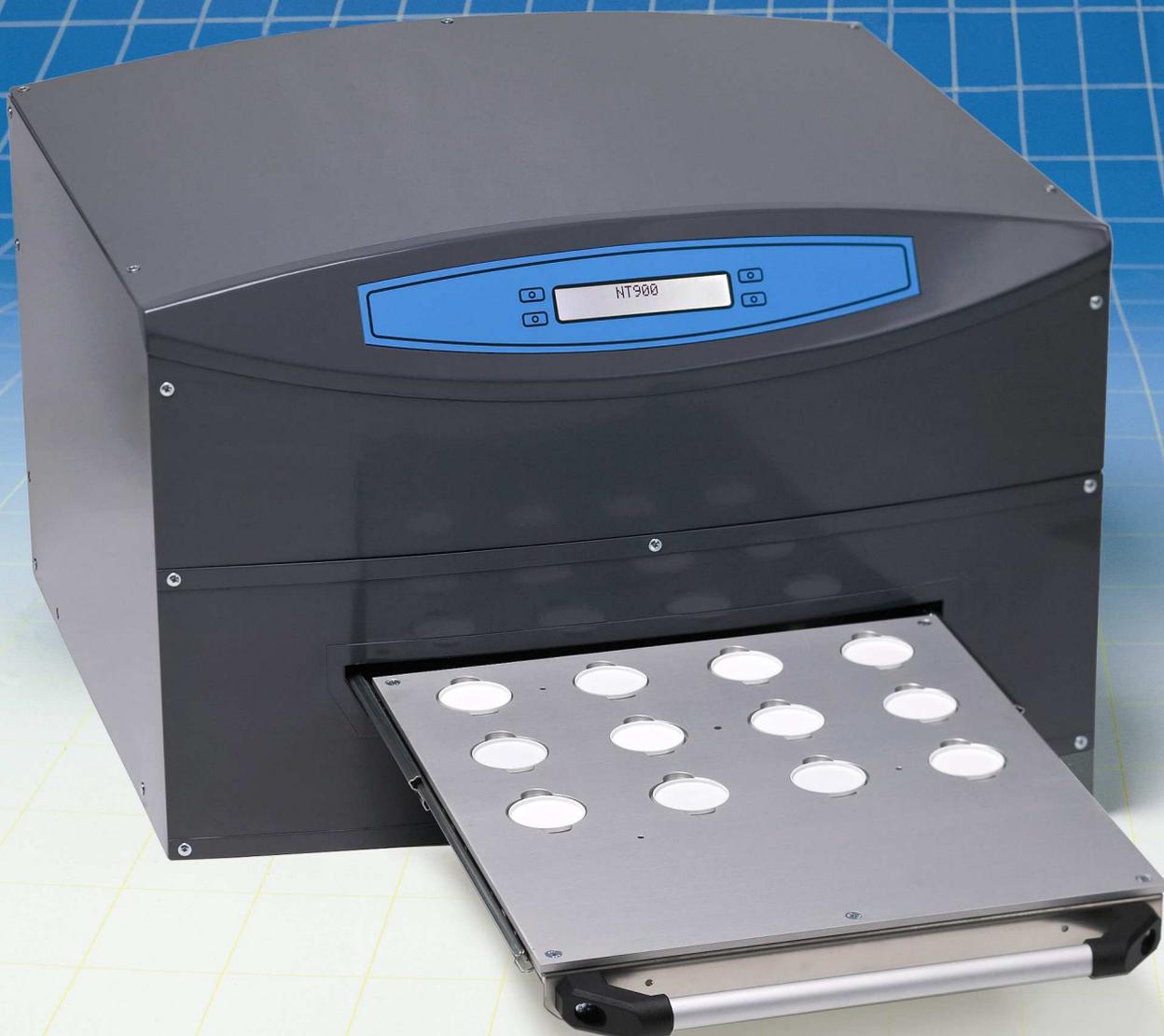


# NT900

12-fold low level counter



**NUTRONIC** Gävle Sweden

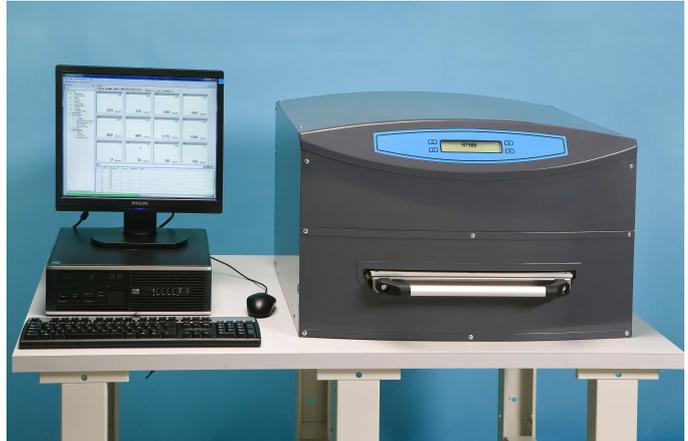


# NT900 12-fold low level counter

The Nutronic NT900 is the first choice for counting large number of smear wipe samples or other low level samples. With a 12-fold high efficiency gas flow proportional detector the NT900 can measure large amounts of samples in short times. The NT900 connects with USB to a standard Windows PC. A user friendly software controls the measurement and displays the result. A detailed report of each measurement can be printed on a standard printer connected to the PC.

## NT900 Main features

- Laboratory quality alpha/beta counting system
- High detector efficiency and low background count rate gives short measuring times
- 12-fold gas flow detector
- Software for smear wipe samples with display in contamination units, activity or counts.
- Standard sample holder for 50 mm samples
- Custom holder for samples up to 70 mm
- 100mm lead shield
- Detector can be accessed without removing the lead and is easy to clean



*NT900 complete system*

## Application

Today's increasing need for contamination control means that more samples must be counted in less time. The NT900 12-fold low level counter will increase sample throughput and make accurate measurement in less time. By measuring 12 samples at the same time in both beta and alpha mode the NT900 is a real time saver. The NT900 is connected to a standard Windows PC via USB. The user friendly software includes measuring, report printing, a database and calibration routines.



