

## **About Us**



## **Radcal History**

In 1975 the world was coming to appreciate the delicate balance between benefit and risk with regard to x-ray exposure. Responding to the needs of the Food and Drug Administration, Radcal introduced the first instrument providing comprehensive measures of dose and having the ability to interchange sensors without loss in accuracy. These systems were founded on Radcal's unparalleled Gold Standard Ion chambers.

## **Built to Last**

Today, 40 years later, many of Radcal's initial products are still in active use around the world and the Gold Standard Ion Chamber continues to lead the industry. Our "Made in the USA" products now incorporate the latest advances in solid-state sensing. Committed to our mission, Radcal provides leading edge technology while exploring the limits of physics.

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# System Overview



## **Versatility**

Radcal appreciates the unique challenges faced by today's diagnostic x-ray applications. For this reason, we have developed a modular product line providing for the ultimate level of customization and tailoring.

## **System Solutions**

Diagnostic systems require a number of key elements:

- A selection of sensors aligned with the needs of your measurement application.
- An Accu-Gold digitizer or Touch meter system that provides fast, reliable, and calibrated results.
- A tablet or built-in Touch display that presents your results in a user friendly way and facilitates recording and reporting results quickly and easily.
- A variety of custom carry cases that allows you to transport your tailored solution conveniently and to protect your investment.

#### **Sensors**

Radcal provides the most **comprehensive** line of diagnostic x-ray sensors in the industry, including solid-state Multisensors, cost-effective solid-state dose sensors, and gold standard ion chambers.





## System Overview

## **Accu-Gold Digitizers**

Radcal has refined the art of calibrated x-ray measurement over the last 40 years. The result is a reliable line of easy to use digitizers and Touch meters with tiered capabilities. In this way, you achieve a cost-effective solution focused on those capabilities you need. The Accu-Gold, Touch, and Touch Professional Series provide tailored solutions to your diagnostic measurement needs.

Accu-Gold+ and Accu-Gold+ Touch

Rapid-Gold+ and Rapid-Gold+ Touch

Accu-Dose+ and Accu-Dose+ Touch





## **Displays**

Radcal recognizes that people prefer to work in different ways and we've developed our software and display options with flexibility and ease of use in mind.

Integrated display



The Large Accu-Gold+
Family Display with keyboard and Excel 2013 pre-installed.

Accu-Gold 10" Tablet



## Solid-State Multisensors



Radcal's Solid-State Multisensors are based on a proprietary stacked sensor design. This design simultaneously delivers the most *complete measurement functionality* and the *smallest footprint* in the industry. Functions include: Dose, Dose Rate, kV, Waveform, HVL, Filtration, and more.

#### AGMS-DM+

A Solid-State kV/Dose Multisensor for Diagnostic and Mammographic measurements

#### AGMS-D+

A Solid-State kV/Dose Multisensor for Diagnostic measurements

### AGMS-M+

A Solid-State kV/Dose Multisensor for Mammographic measurements



Solid-State dose sensor are streamlined for fast reliable measurement of Dose, Dose Rate, and Waveform.

## **DDX6-WL**

A Solid-State Low Dose sensor for Diagnostic measurements



## Ion Chambers



Ion chambers deliver consistent proven performance evidenced by decades of use. Our Gold Standard chambers are suitable for demanding applications where uniform response is important. Radcal provides the most extensive line of ion chambers in the industry.

#### 10X6-0.18

Very High Dose Rate Ion Chamber

#### 10X6-0.6

High Dose Rate Ion Chamber

### 10X6-0.6CT

Modern Wide Beam Multi-slice CT Ion Chamber

#### 10X6-3CT

Computed Tomography and Dose Index (CTDI)
And DWP or DLP Ion Chamber

#### 10X6-6

General Purpose In-Beam Ion Chamber

#### 10X6-6M

Dedicated Mammography Ion Chamber



# Ion Chambers

#### 10X6-10

General Purpose In-Beam Ion Chamber

#### 10X6-60

Service and Image Intensifier Ion Chamber

#### 10X6-60DAP

The 'DAP' Chamber

## 10X6-180

Leakage and Low Level Measurement Ion Chamber

## 10X6-500

Leakage Measurement Chamber

### 10X6-1800

Radiation Protection Ion Chamber



<sup>\*</sup> Note: All Radcal Ion Chambers are available as Reference Class Chambers

# Current (mA) and Light Meters

Radcal mAs Sensors come in invasive sensor and non-invasive clamp on sensor types. These mAs Sensors measure the amount of charge used in x-ray imaging systems. Radcal mAs sensors connect to the mAs-labeled connector of Accu-Gold and Touch series meters.

