

# ORTEC<sup>®</sup>

## *Alpha/Beta Counting Manual Systems*



$\alpha / \beta$

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

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

# Alpha/Beta Counting Manual Systems

ORTEC offers a full suite of **MANUAL** alpha / beta counters incorporating either gas-flow proportional detector or dual-phosphor scintillation detector technologies. These manual, single detector systems are ideally suited for applications requiring **long count times for a small number of samples**.

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

Manual Systems	Recommended Applications					Model Features				
	HP	SC	RC	CL	NP+	GL	LB	ULB	WL	GC
MPC-900-DP	✓	✓				✓				✓
MPC-900-GFL, GFW	✓	✓							✓	✓
MPC-1000-GFL, GFW	✓	✓						✓	✓	
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 Manual Systems

## MPC-900-DP Manual Single Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Dual Phosphor Detector
- Touch Screen
- Light Weight Portability
- Radon Compensation for Air Filters

The MPC-900-DP is a convenient and versatile “benchtop” counter equipped with a dual phosphor scintillator type detector that supports gasless operation and easy portability. This sample counter is ideal for standard health physics applications such as smears and air filters.



### Specifications

#### TYPE

Sample Changer: Manual  
Number of Detectors: 1  
Counter: Gross  
Sample Size: 5.1 cm (2 in.) Diameter  
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: 1  
Depth: 1/8, 1/4, 5/16 inch  
Data Export: USB Flash Drive, RS-232

#### INTERFACE

Type: Touch Screen  
Compatible Software: 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

#### PHYSICAL

Dimensions: 45.7 x 22.9 x 40.6 cm (18 x 9 x 16 in.) (H x W x D)  
Weight: 18.1 kg (40 lb) Installed

#### Compatible Application Software Packages

- DUO Software

#### Options

- Lead ring shielding, 22.7 kg (50 lb), Order part number MPC-900-SHLD
- Cosmic guard, included with model MPC-900-DP-G

# Alpha/Beta Counting Manual Systems

## MPC-900-GFW Manual Single Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Hemi-Gas Flow Proportional
- Gas-PRO™ Failsafe Counting
- Touch Screen
- Gas Conservation
- Light Weight Portability

The MPC-900-GFW is a convenient and versatile benchtop counter equipped with a gas-flow proportional type detector that supports easy portability. This sample counter is ideal for standard health physics applications such as smears and air filters.



### Specifications

#### TYPE

Sample Changer: Manual  
Number of Detectors: 1  
Counter: Gross  
Interface: Touch Screen

#### DETECTOR

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

#### SAMPLE

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

#### INTERFACE

Type: Touch Screen  
Compatible Software: Vista 2000, DUO Software

#### PERFORMANCE

Alpha Background: 0.05 cpm typical, 0.1 cpm warranted  
Beta Background: 35 cpm typical, 55 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

#### PHYSICAL

Dimensions: 45.7 x 22.9 x 40.6 cm (18 x 9 x 16 in.) (H x W x D)  
Weight: 18.1 kg (40 lb) Installed

#### Compatible Application Software Packages

- DUO Software
- Vista 2000 Applications Software

#### Options

- Lead ring shielding, 22.7 kg (50 lb), Order part number MPC-900-SHLD

# Alpha/Beta Counting Manual Systems

## MPC-900-GFL Manual Single Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Windowless Gas Flow Proportional
- Touch Screen
- Gas Conservation
- Light Weight Portability
- Gas-PRO™ Failsafe Counting

The MPC-900-GFL is a convenient and versatile benchtop counter equipped with a windowless gas-flow proportional type detector. This sample counter delivers higher efficiencies for projects involving alpha emitters and higher activity low energy beta emitters.