*The NT900 12-fold detector*

## Detector

The NT900 uses a 12-fold gas flow proportional detector. A guard detector that covers the entire area of the measuring detectors is positioned directly above the measuring detectors. By using anti-coincidence technology the background count rate is lowered considerably.

The foil is a thin 0,28mg/cm<sup>2</sup> metallised mylar film. It can be easily replaced on a single detector without removing the lead.

## Operation

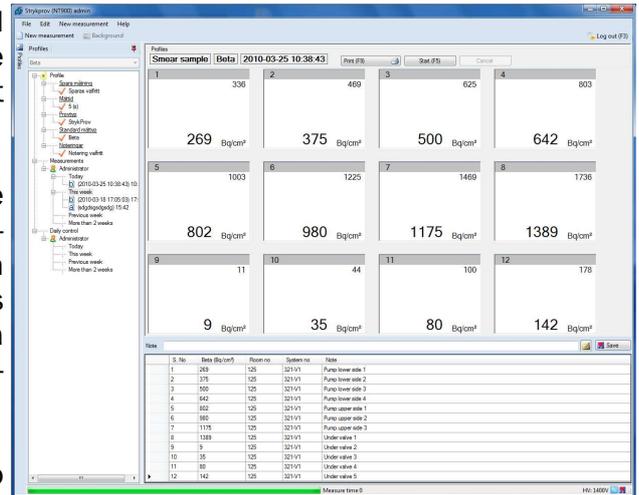
The NT900 is fast and easy to operate. Insert up to 12 samples, close the sample holder, press start in the Windows software and the measuring will start. The result is displayed directly in contamination units (Bq/cm<sup>2</sup>). The result can also be printed a printer connected to the computer.

## Measuring modes

The NT900 can be set to measure beta only, alpha and beta or beta with auto-alpha detection. This makes the instrument flexible and easy to adapt for different tasks.

In beta mode the measurement is performed on the beta plateau only. In alpha and beta mode the instrument will first measure on the beta plateau, then when the beta measurement is complete the detector bias voltage is lowered to the alpha plateau voltage and a new measurement is started. The alpha and beta results are presented separately on the display.

