



MIRION
TECHNOLOGIES

ACCURAD

PERSONAL RADIATION DETECTOR

QUICKSTART GUIDE

INTRODUCTION



The AccuRad™ PRD is a Personal Radiation Detector (PRD) designed for law enforcement, fire and rescue, and other emergency responders to detect and interdict nuclear and radioactive materials. It also provides dose measurement and alarming capabilities for event response.



Exceptional Radiological Performance

The AccuRad PRD features accurate and wide dose rate measurement from background to 1000 Rem/h; mitigation of false alarms with Varying Background Suppression (VBS). Cumulative dose measurements are in compliance with industry dosimetry standards.



Smooth User Experience

Dual display screens and large buttons optimize operation for belt-worn or handheld applications; the AccuRad PRD quickly alerts the operator when a threat is detected through effective loud audible, attentive vibration, clear visual display and bright LED alarm indicators; one-touch alarm acknowledgment; automatic data recording.



Radar Indication Leading Straight to the Source

An intuitive radar screen provides directional indication to help localize a threat in a wide or crowded environment.



Discreet Mode for Covert Operations

Discreet mode silences alarms for stealth applications. USB-C headphone connectivity and silent vibrations add a greater level of stealth operation.



Robust Protection

The AccuRad PRD is resistant to dust, sand and moisture, drop tested at 1.5 m, and rated IP-67.

The PRD body has superior protection providing shock resistance and easy handling. The AccuRad PRD can be used in temperatures from -4 °F (-20 °C) to 140 °F (60 °C).



>900 Hours Continuous Operation

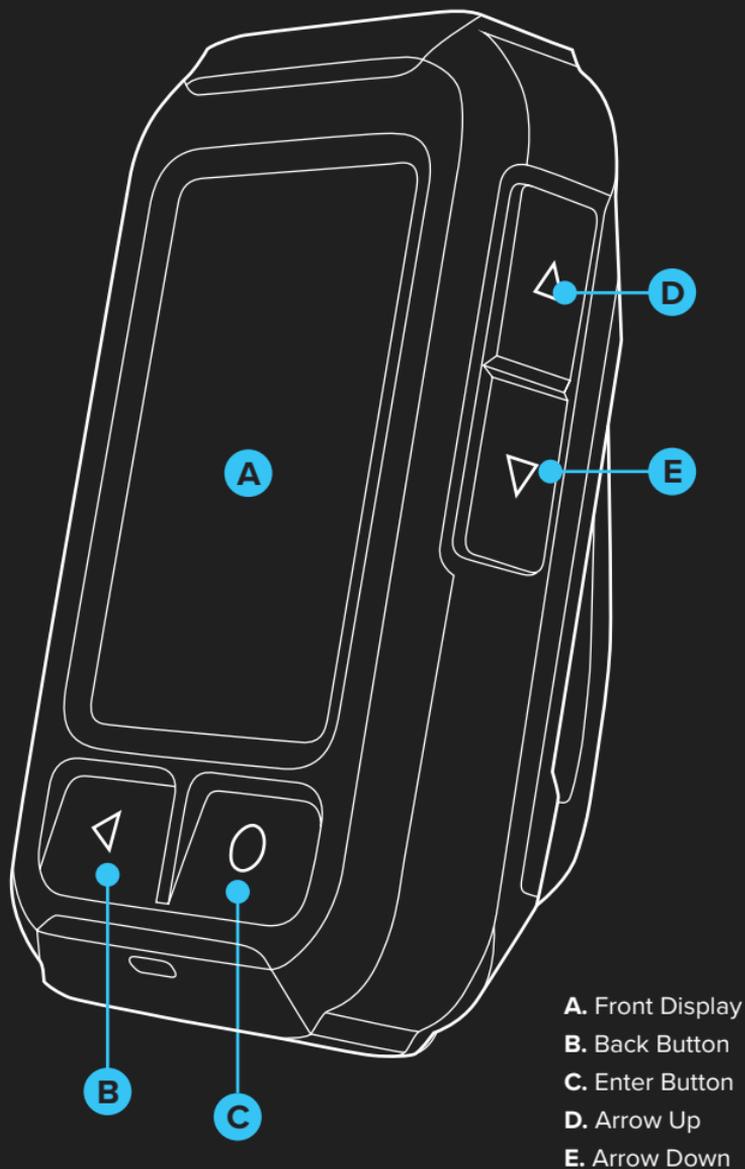
The AccuRad PRD has outstanding battery life and is powered by two commercially available AA batteries.

