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Connecting Visionaries in Radiation Safety, Science and Industry

**MIRION**  
**Connect** **24**  
Annual Users' Conference

July 29 - August 2 | Omni Dallas Hotel, Dallas, TX



**MIRION**  
TECHNOLOGIES

# RDS-32 Meter and its new capabilities

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Product Line Manager HHHP

Mirion Connect | Annual Users' Conference 2024

Dallas, Texas

# SUMMARY

- Introduction to RDS-32
  - Features and Benefits
  - Probes summary
- RDS-32 and probes
- Keystone Product Moving Forward
- New Firmware Features
- Keeping Your Product Up to Date
- RDS-32 App New Features
- GMP-12 TELE-POLE
- Snap-on Probe for RDS-32 - Survey

# Introduction to RDS-32



# A RANGE OF RDS-32



Characteristics	 RDS-32	 RDS-32 WR	 RDS-32iTx	 RDS-32iTx WR	 RDS-32iTx SD
From 50 nSv/h to 100 mSv/h (5 µrem/h to 10 rem/h))	✓	✓	✓	✓	✗
Up to 10 Sv/h (1,000 rem/h)	✗	✓	✗	✓	✓
Telemetry 2.4 GHz or 900 MHz	✗	✗	✓	✓	✓
IEC60846-1 qualified from 300 nSv/h (30 µrem/h)	✓	✓	✓	✓	✗
IEC60846-2 qualified up to 10 Sv/h (1,000 rem/h)	✗	✓	✗	✓	✗

# FEATURES AND BENEFITS





# Triple Display – Real-Time

QUICKER MEASUREMENT = DOSE REDUCTION



- Simultaneous display of up to 3 measurements with Alpha/Beta probes
  - Alpha contamination, Beta contamination and Dose equivalent rate
  - Alpha/Beta discrimination within the probe
- Simultaneous display of 2 measurements with the dose probes
  - Remote and local dose equivalent rate
- Each measurement can be saved for later use
- Dose-rate display can be disabled via CSW-32 sw
- **ALARA** – Real-time monitoring of your radiation exposure



# Keyboard with **Direct Access**

## WHAT MATTERS INTO ONE CLICK

- Navigation keyboard with secondary functions



### Backlight

- Permanent ON/OFF, Auto OFF (setup in CSW-32)



### Audio ON/OFF

- Chirper, Keypad sound, Alarm acknowledgment (Warning level)



### Cumulative Dose, Time to Dose

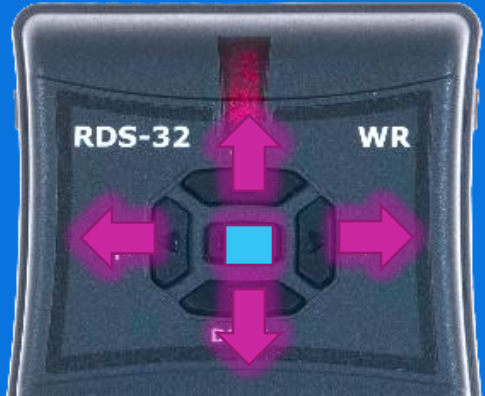
- Bar-graph in % of Dose Alarm



### User Defined Shortcut

- setup with CSW-32 the most useful feature for your daily duty
  - Example: data logging or scaler/timer

- **To the point** – Reduce access to instrument menu in the field





# User Friendly in the Field

## FROM RADIOPROTECTION TO INTERVENTIONS

- WR Version: 50 nSv/h<sup>(\*)</sup> – 10 Sv/h (5  $\mu$ rem/h to 1000 rem/h)
  - Reduce the risk of saturation during critical interventions
- Clip
  - Frees worker's hands
- Small and lightweight < 250 g (8.8 oz) with batteries
  - No user pain even during long time use
- **Perfectly fits in palm** – **Comfortable**



10 Sv/h  
1000 rem/h



<sup>(\*)</sup> qualified to IEC 60846 standard from 300 nSv/h (30  $\mu$ rem/h)

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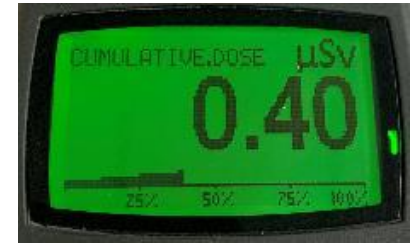
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# Direct Access to Dose Screen

## FOLLOW UP YOUR INTERVENTION DOSE



- First press on «Dose» key
  - Cumulative dose display
    - Since last RESET = Intervention dose
    - Bar-graph in % dose alarm
- Second press on «Dose» key
  - Time to dose alarm display
    - In current dose-rate



- **Cumulated Dose screen – Monitor your intervention**

# Double Alarm Set-point

## WARNING Vs. DANGER

- Dose-rate – All Applications
  - Warning = Presence of Radiation
    - User can acknowledge audio, vibrator and LED
  - Alarm = Presence of Radiation Danger
    - No acknowledgement allowed
- Cumulative Dose - Intervention
  - Warning = Halfway Dose Reached
    - Recommendation to start moving backward
    - User can acknowledge audio, vibrator and LED
  - Alarm = Maximum Intervention Dose Reached
    - No acknowledgement allowed
- Alarms can be disabled
- **Dual Alarm** – Understand your environment



# Scaler/Timer

## DETECTION LIMIT IMPROVEMENT (MDA)

- **Gross or net** measurement
  - Gross only for dose-rate
- Direct or indirect (smear) measurements
- Choice of unit depending on contamination probe connected
  - c/s, Bq, Bq/cm<sup>2</sup>, cpm, dpm equivalent to calibration isotope
- Automatic data saving

- **SCALER** – Improve your measurements



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# Telemetry

## REMOTE SUPERVISION



- Model RDS-32 iTx (WR)
  - 2.4 GHz radio for Europe and Asia
  - 900 MHz radio for North America
- Connection to AWM
  - Up to 12 connected meters (RDS-32 or DMC3000)
  - No PC required
- Nuclear site (iTx)
  - Remote supervision of risky interventions
    - Human or robots
- Emergency follow-up (iTx WR)
  - Remote follow-up of responder teams
- **iTx Model** – Focus on your interventional work



