

MODEL 321 NUCLEAR POWER PLANT TRITIUM MONITOR

NUCLEAR POWER PLANT TRITIUM MONITOR MODEL 321 NPPM 核电站氚监测器型号321NPPM

This tritium monitor is a version of the OTC standard 321/421 series, configured for the special environmental conditions associated with nuclear power plants, especially those of the CANDU type. This monitor can be used for other applications where tritium specific measurements in the presence of other radio-nuclides are required.

此款氚监测器为OTC标准321/421系列，为与核电站，尤其坎杜类型核电站的特殊环境条件要求配置，也可以用于在其它核素出现情况下要求对氚特定测量。

Major distinguishing features include the following: 包括以下在内的主要特点

Measures tritium or tritium oxide specifically
专门测量氚及其氧化物

Immune to other radioisotopes, including reactor gases as well as radon
不受其它核素，包括反应堆气体，及氡的影响

Gamma compensated dual chamber design
双电离室设计伽马补偿

Plate out proof ionization chambers eliminate "background" zero drift
防污电离室清除本底零漂移

Drift free "zero"
无零漂移

Rugged industrial enclosure
耐用工业用外壳

Unaffected by variations in temperature or humidity
不受温度或湿度变化影响

A variety of alarms and controls are available.
Optional Remote Displays and Sampling Units
can be built to suit different applications.
供应各种报警和控制，根据不同应用要求可选购适合的遥控显示和取样器。



SENSITIVITY - NOISE LEVELS 灵敏度-噪音水平

The Model 321 NPPM has been designed to exhibit sensitivities that meet the safety requirements associated with worker exposure in power plants. Sensitivity limits induced by background noise levels with instruments incorporating 2 liter ionization chambers approach 0.4 $\mu\text{Ci}/\text{m}^3$.

型号321NPPM设计显示的灵敏度符合与核电站工人辐射暴露相关的安全要求。

由2L电离室组成的仪器对来自本底噪音的灵敏度限值接近0.4 $\mu\text{Ci}/\text{m}^3$

RANGE 量程

The Model 321 NPPM is a single range instrument, with measurements up to 6 plus decades.

型号321NPPM是一款单量程仪器，测量达到6⁺个数量级



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MAINTENANCE维护

Except for routine attention the sample line dust filters and preventive maintenance to the sampling pump, the instrument will provide decades of trouble free service.

除了注意对样品管线，尘滤网的日常维护和对样品泵的预防性维护外，仪器将提供数十年无故障服务

SUPERVISORY SIGNALS监控信号

Computer compatible outputs are provided to signal operational failure including loss of sample flow, pump failure, electrical failure including that of the electronics, and failure of the ionization chambers.

提供计算机兼容输出以便在工作故障时，包括样品流丢失，泵故障，及包括电子学和电离室在内的电子故障时发出信号。

300/400 UNITS - FIXED CONFIGURATION

300/400仪器-固定配置

PERFORMANCE SPECIFICATIONS, TRITIUM MONITOR MODEL 321

性能规格，氚监测器，型号321

Designation 321.8LD.ICR.APS.DA.DF.PFA

The following specifications will apply when this instrument is used for the measurement of tritium.

当此款仪器用来测量氚时，以下规格适用

MEASUREMENT, TRITIUM CONCENTRATION 测量氚浓度

RANGE 量程范围	5 – 19999 kBq/m ³ (.005 – 19.999 MBq/m ³)
DISPLAY 显示	4½ digit DPM, digits are LED's 4½数字DPM，数字为LED
ACCURACY 精度	± 2 % of reading, ± L.S.D., whichever is greater 读数的± 2 %或± L.S.D.,以较大者为准
STABILITY AND DRIFT 稳定性与漂移	± 0.005 MBq/m ³ long term (at least 30 days) ambient temperature ± 0.005 MBq/m ³ 长期稳定（至少30天），环境温度
NOISE 噪音	± 0.005 MBq/m ³ , 1 sigma with alpha suppression in use. ± 0.005 MBq/m ³ ,使用α补偿时为1西格玛
OFFSET COMPENSATION 偏移补偿	manual zero control provided to offset the effects of gamma radiation and/or tritium build-up 提供手动零点控制抵消伽马辐射和/或氚污染
RESPONSE RATE 响应率	Two linear time constants 2线性时间常数
ELECTRONIC 电子学	approximately 15 seconds for signals up to about 1 MBq/m ³ approximately 3 seconds for signals from 1 to 20 MBq/m ³ 信号达到1 MBq/m ³ ，接近15秒 信号达到1-20 MBq/m ³ ，接近3秒



