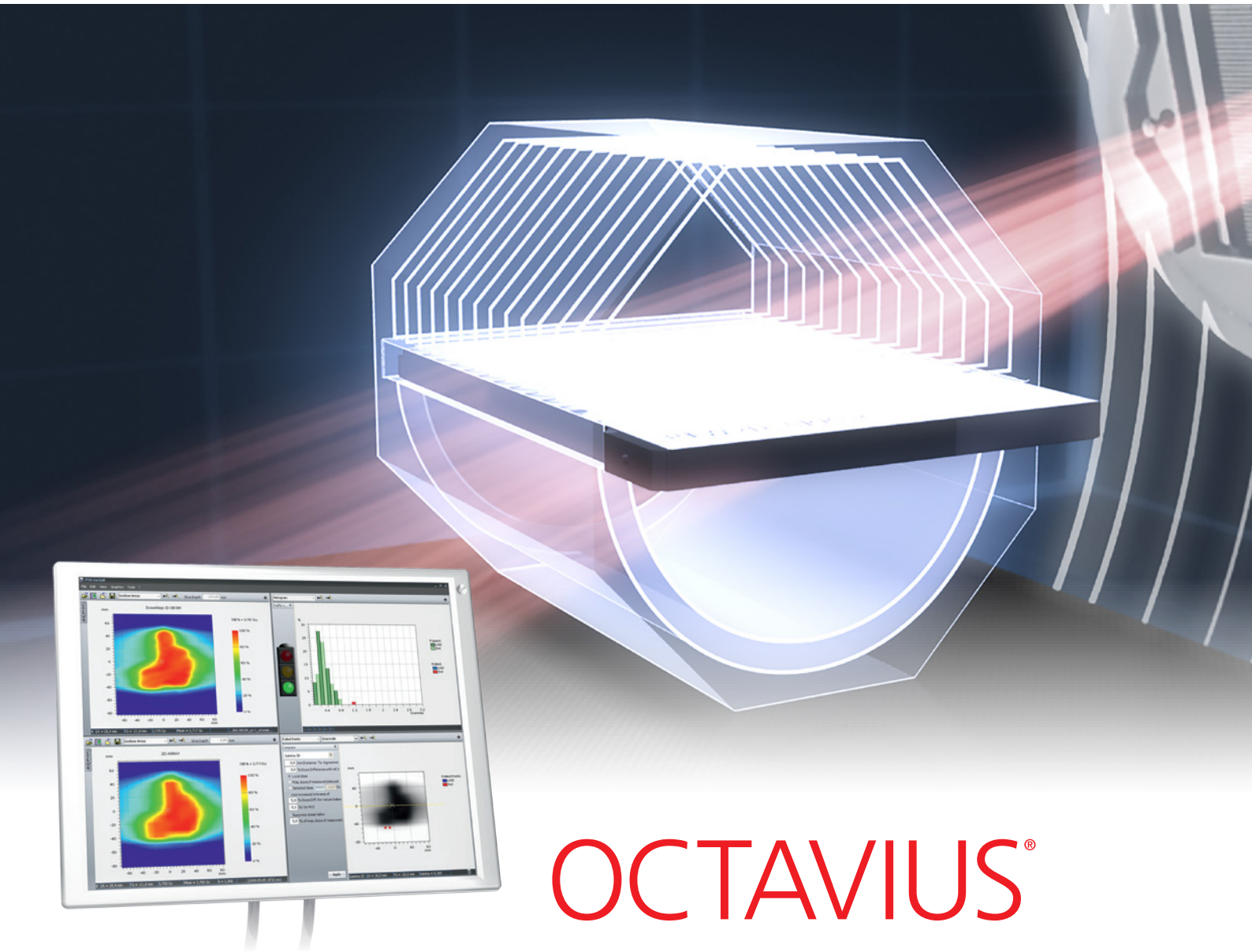
Always One Step Ahead



OCTAVIUS®

Turnkey Solutions for 2D Patient Plan Verification

PTW

Always One Step Ahead

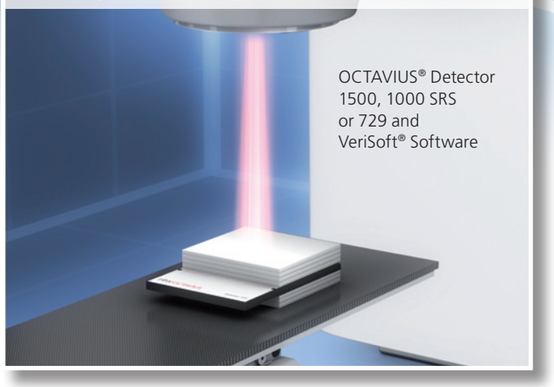
OCTAVIUS® 2D Systems

RapidArc®
VMAT
TomoTherapy®
IMRT
2D/3D
FF/FFF

As new complex treatment and delivery techniques evolve, which tend to increase potential error sources, the need to verify dose delivery quickly during the entire treatment period becomes crucial. Continuing where other QA devices leave off, OCTAVIUS® solutions perfectly answer these needs. With their modular design and trendsetting technologies, OCTAVIUS® systems cover the complete patient QA chain from patient plan verification to in vivo verification, providing you with the optimal solution for each treatment technique. Just as you expect from PTW.

Modular 2D QA Solutions

Pre-Treatment Verification
Field-by-Field, Gantry 0°

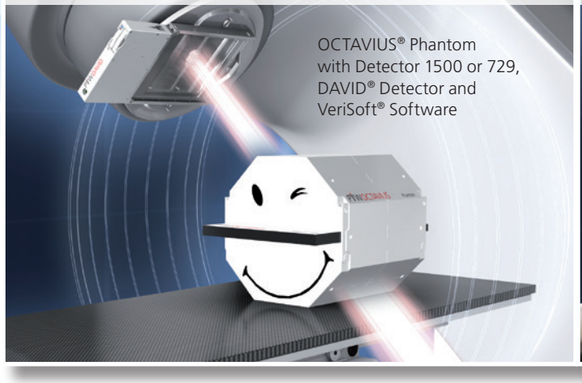


OCTAVIUS® I

Pre-Treatment Verification
Composite Plan, Rotating Gantry

OCTAVIUS® II

Pre-Treatment Verification ...



... and In Vivo Verification

OCTAVIUS® III

OCTAVIUS® I

Pre-Treatment Plan Verification

Field-by-Field, Gantry 0°

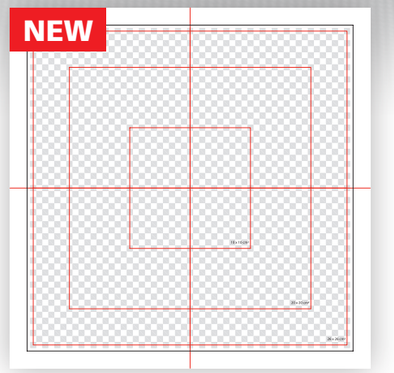
Built on two strong components, an OCTAVIUS® detector and VeriSoft® software, OCTAVIUS® I perfectly answers the needs of field-by-field IMRT verification measurements with fixed gantry positions.