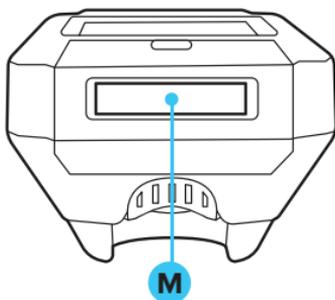
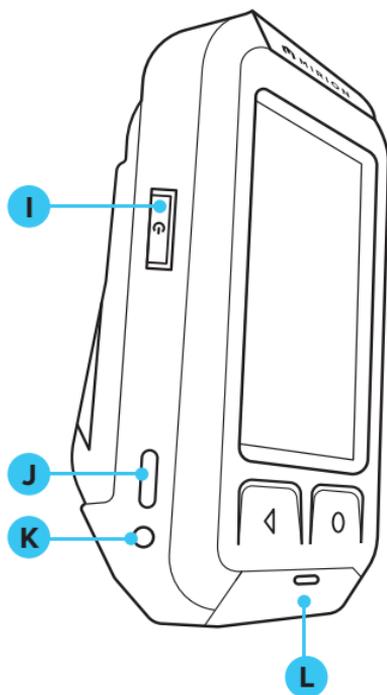
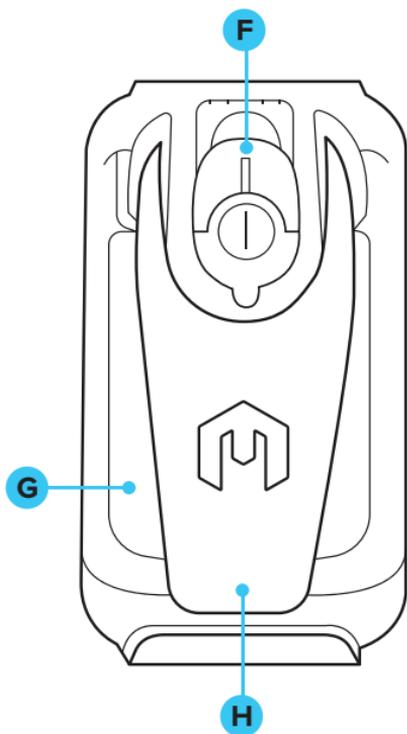


Simplified Data Transmission via Near Field Communication (NFC) and Bluetooth Low Energy (BLE)

Smartphone application (Android, iOS) enables reachback, remote display and alarms, personalization of AccuRad PRDs by batch.

ACCURAD PRD OVERVIEW

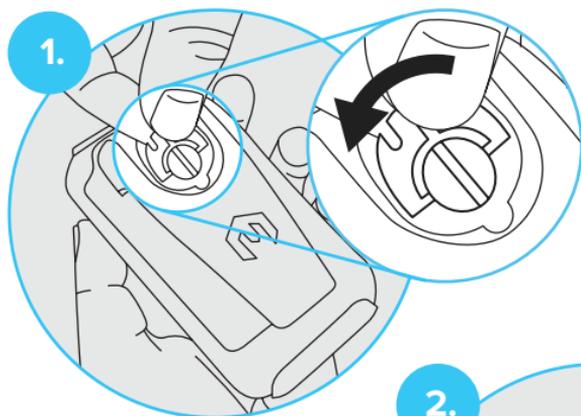




- F.** Battery Cover Tab
- G.** Battery Compartment Cover
- H.** Belt Clip
- I.** Power Button
- J.** USB-C Port
- K.** USB LED Indicator
- L.** Alarm LED Indicator
- M.** Top Display

