
- Operating HV: 450 V
- **GP20B/R**, **GP20B/Sv** connector, MHV

Energy range (KeV–MeV)	Upper range (R/h)	Window		Weight		Size	
		(mg/cm ²)	(cm ²)	(kg)	(lb)	(cm)	(inches)
60–2	20						
60–1.25	200			0.278	0.58		
		1.4–2	2.8 (dia)	0.156		3.9 x 12.4	1.54(dia) x 4.9
		1.4–2.	4.4 (dia)			16.5 x 8.9 x 9.7	6.5 x 3.5 x 3.8
30–6	300			2.6	5.75	15.2 x 7.6 x 10.4	6 x 3 x 4.1
30–1.3	3	30		0.142	0.31	3.5(dia) x 15.2	1.38(dia) x 6
30–1.25	60	90		0.057	0.12	2.9(dia) x 8.9	1.13(dia) x 3.5
		1.4–2	4.4 (dia)	0.2	0.5	24.8 x 6.8 x 7.0	9.75 x 2.68 x 2.75
80–1.25							
55–2							
				0.22	0.48		
		1.4–2	15.5	0.33	0.72		

GP21 Family

Similar to the GP20 but less sensitive, these are suitable for gamma dose rate survey from 1 $\mu\text{Sv/h}$ up to a maximum of 2 mSv/h. The range can be extended down to background levels by integrating the counts over a longer period. Their sensitivity is 2 cps per $\mu\text{Sv/h}$ (20 cps per mR/h).

An energy compensated GM detector in a rugged light alloy housing, for low/medium level surveys. This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** Series.

- Sensitivity: 2 s⁻¹ per $\mu\text{Sv h}^{-1}$ (20 s⁻¹ per mR/h)
- Ranges: 0.01–200 mR/h or 0.1–2,000 $\mu\text{Sv h}^{-1}$
- Operating HV: 500 V
- **IGP21B/R** and **IGP21B/Sv** are used with the Selectra

- **GP21 B/R** and **GP21 B/Sv** ranges
0.01–200 mR/h
0.1–2000 $\mu\text{Sv/h}$
- Energy range: 60 keV–1.25 MeV

HP-190A



This hand probe uses a thin end-window GM tube for detection of relatively low energy beta and provides a limited sensitivity to high energy alpha particles. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **Surveyor**, E-600, RM-25 or **Electra/Delta** series.

- Application: Alpha/Beta/Gamma surveys
- Operating voltage: 900 V \pm 50V
- Operating temp: -55 °C to 60 °C (-67 °F to 140 °F)
- Housing: ABS plastic
- Connector: BNC

HP-210

The Model HP-210 series hand probes provide a sensitive beta detector featuring a "Pancake" GM tube with a thin mica window. This series is designed for contamination surveys on personnel, table tops, floors, equipment, etc. These probes can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25**, Surveyor or Electra/Delta series.

Model **HP-210AL** - Aluminum housing with 1:1 window to background ratio 0.7 kg (1.5 lb)

Model **HP-210L** - Lead shield with 4:1 window to background ratio 1.9 kg (4.25 lb)

Model **HP-210T** - Tungsten shield with 4:1 window to background ratio 1.9 kg (4.25 lb)



- Application: Beta/Gamma surveys
- Operating voltage: 900 V \pm 50V
- Beta/Gamma efficiency: 22% ¹³⁷Cs, 16% ⁶⁰Co
- Operating temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector: BNC
- These replace the **APGM**, **LPGM** or **TPGM**

HP-220A



A gamma hand probe that uses a small halogen-quenched GM tube for detection of relatively high range gamma fields. The Geiger tube assembly is easily removable from the shield. Used for gamma surveys in high backgrounds and directional indications. This probe can be matched with Thermo's portable sur-

vey meters, such as the **ASP-2**, **E-600**, **RM-25**, Surveyor or Electra/Delta series.

- Operating voltage: 600 V \pm 50V
- Detector range: 300 R/h (with Dead time correction)
- Front to back shield ratio ² 9:1
- Operating temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Housing: Steel, chrome plated
- Connector: BNC

HP-270

This is an excellent general purpose GM probe, with energy compensation and a beta shield, making it the choice for most health physics applications. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25**, Surveyor or Electra/Delta series. See also the **SWGGM**.

- Application: Beta/Gamma exposure surveys
- Detector range: 3 R/h (with Dead

- time correction)
- Operating voltage: 900 V \pm 50V
- Wall material: Stainless steel
- Wall thickness: 30 mg/cm² (tube only)
- Operating temp: -40 °C to 63 °C (-40 °F to 146 °F)
- Housing: ABS plastic with sliding beta shield
- Connector: BNC



HP-290

This is a higher range GM probe with energy compensation, providing reliable exposure rate measurement. Used for Beta/Gamma exposure surveys. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25**, Surveyor or Electra/Delta series.

- Detector range: 60 R/h (with Dead time correction)

- Operating voltage: 550 V \pm 50V
- Wall material: Stainless steel
- Wall thickness: 90 mg/cm² (tube only)
- Operating temp: -40 °C to 63 °C (-40 °F to 146 °F)
- Housing: ABS plastic
- Connector: BNC



HP-360



This hand probe provides a sensitive beta detector, featuring a "Pancake" GM tube with a thin mica window. It is designed for contamination surveys on personnel, table tops, floors, equipment, etc. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25**, Surveyor or

Electra/Delta series. Please also refer to the **ECPGM** and **PGM** probes

- Application: Alpha/Beta/Gamma surveys; frisking
- Operating voltage: 900 V \pm 50V
- Beta/Gamma efficiency: 22% ¹³⁷Cs, 16% ⁶⁰Co
- Operating temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Housing: ABS Plastic
- Connector: BNC

IGP24A/Sv

A high range energy compensated GM probe for Ambient Dose Equivalent fitted with a priming source, multiway cable and Fischer connector. (Operates at +575V).

This probe can only be used with Thermo's portable survey meter, the **Selectra**.

- Operating HV: 550 V
- Sensitivity: 33 s⁻¹ per mSv/h⁻¹
- Energy range: \pm 10%

• Sensitivity:
140 cps per mSv/h, ¹³⁷Cs

MC71/MINI 6-80 and 6-81

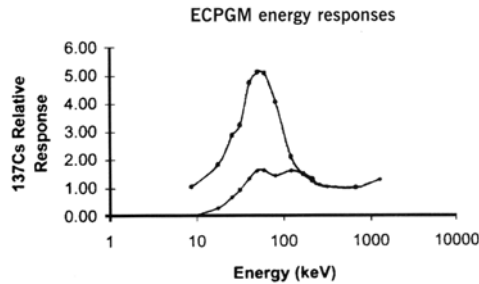
The **MC71** a sensitive, energy compensated GM detector with a low intrinsic background, used for low level surveys. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25**, Surveyor or Electra/Delta series.