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WARM UP TIME less than thirty minutes
预热时间 少于30分钟

ALARM SYSTEM 报警系统

SIGNAL ALARMS Very High and High Concentration alarms set point adjustable from
0.001 – 1.000 MBq/m³. Visual indicators with latching or non-latching
(toggle) modes, rear panel relay interface. 10-turn potentiometer with
turns counting dial.
信号报警 非常高和高浓度报警设定点可调节范围0.001 – 1.000 MBq/m³，视觉指示为上锁
和解锁模式（棒式开关），后板继电器接口，10圈电位计，带圈数计数盘。

IONIZATION CHAMBER 电离室

VOLUME measuring: 6,500 cm³
容量 测量容量
 total wetted: 11,240 cm³ port to port
 总湿容量
 compensation: 8,000 cm³
 补偿容量

ELECTRODES Phantom wall wire grid on measurement chamber
Solid wall stainless steel on compensation chamber
电极 测量室上有模拟壁线栅（丝壁）
 补偿室不锈钢实体壁。

GASKETS Silicone
垫圈 硅酮

IN/OUT
CONNECTIONS 3/16" I.D. vinyl tubing hose barb fittings installed in 1/8 NPT ports
进/出连接 3/16 “内径乙烯管软管倒钩接头安装在1/8 NPT端口

MATERIALS OF
CONSTRUCTION Chambers, stainless steel; electrometer housing, aluminum
结构材料 电离室，不锈钢，静电计外壳，铝

ENVIRONMENTAL 环境

TEMPERATURE storage: -20° C to +70° C
温度 储存-20° C to +70° C
 operating: 5° C to 40° C
 操作：5° C - 40° C

HUMIDITY 0 to 95 % R.H. (non-condensing)
湿度 0 - 95 % R.H.（无冷凝）



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REAR PANEL INTERFACE 后板接口

J1	ELECTROMETER SIGNAL INPUT 静电计信号输出 MS3102A18-1S, 10 pin receptacle MS3102A18-1S, 10针接口
J2	REMOTE OUTPUTS 遥控输出 37 pin "D" connector (female) provides connections for various outputs 37针 "D" 型连接件 (内孔) 提供各种输出连接
J3	RS232 OUTPUTS -OPTIONAL- 25 pin "D" connector (female) provides connections for serial data output RS232 输出-选购, 25针 "D" 型连接件 (内孔) 提供各种串口数据输出连接
J4	0-10vdc linear signal output Dual banana jack 0-10vdc线性信号输出, 双香蕉插头
TB601	ALARM RELAY OUTPUT, High and Low Level Alarms 18 position terminal block with detachable plug, relays operate in the Fail-safe mode and are rated 5A, 250VAC. 继电器输出报警, 高/低值报警,

POWER

电源

VOLTAGE 230 VAC +10 %, 50 Hz, 20 W maximum
电压

FUSE ½ A, slow blow .25" diameter x 1.25" long
熔断器: ½ A, 缓动式熔断器, 直径.25" x 长1.25"

PHYSICAL

物理特点

DISPLAY 显示

ENCLOSURE 19" rack mounts cabinet 3U height (EIA Standard)
外壳 19英寸安装箱, 高度3U (EIA标准)

DIMENSIONS 5.25" [133mm] high x 19" [483mm] wide x 15" [381mm] deep
尺寸

WEIGHT 20 lbs [9 kgs]
重量 20磅/9公斤

IONIZATION CHAMBER, Can Be Remote Mounted Up To 25 Ft. Away
电离室 可以远程安装至25英尺远

DIMENSIONS 24" [610mm] high x 12" [305mm] wide x 12" [305mm] deep
尺寸

WEIGHT 50 lbs [23 kgs]
重量



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