

ORTEC[®]

Alpha/Beta Counting Automatic Systems



α / β

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

AMETEK[®]
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 HP = Health Physics; SC = Smear Counting; RC = Radiochemistry; CL = General Counting Labs; NP+ = 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 1/2 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
Th²³⁰ Efficiency: 23%
Sr⁹⁰/Y⁹⁰ Efficiency: 45%
Tc⁹⁹ 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
Po²¹⁰ Efficiency: 45%
Am²⁴¹ Efficiency: 45%
Th²³⁰ Efficiency: 45%
Sr⁹⁰/Y⁹⁰ Efficiency: 55%
Tc⁹⁹ Efficiency: 45%
Cs¹³⁷ 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

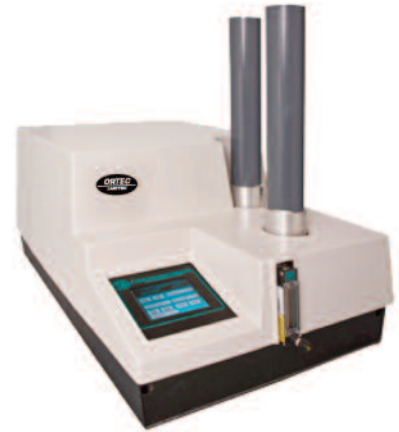
- Add 80 µg/cm² Window
- Touch Screen Interface with USB port (order Model IPC-650-HP)

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
Po²¹⁰ Efficiency: 45%
Am²⁴¹ Efficiency: 45%
Th²³⁰ Efficiency: 45%
Sr⁹⁰/Y⁹⁰ Efficiency: 55%
Tc⁹⁹ Efficiency: 45%
Cs¹³⁷ 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/cm² 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
Po²¹⁰ Efficiency: 40%
Am²⁴¹ Efficiency: 40%
Th²³⁰ Efficiency: 40%
Sr⁹⁰/Y⁹⁰ Efficiency: 55%
Tc⁹⁹ Efficiency: 35%
Cs¹³⁷ 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
Th²³⁰ Efficiency: 27%
Sr⁹⁰/Y⁹⁰ Efficiency: 63%
Tc⁹⁹ 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
Th²³⁰ Efficiency: 27%
Sr⁹⁰/Y⁹⁰ Efficiency: 63%
Tc⁹⁹ Efficiency: 41%
Ni⁶³ 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
092614

ORTEC[®]

www.ortec-online.com

Tel. (865) 482-4411 • Fax (865) 483-0396 • ortec.info@ametek.com
801 South Illinois Ave., Oak Ridge, TN 37830 U.S.A.
For International Office Locations, Visit Our Website

AMETEK[®]
ADVANCED MEASUREMENT TECHNOLOGY