Select the detector that is best for your application or budget, and get started.

Quick Overview

- **Very quick set up – ready for measurement within a few minutes**
- **Outstanding flexibility – three detectors to choose from**
- **High detector density, best available field coverage – better error detection**
- **Optional 4D dosimetry and machine QA with FFF analysis**
- **Reliable Gold Standard ionization chambers as detectors**
- **Modular – upgradeable to any OCTAVIUS® system**

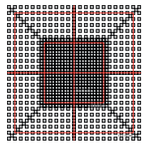
OCTAVIUS® Detectors – which one is best for you?



OCTAVIUS® 1500

Highlights

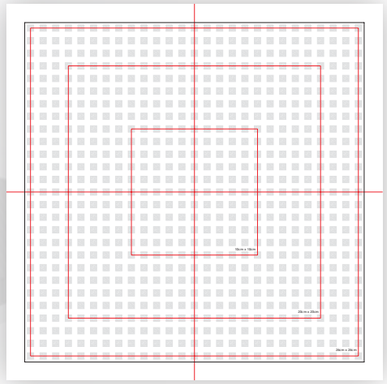
- Highest detector density and largest field coverage of available arrays
- Resolution nearly doubled – 1405 vented ionization chambers (size 4.4 x 4.4 x 3 mm³) on 27 cm x 27 cm
- Unique checkerboard detector layout – no leaf undetected
- 100% field coverage with two measurements via simple couch shift
- Gold Standard ionization chambers as detectors – no ageing, no degradation
- Extended dose rate range for FFF beams (up to 48 Gy/min)



OCTAVIUS® 1000 SRS

Highlights

- Smallest detector size (2.3 x 2.3 x 0.5 mm³) with highest spatial resolution (2.5 mm) – ideal for SRS/SBRT QA
- 977 liquid-filled ionization chambers on 10 cm x 10 cm
- Full field coverage on 5 cm x 5 cm
- Excellent sensitivity – measures single MUs
- 2.5 mm detector spacing in center area – suitable for high-definition MLC QA
- Optional accessory package for CyberKnife® patient QA
- Extended dose rate range for FFF beams (up to 36 Gy/min)

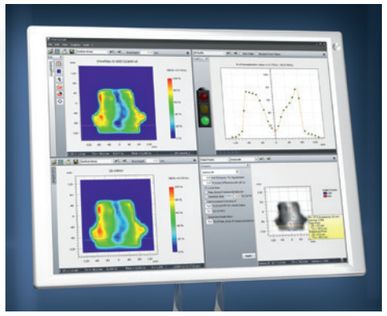


OCTAVIUS® 729

Highlights

- Large field coverage – cubic detector design, uniform detector spacing (5 mm edge-to-edge)
- 729 vented ionization chambers (size 5 x 5 x 5 mm³) on 27 cm x 27 cm
- Full field coverage, increased sensitivity with four measurements using VeriSoft® Merge
- Gold Standard ionization chambers as detectors – no ageing, no degradation
- Extended dose rate range for FFF beams (up to 48 Gy/min)

Patient Plan Verification Software



VeriSoft® **Dose comparison made simple.**

Measure the dose with PTW OCTAVIUS® systems and verify it against the treatment planning system (TPS) quickly and efficiently using VeriSoft® patient plan verification software.

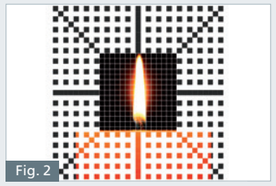
Feature-rich and easy-to-use, VeriSoft® provides you with a wide range of dose evaluation tools - from basic visual comparison to detailed quantitative evaluation.

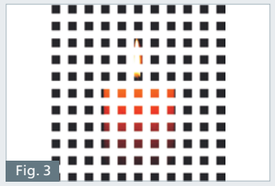
Standard and advanced tools for dose comparison and evaluation:

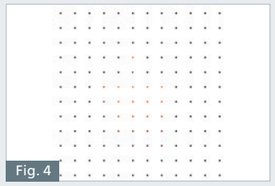
- Profile and dose distribution overlays
- Dose-difference distributions
- Results summary with "traffic light" indicator
- Gamma histograms
- 2D/3D Gamma Index analysis
- Failed-point analysis
- Patient CT overlay
- Pre-defined reports for documentation

OCTAVIUS® Detectors: Largest field coverage – better detection of hot spots

With their high detector density and unique detector layout, OCTAVIUS® detectors offer the best field coverage of commercially available arrays, increasing the chance of detecting a hot spot or measuring dose at steep gradients.