In auto-alpha mode the instrument will always start to measure in beta mode. During the beta measurement the instrument monitors for pulses with high amplitude that are suspected alpha pulses. After the beta measurement, if high-amplitude pulses were found, the NT900 will lower the detector bias voltage to the alpha plateau level and make an alpha measurement.



*The NT900 user friendly software*

## Calibration and maintenance

Calibration is computer assisted and it is easy to set all parameters. An efficiency check can easily be done so the performance can be regularly checked.

## Reports

The software allows user defined reports to be printed. The user can type a comment for each sample. All measurements are stored in a database that can later be searched.

Nutronic AB		3/20/2009		
Namn: 2009-03-20 13:40:52		Notering 13:42		
Användare: Administrator				
Mättyp: AutoAlfa mätning				
Beta	Alfa	Notering	Block	Sys. nr.
196	250	Valve 321 under		
196	250	Valve 321 under		
196	250	Valve 321 over		
196	250	Valve 321 over		
196	250	Valve 322		
196	250	Pipe 698 north end		
196	250	Pipe 698 north end		
196	250	Pipe 698 south end		
196	250	Pipe 698 south end		
196	250	Floor section A		
196	250	Floor section A		
196	250	Floor section A		

*A sample report from the NT900 software*

## Technical data NT900

### Type of instrument

Low level counter for smear wipes or air filters.

### Sample holder

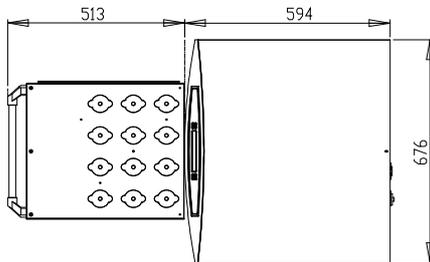
Material: Aluminium  
Standard sample size 50mm  
Maximum sample size for custom sample holder 70mm

### Lead shield

Geometry: 4π  
Thickness: 100 mm

### Size and weight

Width: 716 mm  
Depth: 594 mm  
Height: 431 mm  
Weight standard version: 1050kg



Working area with sample tray in open position:

Width: 716 mm  
Depth: 1107 mm

### Environmental

Operating temperature: 10-40 °C (50-104 °F).  
Operating humidity: 0-90% relative, non-condensing.

### Power supply

Input voltage: 230 VAC  
Input frequency: 50Hz

### Background compensation

Anti-coincidence background compensation. Also for each cup the background is measured and stored. The stored background count rate is subtracted from the sample count rate and the net count rate is used to compute the measuring value.

### Detector

Gas flow proportional detector.  
Gas type: Argon-CO<sub>2</sub> (80-20 to 82-18) or P-10 (methane in argon)  
Gas flow 4 l/h  
Active window size: 60 mm

Window material: Aluminium coated Mylar  
Window density: 0,28 mg/cm<sup>2</sup>  
Background count rate: Beta mode <0,11 CPS  
Alpha mode <0,003 CPS

### Typical efficiency

Measuring geometry 2p according to ISO 7503-1. Counting gas: Ar-CO<sub>2</sub> (80/20). Active diameter of reference source: 45 mm. The reference activity is the surface emission rate as specified by the source manufacturer. Measured efficiencies may vary because of source and geometry differences depending on the source manufacturer, cover material, backing material and source calibration method.

Beta emitters	Eff. [%]	E <sub>bmax</sub> [keV]
Sr-90/Y-90	66	546/2260
Cl-36	65	710
Co-60	66	318
Tc-99	53	294
C-14	35	154

### Alpha emitters

Am-241	47
Pu-239	45
U-238	39
Po-210	31

### Applicable standards

The NT900 adhere to the following international standards: **IEC 325** Alpha, beta and alpha-beta contamination meters and monitors. **ISO 7503-1** Evaluation of surface contamination. **ISO 8769** Reference sources for the calibration of surface contamination monitors. **ISO/FDIS 11929-1** Determination of the detection limit threshold for ionising radiation measurements.

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