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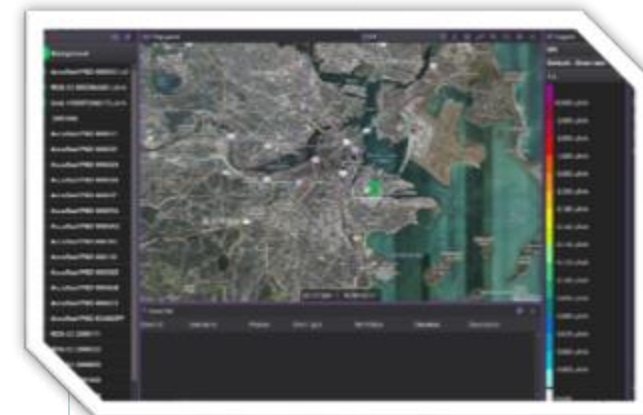
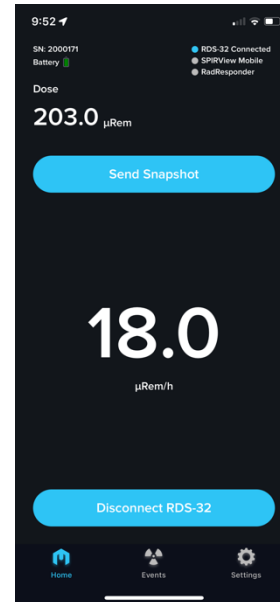
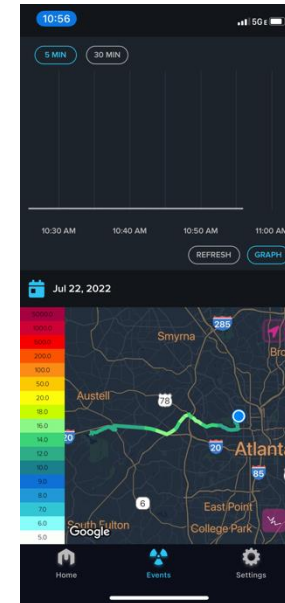




# RDS-32 SmartPhone App

## Mapping and Reachback

- **Status:**
  - RDS-32 Connected
    - Including its serial number and Battery level
  - Connected to Spirview mobile
  - Connected to Radresponder
- **Radiological display**
  - Current dose
  - Current dose rate
- **Action buttons**
  - Send Snapshot
    - to Radresponder
    - to a Reachback Contact
- **Events screen**
  - Trend graph of the dose-rate
  - Plot of location in a color gradient map
  - Marker for current location
- **APP – Track, Store and Replay**