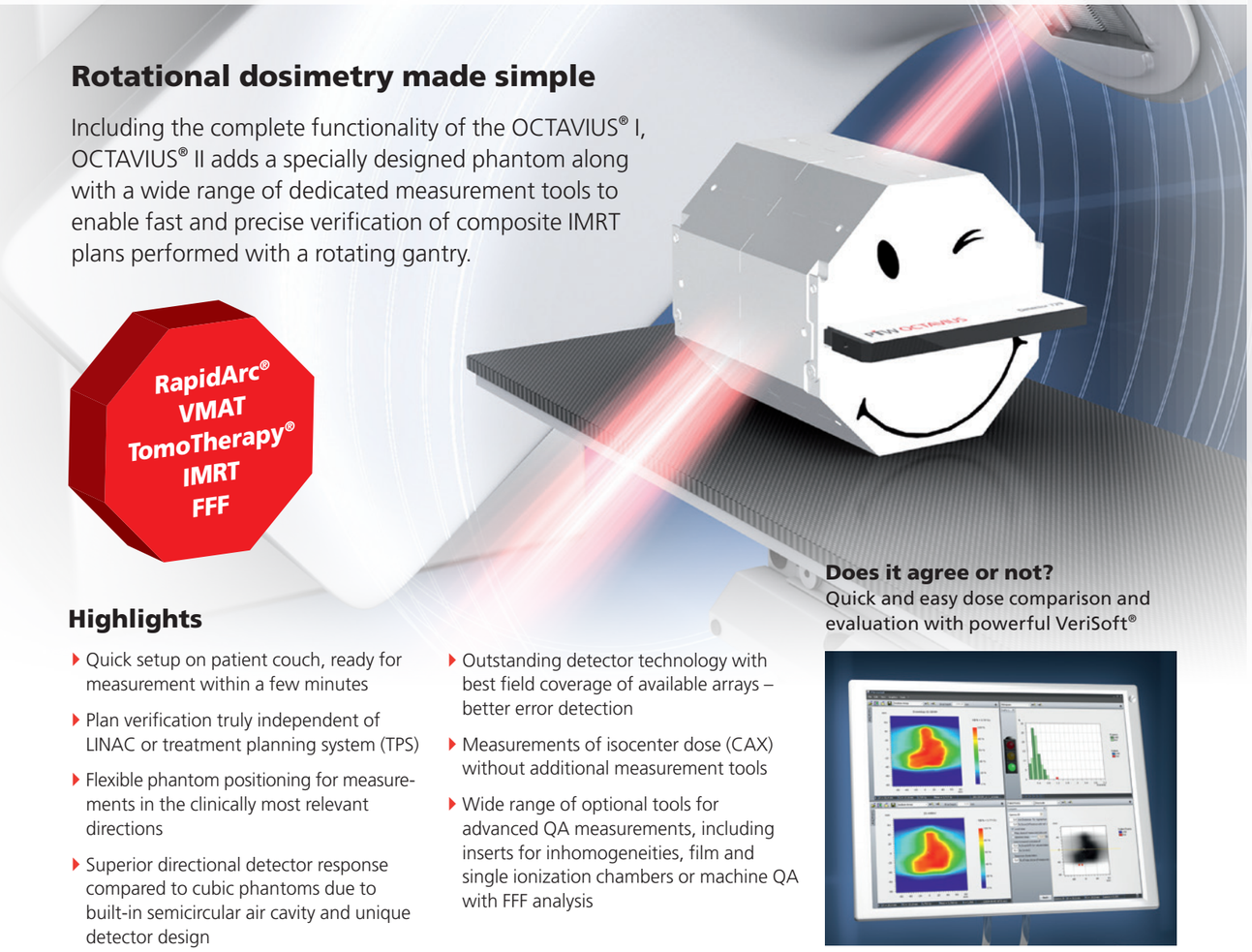


Simplified illustration showing maximum field coverage achieved by OCTAVIUS ionization chamber arrays with a single measurement (Fig. 1 OCTAVIUS 1500: 50% coverage; Fig. 2 OCTAVIUS 1000 SRS: 85% coverage in center area, Fig. 3 OCTAVIUS 729: 25% coverage) compared to diode array of the same detector spacing (Fig. 4 0.64% coverage), even though the actual information is one dose value per single detector for all array types.

OCTAVIUS® II

Pre-Treatment Plan Verification

Composite Plan,
Rotating Gantry



Rotational dosimetry made simple

Including the complete functionality of the OCTAVIUS® I, OCTAVIUS® II adds a specially designed phantom along with a wide range of dedicated measurement tools to enable fast and precise verification of composite IMRT plans performed with a rotating gantry.

RapidArc®
VMAT
TomoTherapy®
IMRT
FFF

Does it agree or not?
Quick and easy dose comparison and evaluation with powerful VeriSoft®

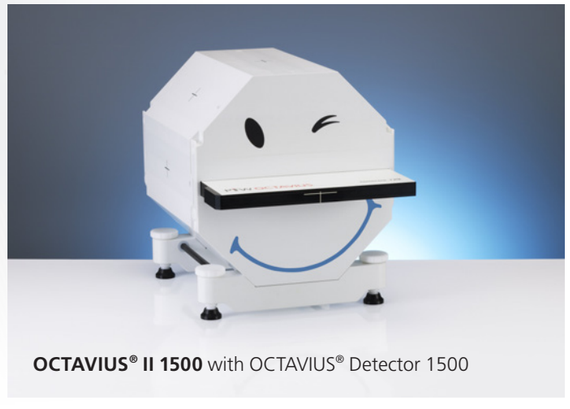
Highlights

- Quick setup on patient couch, ready for measurement within a few minutes
- Plan verification truly independent of LINAC or treatment planning system (TPS)
- Flexible phantom positioning for measurements in the clinically most relevant directions
- Superior directional detector response compared to cubic phantoms due to built-in semicircular air cavity and unique detector design
- Outstanding detector technology with best field coverage of available arrays – better error detection
- Measurements of isocenter dose (CAX) without additional measurement tools
- Wide range of optional tools for advanced QA measurements, including inserts for inhomogeneities, film and single ionization chambers or machine QA with FFF analysis

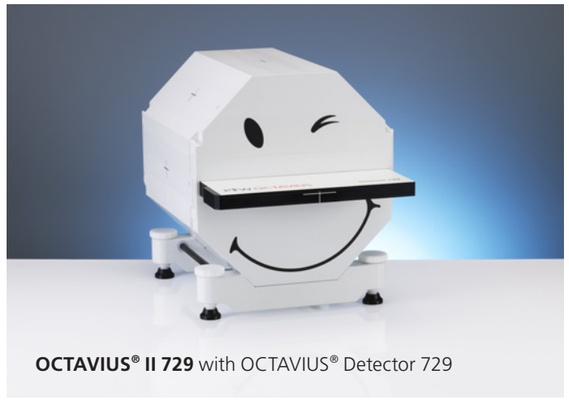
Quick Overview

- Quick, easy set up within a few minutes
- Ready for measurement – no commissioning required
- Unique phantom geometry, perfectly adapted to rotational QA
- Suitable for all IMRT and IMAT treatment techniques
- Flexible – two detectors to choose from
- Versatile – multiple options for advanced QA measurements
- Modular – enhance or upgrade as and when needed

Which turnkey solution is best for you?



OCTAVIUS® II 1500 with OCTAVIUS® Detector 1500



OCTAVIUS® II 729 with OCTAVIUS® Detector 729

OCTAVIUS® II 1500 or 729

OCTAVIUS® II is available in two ready-to-use solutions which include everything you need for patient plan QA. Select the package with the detector that is best for your application or budget, and get started. Enhance or upgrade your OCTAVIUS® system as and when needed. With modular OCTAVIUS®, you stay flexible – now and in the future.

The OCTAVIUS® Phantom

Perfectly adapted to rotational dosimetry

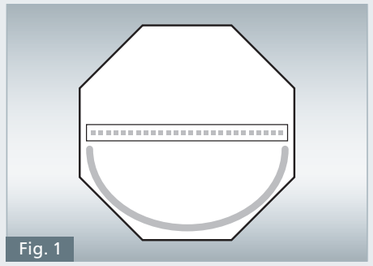


Fig. 1

Superior directional response
OCTAVIUS® phantom with slot for OCTAVIUS® Detectors 1500 or 729 and optional measurement inserts (inhomogeneities, ion chambers, film). A built-in semicircular air cavity provides for an angle-independent detector response.

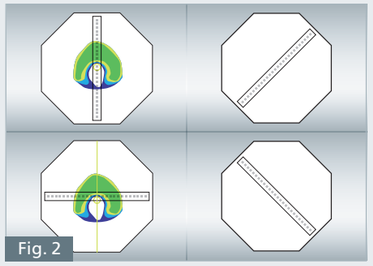


Fig. 2

Measurements inside the clinically relevant volume
The OCTAVIUS® 2D phantom can be rotated in eight different positions, allowing precise measurements in the clinically relevant direction and inside the planned targed volume (PTV).