The **MINI 6-80** Environmental Gamma Radiation Meter is a portable counting system for the determination of low level gamma radiations. It consists of the high sensitivity, MC71 GM tube, 6-80 Scaler Ratemeter, cable, mounting tripod and carrying case. It is used extensively by nuclear plants and local authorities as a reliable means of measuring environmental gamma levels. The **MINI 6-81** is a weatherproof version.

- Sensitivity figures: ¹³⁷Cs, 15.7 s⁻¹ μ Gy⁻¹h; ²²⁶Ra, 18.5 s⁻¹ μ Gy⁻¹h
- Inherent background count rate: 0.25 s⁻¹ (typ)
- Energy range, 55 keV to >1.2 MeV
- Statistical accuracy: \pm 3% measuring 0.06 μ Gy⁻¹ over 1000 s.
- Meter: 75 mm, logarithmic, scaled 0.05 μ Gy⁻¹ to 75 μ Gy⁻¹
- Scaler: LCD display, 6 digits plus overflow and count in progress indication
- Timer: 7 presettable periods, 10 s to 1,000 s, plus no limit
- Recorder output: analog, 0–0.5 V at 1 mA
- Battery life: 400 h at 4 h per day



PGM/ ECPGM



For easy monitoring of surfaces, clothing and equipment, **PGM's** 15.5 cm² radiation window, of thickness only 1.4 to 2 mg.cm², provides high efficiency and is protected by a fine mesh BeCu screen. All versions operate at 900 V.

GM pancake probe with rugged probe housing, responds to alpha, beta and gamma radiations. The **ECPGM's** detachable energy compensation shield lets you convert the response from count rate to gamma dose rate. See graph above. The **ECPGM** is matched to the Surveyor 2000E. The **PGM** can be matched with the

Surveyor, ASP-2, E-600, RM-25 or Electra/Delta Series. See also **HP-360** and **HP-210**.

- 15.5 cm² radiation window protected by fine mesh BeCu screen
- 900 V fixed high voltage
- Connector: MHV
- Check source: CK-1

SL and SLR



Type **SL** is a cylindrical glass walled GM tube in a rugged housing for detecting medium and high-energy beta emitters,

with an active length of 120 mm (4.72"). The **SLR** version incorporates a moveable beta shield. Thermo's

portable survey meters, such as the **ASP-2, E-600, RM-25**, Surveyor or Electra/Delta series.

- 2 s⁻¹ for 1 Bqcm⁻² of ⁹⁰S/⁹⁰Y
- 10 s⁻¹ for 1 μSvh⁻¹ of ⁶⁰Co
- Connector: PET

SWGGM

A side window probe that incorporates a sliding housing. **SWGGM** detects high-energy beta and gamma with the side window exposed but gamma only when the slide is closed to shield the GM tube. This probe can be matched with Thermo's portable survey meters, such as the **Surveyor**, E-600, ASP-2, RM-25 or Electra/Delta series.

See also **HP-270**.



- Flat energy response with GM shielded
- Operates at 900 V
- Connector: MHV
- Check source: CK-1

NRD

Popular REM detector using a moderated BF₃ tube supplying excellent neutron sensitivity and gamma rejection. This probe can be matched with the **ASP-2** and **E-600**. See also **SWENDI-2**.

- Measures neutron dose rate from thermal through fast
- BF₃ tube provides high gamma rejection
- Optional mounting brackets available
- 22.9 cm (9") diameter cadmium-covered polyethylene moderating sphere
- Range: 1–60 kmRem/h
- Operating Voltage: 1,600–2,000 V

- Dead time: 10 μs nominal
- Background: Gamma rejection up to approximately 500 R/h
- Sensitivity: ~50 cpm per mrem/h (3000 counts per mrem)
- Energy range: Thermal to approximately 10 MeV
- Operating temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector: MHV
- Size: 25.1 x 22.9 dia. cm (9" dia. x 9.9")
- Weight: 6.2 kg (13.75 lb)



FN1 and TN1

FN1 Fast Neutron Probe



For fast neutron counting, the phosphor uses the (nα) reaction to

provide enhanced neutron detection and insensitivity to gamma radiation. The housing is made from light alloy.

- Phosphor size: 1.59 x 2.54 dia. cm (0.625" x 1" dia.)
 - Neutron efficiencies: 0.7 MeV, 0.01%. 3.4 MeV, 0.1%. 19 MeV, 1.6%
- FN1 and TN1 are matched with Thermo's portable survey meters, such as the **Surveyor**, E-600, ASP-2, RM-25 or Electra/Delta series.

- Phosphor size: 1 in (dia.) x 0.625 in
- Neutron efficiencies: 0.7 MeV, 0.01% 3.4 MeV, 0.1% 19MeV, 1.6%



TN1 Thermal Neutron Probe
FN1 and TN1

weights: 9.8 oz (278 g)

Uses a proprietary phosphor, highly efficient to slow neutrons with excellent gamma rejection. MHV connector.

- Phosphor size: 0.64 x 2.54 dia. cm (0.25" x 1" dia.)

- Neutron efficiencies: 0.01 eV, 60%. 0.1 eV, 30%. 1 eV, 10%.
 - Weight: 0.278 kg (0.61 lb)
- FN1 and TN1 are matched with Thermo's portable survey meters, such as the **Surveyor**, E-600, ASP-2, RM-25 or Electra/Delta series.

- Phosphor size: 1 in (dia.) x 0.25 in
- Neutron efficiencies: 0.01 eV, 60% 0.1 eV, 30% 1 eV, 10%

SWENDI-2

This state-of-the-art wide energy neutron detector covers an extremely wide energy range. The rugged design and simple one step calibration makes it easy to operate and ideal for use in various applications. This probe can be matched with the **E-600**. See also **NRD**.

- Neutron dose equivalent rate
- Improved energy response above 2 MeV
- Utilizes ³He Tube
- Sensitivity: 680 cpm/mRem/h

- Energy range: Thermal through 30 MeV
- High voltage: 1200 to 1500 Vdc
- Size: 33.7 H x 22.9 dia. cm (13.25" x 9")
- Weight: 13.38 kg (29.5 lb)
- Connector: Thermo Smart Connector for use with the E-600 (Order **CA-99-XX** conversion cable for use with instruments with an MHV connector, for example the RMS-3)



Alpha Probe Data

Alpha efficiency is expressed as a percentage of the 2π flux of a certified reference source.