# RDS-32 and Probes



### Follow-up response

- Monitor the intervention dose



### Removal of all doubt and radiation protection

- Contamination check
- Dose equivalent rate



### Contamination control on personnel and objects

- SAB-100, CSPevo



### Smears, filters check

- Easy-Count



### Monitoring of public areas

- SVLD



### Neutron dose-rate measurement

- SN-D-2



### Search for radiation spots Dose-rate & Contamination

- SABS-579
- TELE-STTC
- GMP-12 POLE



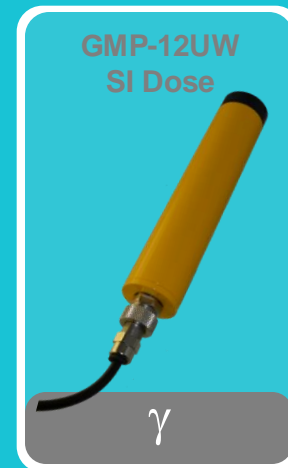
# CSP FAMILY



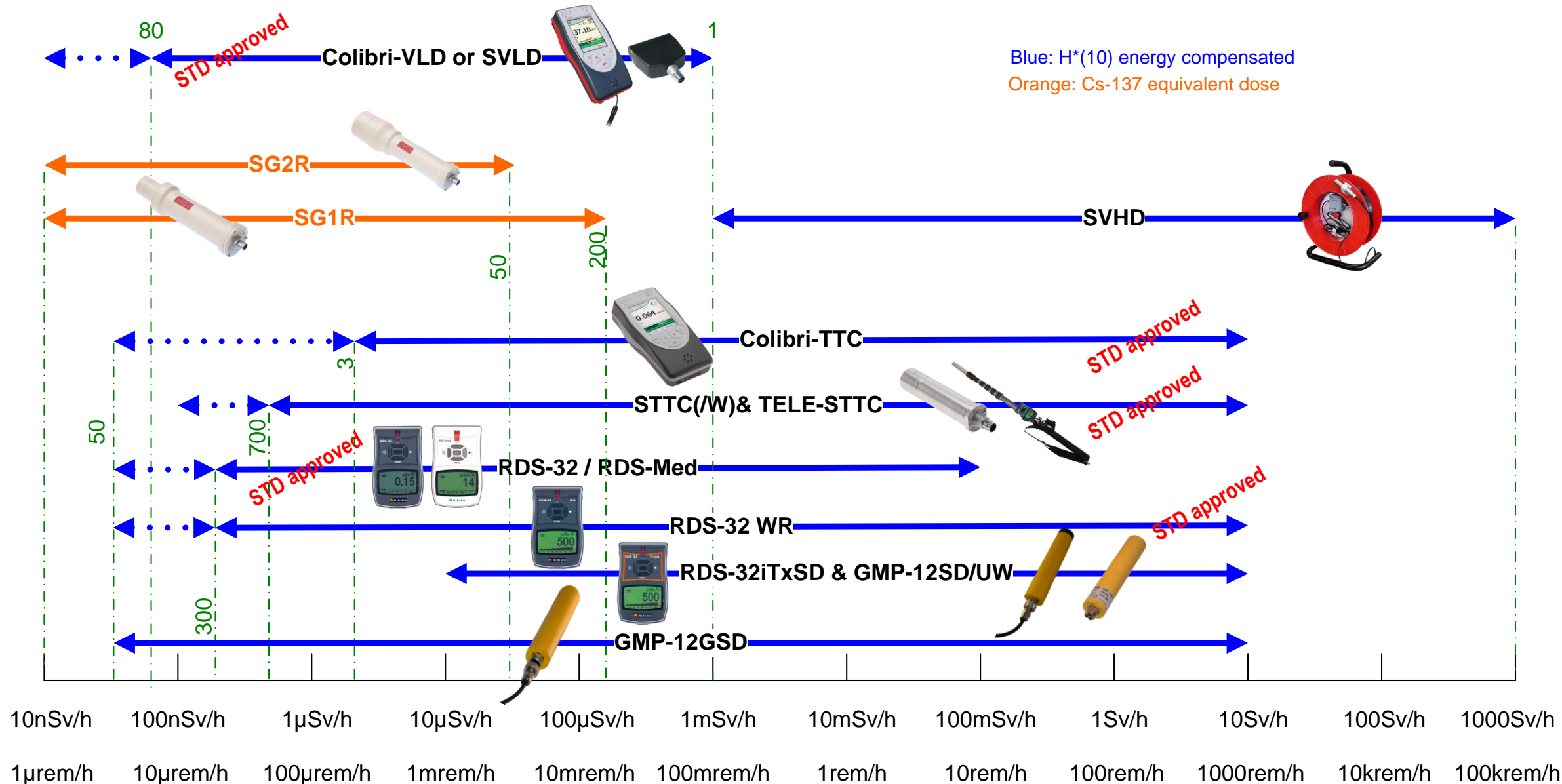
CABLE ADAPTER



# LEGACY RDS-31 probes



GMP-12 TELEPOLE



# Keystone Product Moving Forward





# ONE HAND OPERATIONAL SYSTEM

- Leveraging new CSPevo capabilities
  - No cable needed



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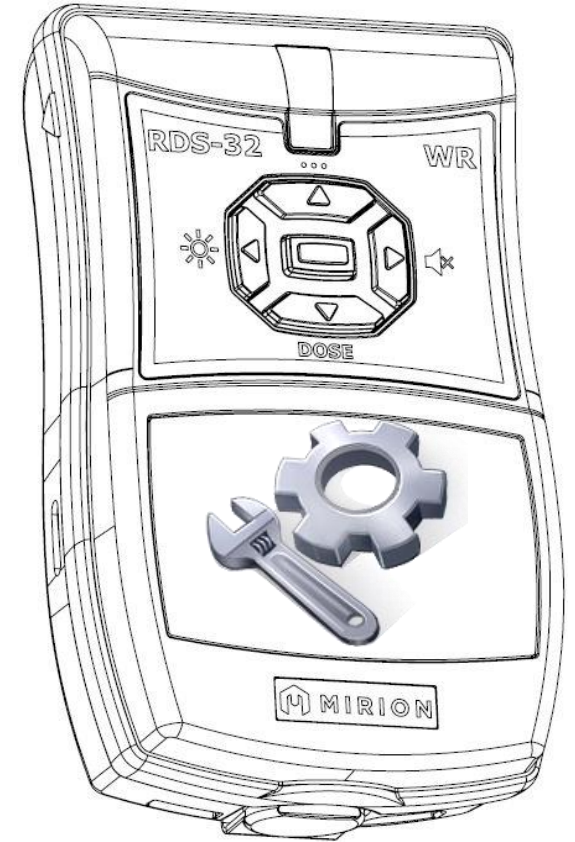
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# RDS-32 New Features

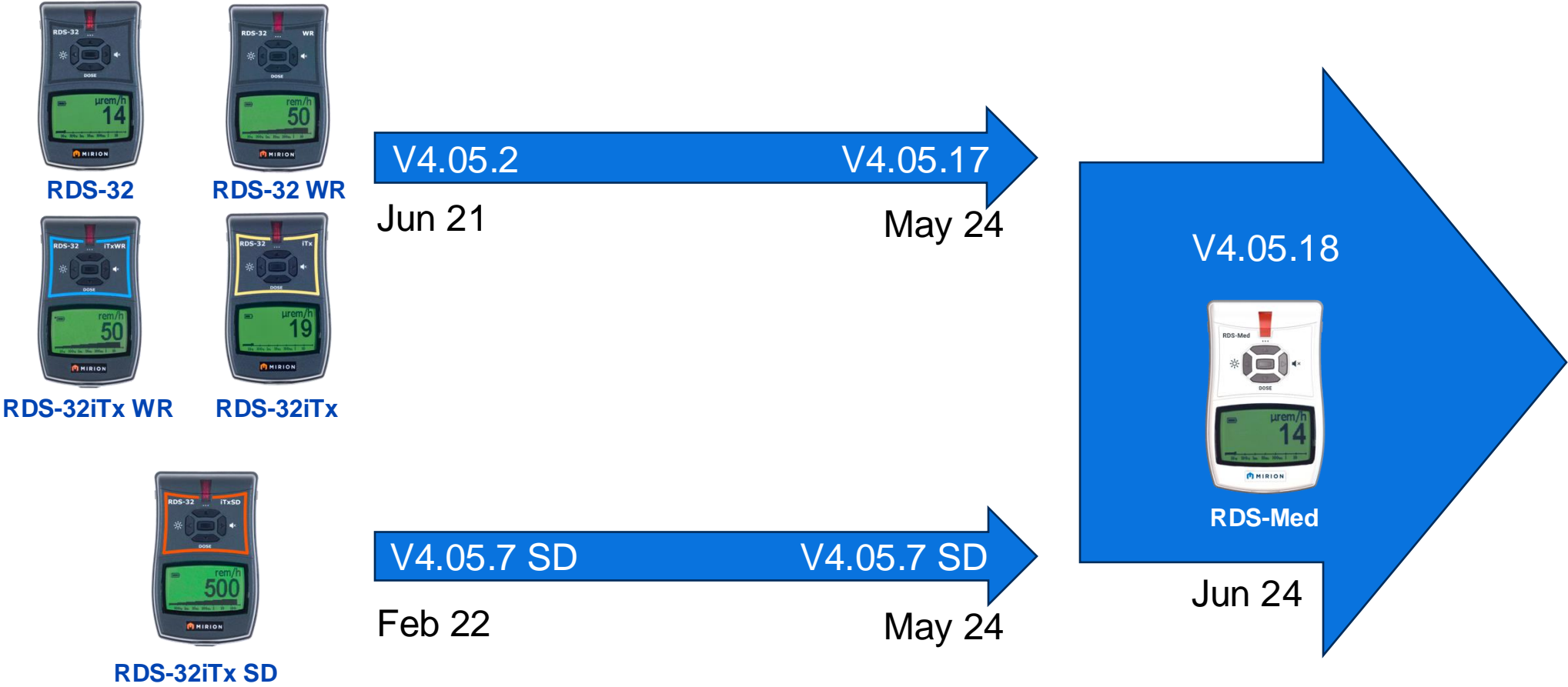


# RDS-32 FIRMWARE

- RDS-32 (4 models) was launched in June 2021
  - Followed by RDS-32 SD in February 2022
    - Dedicated to Alarm Box
- Several firmware were released in the meantime
  - Bug fixtures & Feature improvements
- Moving forward
  - 1 or 2 release per year
    - Depending on user's feedback
    - Product range roadmap (CSPevo)
- New Major Features on next slides



# ONE FIRMWARE FITS ALL MODELS





Up to V4.05.15

- **ALARM BOX is compatible with all Models**

- No specific firmware needed anymore

- **Auto Start on Power**

- Turn RDS-32 on when power is applied – useful for Alarm Box
  - Still requires batteries inside the unit.

- **Smoothing Algorithm Improvement with CSP Probes**

- **BLE status is identical for next start-up**

- When ON, there is 5 min time-out before turning it OFF
  - Saving Battery life but less annoying

- **Adding Total Life Dose Alarm**

- Alarming when total dose of 10 Sv (1,000 rem) is reached
  - Unit can still be used



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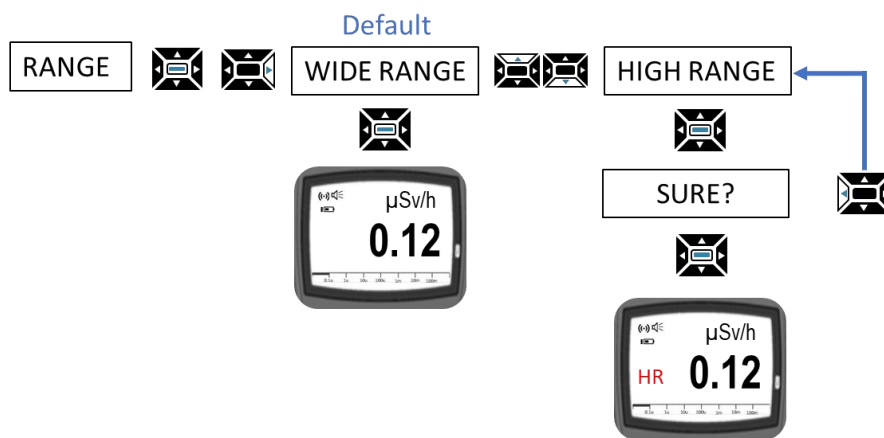
- **ABP-150 no longer compatible with RDS-32**