#### 90M9-AG

Invasive Current Sensor for use with the Accu-Gold Family

#### 90M10-AG

Non-Invasive Current Clamp Sensor for use with the Accu-Gold Family



In the diagnostic imaging environment, the Radcal lightmeter measures the luminance level (brightness) and uniformity of back-lighted display screens, plus the illuminance level of the ambient light incident upon the screen surface. The meter displays photometric parameters in metric (SI) units.

### **AGLS**

Portable, hand-held lightmeter for the measurement of display surface luminance and ambient light cosine-corrected illuminance.

Radcal provides Dose Area Product (DAP) calibration sensors as part of the Accu-Gold+ product family. These sensors provide quick and easy calibration of installed DAP meters by providing accurate measures of DAP and DAP rate.

#### **DAPcheck Plus**

Verify X-ray DAP, DAP rate & Light Field Congruence.





## **PDC** (Patient Dose Calibrator)

A Stand-alone meter with display. Verify DAP, DAP rate, Dose and Dose rate.

# **Accu-Gold Systems**



#### **Accu-Gold+ Touch**

Radcal's stand alone version of the Accu-Gold+ incorporates support for all of the sensors listed above and is equipped with the largest touchscreen in the industry.

## **Accu-Gold+ Touch Professional**

Radcal's Professional version of the Accu-Gold+ Touch adds USB and wireless capability for extended use with your laptop or tablet computer for data collection. The complementary Accu-Gold software provides streamlined Excel report generation and waveform analysis capabilities among many others.



#### Accu-Gold+

Radcal's most capable digitizing system, supporting all of Radcal's extensive line of sensors including solid-state Multisensors, solid-state dose sensors and ion chambers.

Accu-Gold+ provides the most advanced capability encompassing Dose, Dose Rate, Waveform, Exposure Time, kV, HVL, Filtration, Current (mA), Luminance, Illuminance and more.

For Radiography, Fluoroscopy, Mammography, CT, Dental and Survey. The Accu-Gold+ is a member of the Accu-Gold Family of Instruments.





# Rapid-Gold Systems

## Rapid-Gold+ Touch

Radcal's stand alone version of the Rapid-Gold+ incorporates support for all of the sensors listed above and is equipped with the largest touchscreen in the industry.

## **Rapid-Gold+ Touch Professional**

Radcal's Professional version of the Rapid-Gold+ Touch has all of its features, and then adds USB and wireless capability for extended use with your laptop or tablet computer for data collection. The complementary Accu-Gold software provides streamlined Excel report generation and waveform analysis capabilities among many others.



## Rapid-Gold+

A highly capable digitizing system supporting Radcal's expansive line of solid-state Multisensors and solid-state dose sensors.

Rapid-Gold+ provides the most advanced capability encompassing Dose, Dose Rate, Waveform, Exposure Time, kV, HVL, Filtration, Current (mA) and more.

For Radiography, Fluoroscopy, Mammography, and Dental. Solutions for all your measurement needs.



## **Accu-Dose Systems**



#### **Accu-Dose+ Touch**

Radcal's stand alone version of the Accu-Dose+ incorporates support for all of the sensors listed above and is equipped with the largest touchscreen in the industry.

#### **Accu-Dose+ Touch Professional**

Radcal's Professional version of the Accu-Dose+ Touch has all of its features, and then adds USB and wireless capability for extended use with your laptop or tablet computer for data collection. The complementary Accu-Gold software provides streamlined Excel report generation and waveform analysis capabilities among many others.