GETTING STARTED

Installing Batteries

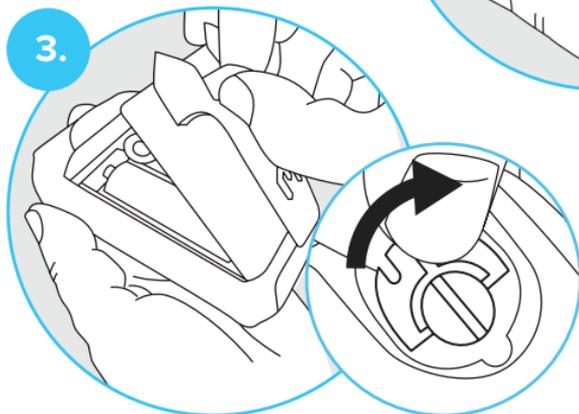
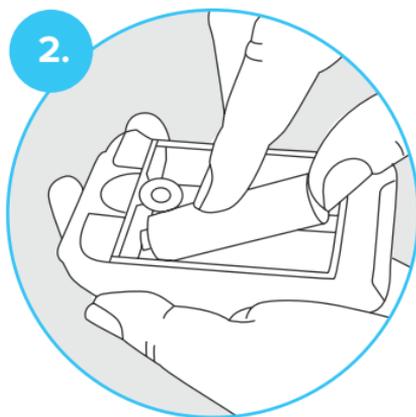


STEP 1

1. Lift and left quarter turn of battery cover tab
2. Remove battery cover

STEP 2

1. Replace the two (2) AA alkaline batteries and install in correct orientation



STEP 3

1. Install battery cover
2. Turn the battery cover ring quarter turn clockwise to lock

Power ON The AccuRad PRD



1. Press the power button



2. Start-up with AccuRad PRD details and self test sequence



3. Background update sequence



4. Measurement data is displayed and ready to go!

Power OFF The AccuRad PRD



1. HOLD the power button



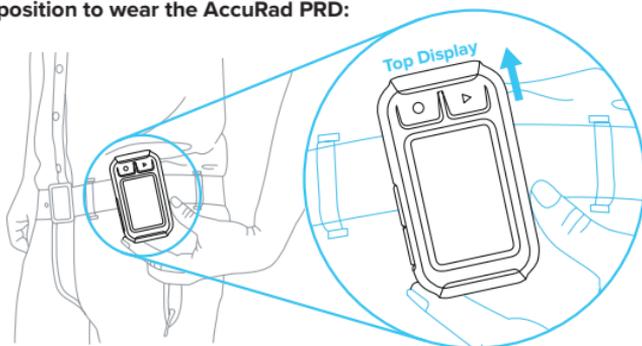
2. Wait for the end of the countdown (3-2-1-OFF)

USING THE ACCURAD PRD

Wearing the PRD

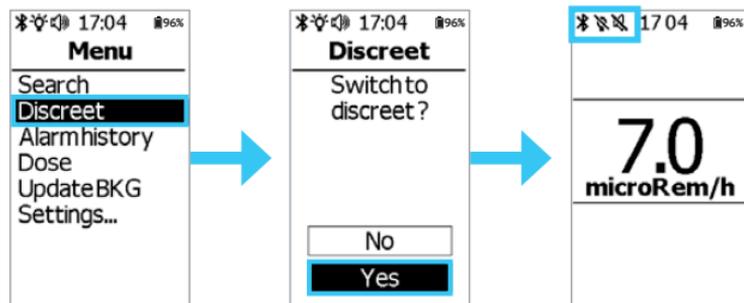
The reference direction of the measurement is orthogonal to the front display to guarantee an optimal measurement of both detectors when the AccuRad PRD is carried. The reference direction of the measurement and the distance measurement have an impact of the quality measurement.