Order Code	Radiation Window		Isotope (MeV)	Efficiency (% surface emission)	Background		Weight	
	Area (cm ²)	Shape			s ⁻¹	cmp	(kg)	(lb)
A50L	62	rect.	230Th (4.682)	>50%			0.6	1.3
AC-3-7, AC-3-8	59	rect.					0.6	1.4
AP2/4A	50	square	241Am (5.486)	35%	<0.1		0.75	1.7
AP2R/4A	50	square	241Am (5.486)	25%	<0.1		0.75	1.7
AP4/4A	20	disc	241Am (5.486)	35%	<0.1		0.60	1.35
AP5AD	100	rect.	241Am (5.486)	35%	<0.1		0.50	1.1
AP5RA	100	rect.	241Am (5.486)	23%	<0.1		0.50	1.1
AP6A	600	rect.	241Am (5.486)	30%	<0.1		1.55	3.5
HP-380 A	100	rect.	239Pu (5.1 MeV)	42%	<0.1	<1.0	0.59	1.37

A50L



This 50 cm² ZnS scintillation probe offers excellent alpha responses, a low mechanical profile and a conveniently angled grip. Easily-repaired windows are provided with protective covers for storage. Uniformity is within $\pm 10\%$ over the whole phosphor surface.

The A50L is used for general purpose alpha monitoring. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25**, or **Electra/Delta** series. See also **AC-3**.

- Light weight, low profile, angled grip
- Large radiation window, hex-mesh grills, protective storage covers
- Connector, MHV
- Uniformity within $\pm 10\%$ over the whole phosphor surface
- 50 cm² active area

AC-3-7 and AC-3-8



Alpha probe with a ZnS phosphor used for survey and frisking in a lightweight cast aluminum body. The radiation window is 0.50 mg/cm² thick, made of aluminized mylar. The **AC-3-8** is fitted with a mesh grille. This probe can be matched with Thermo's portable survey meters, such as the

ASP-2, **E-600**, **RM-25**, or **Electra/Delta** series.

- Operating voltage: 1,000 V nominal
- Dead time: 12 μ s nominal
- Alpha efficiency (4π): 14% ²³⁹Pu
- Operating temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector, CJ-1
- Size: 29.2 x 7.0 x 8.3 cm (11.5" x 2.75" x 3.25")
- 50 cm² window area

AP2 Family



This ergonomically shaped probe with 50 cm² window is suitable for general purpose alpha contamination monitoring with excellent gamma rejection. The AP2R/4A is a version fitted with a rugged 3 mm mesh grill.

- Excellent gamma rejection
- **AP2/4A** and **AP2R/4A** use a PET connector; **AP2/4B** and **AP2R/4B** use a MHV connector
- ²⁴¹Am Calibration source, RRS21A
- Endura Phosphor version also available
- 50 cm² window

General purpose alpha probes containing a ZnS phosphor and PMT in a light alloy housing. The radiation window is conveniently angled for self monitoring of clothing. AP2R/4A is fitted with a rugged 3 mm mesh grille. This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2, E-600, RM-25**.

AP4 Family

A ZnS based alpha probe with circular window, used with wall-mounted friskers, the **710C** Lead Castle and in glove-box areas. The circular radiation window is matched to 2 inch alpha wipes. This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2, E-600, RM-25**.

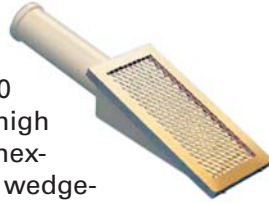
- Circular window matched to 5 cm (2") alpha wipes
- **AP4/4A** fits **710C** Lead Castle for

- counting applications
- **AP4/4A** use a PET connector
- 20 cm² window



AP5 Family

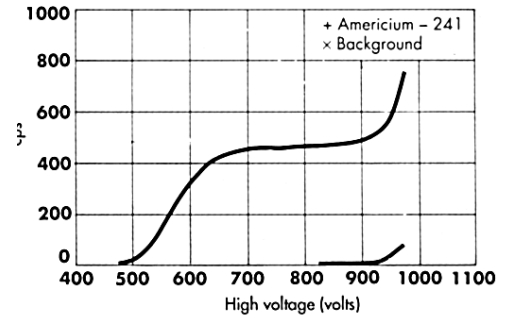
This hand-held ZnS probe with 100 cm² window, high transmission hex-grill and slim, wedge-shaped profile is popular for monitoring workplaces, benches, personnel and tools. The AP5RA version has a ruggedized hex-grill. Note: the thin radiation windows are field-replaceable.



This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, **RM-25**. See also **HP-380A**

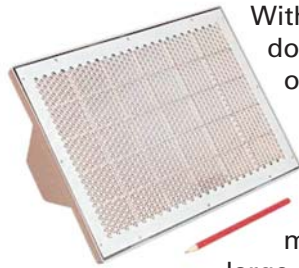
- High transmission rectangular hex-grille
- Slim, light weight, wedge shaped profile
- **AP5RA** version has a ruggedized hex-grille
- Field-replaceable radiation windows
- **AP5AD** and **AP5RA** use a PET connector

AP5A Plateau



- **AP5BD** uses a MHV connector
- Calibration source, RRS 51A
- Endura Phosphor versions also available (**AP5AD/E** or **AP5BD/E**). The Endura is a more resilient detector material which does not require a separate aluminized (Mylar) window.
- 100 cm² window

AP6 Family



With a 600 cm² window but weighing only 1.5 kg (3.3 lb), the AP6A ZnS scintillation probe provides fast monitoring of large surfaces, walls and floors. It has a higher efficiency than air proportional counters and is more practical than gas-flow counters (no counting gas required).

This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, **RM-25**.

- 600 cm² window
- Weight, only 1.55 kg (3.5 lb)
- **AP6A** uses a PET connector; **AP6B** uses an MHV connector
- ²⁴¹Am Calibration Source, RRH 11B

FLP3A, FLM3A, Delta-5

This highly mobile, lightweight monitor includes a ruggedized 600 cm² scintillation probe and a DELTA5 ratemeter. The FLM3 range is ideal for rapid, sensitive floor monitoring. It includes background subtract and alarm settings for extra sensitivity, and integrate mode for confirmatory counting in marginal situations. Steel roller balls suitable for smooth floors are fitted as standard. The AEO119A Wheel Kit, for rough surfaces and outdoor use, offers a smooth ride with castor action and ground clearance adjustable up to 5 cm (2").

