Alpha/Beta Counting Manual Systems

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

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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 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.
### 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 µg/cm²
- 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
- Th²³² Efficiency: 23%
- Sr⁹⁰/Y⁹⁰ Efficiency: 45%
- Tc⁹⁵ Efficiency: 30%
- Alpha-Beta Crosstalk: < 0.1%
- Beta-Alfa 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
# 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 µg/cm²
- 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
- Po²¹⁰ Efficiency: 40%
- Am²⁴¹ Efficiency: 40%
- Th²³⁰ Efficiency: 40%
- Sr⁸⁵/Y⁹⁰ Efficiency: 55%
- Tc⁹⁹ Efficiency: 35%
- Cs¹³⁷ Efficiency: 40%
- Alpha-Beta Crosstalk: < 0.1%
- Beta-Alpah 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
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
Po²¹⁰ Efficiency: 45%
Am²⁴¹ Efficiency: 45%
Th²³² Efficiency: 45%
Sr⁹⁰/Y⁹⁰ Efficiency: 55%
Tc⁹⁰ Efficiency: 45%
Cs¹³⁷ Efficiency: 45%
Alpha-Beta Crosstalk: < 0.1%
Beta-Alpa 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
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 µg/cm²
- 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
- Po²¹⁰ Efficiency: 40%
- Am²⁴¹ Efficiency: 40%
- Th²³² Efficiency: 40%
- Sr⁹⁰/Y⁹⁰ Efficiency: 55%
- Tc⁹⁰ Efficiency: 35%
- Cs¹³⁷ Efficiency: 40%
- Alpha-Beta Crosstalk: < 0.1%
- Beta-Alpa 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)

**Options**
- PC Remote Interface Configuration (no Touch Screen) Order Model: MPC-1000-PC-GFW
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
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-Alpa 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)

Options
• PC Remote Interface Configuration (no Touch Screen) Order
Model: MPC-1000-PC-GFL