True 3D Gamma Index Analysis

Fewer false-positive errors, better protection of OAR

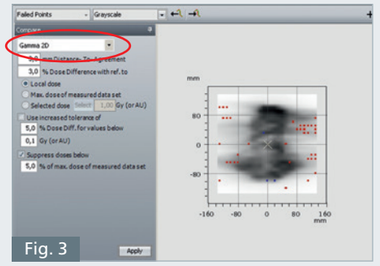


Fig. 3

A 3D Gamma Index analysis may reduce the number of failed points in regions of high dose gradient perpendicular to the measurement plane (Fig. 3 and 4) as it uses all three spatial dimensions for data comparison.

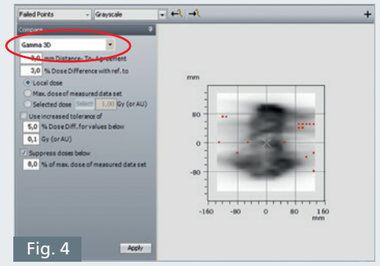
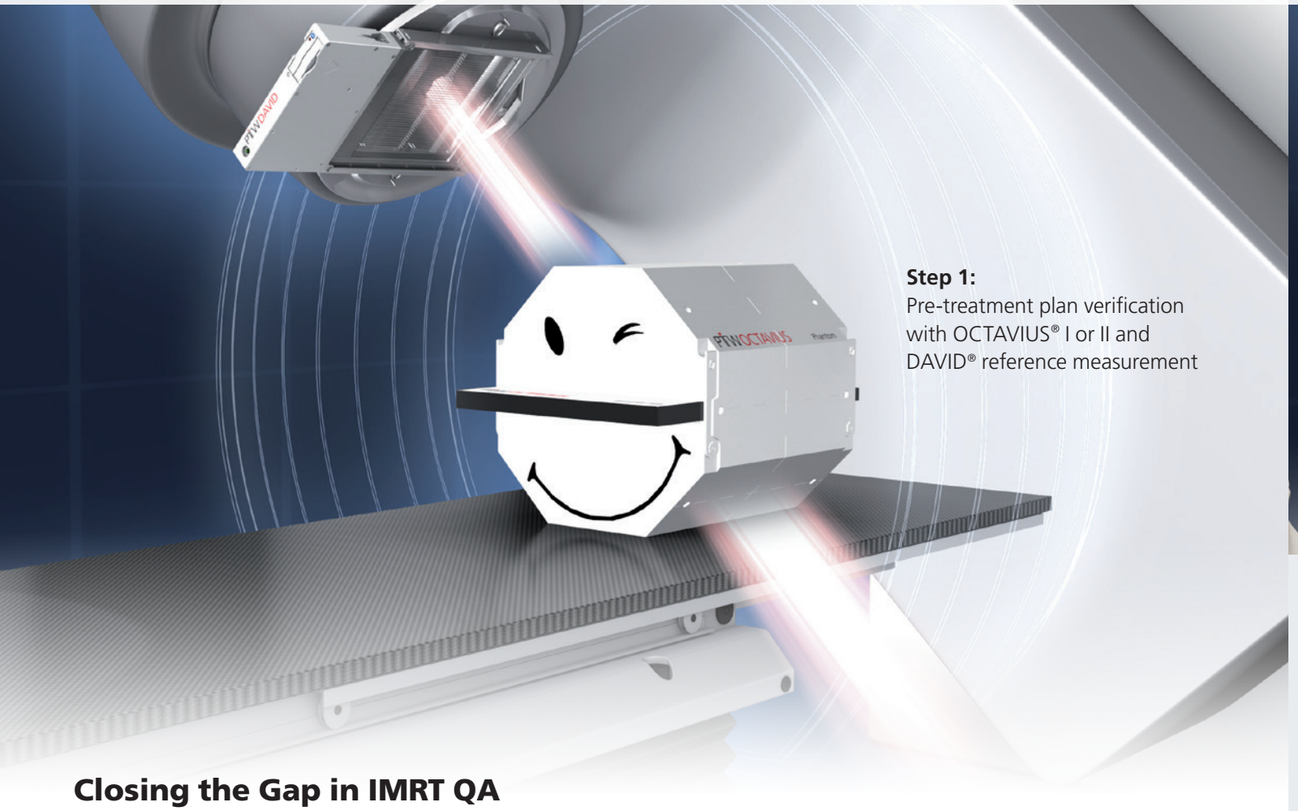


Fig. 4

If this method is used in combination with the local dose chosen as reference value, the 3D Gamma Index analysis method will increase the chance of detecting relevant overdosage in organs at risk (OAR).

OCTAVIUS® III

Pre-Treatment Plan Verification ...



Step 1:
Pre-treatment plan verification with OCTAVIUS® I or II and DAVID® reference measurement

Closing the Gap in IMRT QA

OCTAVIUS® III cleverly combines pre-treatment verification using OCTAVIUS® I or II with the DAVID® detector, a truly innovative real-time in vivo dosimetry system for IMRT.

By integrating DAVID®, OCTAVIUS® III gives you a powerful, yet highly practical QA solution at hand to verify whether the planned dose is actually being delivered over the entire treatment period.