### Specifications

#### TYPE

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

#### DETECTOR

Size: 5.7 cm (2.3 in.) Diameter  
Type: Pancake Gas Flow Proportional  
Window: Windowless  
Counting Gas: P-10, 60 cc/min. @ 10 psi  
Gas-PRO Protection: Yes  
Shielding: Optional

#### SAMPLE

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

#### INTERFACE

Type: Touch Screen  
Compatible Software: Vista 2000, DUO Software

#### PERFORMANCE

Alpha Background: 0.05 cpm typical, 0.1 cpm warranted  
Beta Background: 35 cpm typical, 55 cpm warranted  
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, Beta only, Alpha/Beta simultaneously

#### PHYSICAL

Dimensions: 45.7 x 22.9 x 40.6 cm (18 x 9 x 16 in.) (H x W x D)  
Weight: 18.1 kg (40 lb) Installed

#### Compatible Application Software Packages

- DUO Software
- Vista 2000 Applications Software

#### Options

- Lead ring shielding, 22.7 kg (50 lb), Order part number MPC-900-SHLD

# Alpha/Beta Counting Manual Systems

## MPC-1000-GFW Manual Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Gas-PRO™ Failsafe Counting
- Ultra-Low Background Counter
- Hemispherical Gas Flow Detector
- Cosmic Guard Detector
- Gas Conservation
- Touch Screen Interface
- USB Port



The MPC-1000-GFW Single Detector Counter is the most versatile, high-performance, ultra-low background counter available. This counter provides new labs a cost effective entry into ultra-low background alpha/beta counting until sample volumes grow larger and justify either Multi-Detector Systems or Automatic Counters.

### Specifications

#### TYPE

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

#### DETECTOR

Size: 5.7 cm (2.3 in.) Diameter  
Type: Hemispherical Style Gas Flow Proportional  
Window: Aluminized, 80  $\mu\text{g}/\text{cm}^2$   
Guard Detector: Large Area Gas Flow Proportional  
Counting Gas: P-10, 60 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: 1  
Depth: 1/8, 1/4, 5/16 inch  
Data Export: RS-232, USB

#### INTERFACE

Type: Touch Screen  
Compatible Software: Vista 2000, DUO

#### 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

#### PHYSICAL

Dimensions: 58.4 X 61 cm (23 x 24 in.) (W x D)  
Weight: 172 kg (380 lb) Installed

#### Compatible Application Software Packages

- Vista 2000 Radio-Chemistry Applications Software
- DUO Software (for use when operating in the Color Touch Screen Interface Mode)

# Alpha/Beta Counting Manual Systems

## MPC-1000-GFL Manual Sample Changer

- 5.1 cm (2 in.) Standard Planchet Diameter
- Gas-PRO™ Failsafe Counting
- Ultra-Low Background Counter
- Windowless Gas Flow Detector
- Gas Conservation
- Cosmic Guard Detector
- Touch Screen Interface
- USB Port



The MPC-1000-GFL Single Detector Counter is the most versatile, high-performance, ultra-low background counter available. This counter provides new labs a cost effective entry into ultra-low background alpha/beta counting until sample volumes grow larger and justify either Multi-Detector Systems or Automatic Counters.

### Specifications

#### TYPE

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

#### DETECTOR

Size: 5.7 cm (2.3 in.) Diameter  
Type: Hemispherical Style Gas Flow Proportional  
Window: Windowless  
Guard Detector: Large Area Gas Flow Proportional  
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: 1  
Depth: 1/8, 1/4, 5/16 inch  
Data Export: RS-232, USB

#### INTERFACE

Type: Touch Screen  
Compatible Software: Vista 2000, DUO

#### 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: 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, Beta only, Alpha/Beta simultaneously

#### PHYSICAL

Dimensions: 58.4 X 61 cm (23 x 24 in.) (W x D)  
Weight: 172 kg (380 lb) Installed

#### Compatible Application Software Packages

- Vista 2000 Radio-Chemistry Applications Software
- DUO Software (for use when operating in the Color Touch Screen Interface Mode)

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Specifications subject to change  
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