

# ORTEC<sup>®</sup>

## *Alpha/Beta Counting Automatic Systems*



$\alpha / \beta$

Ultra High Performance Alpha/Beta Counting Systems  
for Maximum Laboratory Productivity

**AMETEK<sup>®</sup>**  
ADVANCED MEASUREMENT TECHNOLOGY

# Alpha/Beta Counting Automatic Systems

ORTEC offers an extensive suite of **AUTOMATIC** alpha / beta counters incorporating either gas-flow proportional detector or dual-phosphor scintillation detector technologies. These automatic systems are ideally suited for applications requiring **relatively short counting times for a large number of samples**. For unattended operation, recommended counting times would range from one to two minutes for smears and air filters, and from 30 to 60 minutes for environmental and radiochemistry samples.

The following Application Guide can be used to select the optimal Automatic system for your specific market application as well as provide information regarding key features for each model.

Automatic Systems	Recommended Applications					Model Features				
	HP	SC	RC	CL	NP+	GL	LB	ULB	WL	GC
ASC-950-DP	✓				✓	✓				✓
IPC-650, -HP			✓	✓				✓	✓	
WPC-1050	✓	✓		✓	✓			✓		
WPC-1150-GFW-3, -5	✓	✓		✓	✓		✓			
Application Key <b>HP</b> = Health Physics; <b>SC</b> = Smear Counting; <b>RC</b> = Radiochemistry; <b>CL</b> = General Counting Labs; <b>NP+</b> = Nuclear Power, Fuel Cycle, Decommissioning and Disposal										

## Features Key

### GL – Gasless Systems

These systems do not require any connection to P-10 counting gas. They operate totally independent of any external supply other than power making them more portable than other counting systems.

### LB – Low Background Systems

These systems offer great performance delivering beta backgrounds less than 2 CPM and alpha less than ½ CPM. The larger size detectors are the major contributors for the higher backgrounds.

### ULB – Ultra-Low Background Systems

Ultra-low level alpha/beta counting systems usually refer to those with beta background counts in the 1–2 CPM or lower range for systems with

a two inch detector. All two inch ultra-low level systems have total background performance of 1.0 CPM or better.

### WL – Windowless Systems

Windowless alpha/beta counting systems offer one very distinct and important benefit, increased counting efficiency. Without the barrier formed by the window, and because the sample is actually placed in the active volume of the detector, counting efficiency can increase tremendously. Also, because the sample is in the active volume of the detector, there is no air gap present, and counting efficiency is far less dependent on planchet depth. A windowless system can reach a lower MDA in the same counting time as a windowed system, or reach the same MDA in a shorter amount of time.

### GC – Gross Counting Systems

The term gross counter has several accepted meanings. In this application, gross alpha/beta counting systems are those that do not have ultra-low level background performance. Specifically, these systems do not have low beta background performance. The alpha background is usually equal to the alpha background of high performance systems. Gross counters are often used for remote locations, and where high beta counting sensitivity is not required.

# Alpha/Beta Counting Automatic Systems

## ASC-950-DP Automatic Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Standard 50 Sample Capacity
- Gross Background Counter
- Dual Phosphor Detector
- Gasless
- Light Weight
- Easy Maintenance
- Easy Window Replacement
- Radon Compensation for Air Filters

The ASC-950-DP is a gasless high-speed counter designed primarily for the health physics user counting smears and air filters.

- Built-in Color Touch Screen Interface
- Ability to export data to a USB flash drive
- Ability to program Routines on a PC running the included DUO software, then transfer the Routines to the instrument via a USB flash drive.



### Specifications

#### TYPE

Sample Changer: Automatic  
Number of Detectors: 1  
Counter: Gross  
Sample Size: 5.1 cm (2 in.)  
Interface: Touch Screen

#### DETECTOR

Size: 5.1 cm (2.0 in.) Diameter  
Type: ZnS+Plastic Dual Phosphor  
Window: Aluminized, 80  $\mu\text{g}/\text{cm}^2$   
Shielding: Optional

#### SAMPLE

Size: 5.1 cm (2 in.) Diameter Planchets  
Capacity: 50 (100 Optional)  
Depth: 1/8, 1/4, 5/16 inch  
Reader: Barcode  
Range: 1-999  
Data Export: USB Flash Drive, RS-232