Correct position to wear the AccuRad PRD:



Using the PRD in Discreet Mode

The Discreet mode can be used when the operator does not want the PRD alarms to be visible to others. By default, the audible and visual alarms (LEDs) in Discreet mode are deactivated while the vibration and display messages are active.



STEP 1

Press the enter (O) button to enter the menu

STEP 2

Use the arrow buttons to select 'Yes'

STEP 3

The PRD is now in Discreet Mode

Note: the speaker icon indicates the sound is muted

Using the PRD in Detection Mode

STEP 1

Wearing the PRD in Detection Mode

Dose rate is automatically provided on both displays



STEP 2

PRD alarms when it detects a source

The PRD activates the audible buzzer and vibration



STEP 3

Press any button to acknowledge the alarm

Respond according to the alarm level

LOW ALARM

Investigate with Caution

HIGH ALARM

Move Away and Investigate with Caution

ANGER

Move Away!

(Note: actions above are suggestions only and should not replace operator procedures and CONOPS)

Enabling Search Mode

Search Mode via Menu



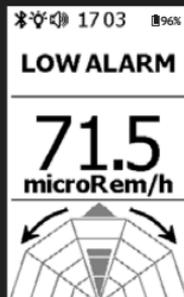
STEP 1

Press enter (O) button to access the menu



STEP 2

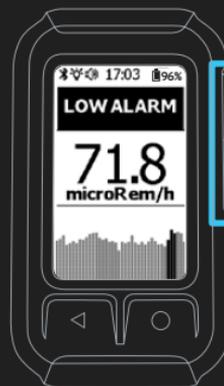
Press the enter (O) button again to begin Search mode



STEP 3

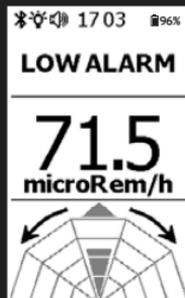
AccuRad PRD assists with locating the source
(See next page)

Enable Search Mode with Trend



STEP 1

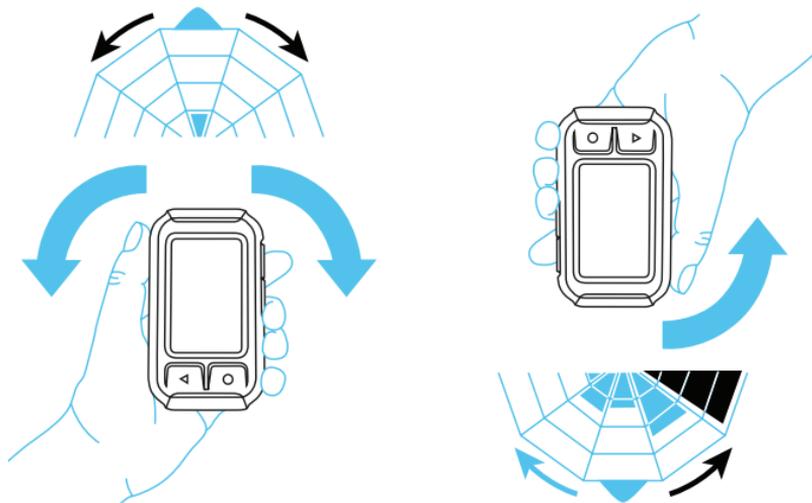
Press either arrow on side of device to enable Search mode



STEP 2

AccuRad PRD assists with locating the source
(See next page)

Using the Radar in Search Mode



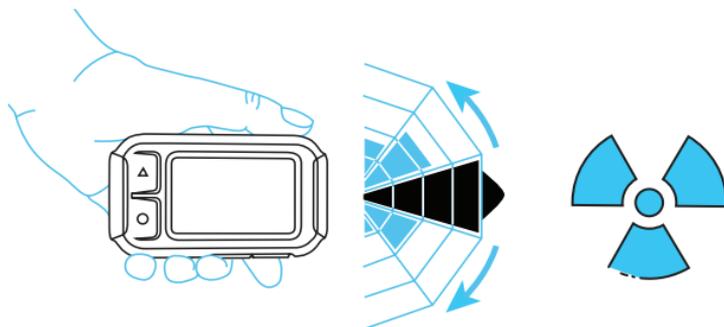
STEP 1

Turn Left or Right
to build the radar sectors.