Alpha and beta efficiencies are expressed as a percentage of the 2π flux of a certified reference source. Gamma efficiency is measured in a ¹³⁷Cs field.

FLP3A utilizes the same 600 cm² detector used in the AP6 above. Mounted in a wheeled assembly to enable effective alpha floor monitoring. The **FLM3A** is the **FLP3A** combined with a **Delta-5** ratemeter as seen in picture.



•
Ranges:
0.1–60,000 cps
or 1–1,000,000

HP-380A



These hand probes are general purpose survey and frisking

probes with excellent sensitivity to alpha with minimum interference from gamma backgrounds. The probe design is constructed from lightweight aluminum which promotes ruggedness and ergonomic handling. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25** or Electra/Delta series.

See also the **AP-5** family.

- Operating voltage: 600 V nominal
- Window thickness: 3 layers of 0.29 mg/cm² (0.87 mg/cm²)
- Alpha efficiency (4π): 21% ²³⁹Pu
- Operating temp: -40 °C to 60 °C (-40 °F to 140 °F)
- Connector, MHV, also available with Thermo Smart connector as the **SHP380A**
- Size: 28.6 x 7 x 8.3 cm (11.25" x 2.75" x 3.25")
- 100 cm² surface area

Alpha-Beta Probe Data

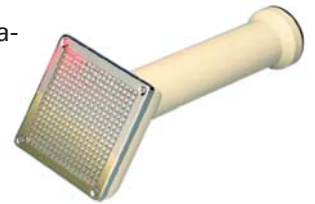
Order Code	Window		Efficiencies (% surface emission)					Background		¹³⁷ Cs (γ) Response		Weight	
	Area (cm ²)	Shape	Alpha		Beta			s ⁻¹	cpm	s ⁻¹	cpm	(kg)	(lb)
			²⁴¹ Am	⁹⁹ Tc	⁶ Co	³⁶ Cl	⁹⁰ Sr/ ⁹⁰ Y			(per μSv/h)	(per 100 μR/h)		
DP2/4A	50	square	35%		29%	34%	<4	<240	25	1500	0.75	1.7	
DP2R/4A	50	square	25%	7%	21%	24%	<4	<240	25	1500	0.75	1.7	
DP6AD	100	rect.	33%	—	18%	38%	<10	<600	50	3000	0.5	1.1	
DP6CD	100	rect.	30%	—	14%	30%	<10	<600	50	3000	0.5	1.1	
DP6DD	100	rect.	39%	—	20%	38%	<10	<600	40	2400	0.5	1.1	
DP8A	600	rect.	28%	—	12%	31%	<30	<1800	180	10,800	1.55	3.5	
HP-380AB	100	rect.	36%	18%		44%	<10	<600	50	3000	0.59	1.37	

DP2 Family

A well-established general purpose dual phosphor (ZnS/ BC400) probe which responds to alpha, medium and high energy beta and gamma. Compact, reasonably robust and ergonomic, users include nuclear sites, survey, environmental and government radiation laboratories, emergency services and the petrochemical industry. The DP2R/4A version has a rugged 3 mm mesh grill for longer life of the thin aluminized window.

This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**.

- Compact, reasonably robust, ergonomic
- Rugged 3 mm mesh grille version, **DP2R/4A**
- **DP2/4A**, **DP2R/4A** use a PET connector; **DP2/4B**, **DP2R/4B** use an MHV connector; **IDP2/4B**, **IDP2R/4B** are the intelligent version for use only with the **Selectra**
- ²⁴¹Am alpha calibration source: RRS 21A
- ³⁶Cl beta calibration source: RRS 24A



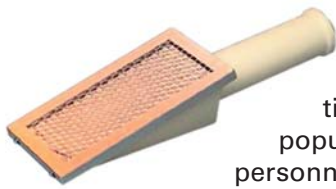
HP-380AB



These hand probes are dual phosphor (ZnS/NE102) general purpose survey and frisking probes with excellent sensitivity to alpha and beta with minimum interference from gamma backgrounds. The probe design is constructed from lightweight aluminum which promotes ruggedness and ergonomic handling. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25** or **Electra/Delta** series. See also DP-6 Family.

- Operating voltage: 600 V nominal
- Window thickness: 3 layers of 0.29 mg/cm² (0.87 mg/cm²)
- Efficiency (4π): Alpha: 18% ²³⁹Pu
- Operating temp: -40 °C to 60 °C (-40 °F to 140 °F)
- Connector: MHV, also available with Thermo Smart connector as the **SHP 380 AB**
- Size: 28.6 x 7 x 8.3 cm (11.25" x 2.75" x 3.25")

DP6 Family



These large, 100 cm², dual phosphor (ZnS/BC400) scintillation probes are popular for monitoring personnel, tools and work areas for alpha and beta with efficient discrimination. The lightweight, slim, wedge profile, durable hex grill and field replaceable windows provide practical advantages: high availability and faster surveys. The R version is fitted with a more rugged hex grill which reduces the efficiency figures by a factor of 0.65.

- **PET DP6AD** — Al. alloy die-cast housing fitted with a PET connector
- **MHV DP6BD** — Al. alloy die-cast housing, MHV connector
- **MHV DP6DD** - An enhanced design with a more uniform beta energy response and slightly lower background response than others. The radiation window consists of two layers of 0.3 mg/cm² polycarbonate and the grill is supported by an extra frame reinforcement bar.
- **MHV DP6CD** - Al. alloy die-cast housing, MHV connector. The signal gain control is adjusted to simulate GM detectors requiring +900 volts. This allows user sites to upgrade their probes without setup penalties and without needing to replace their ratemeter.

DP6CD versions are customized to user's preferred ratemeter. Further details on request.

This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**. See also **HP-380AB**.

- Light weight, slim, wedge profile
- Durable hex grille and field replaceable windows provide high reliability
- **DP6R** range: fitted with extra-rugged hex grille
- **DP6AD**, **DP6RA** uses a PET connector
- **DP6BD**, **DP6RB** uses an MHV connector
- **IDP6B** is the intelligent version used only with the **Selectra**

The **DP6CD** and **DP6RC** probes feature signal gain adjustment to permit operation with ratemeters whose HV supply is fixed at 900 V. Users can upgrade from a GM probe to these probes without having to replace their ratemeter, for example the **Surveyor 2000**.

The **DP6DD** is a premium performer with extra-reinforced window frame, a thinner 0.5 μm phosphor and thinner coating of ZnS to better measure lower energy beta emitters.