- If needed, downgrade RDS-32 to V4.05.15

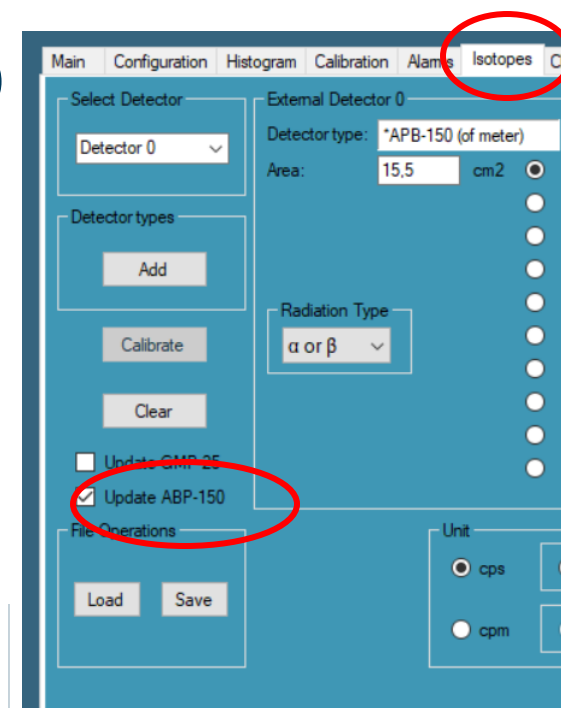
- **Force High Range Pin Diode use with RDS-32 WR models**

- Useful for dose-rate measurement above 1mrem/h with flatter energy response (Pin Diode)
  - Wide Range switch is 3 rem/h (increase) and 1 rem/h (decrease)
- Enable the feature in CSW-32 (Isotope TAB)
  - Check-box “Update ABP-150” (version 1.2.5.5)
  - Will be updated in next CSW-32 version

From to V4.05.16



After RDS-32 is powered-off and back on, the default setting is WR



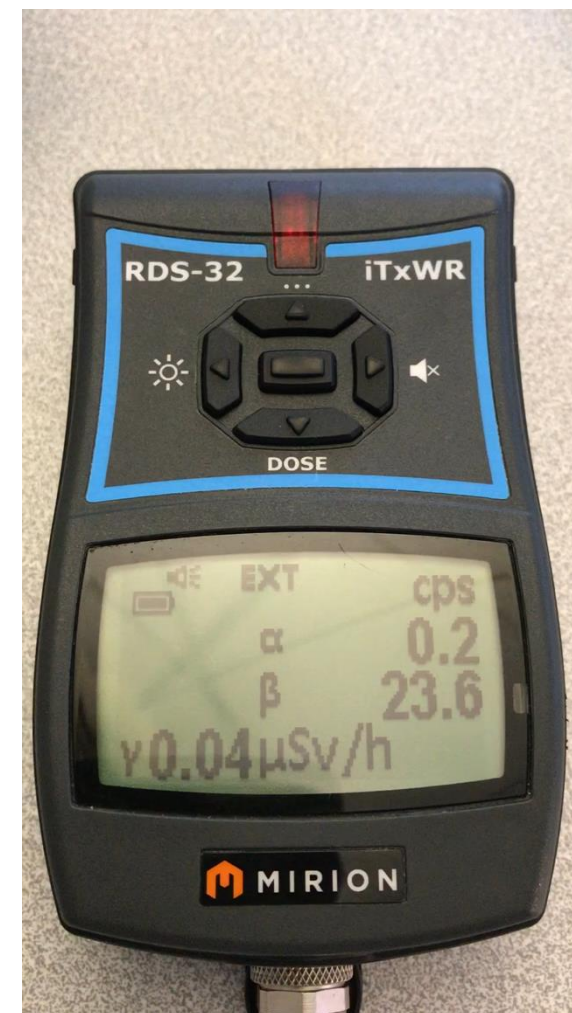




From to V4.05.16

- **Alpha and Beta Sound Discrimination**

- Different sound frequency for Alpha and Beta particles
- Facilitates Alpha low-rate detection into high Beta background

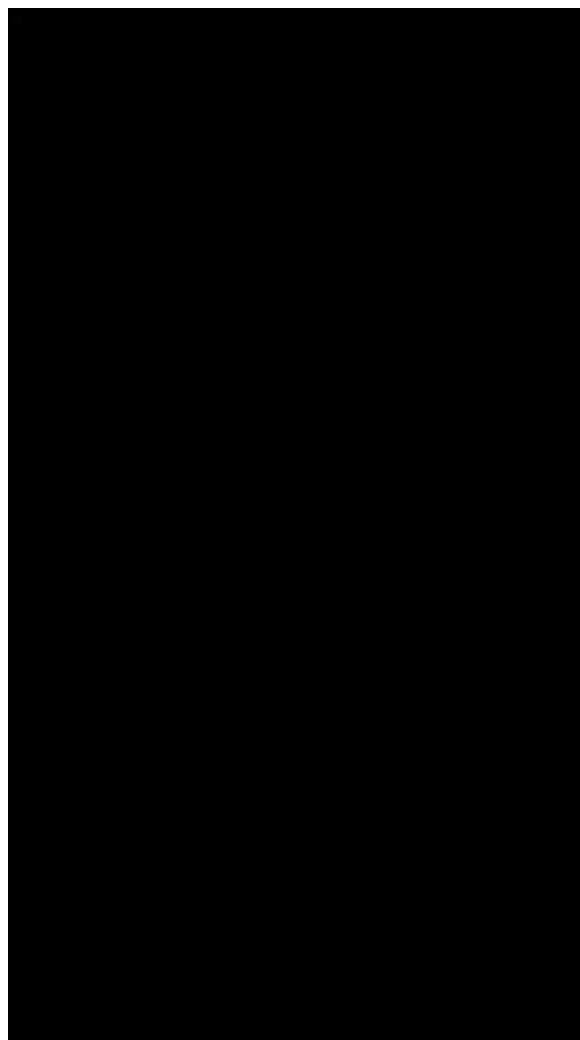


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From to V4.05.16



DISPLAY



FINDER



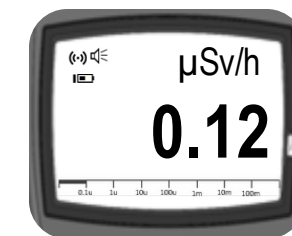
ON



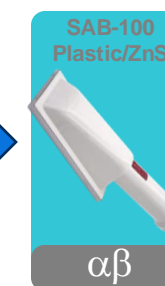
OFF



Default



- Trending display - Finder
  - External contamination probes
- Moving a Fiesta Ware slowly to SAB-100 probe and quick take away