STEP 2

Sectors indicate source intensity versus direction.

Black sectors/arrows indicate the direction.



STEP 3

Go in the direction of the black sectors and arrows to localize the source.



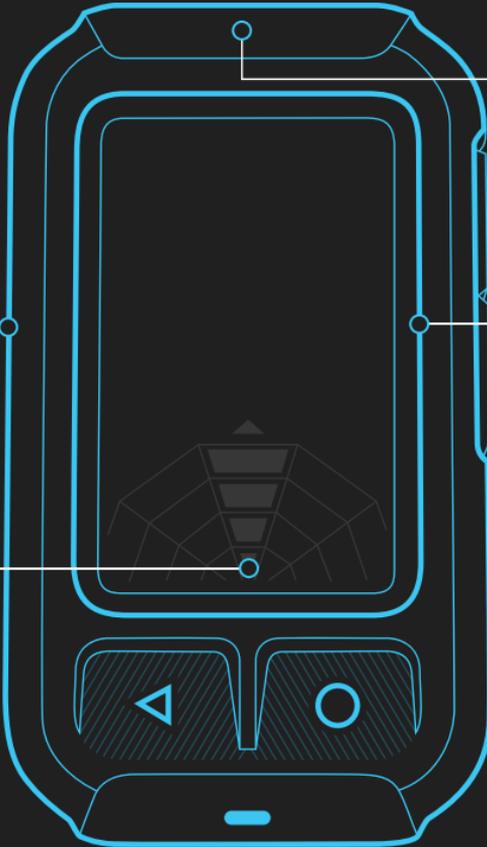
Exceptional
Radiological
Performance



Robust
Protection



Directional
Source
Localization



NFC & BLE
Data
Transmission



Smooth User
Experience



>900 Hour
Continuous
Operation



Discreet Mode for
Covert Operations

“I keep this thing on me 24/7
when I’m working...It’s like carrying
the gun; you know it’s there, but you
don’t have to think about it.”

SGT. TIM PRICE
COBB COUNTY BOMB SQUAD

TECHNICAL

Nuclear

Dose Equivalent Quantity	<ul style="list-style-type: none"> • Hp(10) – Personal dose equivalent rate
Units	<ul style="list-style-type: none"> • Sv, rem, unit-less (0-9), cps (search mode)
Detectors	<ul style="list-style-type: none"> • CsI(Tl) scintillation detector with temperature compensated SiPM • Sensitive volume: 10 mm (0.4 in.) diameter by 35 mm (1.4 in.) long • Silicon diode for integrated dose and high dose rate
Alarm Response And False Alarm Rate	<ul style="list-style-type: none"> • According to ANSI/IEC standards* • Detects 50 $\mu\text{R/h}$ (0.05 $\mu\text{Sv/h}$) increase within 2 seconds (Am-241, Cs-137, Co-60)
False Alarm Rate	<ul style="list-style-type: none"> • Less than two alarms per 8 hours in stable background (typically zero alarm per 24 hours) • VBS mitigates or suppresses alarms due to varying background
Type Of Radiation	<ul style="list-style-type: none"> • Photons (Gamma, X)
Energy Response	<ul style="list-style-type: none"> • 25 keV to 3 MeV
Count Rate (Search Mode)	<ul style="list-style-type: none"> • 0 cps to 160 000 cps
Dose Rate	<ul style="list-style-type: none"> • ANSI N42.32: 1 $\mu\text{rem/h}$ (0.01 $\mu\text{Sv/h}$) - 10 rem/h (1 mSv/h) • ANSI N42.49A: 1 $\mu\text{rem/h}$ (0.01 $\mu\text{Sv/h}$) - 1000 rem/h (10 Sv/h) • Accuracy: $\pm 20\%$
Dose	<ul style="list-style-type: none"> • Accuracy: $\pm 20\%$
Stabilization	<ul style="list-style-type: none"> • Warm-up time: 35 seconds • No source required