Highlights

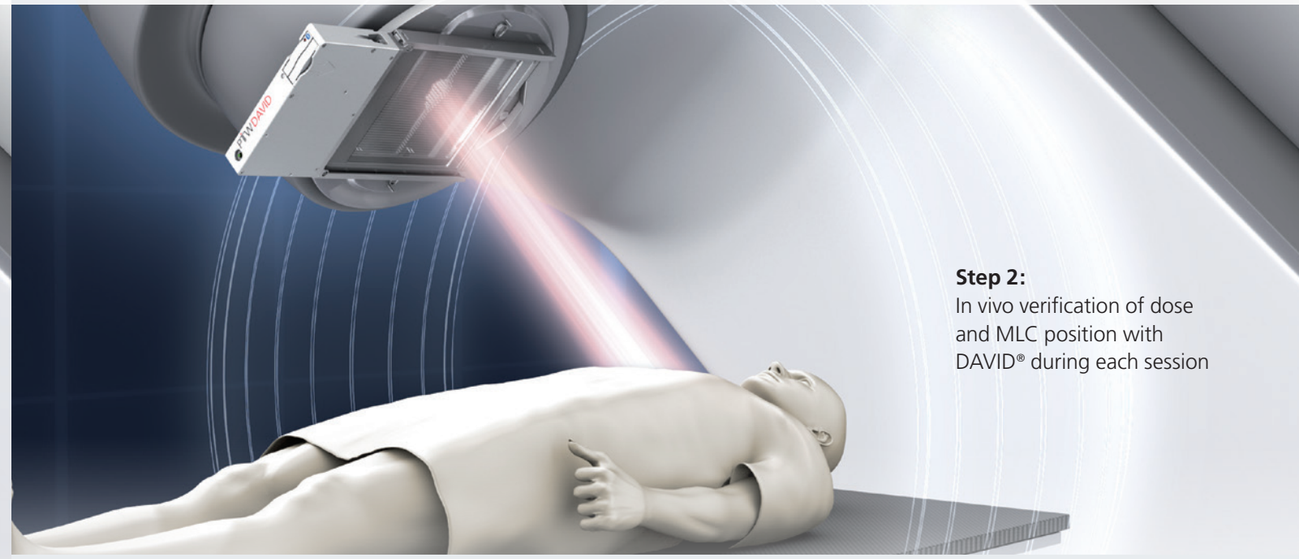
- Clinically established QA solution for patient plan verification and in vivo verification of dose delivery and MLC accuracy during each patient treatment
- Pre-treatment QA based on independent measurements with OCTAVIUS® I, II or optional DIAMOND® secondary check software
- Immediate detection of errors or malfunctions (e.g. lost MLC positions) during each session
- Truly independent measurements, acquired and transmitted in real time
- Entirely wireless operation and data transfer during treatment verification
- Quickly installed, ready for operation in a few minutes (no cables, no detector placement on patient)
- Available for all standard MLCs

Why In Vivo IMRT Dosimetry?

- **More potential for treatment-related incidents due to increased complexity of planning and new technologies**
- **Certain types of tumors require accuracy better (up to 3.5%) than 5% as recommended by ICRU Report 24 (1976).**
- **Of the more than 4,000 near misses without adverse outcome to patients reported in the years 1992 to 2007, more than 50% were related to the planning or treatment delivery stage.**
- **More system or equipment-related errors were reported as compared to other errors, e.g. dose prescription.**

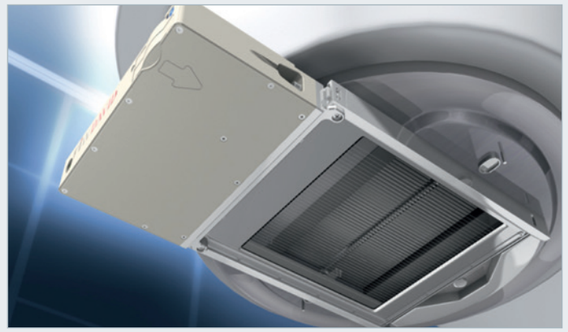
Statistics from: Radiotherapy Risk Profile, World Health Organization 2008

... and In Vivo Treatment Verification

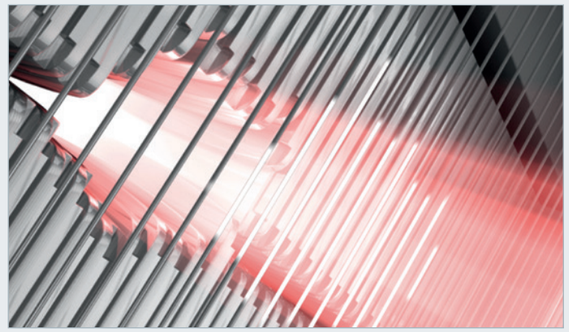


Step 2:
In vivo verification of dose and MLC position with DAVID® during each session

Pioneering, clinically validated detector technology



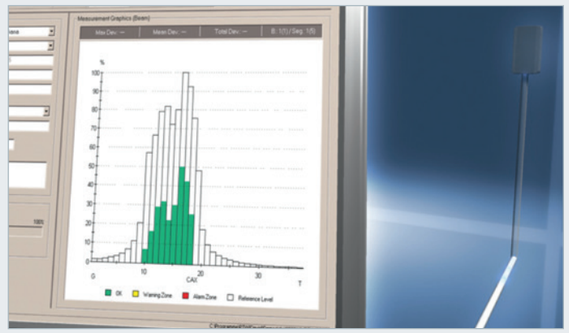
DAVID® is a multi-wire transmission detector specially developed for patient delivery QA. It is inserted into the LINAC accessory tray to monitor dose delivery and MLC accuracy while the patient is treated. Since it is transparent, the DAVID® detector does not interfere with the LINAC's light field.



DAVID® consists of measurement wires which run parallel to the direction of the MLC. Each measurement wire monitors the opening of a leaf pair. The measured dose length product consequently correlates with the opening of the leaf pair and supplied dose.

Ingeniously simple operation. Immediate results.

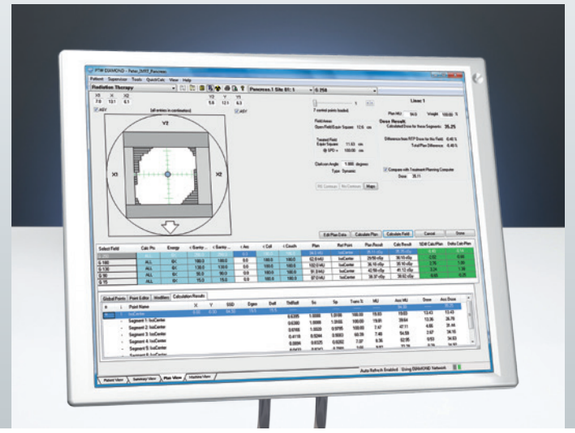
To maximize both efficiency and patient safety, DAVID® operates and communicates completely wireless via Bluetooth. As an ultra lightweight, cable-free device, it can be quickly inserted for measurement and swiftly removed as needed (e.g. for electron treatment), requiring no complicated setup or commissioning procedures.



Prior to daily measurements, a reference measurement is to be taken that can be simultaneously recorded during patient plan verification with an OCTAVIUS® QA system. The dose subsequently measured during each session is then compared real-time to the reference dose. Deviations are displayed immediately according to predefined warning and alarm levels.

OCTAVIUS®

Points selected. Plan verified.



DIAMOND®

Secondary check software for independent dose or MU verification

Key Features

- Clinically established solution for precise, independent verification of point dose or MU calculations
- Fast and simple – no LINAC time or phantom setup required
- Dose comparisons at one or multiple points (field-by-field, composite)
- Advanced calculation capabilities, e.g., wedge support, corrections of "flash" in breast treatments, fluence/dose mapping
- Multiple treatment techniques supported, including IMRT, RapidArc® and VMAT

When small size matters.