#### INTERFACE

Type: Touch Screen  
Compatible Software: Vista FC, DUO Software

#### PERFORMANCE

Alpha Background: 0.2 cpm typical, 0.3 cpm warranted  
Beta Background: 40 cpm typical, 65 cpm warranted  
Th<sup>230</sup> Efficiency: 23%  
Sr<sup>90</sup>/Y<sup>90</sup> Efficiency: 45%  
Tc<sup>99</sup> Efficiency: 30%  
Alpha-Beta Crosstalk: < 0.1%  
Beta-Alpha Crosstalk: < 0.1%  
Count Modes: Alpha only, Beta only, Alpha/Beta simultaneously,  
Alpha then Beta from Vista FC Software

#### PHYSICAL

Dimensions: 91.4 x 59.7 x 59.7 cm (36 x 23.5 x 23.5 in.)  
(H x W x D)  
Weight: 49.9 kg (110 lb) installed

#### Compatible Application Software Packages

- Vista FC Health Physics Applications Software
- DUO Software (for use when operating in the Color Touch Screen Interface Mode)

#### Options

- 100 Sample Capacity
- Lead Ring, 22.7 kg (50 lb)

# Alpha/Beta Counting Automatic Systems

## IPC-650 Automatic Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Standard 50 Sample Capacity
- Ultra-Low Background Counter
- Windowless Gas Flow Detector
- Remote PC Interface

The IPC-650 ultra-low background windowless automatic is intended to address only the radiochemistry market and does not have a built-in interface, thus is only operated from a PC running the Vista 2000 radiochemistry software. This hemispherical windowless gas-flow proportional counter design offers the best efficiencies available for low-energy beta and alpha particles.



### Specifications

#### TYPE

Sample Changer: Automatic  
Number of Detectors: 1  
Counter: Low Background  
Sample Size: 5.1 cm (2 in.)  
Interface: Remote PC

#### DETECTOR

Size: 5.7 cm (2.25 in.) Diameter  
Type: Hemispherical style gas flow proportional  
Window: Windowless  
Counting Gas: P-10, 150 cc/min @ 10 psi  
Gas-Pro Protection: Yes  
Shielding: 10.2 cm (4 in.) thick

#### SAMPLE

Size: 5.1 cm (2 in.) Diameter Planchets  
Capacity: 50  
Reader: Barcode  
Range: 1-999  
Data Export: Serial RS-232

#### INTERFACE

Type: Remote PC  
Compatible Software: Vista 2000

#### PERFORMANCE

Alpha Background: 0.5 cpm  
Beta Background: 0.7 cpm  
Po<sup>210</sup> Efficiency: 45%  
Am<sup>241</sup> Efficiency: 45%  
Th<sup>230</sup> Efficiency: 45%  
Sr<sup>90</sup>/Y<sup>90</sup> Efficiency: 55%  
Tc<sup>99</sup> Efficiency: 45%  
Cs<sup>137</sup> Efficiency: 45%  
Alpha-Beta Crosstalk: < 0.1%  
Beta-Alpha Crosstalk: < 0.1%  
Count Modes: Alpha only, Alpha/Beta simultaneously

#### PHYSICAL

Dimensions: 68.6 x 55.9 x 86.4 cm (27 x 22 x 34 in) (H x W x D)  
Weight: 194 kg (427 lb)

#### Compatible Application Software Packages

- Vista 2000 Applications Software

#### Options

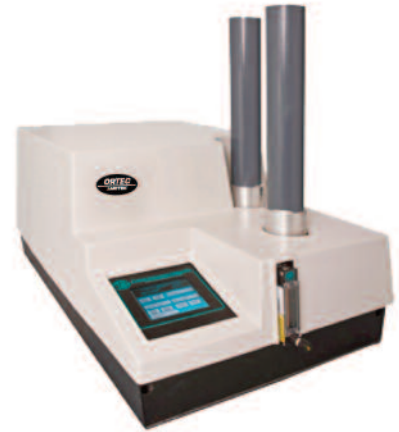
- Add 80 µg/cm<sup>2</sup> Window
- Touch Screen Interface with USB port (order Model IPC-650-HP)

# Alpha/Beta Counting Automatic Systems

## IPC-650-HP Automatic Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Standard 50 Sample Capacity
- Ultra-Low Background Counter
- Windowless Gas Flow Detector
- Touch Screen Interface
- Radon Compensation for Air Filters

The IPC-650-HP incorporates a built-in color touch screen interface and is targeted toward health physics applications. This hemispherical, windowless, gas-flow proportional counter design offers the best efficiencies available for low-energy beta and alpha particles.