#### Accu-Dose+

A streamlined digitizing system supporting Radcal's solidstate dose sensors and ion chambers.

Accu-Dose+ provides capabilities tailored for Dose, Dose Rate, Waveform and Exposure Time measurement.

For Radiography, Fluoroscopy, Mammography, CT, Dental and Survey measurements. The Accu-Dose+ is a member of the Accu-Gold Family of Instruments.



# Acou-Gold Series Compatibility Chart

	Accir.Gold*	Rapid.Cold*	ACU-Dose*
Dose	•	•	•
Dose Rate	•	•	•
Waveform	•	•	•
Exposure Time	•	•	•
kV	•	•	
HVL	•	•	
Filtration	•	•	
Current (mA)	•	•	
Luminance and Illuminance	•		
Scatter and Leakage	•		•

# Touch Series Compatibility Chart

	Accu-Gold+		Rapid-Gold+		Accu-Dose+	
Model Number	Touch AGT-AG	Touch Pro AGT-P-AG	Touch AGT-RG	Touch Pro AGT-P-RG	Touch AGT-AD	Touch Pro AGT-P-AD
Functional Compatibility						
Dose	•	•	•	•	•	•
Dose Rate	•	•	•	•	•	•
Exposure Time	•	•	•	•	•	•
Pulse Count	•	•	•	•	•	•
kV	•	•	•	•		
HVL	•	•	•	•		
Filtration	•	•	•	•		
Current (mA)	•	•	•	•		
Luminance and Illuminance	•	•				
Scatter and Leakage	•	•			•	•
Sensor Compatibility						
Accu-Gold Multi-Sensors (AGMS)	•	•	•	•		
Accu-Gold Ion Chambers (10x6)	•	•			•	•
Accu-Gold Dose Diodes (DDX6)	•	•	•	•	•	•
mA and mAs Sensor (90M)	•	•	•	•		
Light Sensor (AGLS)	•	•				
Computer Features						
Accu-Gold Windows Application		•		•		•
Waveforms	•	•	•	•	•	•
Excel Reporting		•		•		•
iOS and Android Applications		•		•		•
USB Connectivity		•		•		•
Wireless Connectivity		•		•		•





## Accu-Gold 10" Tablet

For the ultimate in flexibility and portability choose the Windows 10 based tablet display.



## **The Full-Featured Display**

For the additional ease of use provided by a 10 inch multi-touch display and an added keyboard, select the full-featured display with Excel 2013 pre-installed.



## **Software**



## **Accu-Gold Windows Application**

The Accu-Gold software presents a common look and feel across the entire Radcal product line. The user configurable display presents up to 16 parameters and waveform views simultaneously. Accu-Gold Software is complementary with all Accu-Gold instruments.

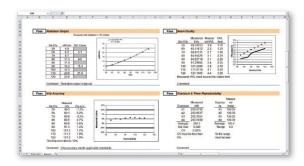
A convenient straightforward interface makes waveform and pulse analysis a snap, while the real-time Excel export features streamline workflow and make reporting results seamless.



## **Accu-Gold Excel**

The Accu-Gold Excel software provides a highly customizable interface for the Accu-Gold family of products.

Excel reports are designed to meet your individual needs, incorporating custom calculations and formatting to your specifications. These reports are populated automatically as Accu-Gold measurements are made so that when your measurements are done – your report is done. Excel Users can develop their own templates or Radcal is pleased to develop templates based on your unique requirements.

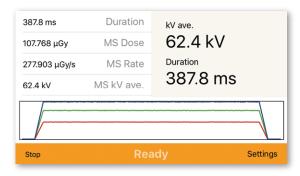




#### **Accu-Gold iOS**

Radcal continues to incorporate the latest user interface technology into our systems. Accu-Gold iOS is a basic application with which industry professionals can make, store, and transmit measurements from the convenience of their iPhone or iPad.

The application, available on the App Store, interfaces wirelessly with Radcal's complete line of Accu-Gold systems and is especially convenient for those already using Apple devices for other QA or maintenance functions.