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From to V4.05.16



DISPLAY



FINDER

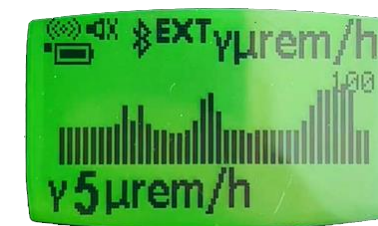


ON



OFF

Default



- Trending display - Finder
  - Internal Dose-rate detector
  - External Dose-rate probe
- Moving a Fiesta Ware back and forth to SG-2R probe

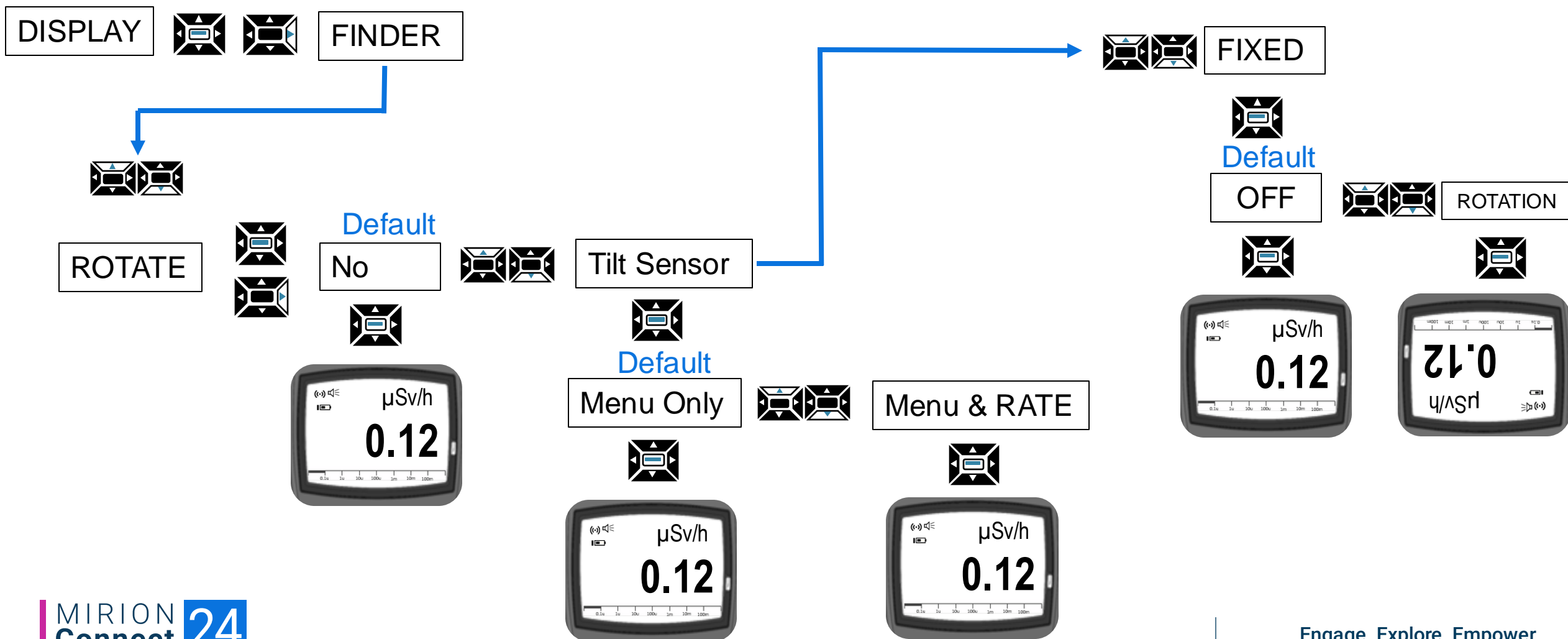


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## Display Rotation

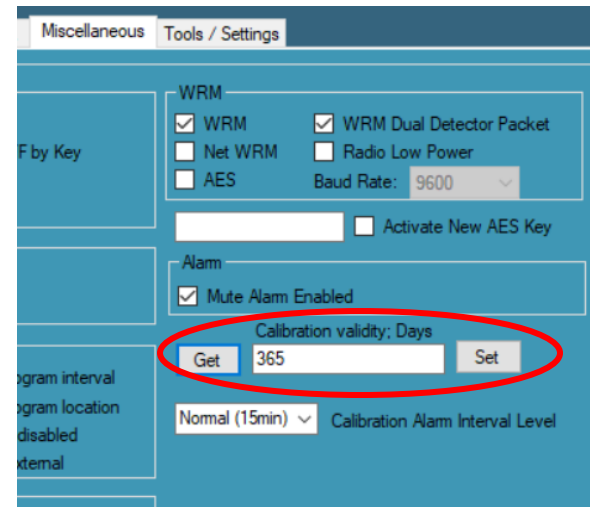
- Fixed or via Tilt Sensor





## ■ Calibration check

- Can be performed directly on RDS-32
  - Unlike Calibration that requires CSW-32
- Select DIAG in menu and CAL.CHECK
  - Referenced Dose-Rate is 100 mrem/h (Cs-137)
  - Response must be within +/- 10%
  - If response is ok calibration validity duration is extended by duration set with CSW-32

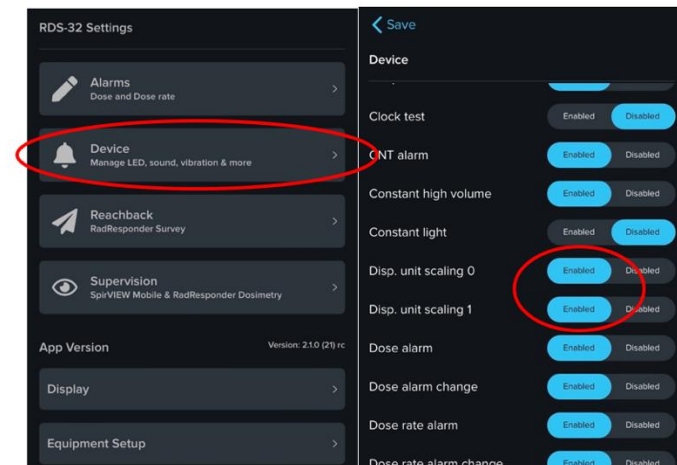


From to V4.05.17



From to V4.05.18

- **AutoScale display without  $\mu\text{rem/h}$** 
  - Display automatically mrem/h and Rem/h
    - Does not display  $\mu\text{rem/h}$  but 0.01 mrem/h
  - Cannot set this feature with current CSW-32 version
    - Work-around with RDS-32 App
      - ✓ Select Device in Settings
      - ✓ Set **Disp. unit scaling 0** to enabled
      - ✓ Set **Disp. unit scaling 1** to enabled
    - Will be updated in next CSW-32 version



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# FEEDBACK



- We value your feedback on RDS-32
- You can send it to
  - Your MIRION Sales Account Manager
  - Kris Bauer – Application Support Manager for North America
    - [kbauer@mirion.com](mailto:kbauer@mirion.com)