CyberKnife® Accessory Package

CyberKnife® patient and machine QA with OCTAVIUS® 1000 SRS

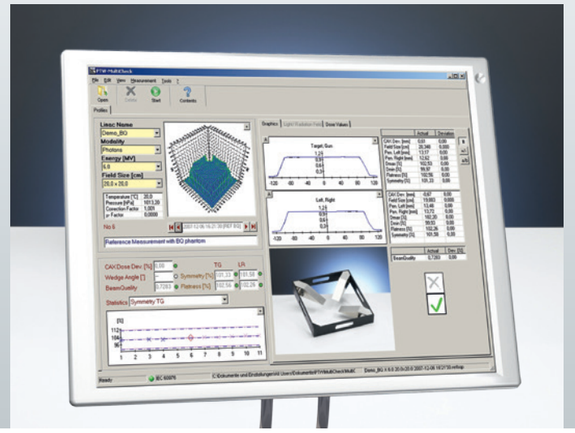
Key Features

- Unique, ready-to-use accessory package for CyberKnife® patient-specific QA in combination with OCTAVIUS® Detector 1000 *SRS* and VeriSoft® software
- Quick, comfortable setup – ready for measurement within a few minutes
- Suitable for CyberKnife® VSI and M6 systems
- Optional MultiCheck® software for quick and easy CyberKnife® machine-specific QA
- Package includes: Positioning device for VSI or M6 birdcage, fiducial marker plate for beam release, foam rubber padding

Fast. Simple.
With millimetric accuracy.

Patient-specific QA for CyberKnife® VSI and M6 systems with OCTAVIUS® Detector 1000 *SRS* in combination with CyberKnife® accessory package

All parameters in one go.



LINAC QA for OCTAVIUS®

LINAC QA Upgrade Package

Key Features

- Complete package for machine-specific QA in combination with an OCTAVIUS® detector and MultiCheck® LINAC QA software
- Fast, efficient check of all relevant beam profile parameters, including beam quality and absolute dose, in one single shot
- QA checks at all gantry angles without gantry mounts using optional OCTAVIUS® 4D phantom
- FFF analysis
- Record and playback function for a quick assessment of the LINAC startup behavior
- Profile and trend display

Options

- OCTAVIUS® 4D Rotating Phantom
- Universal Gantry Mount

Supported QA Procedures

X-ray and electron output constancy
Electron and photon beam profile constancy
Electron beam energy constancy
Electron and x-ray output constancy vs. gantry angle
Electron and x-ray off-axis factor constancy vs. gantry angle
Check of wedge angle for 60°
Dose rate and symmetry over time
Segmental IMRT (step and shoot) test*
Moving Window IMRT (four cardinal gantry angles)*

*in combination with OCTAVIUS® 4D Rotating Phantom

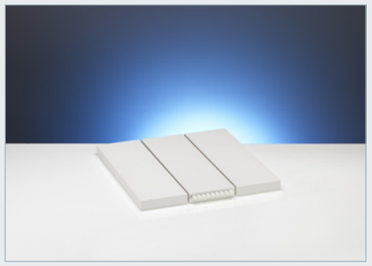
4D in Motion.

OCTAVIUS® 4D Upgrade Package

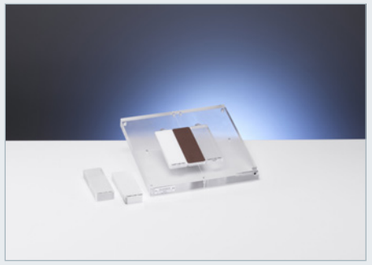
The easiest way to 4D dosimetry

Key Features

- Budget-friendly solution for users of PTW two-dimensional detector arrays who wish to upgrade to 4D dosimetry
- Upgrade package includes: Motorized OCTAVIUS® 4D phantom, wireless inclinometer, electronics, VeriSoft® upgrade with Navigator single user interface
- Supported detector arrays: OCTAVIUS® Detector 1500, OCTAVIUS® Detector 1000 *SRS*, OCTAVIUS® Detector 729, 2D-Array seven29®



Chamber insert plate with nine cavities



Inhomogeneity phantom with inserts

Inclinometer for gantry angle measurement

Comfortable setup with OCTAVIUS® trolley

Options & Accessories

Film Measurement
Polystyrene holding device for OCTAVIUS® phantom to insert a GafChromic® EBT / EBT 2 film (max. size 20.32 cm x 25.4 cm, 8" x 10") for film measurements.

Chamber Measurement
Insert plates for OCTAVIUS® phantom with cavities to allow point measurements with up to nine 0.125 cm³ Semiflex ionization chambers. Unneeded cavities can be closed with blind plugs.

0.125 cm³ Semiflex Ionization Chamber
Vented cylindrical ionization chamber with a sensitive volume of 0.125 cm³ which is inserted into the chamber insert plate of the OCTAVIUS® phantom to allow point measurements.

Inhomogeneity
30 cm x 30 cm x 2.5 cm acrylic phantom to test TPS with consideration of inhomogeneities. Includes five exchangeable inserts, three of different density (lung, bone and soft tissue), two of acrylic glass (PMMA) and a specific adapter plate for OCTAVIUS® phantom.

The inhomogeneity phantom is not a CT test phantom. The Hounsfield units of the phantom must be determined by a CT scan.

Universal Gantry Mount
Vendor-specific gantry holding device designed to keep PTW ionization chamber arrays secure at isocenter at any gantry position.

Inclinometer
Device to measure the gantry angle. Allows dose measurements as a function of time or gantry angle to verify partial plans.

OCTAVIUS® Trolley
Robust, functionally designed trolley to conveniently store and move OCTAVIUS® phantom and detector.
Dimensions (WDH): 60 cm x 64 cm x 94 cm, weight: 33 kg

Workflow: Pre-Treatment Verification "Field-by-Field"

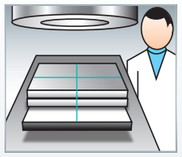
OCTAVIUS® I

TPS Transfer

Verification plan is calculated in TPS system.

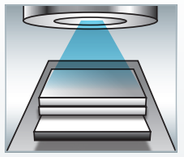
TPS dose plane is loaded into VeriSoft®.

QA Device Setup



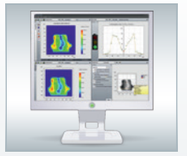
OCTAVIUS® detector is set up and aligned on patient couch.

Verification Plan Delivery



OCTAVIUS® detector is irradiated (Gantry 0°).

Evaluation



Measured dose map is displayed in VeriSoft®.

Measured and calculated dose maps are compared in VeriSoft®:
Green: Verification passed.
Red: Deviations outside tolerance.

Workflow: Pre-Treatment Verification "Composite Plan"

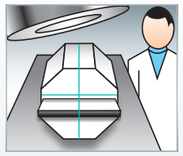
OCTAVIUS® II

TPS Transfer

Verification plan is calculated in TPS system.

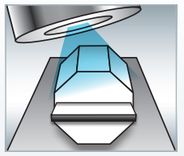
TPS dose plane is loaded into VeriSoft®.