- Connector: MHV
- Calibration sources ²⁴¹Am alpha, code RRS 51A, ³⁶Cl beta, code RRS 54A, ⁹⁰Sr/⁹⁰Y beta, code RRS 55A

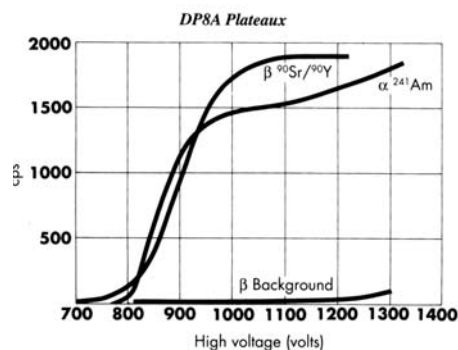
DP8 Family

The largest dual phosphor probe currently available. Its 600 cm² window offers large savings in time when monitoring areas such as walls, floors and flat objects. It weighs only 1.5 kg (3.3 lb).

This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**.

- High sensitivity to distributed contamination
- Durable, light weight, only 1.5 kg (3.3 lb)
- **DP8A** uses a PET connector; **DP8B** uses an MHV connector

- ²⁴¹Am alpha calibration source, RRH 11B
- ³⁶Cl beta calibration source, RRH 143.



Beta Scintillation Probe Data

Order Code	Window		Efficiency (% Surface emission)				Background		¹³⁷ Cs (γ) Response		Weight	
	Area (cm ²)	Shape	Beta				s ⁻¹	cpm	s ⁻¹	cpm	(kg)	(lb)
			¹⁴ C	⁶⁰ Co	³⁶ Cl	⁹⁰ Sr/ ⁹⁰ Y						
BP1/4A	1.36	disc	—			58%	<1.0		30	1800		
BP4/4A	20	disc	24%	36%	44%	46%	<4	<240	25	1500		
BP4/4B	20	disc	15%	25%	32%	34%	<4	<240	25	1500		
BP4/4C	20	disc	11%	21%	25%	27%	<4	<240	25	1500		
BP7/4A	50	square	18%	27%	39%	41%	<4	<240	12	720	0.75	1.7
BP13A	80	annular	—	9%	15%	16%	<7	<480	60	4200	0.875	2
BP17A	600	rect.	—	19%	36%	42%	<30	<1800	250	15,000	1.55	3.5
BP19AD	100	rect.	14%	32%	49%	51%	<10	<600	50	3000	0.5	1.1
BP19DD	100	rect.	21%	34%	48%	51%	<8	<480	40	2400	0.5	1.1
HP-380B	100	rect.	28%			52%	<10	<600	50	3000	0.59	1.37

BP4 Family

A scintillation beta probe with high sensitivity to low, medium and high-energy beta radiation. The BP4 Family has the highest efficiency to ¹⁴C. Extra window protection is obtained by increasing the window/grill spacing. This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**.

- Circular radiation window suits 5 cm (2") filter paper wipes
- Matched to **710C** Lead Castle for counting beta

- Choice of spacings, window-grille: **BP4/4A**, 3 mm (0.12"); **BP4/4B**, 6 mm (0.24"); **BP4/4C**, 9 mm (0.35")
- **BP4A** uses a PET connector; **BP4B** uses an MHV connector; **IBP4B** is the intelligent version used only with the **Selectra**
- Beta calibration sources: ¹⁴C beta RRS 12A, ³⁶Cl beta RRS 14A.



BP7 Family

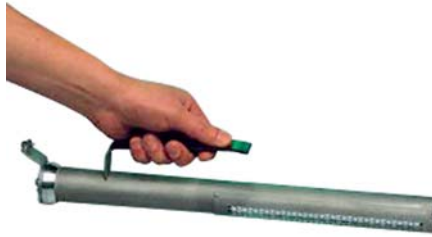


Large area scintillation probe with an anthracene phosphor for general purpose monitoring of low, medium and high-energy beta, with a 50 cm² window angled at 45 degrees to the probe axis. The low response to gammas can be an important consideration in high background applications. The BP20A is a version fitted with an NE 102A equivalent plastic phosphor.

This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**.

- Premium beta over gamma response suits high background applications
- 45° angled radiation window
- **BP7A** uses a PET connector; **BP7** uses an MHV connector; **IBP17B** is the intelligent version used only with the **Selectra**
- Calibration sources: ¹⁴C beta RRS 22A, ³⁶Cl beta RRS 24A.

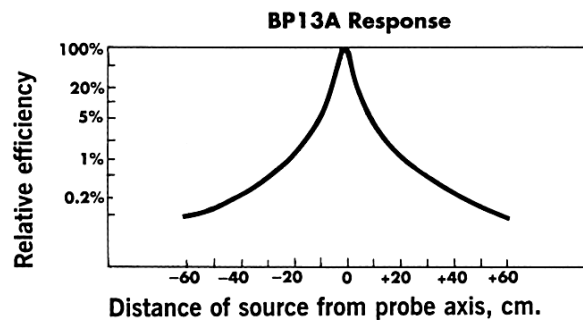
The BP13A is a robust, side-window scintillation probe with a cylindrical plastic phosphor and strong convex grille, for low/medium and high-energy beta for on-plant survey work where hot particles may pose a hazard.



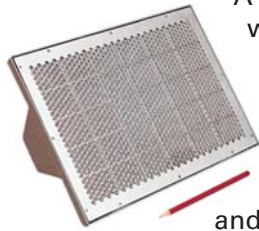
The plastic scintillator is curved to monitor particles trapped at floor/wall angles effectively and the window is very thin. The response is sustained at a considerable distances from the probe so that hot spots or 'fleas' are detectable without risk of contact to the user. The ^{60}Co efficiency is greater than many side-window GM probes.

Robust, side-window This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**.

- Wide-angle response—see graph
- Higher sensitivity than side-window GM probes
- Extra effective for edges, corners and returns
- **BP13A** uses a PET connector; **BP13B** uses an MHV connector; **IB13B** is the intelligent version used only with the **Selectra**
- Calibration source, ^{36}Cl beta RRS 64A



BP17 Family

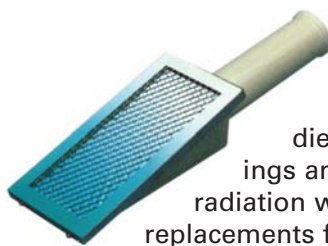


A very large light-weight probe with good beta efficiency at ^{60}Co energies, the 600 cm² radiation window enables fast and thorough beta monitoring of large, flat surfaces.