# New Mirion ASG

## Industry Experience



- Corporate program manager at Tennessee Valley Authority
- INPO Sr. Radiation Protection Evaluator
- Technical and ALARA superintendent at Watts Bar Nuclear
- ALARA analyst and remote monitoring specialist at Prairie Island
- 15 years of experience in radiation protection
- Chair of WGDECOM (International working group in decommissioning)

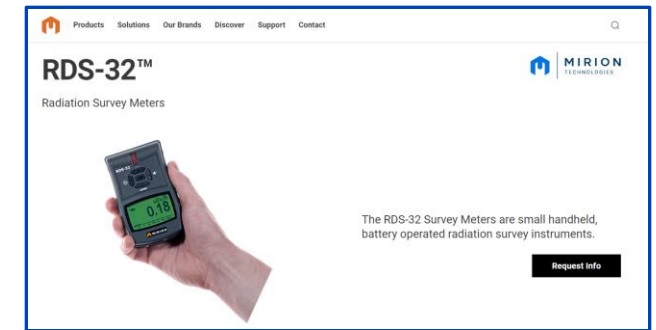
# Keep your product up to date





# Keep your instrument fleet up to date

- Get firmware upgrade from Mirion Website RDS-32 product page
- Need CSW-32 software and USB cable



## Related Resources

Product Literature



Videos



Software Downloads



[RDS-32 Firmware V4.05.18](#) ↓

Webinars



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# RDS-32 App New Features

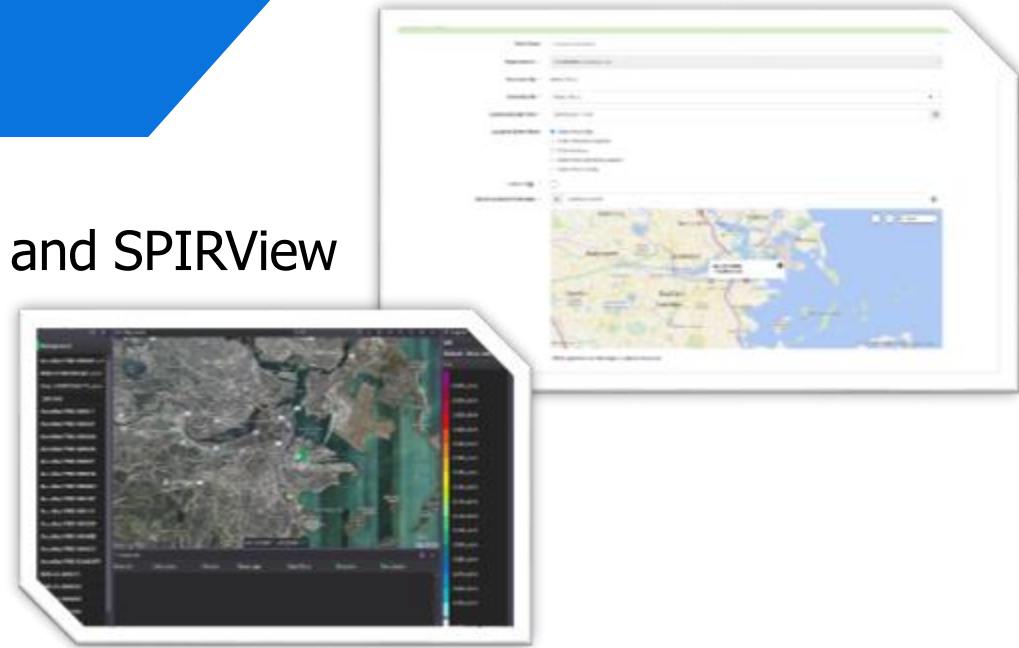
Release: Q3-2024



# RDS-32 App Update



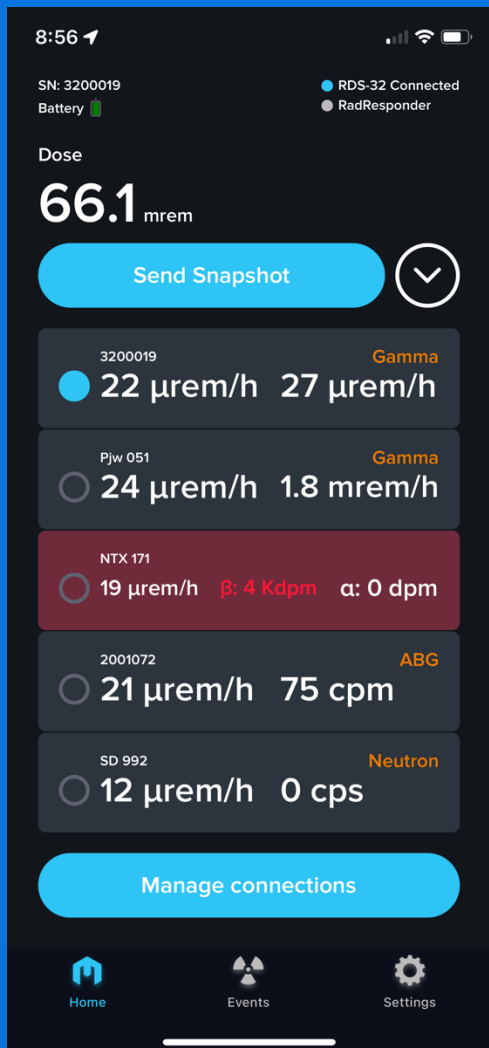
- RDS-32 App was initially developed for Rad Responder and SPIRView
- It is easier/quicker to use than a computer
  - Can change setting in the RDS-32
    - Now it is password protected
- So, we added more features
  - Connect up to 5 devices, including full management
  - Display both Internal dose detector and external probe readings
    - ✓ Alpha, Beta, Gamma and Neutron
  - Save your RDS-32 settings and send to other users
    - ✓ Standardize all your RDS-32 on site with same settings
  - Save your mission data







# MULTIPLE DEVICES DISPLAY



- Each channel displays Internal RDS-32 dose-rate and external probe reading
  - SVLD, GMP-12: Gamma Dose-rate - **Gamma**
  - SAB-100: Beta and Alpha contamination -  **$\alpha$   $\beta$**  - **Beta in High alarm**
  - GMP-25: Alpha/Beta/Gamma cumulative reading - **ABG**
  - SN-S: Neutron count-rate - **Neutron**

