

FLUKE®

Biomedical

Nuclear Associates 05-582

PRIMA® 7 Transport Index Radiation Monitor

Operators Manual

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Table of Contents

Section 1:	General Information	1-1
1.1	Product Description	1-1
1.2	Specifications.....	1-1
Section 2:	Operation	2-1
2.1	Operation	2-1
2.2	Operation Check.....	2-1
Section 3:	Maintenance/Calibration	3-1
3.1	Battery Replacement	3-1
3.2	Calibration.....	3-1

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Section 1

General Information

1.1 Product Description

The PRIMA® 7 is a general-purpose survey meter designed for the measurement of gamma radiation. It can be used to determine *TRANSPORT INDEX of packages containing gamma emitting radioactive material. The telescoping rod, when fully extended, places the detector of the PRIMA 7 at a distance of one meter from the package being monitored. This is the distance at which the TRANSPORT INDEX is measured.

Some early models of the PRIMA 7 have a telescoping measuring rod that is three feet long. On these models, the rod, when fully depressed, protrudes from the top of the case about ¼ inch. On models with a one-meter rod, the rod, when fully depressed, will protrude about ¾ inch.

1.2 Specifications

Range	0-99 mR/h, in 1 mR increments with round-off
Display	2 digit L.E.D., 0.3 in. high
Indicators	Read indicator lights up after 4-second measurement cycle is complete Display blanks over 99 mR/h Low-battery indicator flashes when battery needs to be replaced Count indicator flashes on or off for each detector pulse
Energy Response	+40%, -12% from 50 keV to 1.2 MeV
Accuracy	± 10% or ± 1 digit, whichever is greater Calibrated for ¹³⁷ Cs
Detector	Compensated halogen-quenched GH tube
Control	Press to measure (4 seconds); hold to read
Response Time	4 seconds
Batteries	4 type AA alkaline cells; over 10,000 measurements
Operating Environment	10°F to 120°F (-12°C to 50°C) with alkaline cells
Dimensions (HxWxD)	6 in. x 3 ½ in. x 1 ½ in. (15.2 cm x 8.9 cm x 3.8 cm)
Weight	12 oz (340.2 g)

* U.S. Department of Transportation, Title #49

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Section 2

Operation

2.1 Operation

Holding the instrument in front of you, press the red button on the right side of the unit and HOLD IT IN. The digital indicator will come on, and counting will commence automatically. When the green READ indicator light on the right side of the panel lights up, in approximately four to five seconds, the measurement is complete. The display will be in mR/h (milliroentgens per hour). This display will remain illuminated until the button is released.

During the counting period of approximately four seconds, a small LED indicator below RATE will blink on or off for each detector pulse, indicating that the instrument is operating properly. The RATE indicator can be used to determine the area of highest activity before the actual measurement is made, if desired.

Immediately to the right of the RATE indicator is a LOW BATTERY indicator. If the low battery indicator flashes on and off during a measurement, the batteries should be replaced.

If the display blanks completely at the end of a counting cycle and the low battery indicator is not flashing, it is an indication that the field is greater than 99 mR/h. In very high fields, the display will never come on, but in fields up to about 500 mR/h, the display will come on briefly before it is completely extinguished.

The PRIMA 7 is designed to round off the digits on the display. In the round off procedure, the display will read 1 for fields above 0.5 mR/h and will read 2 for fields between 1.5 and 2.5 mR/h, etc.

2.2 Operation Check

To check overall consistency in operation of the PRIMA 7, a license free radioactive check source such as catalog number 62-103 containing approximately ten microcuries of ^{137}Cs should be used. To check for proper operation with this source, place the source (label side down) directly over the target area indicated on the top of the front panel. Because the check source is not a calibrated source, the reading should be, on most instruments, between 10 and 15 mR/h. The main use of the check source is to verify that instrument operation is consistent from day to day. Typical readings from day to day will be from 11 to 13 mR/h with most readings at 12 mR/h.

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Section 3

Maintenance/Calibration

3.1 Battery Replacement

The PRIMA 7 uses four (4) AA cells. Mallory type MN1500 alkaline cells are preferable to the normal carbon cells because the alkaline cells will give approximately 10,000 measurements in normal service.

The instrument may be shipped with the batteries packed separately. To install or replace batteries, remove the single screw in the center of the back of the case to expose the battery holder. Note carefully how the case is installed. Insert cells with negative terminals on the springs. (Note + markings on battery holder.)

3.2 Calibration

The PRIMA 7 is calibrated at the factory, using a ^{137}Cs standard and should not need to be readjusted in the field.

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