This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**.

- Good efficiency to ^{60}Co beta and higher beta energies
- Very sensitive to large area, low-level emission
- Weight only 1.5 kg (3.3 lb)
- **BP17A** uses a PET connector; **BP17B** uses an MHV connector
- Calibration source, ^{36}Cl beta RRH 14B

BP19 Family



These slim-profile probes with light alloy diecast housings and 100 cm² radiation windows are replacements for the **BP6**, weighing less, and mechanically stronger, with a new design of light seal. The **BP18AD** has a greater low energy beta efficiency and less response to background than the **DP6**. The **BP19AD** is a premium type with improved background and low energy beta efficiency specifications.

These large scintillation probes with a

BC400 plastic phosphor in a light alloy diecast housing are ideal for general purpose and large area monitoring for low, medium and high-energy beta. The **BP19DD** is a thin window version offering better ^{14}C beta efficiency. This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**. See also **HP-380B**.

- Slim profile, low weight
- Connector: PET. MHV available
- **BP19** Calibration sources: ^{14}C beta RRS 52A; ^{36}Cl beta RRS 54A
- Endura Phosphor **BP19 BD/E** version also available

HP-380B



These hand probes are general purpose survey and frisking probes with excellent sensitivity to beta with minimum interference from gamma backgrounds. The probe design is constructed from light-weight aluminum which promotes ruggedness and ergonomic handling. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25**, or **Electra/Delta** series. See also **DP-6** Family.

- Detector Type: NE 102 plastic scintillator
- Operating Voltage: 600 V nominal
- Window Thickness: 3 layers of 0.29 mg/cm² (0.87 mg/cm²)
- Operating Temp: -40 °C to 60 °C (-40 °F to 140 °F)
- Connector: MHV, also available with Thermo Smart connector
- Size: 28.6 L x 7 W x 8.3 H cm (11.25" x 2.75" x 3.25" H)

FLP3B and FLM3B

FLP3B utilizes the same 600 cm² detector used in the **BP17**. Mounted in a wheeled assembly to enable effective alpha floor monitoring. The **FLM3B** is the **FLP3B** combined with a **Delta-5** ratemeter as seen in picture. A Separate data sheet is available for the **FLM-3** Series.



Gamma Scintillation Probes/Data

Gamma Scintillation Probe Data

Model	Application	Sensing Element	Element Size (Dia. x thick)	Sensitivity (cpm/mR/h)	Energy Range
LEG-1	¹²⁵ I Measurements	Nal(T1)	1" x 0.04"	60	15–200 keV
PG-2	²³⁹ Pu, 241 Am, X-ray	Nal(T1)	2" x 2 mm	60,000	10–200 keV
SPA-3	High sensitivity gamma	Nal(T1)	2" x 2"	1,200,000	60 keV–2 MeV
SPA-6	Medium sensitivity gamma	Plastic	50 mm x 60 mm	600,000	40 keV–1.3 MeV
SPA-8	Moderate sensitivity gamma	Nal(T1)	1" x 1"	300,000	40 keV–1.3 MeV
SPA-9	Medium sensitivity gamma	Nal(T1)	2" x 0.05"	400,000	40 keV–1.3 MeV

LEG-1

This is a gamma scintillation probe for detection of low-energy gamma and x-rays, optimized for ¹²⁵I, housed in a lightweight aluminum body. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25** or Electra/Delta series.

- Detector type: 1" dia x 0.04" thick Nal
- Window: 75.4 mg/cm² aluminum window
- Sensitive area: 5.1cm² (0.79 inch²)
- Operating voltage: 1,000 V nominal
- Dead time: 8 μs nominal
- Background sensitivity: 60 cpm/mR/h



- (¹³⁷Cs)
- Energy Response/Photon: 95% ¹²⁵I
- Operating temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector: CJ-1
- Size: 4.2 dia. x 20.1 cm (1.65" dia. x 7.9")
- Weight: 340 g (12 oz)
- Consider as an alternate to the **G1LE**

PG-2



This is a large-area rugged scintillation detector with an aluminum body and a thin window for application in the detection of low energy gamma or x-ray radiation.

This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25** or Electra/Delta series.

- Detector type: 2" dia x 2mm thick NaI
- Window: 0.001" thick (6.9 mg/cm²) aluminum
- Operating Voltage: 1,000 V nominal
- Dead time: 12 μs nominal
- Efficiency: ² 18% ²³⁹Pu, ² 18% ²⁴¹Am
- Operating Temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector: CJ-1
- Size: 6.8 dia. x 22.9 cm (2.69" dia. x 9")
- Weight: 1.1 kg (2.5 lb)
- Consider as an alternate to the **G2LE**

SPA-3

A scintillation probe that is a rugged, aluminum bodied, waterproof gamma detector designed for high sensitivity of pulse-height applications. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25** or Electra/Delta series.

- Detector type: 2" dia x 2" thick NaI
- Operating Voltage: 1,000 V nominal

- Dead time: 14 μs nominal
- Operating Temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector: CJ-1
- Size: 6.7 dia. x 28.3 cm (2.63" dia. x 11.13")
- Weight: 1.5 kg (3.4 lb)
- Consider as an alternate to the **G2**



SPA-6



This scintillation probe is a rugged, aluminum bodied, (2" x 2.4" plastic scintillator) gamma detector designed for medium sensitivity applications. This probe can be matched

with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25** or Electra/Delta series.

- Detector type: 2" dia x 2.4" thick plastic scintillator
- Operating Voltage: 1,000 V nominal
- Dead time: 12 μs nominal
- Operating Temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector: MHV
- Size: 6.6 dia. x 25.1 cm (2.6" dia. x 9.9")
- Weight: 0.8 kg (1.75 lb)

SPA-8

This scintillation probe is a rugged, aluminum bodied gamma detector designed for low sensitivity applications. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25** or Electra/Delta series.

- Detector type: 1" dia x 1" thick NaI
- Operating Voltage: 600 V nominal
- Dead time: 36 μ s nominal

- Operating Temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector: MHV
- Size: 4.7 dia. x 21.1 cm (1.85" dia. x 8.31")
- Weight: 0.4 kg (0.9 lb)
- Consider as an alternate to the **G1**



SPA-9



This scintillation probe is an aluminum bodied gamma detector designed for detection of low to medium energy gammas. This probe can be matched with

Thermo's portable survey meters, such as the **ASP-2**, **E-600**, **RM-25** or Electra/Delta series.

