

UNIDOS[®] Tango & Romeo

The New Generation of
Reference Class Electrometers



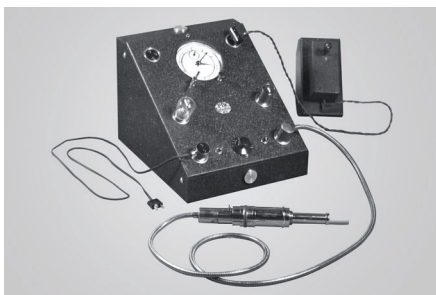
UNIDOS® Tango

UNIDOS® Romeo

The New Electrometer Generation:
A Reference Class of Their Own



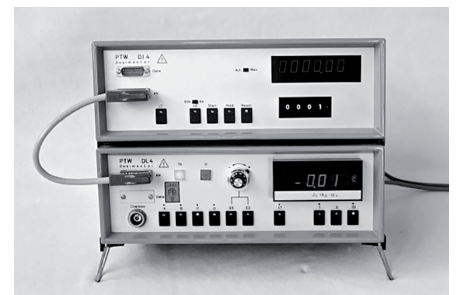
Electrometers by PTW: A Century of Excellence in Measurement Technology



1922 Hammer Dosemeter
The first X-ray therapy dosimeter based on an electrostatic relay



1955 SIMPLEX
The first dosimeter with an electron tube



1977 DOSIMENTOR
The first therapy dosimeter with field-effect transistors

Striking Design. Exceptional Performance. Impressive Functionality.

In 1922, PTW launched the first dosimeter that used a revolutionary new electromechanical component, the electrostatic relay. The Hammer dosimeter was a milestone in the measurement of radiation dose and the first in a line of high-precision dosimeters, which built PTW's reputation as a quality and technology leader in clinical dosimetry.

Nearly 100 years later, a new UNIDOS generation is ready to take technology and usability to the next level.



1992 UNIDOS®
The first microprocessor-controlled electrometer with 1 fA resolution



2005 UNIDOS weblin®
The first network-enabled reference class electrometer

UNIDOS[®] Tango

The Smart Reference Class Electrometer



Touchscreen



Ethernet/LAN



WiFi

▶ Exceptional

As a secondary standard reference class electrometer that exceeds IEC and IPEM performance requirements, UNIDOS Tango delivers fast, reliable and highly accurate results across all applications. Equipped with industry-leading amplifier technology, it is exceptionally stable and ready for use immediately upon start. The new UNIDOS Tango is your tool of choice for high-precision measurements, e.g., in small field dosimetry.

▶ Connected

Touchscreen, hard-wired Ethernet or WiFi? Your choice. Use UNIDOS Tango as a standalone electrometer with intuitive touchscreen operation or control it remotely from your PC/laptop. Access its built-in webserver using any WiFi-enabled device, like your smartphone or tablet. As a smart electrometer with multiple connectivity options, UNIDOS Tango is easy and flexible in its operation.

Less time. More safety.

Intelligent Detector Recognition (IDR)

UNIDOS Tango is the first electrometer worldwide that automates detector management and identification. By using detector-specific data matrix codes and intelligent 2D code scanning technology, it saves time and eliminates the chance for mistyped data, particularly in clinical environments with multiple electrometers and different detectors in use.

All in one code.

Each PTW detector suitable for reference dosimetry comes with a calibration certificate which also contains a unique data matrix code (DMC). It stores all detector-specific information, e.g., the calibration factor, calibration date and the name and serial number of the detector.

Scan code.

Updating the detector database of your UNIDOS Tango is very easy: Simply tap the DMC icon in the detector database, then point the data matrix code on your calibration certificate at the device camera. The built-in 2D code scanner reads the code and automatically enters all detector-specific information into the detector database of your UNIDOS Tango.

Identify detector.

Ready to perform a measurement? Hold the data matrix code that is printed on the label of your measurement detector in front of the device camera. The built-in 2D code scanner reads the code and calls up the correct detector simply by matching the data stored on the code to an entry in the detector database.



▶ Automated

Reduce setup time and improve measurement consistency with individual user profiles. Favorite device settings and detector parameters for frequent or specific measurement tasks, e.g., preferred measurement detector, user-defined correction factor and measurement range, can be saved as password-protected user profiles.

▶ Intuitive

Its brilliant 5" capacitive touchscreen provides a clean, easy-to-navigate multi-lingual user interface, which gives you instant access to all relevant settings with the simple touch of a finger. Measurement readings and other important data are always clearly visible on the screen and from almost any angle regardless of whether you are sitting or standing.

▶ Versatile

Readings are automatically saved to memory and immediately available for review. Access the last 50 measurements and quickly calculate mean value and standard deviation right on the spot. A comprehensive detector database with ready-to-use detector templates makes it easy for you to manage up to 100 different detectors and their calibration data conveniently from one place. Export measurement values to the Track-it data management software for documentation and constancy monitoring using optional BeamDose software.

UNIDOS[®] Romeo

The Standard Reference Class Electrometer



▶ State-of-the-art

As a reference class electrometer that exceeds IEC 60731 performance requirements, UNIDOS Romeo provides fast, reliable and highly accurate dose measurements in any situation. With its exceptional stability, low noise and wide measurement range, it is perfect for users who look for a standalone, easy-to-operate electrometer without compromising on accuracy and performance.

▶ Automated

Reduce setup time by saving your favorite device settings and detector parameters for specific or frequent measurement tasks, e.g., preferred measurement detector, user-defined correction factor and measurement range, as password-protected user profiles for future use.