QA Device Setup



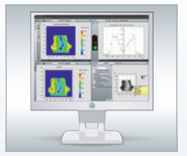
OCTAVIUS® phantom with detector is set up and aligned on patient couch.

Verification Plan Delivery



OCTAVIUS® phantom with detector is irradiated according to plan.

Evaluation



Measured dose map is displayed in VeriSoft®.

Measured and calculated dose maps are compared in VeriSoft®:
Green: Verification passed.
Red: Deviations outside tolerance.

Workflow: Pre-Treatment Verification

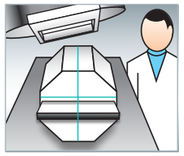
OCTAVIUS® III

TPS Transfer

Verification plan is calculated in TPS system.

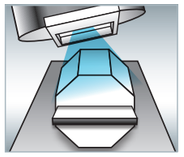
TPS dose plane is loaded into VeriSoft®.

QA Device Setup



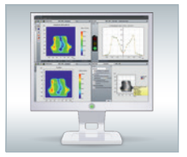
OCTAVIUS® phantom with detector is set up and aligned on patient couch.
DAVID® detector is inserted into accessory tray of LINAC.

Verification Plan Delivery



OCTAVIUS® phantom with detector is irradiated according to plan. Simultaneously, a reference measurement with DAVID® is taken.

Evaluation

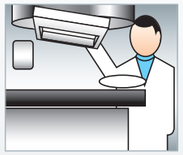


Measured dose map is displayed in VeriSoft®.

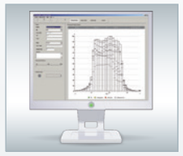
Measured and calculated dose maps are compared in VeriSoft®:
Green: Verification passed.
Red: Deviations outside tolerance.

Workflow: In Vivo Treatment Verification during each fraction

QA Device Setup

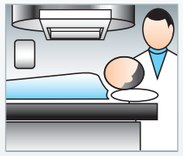


DAVID® detector is inserted into accessory tray of LINAC.



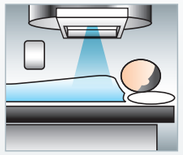
Reference measurement is loaded in DAVID® software and shown as transparent bar graph.

Patient Setup



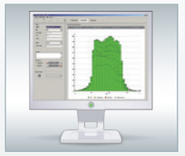
Patient is set up on patient couch.

Treatment Delivery

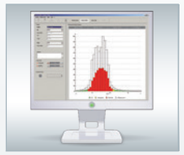


Patient is being irradiated. DAVID® measures dose length product of each leaf pair and transfers data wireless to a remote PC.

Treatment Verification & Monitoring



Measured dose is overlaid with reference dose. Deviations are displayed color-coded:



Green bars: Irradiation delivered as planned.
Red bars: Deviations outside tolerance.

Selected Publications

The Octavius 1500 2D ion chamber array and its associated phantoms: Dosimetric characterization of a new prototype, A. van Esch et al., Med.Phys. **41**, 091708 (2014)

VMAT monthly QA using two techniques: 2D ion chamber array with an isocentric gantry mount and an in vivo dosimetric device attached to gantry, P. Myers et al., Journal of Radiotherapy in Practice (2013)

Establishing an optimized patient-specific verification program for volumetric modulated arc therapy, Alfredo Serna, Fernando Mata, Vicente Puchades, Medical Dosimetry **38** (2013), 274-279

A methodology for dosimetry audit of rotational radiotherapy using a commercial detector array, M. Hussein et al., Radiotherapy & Oncology **108** (2013), Issue 1, 78-85

Characterization of responses of 2D ARRAY seven29 detector and its combined use with Octavius phantom for the patient-specific quality assurance in RapidArc treatment delivery, S. A. Syamkumar et al., Medical Dosimetry **37** (2012), 53-60

Evaluation of PTW Seven29 for Tomotherapy patient specific quality assurance and comparison with ScandiDos Delta4, P. Myers et al., Journal of Medical Physics **37** (2012), 72-80

Implementing RapidArc into clinical routine: A comprehensive program from machine QA to TPS validation and patient QA, A. van Esch et al., Med. Phys. **38**, 5146 (2011)

Enhanced accuracy of IMRT photon fluence profile surveillance: iterative resolution correction of the DAVID chamber, H. K. Looe et al., Phys. Med. Biol. **55**, 3981 (2010)

Clinical performance of a transmission detector array for the permanent supervision of IMRT deliveries, B. Poppe et al., Radiotherapy & Oncology **95** (2010), Issue 2, 158-165

IMRT Pre-Treatment Plan and In-Vivo Verification with 2D-ARRAYs and Multi-Wire Ionisation Chambers, B. Poppe et al., Med. Phys. **35**, 2759 (2008)

On the Influences of the Detector Size and Sampling Frequency On IMRT Verifications with 2D Arrays, B. Poppe et al., Med. Phys. **35**, 2943 (2008)

On-line quality assurance of rotational radiotherapy treatment delivery by means of a 2D ion chamber array and the Octavius phantom, A. van Esch et al., Med. Phys. **34**, 3825 - 3837 (2007)

Spatial resolution of 2D ionization chamber arrays for IMRT dose verification: single-detector size and sampling step width, B. Poppe et al., Phys. Med. Biol. **52**, 2921-2935 (2007)

Portal dose measurements by a 2D array, S. Cilla et al., Physica Medica Volume **23** (2007), Issue 1, 25-32

DAVID – a translucent multi-wire transmission ionization chamber for in vivo verification of IMRT and conformal irradiation techniques, B. Poppe et al., Phys. Med. Biol. **51,** 1237-1248 (2006)

Two-dimensional ionization chamber arrays for IMRT plan verification, B. Poppe et al., Med.Phys. **33** 1005-1015 (2006)