- Detector type: 2" dia x 0.5" thick NaI
- Operating Voltage: 1,000 V nominal
- Dead time: 18 μ s nominal
- Operating Temp: -30 °C to 60 °C (-22 °F to 140 °F)
- Connector: MHV
- Size: 6.6 dia. x 20.1 cm (2.6" dia. x 7.9")
- Weight: 0.7 kg (1.5 lb)

Sodium Iodide Scintillation Probes

G1, G1LE, G2, G2LE and G3

Scintillation probes fitted with 2.5 cm (1"), 5 cm (2") or 7.6 cm (3") diameter Sodium Iodide detectors to provide a range of gamma sensitivity that can be used for energy discrimination with single channel analyzers.

G1: Compact, lightweight and useful for detecting small background changes.

G1LE: For enhanced detection of low energy emitters such as ^{125}I . The G2LE is a 2" version also optimized for ^{125}I detection.

G2: Rugged, with greater sensitivity than the G1, and also useful for detecting sub-surface gamma emissions during cleanup or decommissioning. Response: 1,200 kcpm per mR/h due to ^{137}Cs .



G2LE: A 5 cm (2") thin crystal version, optimized for ^{125}I detection.

G3: Rugged with twice the sensitivity of the G2. Response: 4,000 kcpm per mR/h (^{137}Cs).

Consider LEG-2 and PG-2 as possible alternates. Best used with **ASP2E**, **E-600** and **Electra**.

Sodium Iodide Scintillation Probes

G5 "FIDLER" Family



The 5" diameter (127 mm) NaI(Tl) crystal is optimized for detection of 10-100 keV gammas eg. from degraded Pu or Pu-Am, and excellent for ^{125}I .

The ruggedized version for field use includes a secondary scratch-resistant kapton window. Sensitivity can be further improved by using an instrument with a single channel analyzer such as the **Electra, E-600**, ASP2E or Delta 5.

The ruggedized version for field use includes a secondary scratch-resistant kapton window.

Sensitivity can be further improved by

use of a hand held rate meter that features a single channel analyzer.

- Connector: MHV
- **G5-AI**: Aluminum window
- **G5-Be**: Beryllium window for better low energy response
- **G5-BeR**: Ruggedized version
- **G5-BELB**: Low background version

G5 Accessories

- Military vertical handle, **G5VHX**
- ruggedized horizontal handle **G5HHR**
- Horizontal handle, standard **G5, G5HH**
- Vertical G5 handle, **G5VH**



Optional handles

GP13 Family



A very sensitive probe for low energy gamma or beta radiation with a

100 cm² window and CsI phosphor, the GP13A is also ideal for contamination monitoring in medical applications. Used with a two channel ratemeter, DELTA5 or ELECTRA, or with the wall-mounted CM11D, it can discriminate between ^{125}I and higher energy medical isotopes; $^{99\text{m}}\text{Tc}$, ^{14}C , ^{32}P etc.

This probe can be matched with Thermo's portable survey meters, such as the **Electra/Delta** series, **ASP-2**, **E-600**, or **RM-25**.

- **GP13A** uses a PET connector; **GP13B** uses an MHV connector; **IGP13B** is the intelligent version for use only with the **Selectra**.

PP1 Pipe Probe

A long, thin probe in a rugged, easily decontaminable housing for use within pipes and tubes.

Up to 25 ft (7.5 m) of cable can be attached to the probe.

A Sodium Iodide probe in a rugged housing.

This probe can be matched with Thermo's portable survey meters, such as the **ASP-2E**, E-600, RM-25, or Electra/Delta series.

- Up to 7.5 m (25 ft) of cable can be attached

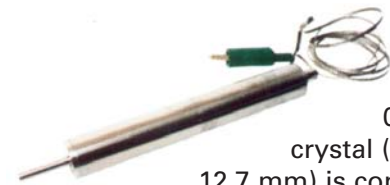


- Easily decontaminable
- NaI (TI) crystal 1.27 cm (0.5") dia. x 7.62 cm (3") length
- Probe dimensions: 0.75" diameter 11.6" length
- MHV connector

WP1 Wound Probe

The 0.125 x 0.5" Nat crystal (3.2 x 12.7 mm) is contained in a stainless steel housing. The braided grounding strap provides extra electrical safety.

A small Sodium Iodide probe for pinpointing sources in confined spaces, equipped with a braided grounding strap for additional electrical safety.



- Crystal size: 0.317 cm (0.125") dia. x 1.27 cm (0.5") length
- Detector section: 0.635 cm (0.25") dia. x 3.1 cm (1.22") length
- Probe dimensions: 2.5 cm (1") dia. x 21.6 cm (8.5") length
- MHV connector

HP-100CGS Gas Proportional Rechargeable



A gas proportional detector using rechargeable P10 counting gas.

Primary applications are Alpha/Beta surveying and frisking. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, or **RM-25**.

- Operating Voltage: 1,500 to 1,800 V
- Beta/Gamma efficiency: 31% ^{137}Cs , 21% ^{60}Co
- Alpha efficiency (4π): 26% ^{239}Pu
- Operating Temp: $-30\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$ ($-22\text{ }^{\circ}\text{F}$ to $140\text{ }^{\circ}\text{F}$)
- Housing: Cast aluminum body
- Connector: MHV
- Operational time between charges: 8 hrs minimum
- Options: Constant gas flow, model **HP-100C**
- A small, light-weight gas filled detector, the **HP-100CGS** has several good portable applications

HP-330 Gas Sealed Proportional Detector

A sealed gas proportional detector whose primary application is Alpha/Beta/Gamma surveys and frisking. This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, or **RM-25**.

- Operating voltage: 1,550 V nominal
- Beta/Gamma efficiency: 6% ^{137}Cs , 8% ^{60}Co
- Alpha efficiency (4π): 19 % ^{239}Pu

- Operating temp: $-30\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$ ($-22\text{ }^{\circ}\text{F}$ to $140\text{ }^{\circ}\text{F}$)
- Housing: ABS Plastic
- Connector: MHV



HP-370 Gas Sealed Proportional Detector



A Xenon gas filled proportional tube type detector used for low energy gamma surveying.

This probe can be matched with Thermo's portable survey meters, such as the **ASP-2**, **E-600**, or **RM-25**.

- Operating voltage: 1,750 Vdc nominal
- Efficiency (4π): ^{129}I 3.1%, ^{109}Cd 33%
- Operating temp: $-30\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$ ($-22\text{ }^{\circ}\text{F}$ to $140\text{ }^{\circ}\text{F}$)
- Housing: ABS Plastic
- Connector: MHV

CCAL2

Aluminum alloy, rugged carrying case capable of holding up to two instruments and associated probes.

