

Model 802 Scintillation Detectors

9/85

User's Manual

Section 1. Introduction

The Model 802 Scintillation Detector is a Monoline Crystal Assembly which includes a high resolution NaI(Tl) crystal, a photomultiplier tube, an internal magnetic/light shield, and a chrome-plated aluminum housing.

Any Model 802 Detector Assembly plugs directly into the Model 2007 Tube Base, which provides bias for the photomultiplier tube, or into the Model 2007P, which combines the bias network with a built-in preamplifier.

Three crystal sizes are available, either with or without a well:

<u>Model</u>	<u>Crystal Size</u>
802-1	3.8 x 2.5 cm (1.5 x 1 in.)
802-3 802-3W	5 x 5 cm (2 x 2 in.) Same, with a well.
802-4 802-4W	7.6 x 7.6 cm (3 x 3 in.) Same, with a well.

Section 2. Specifications

RESOLUTION - Typically 7.5% - 8.5%; specified at 662 keV peak of ¹³⁷Cs; refer to the Specification Sheet packed with each detector.

WINDOW - 0.05 mm (0.02 in.) aluminum; density: 147.9 mg/cm².

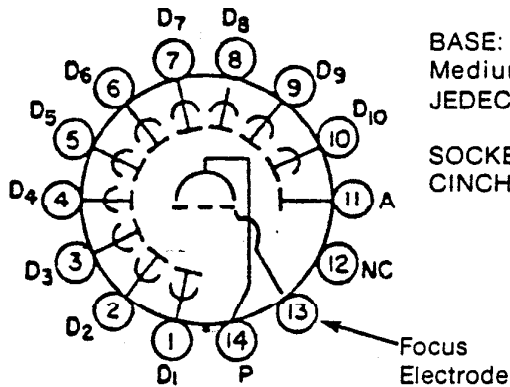
REFLECTOR - Oxide, 1.6 mm (0.625 in.) thick; density: 88 mg/cm².

MAGNETIC/LIGHT SHIELD - Conetic lined steel.

TYPICAL BIAS - +800 to +1100 V dc; refer to the Specification Sheet packed with each detector.

Section 3. Tube Base

Pin Configuration



BASE:
Medium-shell Diheptal 14-pin
JEDEC NO. B14-38

SOCKET:
CINCH No. 3M-14

D - DYNODE
A - ANODE
P - PHOTOCATHODE
NC - NO CONNECTION

Section 4. Operating Instructions

The Model 802 series NaI photomultiplier tubes (PMTs) are designed to be operated with a Model 2007 Tube Base or a Model 2007P Tube Base/Preamplifier, or equivalent, both of which provide the PMT with its operating bias. The bias is derived from a high voltage power supply such as the Model 3002 or the Model 3102, or equivalent.

The Model 2007 Tube Base is used with an external preamplifier, such as the Model 2005, or with the built-in charge-to-voltage converter and preamplifier in the Series 30, 35, 35 PLUS, and 40 MCAs.

The Model 2007P Tube Base/Preamplifier is used with an external amplifier which is connected directly either to the internal ADC in any Canberra MCA or to an external ADC.

4.1 SETUP

In mating a Model 802 series detector to either the Model 2007 or the Model 2007P Tube Base, use care in aligning

the pins of the Model 802 with the sockets of the Tube Base. A key is provided on the Model 802 and a keyway on the Tube Base to ensure correct alignment.

When applying the High Voltage bias to the Model 802 good operating practice requires that the full bias not be applied immediately; it should be raised or lowered over a period of several seconds. The Model 2007P is diode-protected for occasional faults and for high-voltage arcing. The Model 2007 has no diode protection.

Refer to the Model 2007 or Model 2007P manual for system interconnections.

WARRANTY

This warranty covers Canberra hardware and software shipped to customers within the United States. For hardware and software shipped outside the United States, a similar warranty is provided by Canberra's local representative.

DOMESTIC WARRANTY

Equipment manufactured by Canberra's Instruments Division, Detector Products Division, and Nuclear Systems Division is warranted against defects in materials and workmanship for one year from the date of shipment.

Canberra warrants proper operation of its software only when used with software and hardware supplied by Canberra and warrants software media to be free from defects for 90 days from the date of shipment.

If defects are discovered within 30 days of the time you receive your order, Canberra will pay transportation costs both ways. After the first 30 days, you will have to pay the transportation costs.

This is the only warranty provided by Canberra; there are no other warranties, expressed or implied. All warranties of merchantability and fitness for an intended purpose are excluded. Canberra shall have no liability for any special, indirect or consequential damages caused by failure of any equipment manufactured by Canberra.

EXCLUSIONS

This warranty does not cover equipment which has been modified without Canberra's written permission or which has been subjected to unusual physical or electrical stress as determined by Canberra's Service Personnel.

Canberra is under no obligation to provide warranty service if adjustment or repair is required because of damage caused by other than ordinary use or if the equipment is serviced or repaired, or if an attempt is made to service or repair the equipment, by other than Canberra personnel without the prior approval of Canberra.

This warranty does not cover detector damage caused by abuse, neutrons, or heavy charged particles.

SHIPPING DAMAGE

Examine shipments carefully when you receive them for evidence of damage caused in transit. If damage is found, notify Canberra and the carrier immediately. Keep all packages, materials and documents, including your freight bill, invoice and packing list. Although Canberra is not responsible for damage sustained in transit, we will be glad to help you in processing your claim.

OUT OF WARRANTY REPAIRS

Any Canberra equipment which is no longer covered by warranty may be returned to Canberra freight prepaid for repair. After the equipment is repaired, it will pass through our normal pre-shipment checkout procedure.

RETURNING EQUIPMENT

Before returning equipment for repair you must contact your Regional Service Center or one of our factories for instructions. For detector repair, contact the Canberra Detector Division in our Meriden, Connecticut, factory for instructions. If you are going to return the equipment to the factory, you must call first to get an Authorized Return Number (ARN).

When you call us, we will be glad to suggest the best way for you to ship the equipment and will expedite the shipment in case it is delayed or lost in transit. Giving you shipping advice does not make us responsible for the equipment while it is in transit.

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