OCTAVIUS® 2D QA Systems Overview

	Part No.	OCTAVIUS® I "Standard"	OCTAVIUS® II "Rotational"	OCTAVIUS® III "In vivo"
Applications				
Pre-Treatment "field-by-field"		■	■	■
Pre-Treatment "composite plan"		–	■	■
In Vivo Verification		□	□	■
LINAC QA		□	□	□
Supported Techniques				
2D/3D		■	■	■
Step & Shoot		■	■	■
Sliding Window		■	■	■
Arc IMRT / IMAT (RapidArc®, VMAT)		–	■	■
Helical TomoTherapy®		–	■	–
SRS/SBRT		■	■	■
CyberKnife®		□	–	–
Components				
VeriSoft® Patient Plan Verification Software		■	■	■
OCTAVIUS® Detector		■	■	■
OCTAVIUS® Phantom		–	■	■
DAVID® System		–	–	■
Options				
LINAC QA for OCTAVIUS®	L981295	□	□	□
DIAMOND® Secondary Check Software	S070020	□	□	□
DAVID® In Vivo Verification	L981390	□	□	■
Film Measurement	T40054.1.015	–	□	□
Chamber Measurement	T40042.1.010	–	□	□
Inhomogeneity	L981296	–	□	□
Inclinometer	L981316	–	□	□
CyberKnife® Accessory Package	L981454	□	–	–
OCTAVIUS® 4D Upgrade Package	L981324	□	□	□
OCTAVIUS® 1500 Upgrade Package	L981452	□	–	–
OCTAVIUS® II 1500 Upgrade Package	L981466	–	□	□
Optional Accessories				
Universal Gantry Mount	T41021	□	□	□
0.125 cm³ Semiflex Ionization Chamber	T31010	–	□	□
OCTAVIUS® Trolley	T40053	–	□	□
Turnkey Solutions				
incl. OCTAVIUS® Detector 1500	L981449	**OCTAVIUS® I 1500**		
	L981450		**OCTAVIUS® II 1500**	
	L981451			**OCTAVIUS® III 1500**
incl. OCTAVIUS® Detector 1000 SRS	L981465	**OCTAVIUS® I 1000 SRS**		
incl. OCTAVIUS® Detector 729	L981297	**OCTAVIUS® I 729**		
	L981298		**OCTAVIUS® II 729**	
	L981229			**OCTAVIUS® III 729**

■ included □ optional – not available or not recommended

Technical Specifications

OCTAVIUS® Detector 1500

Detector type:	Plane-parallel vented ionization chambers
Number of detectors:	1405
Detector size:	4.4 mm x 4.4 mm x 3 mm (0.06 cm³)
Detector spacing:	7.1 mm center-to-center
Max. field size:	27 cm x 27 cm
Reproducibility:	≤± 0.5%
Dead time:	Zero
Repetition rate:	100 ms
Measured quantities:	Absorbed dose to water (Gy), absorbed dose rate to water (Gy/min)
Resolution:	0.1 mGy, 0.1 mGy/min
Measurement range:	(0.5 ... 48) Gy/min
Reference point:	7.5 mm below the surface of the array
Housing material:	PC, GRP (frame)
Dimensions:	30 cm x 46.7 cm x 2.2 cm (W x D x H)
Weight:	6 kg
Power supply:	(100 ... 265) VAC; (50 ... 60) Hz
PC connection:	Ethernet, RS232
Extent of supply:	OCTAVIUS® Detector 1500, Detector Interface 4000

OCTAVIUS® Detector 1000 SRS

Detector type:	Liquid-filled ionization chambers
Number of detectors:	977
Detector size:	2.3 mm x 2.3 mm x 0.5 mm (0.003 cm³)
Detector spacing:	Center (5.5 cm x 5.5 cm): 2.5 mm center-to-center Outer area (10 cm x 10 cm): 5 mm center-to-center
Max. field size:	10 cm x 10 cm
Reproducibility:	≤± 0.5%
Dead time:	Zero
Repetition rate:	100 ms
Measured quantities:	Absorbed dose to water (Gy), absorbed dose rate to water (Gy/min)
Resolution:	0.1 mGy, 0.1 mGy/min
Measurement range:	(0.2 ... 36) Gy/min
Reference point:	9 mm below the surface of the array
Housing material:	GRP
Dimensions:	30 cm x 42 cm x 2.2 cm (W x D x H)
Weight:	5.4 kg
Power supply:	(100 ... 265) VAC; (50 ... 60) Hz
PC connection:	Ethernet, RS232
Extent of supply:	OCTAVIUS® Detector 1000 SRS, Detector Interface 4000

OCTAVIUS® Detector 729

Detector type:	Plane-parallel vented ionization chambers
Number of detectors:	729
Detector size:	5 mm x 5 mm x 5 mm (0.125 cm³)
Detector spacing:	10 mm center-to-center, 5 mm edge-to-edge
Max. field size:	27 cm x 27 cm
Reproducibility:	≤ ± 0.5%
Dead time:	Zero
Repetition rate:	200 ms
Measured quantities:	Absorbed dose to water (Gy), absorbed dose rate to water (Gy/min)
Resolution:	0.1 mGy, 0.1 mGy/min
Measurement range:	(0.5 … 48) Gy/min
Reference point:	7.5 mm below the surface of the array
Housing material:	GRP
Dimensions:	30 cm x 42 cm x 2.2 cm (W x D x H)
Weight:	5.4 kg
Power supply:	(100 … 265) VAC; (50 ... 60) Hz
PC connection:	Ethernet, RS232
Extent of supply:	OCTAVIUS® Detector 729, Detector Interface 4000

OCTAVIUS® 2D Phantom

Design:	Octagon-shaped solid body phantom with two exchangeable bottom parts (LINAC phantom with air cavity, CT phantom)
Dimensions:	Diameter 32 cm, length 32 cm
Weight:	24 kg
Material:	Polystyrene (water equivalent within ~ 2%)
Density:	1.04 g/cm³
Extent of supply:	Detector-specific OCTAVIUS® LINAC phantom, CT phantom

DAVID® Detector

Detector type:	Transparent multi-wire ionization chamber (MIC technology)
Number of measurement wires:	Dependent on MLC
Beam attenuation:	Approx. 5% for 6 MV photons; compensation via tray factor
Dimensions:	Dependent on MLC
Weight:	3 kg, incl. battery
Power supply:	NiMH rechargeable batteries, incl. charger; approx. 16 hours operation
Data transmission:	Bluetooth, 1 mW power = Bluetooth class 2
Transmission distance:	Up to 10 m distance between measurement electronics and transceiver
PC connection:	RS232 (transceiver)
Extent of supply:	Vendor-specific DAVID® detector, transceiver, DAVID® software

VeriSoft® 6.1 or higher

Operating system:	Microsoft® Windows® (XP Professional, Vista® Business x32/x64, Windows 7 Professional x32/x64 Windows 8 Professional x32/x64)
Processor:	Multi-core processor
Memory (RAM):	Min. 4 GB, 8 GB recommended
Hard disk:	Min. 500 MB of free space for application software and min. 1.5 GB of free space for .NET Framework 2.0, 3.5 and 4.0
Screen resolution:	1280 x 1024 or higher
Interfaces:	Network interface
Other:	Windows® Internet Explorer® 8.0 or higher, Adobe® Reader® 7.0 or higher
Extent of supply:	VeriSoft® software

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It all started with a brilliant invention - the revolutionary Hammer dosemeter in 1922. Ingenuity coupled with German engineering know-how shaped the company's history, leading to innovative dosimetry products that later became an industry standard. Over the years, PTW has maintained its pioneering spirit, growing into a global market leader of dosimetry and QA solutions well known for its product excellence and innovative strength. Today, PTW dosimetry is one of the first choices for healthcare professionals in radiation therapy, diagnostic radiology, nuclear medicine and health physics.

For more information on OCTAVIUS® QA systems and other PTW products, visit www.ptw.de or contact your local PTW representative:

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