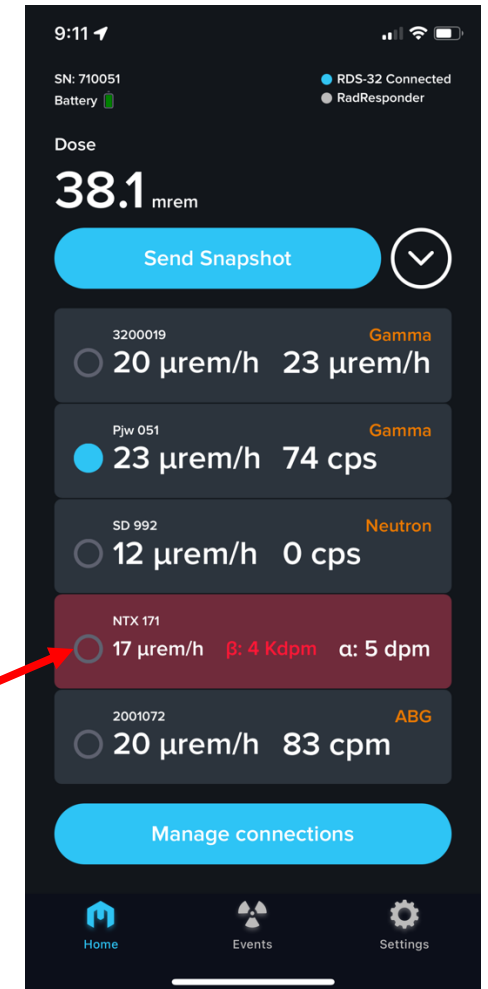
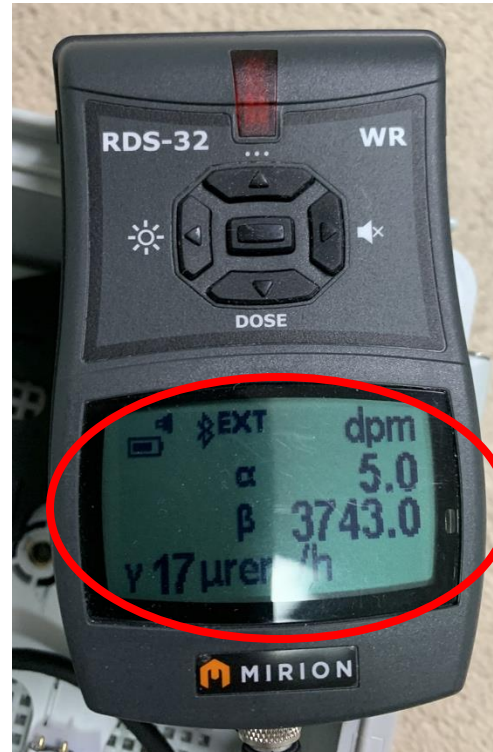
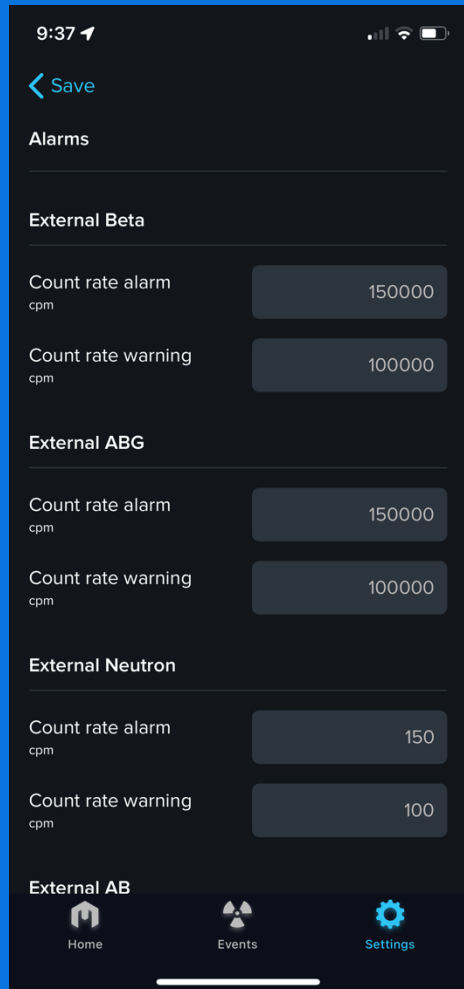
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# SAB-100 Alarm example

- The App can have specific local alarm setpoint
  - Different from those in RDS-32
  - **Warning** and **Alarm**

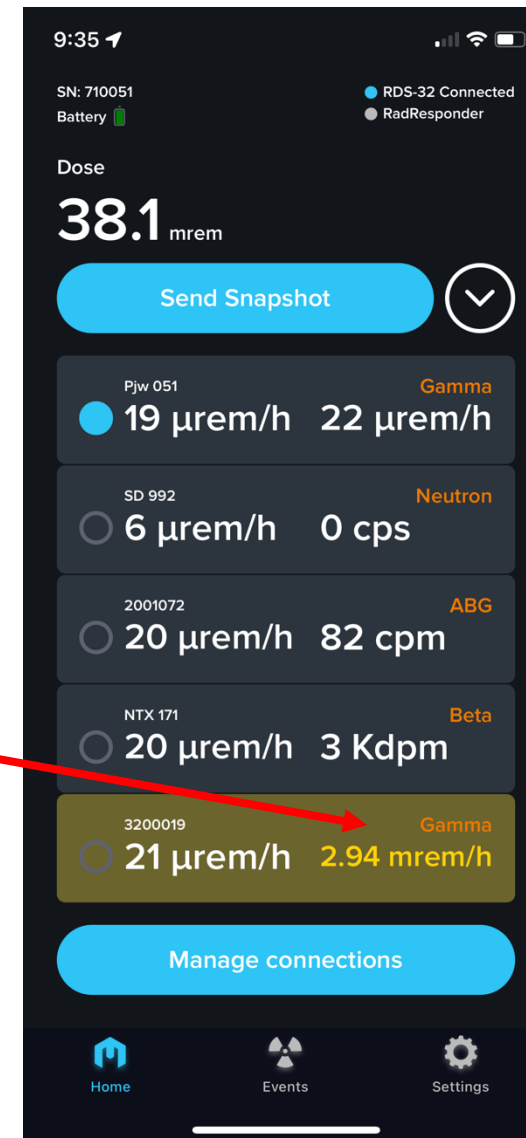
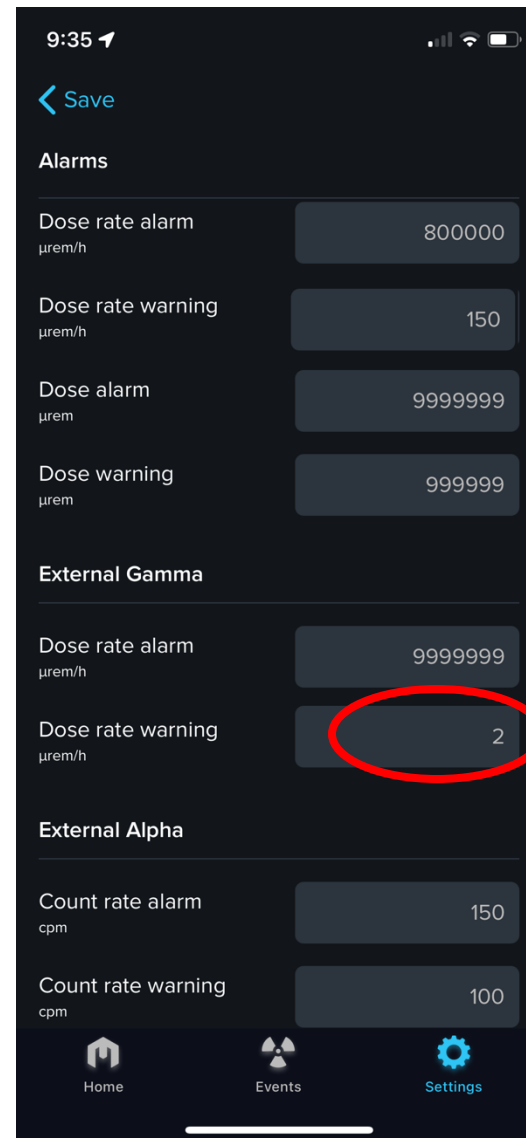