### Specifications

#### TYPE

Sample Changer: Automatic  
Number of Detectors: 1  
Counter: Low Background  
Sample Size: 5.1 cm (2 in.)  
Interface: Touch Screen

#### DETECTOR

Size: 5.7 cm (2.25 in.) Diameter  
Type: Hemispherical style gas flow proportional  
Window: Windowless  
Counting Gas: P-10, 150 cc/min @ 10 psi  
Gas-Pro Protection: Yes  
Shielding: 10.2 cm (4 in.) thick

#### SAMPLE

Size: 5.1 cm (2 in.) Diameter Planchets  
Capacity: 50  
Reader: Barcode  
Range: 1-999  
Data Export: Serial RS-232

#### INTERFACE

Type: Remote PC  
Compatible Software: Vista 2000

#### PERFORMANCE

Alpha Background: 0.5 cpm  
Beta Background: 0.7 cpm  
Po<sup>210</sup> Efficiency: 45%  
Am<sup>241</sup> Efficiency: 45%  
Th<sup>230</sup> Efficiency: 45%  
Sr<sup>90</sup>/Y<sup>90</sup> Efficiency: 55%  
Tc<sup>99</sup> Efficiency: 45%  
Cs<sup>137</sup> Efficiency: 45%  
Alpha-Beta Crosstalk: < 0.1%  
Beta-Alpha Crosstalk: < 0.1%  
Count Modes: Alpha only, Alpha/Beta simultaneously

#### PHYSICAL

Dimensions: 68.6 x 55.9 x 86.4 cm (27 x 22 x 34 in) (H x W x D)  
Weight: 194 kg (427 lb)

#### Compatible Application Software Packages

- DUO Software (used when operating in the Color Touch Screen Interface Mode)

#### Options

- Add 80 µg/cm<sup>2</sup> Window

# Alpha/Beta Counting Automatic Systems

## WPC-1050 Automatic Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Ultra-Low Background
- Easy Maintenance
- Easy Window Replacement
- Gas-PRO™ Failsafe Counting
- Radon Compensation for Air Filters
- Gas Conservation

The WPC-1050 is a general purpose ultra-low background counting system, which is widely used for both health physics and radiochemistry applications.

- Built-in Color Touch Screen Interface
- Ability to export data to a USB flash drive
- Ability to program Routines on a PC running the included DUO software then transfer the Routines to the instrument via a USB flash drive
- Optional Gas Flow Conservation Mode option available



### Specifications

#### TYPE

Sample Changer: Automatic  
Number of Detectors: 1 + guard  
Counter: Ultra-Low Background  
Sample Size: 5.1 cm (2 in.)  
Interface: Touch Screen

#### DETECTOR

Size: 5.7 cm (2.3 in.) Diameter  
Type: Pancake Style Gas Flow Proportional  
Window: Aluminized, 80  $\mu\text{g}/\text{cm}^2$   
Guard Detector: 1 Large Gas Flow Proportional  
Counting Gas: P-10, 60 cc/min @ 10 psi  
Gas-PRO™ Protection: Yes  
Shielding: 10 cm (2.4 in.) Thick

#### SAMPLE

Size: 5.1 cm (2 in.) Diameter Planchets  
Capacity: 50 (100 Optional)  
Depth: 1/8, 1/4, 5/16 inch  
Reader: Barcode  
Range: 1–999  
Data Export: USB Flash Drive, RS-232

#### INTERFACE

Type: Touch Screen  
Compatible Software: Vista FC, DUO Software

#### PERFORMANCE

Alpha Background: 0.05 cpm typical, 0.1 cpm warranted  
Beta Background: 0.7 cpm typical, 0.9 cpm warranted  
Po<sup>210</sup> Efficiency: 40%  
Am<sup>241</sup> Efficiency: 40%  
Th<sup>230</sup> Efficiency: 40%  
Sr<sup>90</sup>/Y<sup>90</sup> Efficiency: 55%  
Tc<sup>99</sup> Efficiency: 35%  
Cs<sup>137</sup> Efficiency: 40%  
Alpha-Beta Crosstalk: < 0.1%  
Beta-Alpha Crosstalk: < 0.1%  
Count Modes: Alpha only, Beta only, Alpha/Beta simultaneously,  
Alpha then Beta from Vista FC Software

#### PHYSICAL

Dimensions: 83.8 x 81.3 x 63.5 cm (33 x 32 x 25 in.) (H x W x D) (50 Samples)  
129.5 x 81.3 x 63.5 cm (51 x 32 x 25 in.) (H x W x D) (100 Samples)  
Weight: 195 kg (430 lb) Installed

#### Compatible Application Software Packages

- Vista 2000 Radiochemistry Applications Software
- Vista FC Health Physics Applications Software
- DUO Software (for use when operating in the Color Touch Screen Interface Mode)

#### Options

- 100 Sample Stack

# Alpha/Beta Counting Automatic Systems

## WPC-1150-GFW-3 Automatic Sample Changer

- 8.9 cm (3.5 in.) Diameter Gas Flow Detector
- 10.2 cm (4 in.) Standard Planchet Diameter
- 50 Sample Capacity
- Low Background
- Touch Screen Interface
- Gas-Pro Failsafe Counting

The WPC-1150-GFW-3 12.7 cm (5 in.) low background windowless automatic is a gas-flow proportional counter equipped with a 8.9 cm (3.5 in.) detector configuration. The WPC-1150-GFW-3 incorporates a built-in color touch screen interface and is targeted toward health physics and environmental applications. The WPC-1150-GFW-3 is ideal for large diameter air filters used in high-volume air samplers.