*IEC 62401 and ANSI N42.32

Physical, Electrical & Environmental

Dimensions	<ul style="list-style-type: none">• Weight: 200 g (7 oz), including batteries and clip• Size: 4.25 x 2.4 x 1.4 in. (108 x 61 x 36 mm), without clip
Power	<ul style="list-style-type: none">• Two AA alkaline batteries for more than 900 hours of continuous operation• Tool-less battery cover
Ingress Protection	<ul style="list-style-type: none">• IP-67 - Dust and 1 m water immersion
Temperature	<ul style="list-style-type: none">• -4 °F to 140 °F (-20 °C to 60 °C)• Temperature shocks and relative humidity according to ANSI/IEC standards*
Drop	<ul style="list-style-type: none">• 1.5 m (4 ft 11 in.) on concrete• Vibration, impact according to ANSI/IEC standards*

*IEC 62401 and ANSI N42.32

Functional

Audible Sound	<ul style="list-style-type: none">• >85 dB(A) at 30 cm
Batteries	<ul style="list-style-type: none">• AA (LR6) 1.5 V alkaline• Lithium 1.5 V batteries (non-rechargeable)• NiMH 1.2 V batteries (rechargeable)
Power Supply	<ul style="list-style-type: none">• USB-C (recharges NiMH)

Please inquire on [accurad.mirion.com](https://www.accurad.com) for test reports and certificates of conformity (ANSI N42.32, IEC 62401, CE).

Certificate provided with purchase of the AccuRad PRD.

Find more information at:

ACCURAD.MIRION.COM

SAFETY INFORMATION

 Risk of electric shock. **Any work on powered equipment must be performed by qualified and authorized personnel.**

 **Sources with ionizing radiation present are dangerous for the user if proper protective measures are not strictly applied.** Although our equipment is built in compliance with the strictest safety standards, ionizing radiation sources present a danger when the user is not qualified or not sufficiently informed of the danger.

Radioactive sources must be handled exclusively by qualified and authorized personnel. Consequently, all precautions must be taken to prevent any non-authorized or non-qualified personnel from using this equipment, potentially endangering others and themselves.

Prior to any handling, those qualified and authorized to use this equipment shall acquire information on the protective measures set forth by the national standards in force.

Abandonment or destruction of equipment containing a radioactive source is forbidden. If no longer required, the user must inform Mirion Technologies who will arrange to take the source back (according to the contract) and establish a certificate stating that the source has been taken back. In the event that the source is lost or stolen, the user must inform the appropriate authorities as soon as possible.

 **DISPOSAL:** At the end of the product's useful life, please dispose of it according to local legislation. (Directive 2002/96/EU of the European parliament and of the council of January 2003 on waste electrical and electronic equipment (WEEE).) If you have questions about disposal in Europe, please email environnement-iso14001@mirion.com.

 **CAUTION:** The AccuRad PRD is not certified for explosive atmospheres.

 **CAUTION:** When inserting the batteries, make sure to respect the polarities. Always use batteries of the types given on page 17.

 **CAUTION:** Earphones. Do not use at high volume during extended periods. High acoustic pressure. Risk of hearing impairment.

ABOUT MIRION TECHNOLOGIES

In partnership with our customers in nuclear power plants, military and civil defense agencies, hospitals, universities, national labs, and other specialized industries, Mirion Technologies strives to deliver cutting-edge products and services that constantly evolve based on the changing needs of our customers.

Combining state-of-the-art technology with exceptional customer service, Mirion is dedicated to providing an unmatched experience in radiation detection and instrumentation.

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