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# Warning and Alarm



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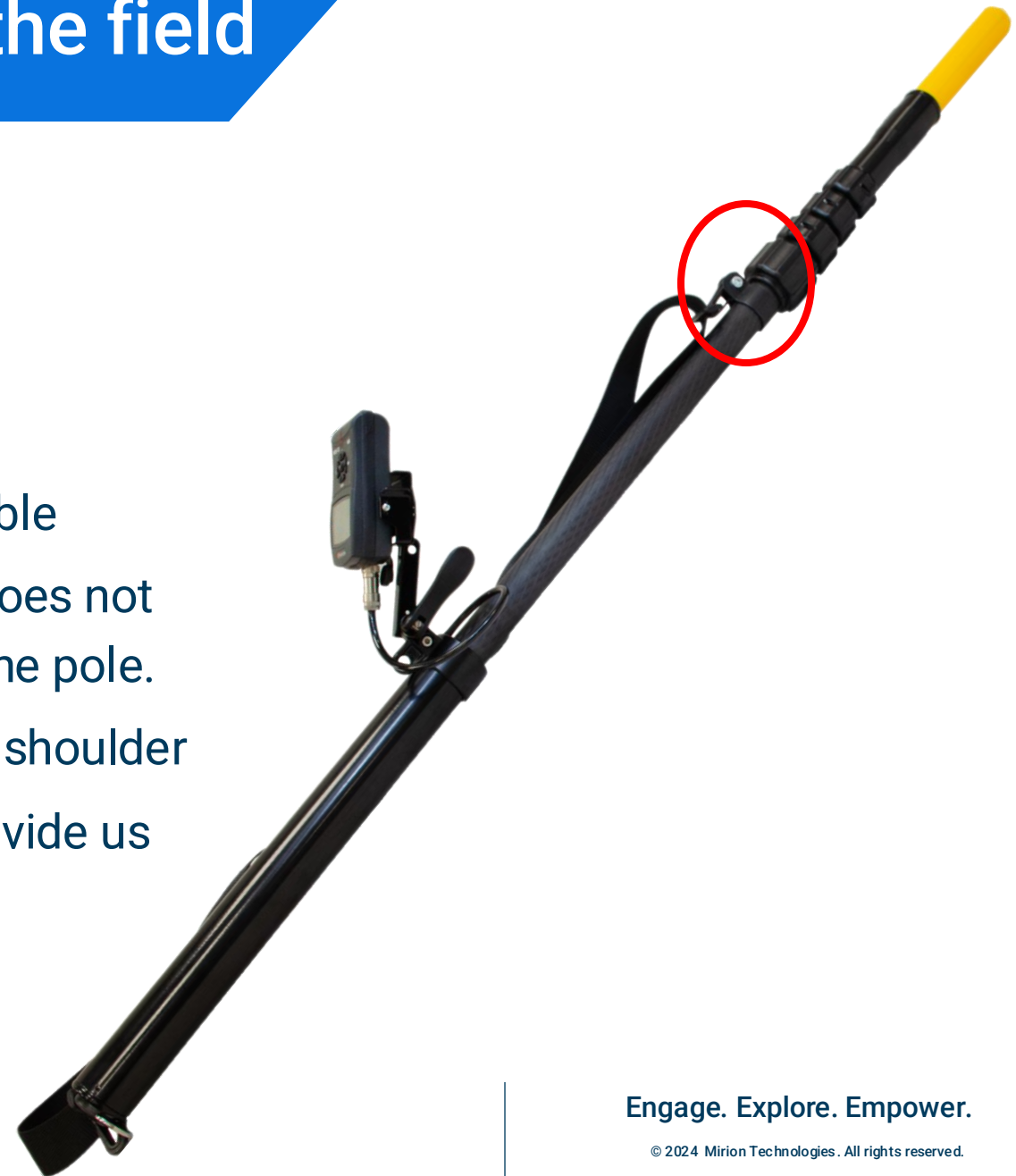
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# GMP-12 TELE-POLE news



# Updates following feedback from the field

- GMP-12 TELE-POLE requirements
  - Move to Carbon fiber pole to save weight
  - Ensure user can quickly take off the detector for Calibration/Cal-Check using GMP-12 standard cable
  - Ensure the overall diameter on the detector end does not exceed 1.75 inch for Calibration/Cal-Check with the pole.
  - New Strap Hook Position to allow carrying on the shoulder
  - Come to demo room to see the prototype and provide us with your feedback





# Prototype views



- Slide GMP-12 into the slot while aligning the pin
- Twist GMP-12 to secure it in place

1-



2-





# Snap-on Probe – Survey...



# OUR GOAL!

- Build a One-Hand Frisking product
- Leverage RDS-32 Numerous Benefits
  - Dose-rate & Contamination Display at Once
- Small Overall Form Factor
  - Should fit in a Pocket
  - Comfortable Palm Fitting



## TWO POTENTIAL DESIGN

- Snap on pancake probe
- Reduce/Remove cable dependance
- One hand operation
- Dual Dose-rate and Conta Display

# PRO AND CON AT FIRST GLANCE

## CABLE BASED DESIGN



- PRO
  - Docking/Connection with no tool
- CON
  - Cable to connect to RDS-32

## FREE INSERTION DESIGN



- PRO
  - No Cable at all
- CON
  - More permanent mounting via battery door screws (use of screwdriver)

# SURVEY

## BOTH DESIGN

- Is there enough **CLEARANCE** underneath the unit for Hands/fingers?
- Is the Probe/RDS-32 combination **COMPACT** enough for your regular use?
- Is the Probe/RDS-32 combination well **BALANCED**?

# SURVEY

## CABLE BASED DESIGN



- Do you see a problem of having to screw-in the cable connector into RDS-32?
- Do you have concern about the cable bending by the front?
- When using the unit for Dose-Rate measurement, are you comfortable enough to rotate the assembly and get the dose detector(s) facing forward?



# SURVEY

## FREE INSERTION DESIGN

G-M dose  
detector  
pointing



- Is it a problem to secure the probe in place with battery door screws?
- Are you ok if MIRION delivers a new battery door w/o rubber cap?
- When using the unit for Dose-Rate measurement, are you comfortable enough to rotate the assembly and get the dose detector(s) facing forward?
- Is a permanent combination (secured with screws) an issue?

# Thank you