### Specifications

#### TYPE

Sample Changer: Automatic  
Number of Detectors: 1 + guard  
Counter: Ultra-Low Background  
Sample Size: 10.2 cm (4 in.)  
Interface: Touch Screen

#### DETECTOR

Size: 8.9 cm (3.5 in.) Diameter  
Type: Pancake-style gas flow proportional  
Window: Aluminized, 80  $\mu\text{g}/\text{cm}^2$   
Guard Detector: 1 large gas flow proportional  
Counting Gas: P-10, 60 cc/min @ 10 psi  
Shielding: 10.2 cm (4 in.) thick

#### SAMPLE

Size: 10.2 cm (4 in.), custom sizes available  
Capacity: 50  
Reader: Barcode  
Range: 1-999

#### PERFORMANCE

Alpha Background: 0.3 cpm  
Beta Background: 1.5 cpm  
Th<sup>230</sup> Efficiency: 27%  
Sr<sup>90</sup>/Y<sup>90</sup> Efficiency: 63%  
Tc<sup>99</sup> Efficiency: 41%  
Alpha-Beta Crosstalk: < 0.1%  
Beta-Alpha Crosstalk: < 0.1%  
Count Modes: Alpha only, Beta only, Alpha/Beta simultaneously

#### PHYSICAL

Dimensions: 63.5 x 91.4 cm (25 x 36 in.) (W x D)  
Weight: 816 kg (1800 lb)

#### Compatible Application Software Packages

- Vista FC Health Physics Applications Software
- DUO Software (used when operating in the Color Touch Screen Interface Mode)

# Alpha/Beta Counting Automatic Systems

## WPC-1150-GFW-5 Automatic Sample Changer

- 12.7 cm (5 in.) Diameter Gas Flow Detector
- 10.2 cm (4 in.) Standard Planchet Diameter
- 50 Sample Capacity
- Low Background
- Touch Screen Interface
- Gas-Pro Failsafe Counting

The WPC-1150-GFW-5 12.7 cm (5 in.) low-background windowless automatic sample changer is a gas-flow proportional counter available in either a 12.7 cm (5 in.) or 8.9 cm (3.5 in.) detector configuration. The WPC-1150-GFW-5 incorporates a built-in color touch screen interface and is targeted toward health physics and environmental applications. The WPC-1150-GFW-5 is ideal for large diameter air filters used in high-volume air samplers.



### Specifications

#### TYPE

Sample Changer: Automatic  
Number of Detectors: 1 + guard  
Counter: Ultra-Low Background  
Sample Size: 10.2 cm (4 in.)  
Interface: Touch Screen

#### DETECTOR

Size: 12.7 cm (5 in.) Diameter  
Type: Pancake-style gas flow proportional  
Window: Aluminized, 80  $\mu\text{g}/\text{cm}^2$   
Guard Detector: 1 large gas flow proportional  
Counting Gas: P-10, 60 cc/min @ 10 psi  
Shielding: 10.2 cm (4 in.) thick

#### SAMPLE

Size: 10.2 cm (4 in.), custom sizes available  
Capacity: 50  
Reader: Barcode  
Range: 1-999

#### PERFORMANCE

Alpha Background: 0.5 cpm  
Beta Background: 5 cpm  
Th<sup>230</sup> Efficiency: 27%  
Sr<sup>90</sup>/Y<sup>90</sup> Efficiency: 63%  
Tc<sup>99</sup> Efficiency: 41%  
Ni<sup>63</sup> Efficiency: 20%  
Alpha-Beta Crosstalk: < 0.1%  
Beta-Alpha Crosstalk: < 0.1%  
Count Modes: Alpha only, Beta only, Alpha/Beta simultaneously

#### PHYSICAL

Dimensions: 63.5 x 91.4 cm (25 x 36 in.) (W x D)  
Weight: 816 kg (1800 lb)

#### Compatible Application Software Packages

- Vista FC Health Physics Applications Software
- DUO Software (used when operating in the Color Touch Screen Interface Mode)

Specifications subject to change  
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