### **Accu-Gold API**

For those applications requiring integration of Accu-Gold x-ray measurements with other automated equipment, Radcal provides an application programming interface ("API"). The Accu-Gold API allows software developers to create their own applications.

The API is a Microsoft .Net 4 DLL compatible with most mainstream development languages for the PC platform such as Visual C++, C#, VB.Net, PowerShell, and LabView. Contact Radcal for software licensing terms and conditions.



## **Accessories**



## WiFi Nugget

Recognizing that the system display and x-ray sensor are often widely separated, wireless capability eliminates the need to be tethered by an unwieldy cable. Simply snap NUGGET onto an Accu-Gold+ Family Digitizer and eliminate the USB cable. The NUGGET will power your Digitizer and transmit your measurement data after each exposure.

- Convenient, reliable, and secure connectivity
- Equipped with a rechargeable battery
- Provides wireless power to your Accu-Gold+ digitizer
- Lightweight, and durable
- WiFi IEEE 802.11b/g robust wireless connection



## **Accessories**

## **CT Beam Width Tool Kit**

The CTBW Tool Kit is used to make CT beam width measurements quickly and easily based on a new patent pending\* technique.

The kit includes three precision masks packaged in a compact zippered case. Each mask is engraved with its specifications. Two diameter sizes are available.



<sup>\*</sup> Licensed under agreement with the University of Alabama-Birmingham

## **Accessories**



## **SRC-500 Ionization Chamber**

Radcal SRC-500 Ionization Chamber is a direct replacement for the Fluke® 96010A Ion Chamber used in Radiation Leakage Detection System. This chamber meets 21 CFR 1020.30(k) for leakage measurement requirements (Electrometer not provided).



## **Custom Carry Case**

Once you've identified the unique combination of sensors, digitizing system and display that are just right for your application, we will offer you a carry case designed to transport your new system



## **Additional Products**



#### 2186 Dose Meter

This system incorporates a built-in display and supports Radcal's entire Accu-Gold family of solid-state dose sensors and ion chambers.

The 2186 provides accurate measurement of Dose, Dose Rate, Waveform, and Exposure Time.

This versatile meter is aimed at Radiography, Fluoroscopy, Mammography, CT, Dental, and Survey applications including x-ray system Calibration, Analysis, and Quality Assurance.





## **Additional Products**

## **Dynalyzer**

#### **Dynalyzer IV High Voltage Unit**

The Dynalyzer IV is one of the most accurate tools for the calibration and analysis of x-ray generator systems.

Connected between the generator and the x-ray tube unit, it isolates the signals and provides an output proportional to kV, mA and filament current. These ground-referenced analog signals may be routed to external test equipment, such as the Dynalyzer Digital Display, an oscilloscope, or Accu-Gold Excel software. Unlike non-invasive instruments, the Dynalyzer provides the user with direct kV measurements unaffected by tube target material or filtration.

#### **Dynalyzer Accu-Dyn+ Display System**

The Accu-Dyn+ display system provides the means to display, analyze, and report values measured by the Dynalyzer that support calibration, compliance testing, and troubleshooting. Displayed values include: kV, kVp, PPV, anode current, number of pulses, and pulse duration. In addition, waveforms of kV and anode current can be displayed and analyzed, providing a deeper understanding of the operation of the system.





## **Additional Products**



#### **Reference Class Ion Chambers**

All Radcal Ion Chambers are available as Reference Class Chambers, designed to be used by calibration laboratories which use reference grade electrometers and bias supplies.

RC0.6
High Dose Rate Ion Chamber



RC6

General Purpose X-Ray Measurements



## **RC60**

X-Ray Beam Measurements



#### **RC180**

Low Dose Rate X-Ray Beam or Scatter Measurements



## RC0.6CT

The Chamber for Computed Tomography Dose Index (CTDI)



#### RC6M

Low Energy X-Ray Measurements



## RC3CT

CT X-Ray Beam Measurements



#### **RC1800**

Low Dose Rate Radiation Applications





# "Over 40 Years of Commitment to Quality"...

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