▶ Intuitive

The new UNIDOS generation is the first to come with a capacitive touchscreen and a clean multi-lingual user interface, which gives you instant access to all relevant settings at the simple touch of a finger. Readings are always clearly visible on the screen and from almost any viewing angle.

▶ Versatile

Benefit from a suite of versatile functions that make day-to-day operation easier. Access previously stored measurements to calculate mean value and standard deviation on the spot. Efficiently manage up to 100 different detectors and their calibration data in one easy-to-access detector database.

Reference Dosimetry

Accuracy where it matters most

Complete your new UNIDOS® electrometer with PTW best-in-class detectors and phantoms to benefit from a single source solution for maximum reliability and precision in reference dosimetry.

Reference Ionization Chambers

PTW Farmer® (30013)

Gold standard for reference dosimetry in radiation therapy

Type: Vented cylindrical ionization chamber

Volume: 0.6 cm³

Field size: (5 x 5) cm² ... (40 x 40) cm²

Energy range: 30 kV ... 50 MV photons
(10 ... 45) MeV electrons
(50 ... 270) MeV protons

Semiflex 3D (31021)

Exceptionally versatile ionization chamber with high spatial resolution and excellent 3D characteristics

Type: Vented cylindrical ionization chamber

Volume: 0.07 cm³

Field size: (2.5 x 2.5) cm² ... (40 x 40) cm²

Energy range: ⁶⁰Co ... 50 MV photons
(9 ... 45) MeV electrons

Roos® (34001)

Gold standard for electron reference dosimetry in radiation therapy

Type: Vented plane-parallel ionization chamber

Volume: 0.35 cm³

Field size: (4 x 4) cm² ... (40 x 40) cm²

Energy range: (2 ... 45) MeV electrons
⁶⁰Co ... 25 MV photons
(50 ... 270) MeV protons



**Industry-leading
detector range –
for any application**

**Scan the QR code to download our detector catalog
for a complete overview of all PTW detectors.**

Also includes a brief code of practice for absorbed dose to water determination.

High-Precision Phantoms

BEAMSCAN®

All-in-one 3D water phantom with automated setup, wireless operation and patented clip-in TRUFIX® detector positioning system, scanning range: 50 cm x 50 cm x 41.5 cm

MP1-M

Small 1D water tank (T41025) for protocol-compliant reference dose and PDD measurements, scanning range: 32 cm x 32 cm x 37 cm

Water Phantom T41023

Small 1D water tank with sliding caliper for reference dose measurements at different water depths, size: 30 cm x 30 cm x 30 cm

RW3 Slab Phantoms

Water-equivalent solid-state phantoms (T29672) for MU calibration, quality assurance and low energy electron beam dosimetry, size: 30 cm x 30 cm x 30 cm, four different thicknesses (1, 2, 5, 10 mm)

Calibration Services

Ensure that your radiation instruments are always safe and compliant with current legislation. As a member of the IAEA/WHO SSDL network, the PTW calibration lab provides a full range of calibration services – from factory calibrations to accredited calibrations based on national and international standards.



**PTW
CALIBRATION
LAB**



Technical Specifications

Use	Reference class electrometers fully compliant with: Radiation therapy according to IEC 60731 Diagnostic radiology according to IEC 61674 Brachytherapy according to IEC 62467-1 Secondary standard electrometer according to IPEM* JSMP (JCSS calibration required)* Radiation protection according to IEC 60846*
Channel	1
Display	5" color display with capacitive touchscreen, WVGA (800 x 480 Pixel), backlit
2D Code Reader	Data Matrix Code Scanner*
Connectivity	LAN, TCP/IP, 100 Mbit/s, IPv4/6 WLAN Access Point 802.11ac/b/g/n, WPA2, up to 800 Mbit/s* USB 2.0 Host, Type A (700 mA)
Dimensions	approx. 201 mm (W) x 122 mm (H) x 253 mm (D) (including feet)
Weight	3 kg
Power Supply	(100 ... 240) V, (50/60) Hz
Measurement Ranges	(according to IEC 60731, reference class)
▶ Current	400 fA ... 2.6 μ A
▶ Charge	4 pC ... 9.3 C
Resolution	
▶ Current	1 fA (0.1 fA*)
▶ Charge	10 fC (1 fC*)
Operation Modes	MEAS: Manual start/stop – continuous measurement AutoMEAS: Auto start/stop Measurement is triggered by radiation, dose is calculated from all recorded data. AutoMEAS & RESET: Auto start/stop with reset Measurement is triggered by radiation, dose is calculated from the last measurement. INTEG: Measurements are integrated over a predefined time interval.
Repeatability	$\leq \pm 0.25$ % ($\leq \pm 0.25$ % IEC 60731)
Long-Term Stability	$\leq \pm 0.1$ % ($\leq \pm 0.5$ % over one year, IEC 60731)
Response Time	≤ 1.5 s (≤ 3 s (90 % response), IEC 60731)
Non-Linearity	$\leq \pm 0.25$ % ($\leq \pm 0.5$ % IEC 60731)
Zero Drift	$\leq \pm 0.25$ % ($\leq \pm 0.5$ % IEC 60731)
Bias Voltage	(0 ... ± 400) V (± 0.5 V) @ 1 V steps
Zeroing	typ. 85 s
Configurations	UNIDOS Tango Electrometer with M connector (Order No. L981629), BNT connector (Order No. L981630) or TNC connector (Order No. L981631) UNIDOS Romeo Electrometer with M connector (Order No. L981632), BNT connector (Order No. L981633) or TNC connector (Order No. L981634)
Extent of Supply	Set includes: Shelf stand, LAN/Ethernet network cable, power supply cable

*applies to UNIDOS Tango only

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