- Size: 45.7 x 61.0 x 16.5 cm (18" x 24" x 6.5")
- A number of optional foam cut-outs are available for combinations of different equipment
- A number of optional foam cut-outs are available for different equipment

**CCPL4 and CCPL8**

Black plastic carrying case for a single instrument type with associated probes

- Size: **CCPL4**: 47.0 x 38.1 x 17.8 cm (18.5" x 15" x 7") **CCPL8**: 52.1 x 42.7 x 21.6 cm (20.5" x 16.8" x 8.5")
- A number of optional foam cut-outs are available for different equipment





Detector Cables

Type	Part #	Length	Style
BNC to BNC	CA-1-36	0.9 m (36")	straight
BNC to BNC	SC-2	0.9 m (36")	straight
BNC to MHV	CA-16-36	0.9 m (36")	straight
BNC to CP-1	CA-14-36	0.9 m (36")	straight
CP-1 to CP-1	CA-5-36	0.9 m (36")	straight
CE Selectra to I probes (B suffix)	3212A	1 m (39")	straight
CE Selectra to I probes (B suffix)	3212B	1.5 m (60")	straight
CE Selectra to I probes (B suffix)	3212C	2 m (79")	straight
MHV to BNC	SC-1B	0.9 m (36")	straight
MHV to CP-1	CA-12-36	0.9 m (36")	straight
MHV to MHV	CA-15-36	0.9 m (36")	straight
MHV to MHV	3206A	0.5 m (20")	straight
MHV to MHV	3190B	0.3-1.3 m (12"-51")	coil
MHV to MHV	3190C	1.2-3.3 m (48"-120")	coil
MHV to PET	3211A	1.5 m (60")	straight
MHV to PET	3191A	0.3-1.3 m (12"-51")	coil
MHV to Series C	SC-1C	0.9 m (36")	straight
PAC-4G-3	CA-6-30	0.75 m (30")	straight
PET to PET	3152C	2 m (79")	straight
PET to PET	3152F	1.5 m (60")	straight
PET to PET	3201A	0.3-1.3 m (12"-51")	coil
pre-CE Selectra to I probes (B suffix)	3213A	1 m (39")	straight
pre-CE Selectra to I probes (B suffix)	3213B	1.5 m (60")	straight
pre-CE Selectra to I probes (B suffix)	3213C	2 m (79")	straight
Smart to MHV	CA-99-36	0.9 m (36")	straight
Smart to Smart	CA-100-36	0.9 m (36")	straight
Smart to BNC	CA-102-36	0.9 m (36")	straight
Smart to CP-1	CA-103-36	0.9 m (36")	straight

Sample Holder

SH-4A

A convenient means of positioning samples in a fixed geometry under the **HP-210** detector. The body of the holder is made from heavy gauge steel with four rubber feet.

- Sample tray for air filters, wipes, planchets and uranium ore samples
- Used with **HP-210** detector

- Sample Size: 5 cm (2") dia. x 1.59 cm (0.63")
- Overall Size: 20.3 x 9.9 x 5.1 cm (8" x 3.88" x 2")
- Weight: 425 g (15 oz)



A50L	12	LEG-1	21
AC-3-7 and AC-3-8	12	MC71	9
AP2 Family	13	Mini 6-80 and 6-81	9
AP4 Family	13	NRD BF3	11
AP5 Family	14	PG-2	22
AP6 Family	14	PGM	10
ASP-2/2e	2	PP1	25
BP1/4A	6	RM-25	4
BP1/4A	6	SH-4A	28
BP13 Family	19	SL	10
BP17 Family	20	SLR	10
BP19 Family	20	Smart Probes	2
BP4 Family	18	SPA-3	22
BP7 Family	18	SPA-6	22
CCAL2	27	SPA-8	23
CCPL4 and CCPL8	27	SPA-9	23
Delta 5	4	Surveyor 2000/2000e	5
Detector Cables	28	Surveyor 50	5
DP2 Family	16	SWENDI-2	11
DP6 Family	17	SWGGM	10
DP8 Family	17	TN1	11
E-600	2	WP1	25
ECPGM	10		
Electra/Selectra	3		
FLP3A, FLM3A, Delta-5	15		
FLP3B and FLM3B	21		
FN1 Probe	11		
G1 Family	23		
G5 "FIDLER" Family	24		
G5 Accessories	24		
GP13 Family	24		
GP20 Family	6		
GP21 Family	7		
HP-100CGS	26		
HP-190A	7		
HP-210	8		
HP-210AL	8		
HP-210L	8		
HP-210T	8		
HP-220A	8		
HP-270	8		
HP-290	9		
HP-330	26		
HP-360	9		
HP-370	26		
HP-380A	15		
HP-380AB	16		
HP-380B	20		
Intelligent Probes	3		
IGP24A/Sv	9		

About Thermo Electron Corporation

Thermo Electron Corporation is the world leader in analytical instruments. Our instrument solutions enable our customers to make the world a healthier, cleaner and safer place. Thermo's Life and Laboratory Sciences segment provides analytical instruments, scientific equipment, services and software solutions for life science, drug discovery, clinical, environmental and industrial laboratories. Thermo's Measurement and Control segment is dedicated to providing analytical instruments used in a variety of manufacturing processes and in-the-field applications, including those associated with safety and homeland security. Based near Boston, Massachusetts, Thermo has revenues of approximately \$2.7 billion, and employs approximately 11,000 people in 30 countries. For more information, visit <http://www.thermo.com>.

This specification sheet is for informational purposes only and is subject to change without notice. Thermo makes no warranties, expressed or implied, in this product summary. © 2004 Thermo Electron Corporation. All rights reserved. *question everything*, and *Analyze. Detect. Measure. Control* are trademarks of Thermo Electron Corporation. LITPROBRESATALOG 0505

USA:	UK:	Rest of Europe:	Rest of World:
5981 Airport Rd.	Bath Road	Fraunauracher Strasse 96	Viktoriastrasse 5
Santa Fe, NM 87507	Beenham, Reading RG7 5PR	D 91056 Erlangen	D 42929 Wermelskirchen
USA	England	Germany	Germany
(505) 471 3232	+44 (0) 118 971 2121	+49 (0) 9131 909-0	+49 (0) 21 96 72 28 0
(505) 428 3535 fax	+44 (0) 118 971 2835 fax	+49 (0) 9131 909-205 fax	+49 (0) 21 96 72 28 24 / 25 fax

www.thermo.com/rmp