



# SN-D-2™

## Neutron Dose Probe



### DESCRIPTION

The SN-D-2 probe for measurement of neutron dose equivalent rate is designed to be used with any CSP survey meter or any computer-based system developed within a CSP environment. Its 8 atm <sup>3</sup>He gas detector associated with a 200 mm polyethylene sphere, brings a best-in-class neutron efficiency and, an excellent Gamma rejection.

SN-D-2 probe's lightweight makes it an ideal tool for direct measurement of neutron ambient dose equivalent in reactor buildings during outages or on spent fuel transportation containers, prior to shipment to a reprocessing plant. A specific tripod can accommodate various heights and distances to the measurement scene while the user remains at a safe area with remote control, supporting ALARA principle.

Its measurement range starting from 300 nSv/h allows controlling neutron public limits within less than a minute. Most CSP meters can also improve MDA with the use of scaler-timer function whenever necessary. The top of range ending at 100 mSv/h supports occupational dose-rate monitoring in radiation controlled area.

The SN-D-2 probe includes an embedded carrying handle making it easy to move to the area to be monitored. Dedicated meter holders adapt each of the available host instruments to complete the probe as a

### FEATURES

- ✓ Neutron H\*(10) Dose Equivalent Rate
- ✓ Complies with public limit controls
- ✓ Belongs to CSP™ family
- ✓ Calibration via PC
- ✓ Easy to carry
- ✓ Excellent fit of IEC 61005 and ICRP-74 starting from thermal energies

one hand operational system. It can also be connected via CSP-COM™ modules to integrate a third-party system and behave as a neutron sub-assembly.

SN-D-2 probe can be calibrated and upgraded (probe's firmware) via CSPS™ software, a USB cable and a PC. It connects to the survey meter via a 1.5 meter, 10 meter or 20 meter CSP cable.

*SN-D-2 probe is part of Canberra™ Smart Probe (CSP) family, that drives numerous benefits, such as plug and play capabilities and exceptional readiness for field operations. Please refer to the "hand-held probes" brochure for further details.*

## SN-D-2 NEUTRON DOSE PROBE

# Specifications

NUCLEAR CHARACTERISTICS	
<b>Unit to display</b>	Depending on survey meter: Sv/h, Sv, rem/h, rem
<b>Emitter</b>	Neutron
<b>Detector</b>	<sup>3</sup> He filled tube (8 atm) with 1 mm Cadmium wrap and 200 mm PEHD moderating sphere
<b>Detection sensitivity</b>	0.17 to 0.20 c/s per $\mu$ Sv/h (Cf-252)
<b>Measurement range</b>	0.3 $\mu$ Sv/h to 100 mSv/h (30 $\mu$ rem/h to 10 rem/h)
<b>Energy range</b>	0.025 eV to 15 MeV within IEC61005-2014 tolerances
<b>Dead time</b>	< 8 $\mu$ s. Dead time correction is applied to cover entire linear measurement range
<b>Measurement accuracy</b>	-17% to +25% according to IEC 61005
<b>Response time</b>	From 1 $\mu$ Sv/h to 10 $\mu$ Sv/h < 20 s, from 10 $\mu$ Sv/h to 100 $\mu$ Sv/h < 10 s, above 100 $\mu$ Sv/h < 2 s
<b>Gamma sensitivity</b>	Gamma Rejection > 10 <sup>4</sup>
<b>Background</b>	Ambient $\leq$ 100 nGy/h (10 $\mu$ R/h): < 0.05 c/s (< 3.0 cpm)

ERGONOMIC	
<b>Display</b>	Provided by survey meter
<b>Alarm setpoints</b>	10 values for each unit to display. Saved in probe memory. They can be edited with CSPS software and PC or with Colibri® and AVIOR®-2 survey meters
<b>Default alarm threshold</b>	Chosen in a list by use of survey meter keypad

ELECTRICAL	
<b>Power</b>	Dupplied by survey meter or PC (low voltage only): +5 V
<b>Consumption</b>	25 mA maximum

MECHANICAL CHARACTERISTICS	
<b>Housing</b>	Painted aluminium for the top and painted stainless steel for the base
<b>Dimensions</b>	Sphere dia x height (without survey meter): 200 x 330 mm (7.9 x 13 in.)
<b>Weight</b>	< 5.9 kg (12.6 lb) without meter
<b>Drop tested</b>	On all faces from 30 cm (1 ft) height

ENVIRONMENT	
<b>Operating temperature</b>	-10 °C to +60 °C (+14 °F to 140 °F)
<b>Storage temperature</b>	-30 °C to +70 °C (-22 °F to 158 °F)
<b>Relative humidity</b>	10% to 95% at 35 °C
<b>Cleaning</b>	Housing easy to decontaminate
<b>Ingress protection</b>	IP64

NORM	
<b>EMC</b>	Conform
<b>CE</b>	Conform
<b>IEC</b>	Compliant with IEC 61005:2014
<b>ANSI</b>	Compliant with ANSI N42.17A:2003
<b>FCC</b>	Class A Digital device

## SN-D-2 NEUTRON DOSE PROBE

# Specifications Continued

### ORDERING REFERENCES

- SN-D-2/C for Colibri: NOM007740
- SN-D-2/R2000 for Radiagem-2000: NOM007741
- SN-D-2/RDS for RDS-32/31: NOM007742
- SN-D-2-TRIPOD: NOM006504/EM98148
- RDS-32/31 Adapter cable: 1233-318
- CSP Cable (1.5 m length): NOM006282/EM77336
- CSP Cable (10 m length): NOM006513/EM99006
- CSP Cable (20 m length): NOM006512/EM98830
- CSP Coil Cable (0.7-1.5 m extensible length):  
NOM006283/EM77337
- CSP-PC USB cable: NOM006288/EM78466
- BINDER CSP PROBE-PC USB CABLE: NOM007145/  
EM109648
- Calibration/Setup Software (CSPS):
  - CSPS-F: NOM006289/EM78468
  - CSPS-R: NOM006298/EM80642
  - CSPS-E: NOM006299/EM80643



SN-D-2 probe on tripod



**MIRION**  
TECHNOLOGIES



Copyright © 2023 Mirion Technologies, Inc. or its affiliates. All rights reserved. Mirion, the Mirion logo, and other trade names of Mirion products listed herein are registered trademarks or trademarks of Mirion Technologies, Inc. or its affiliates in the United States and other countries. Third party trademarks mentioned are the property of their respective owners.

SPC-246\_DMD\_EN-A – 11/2023

**MIRION.COM**