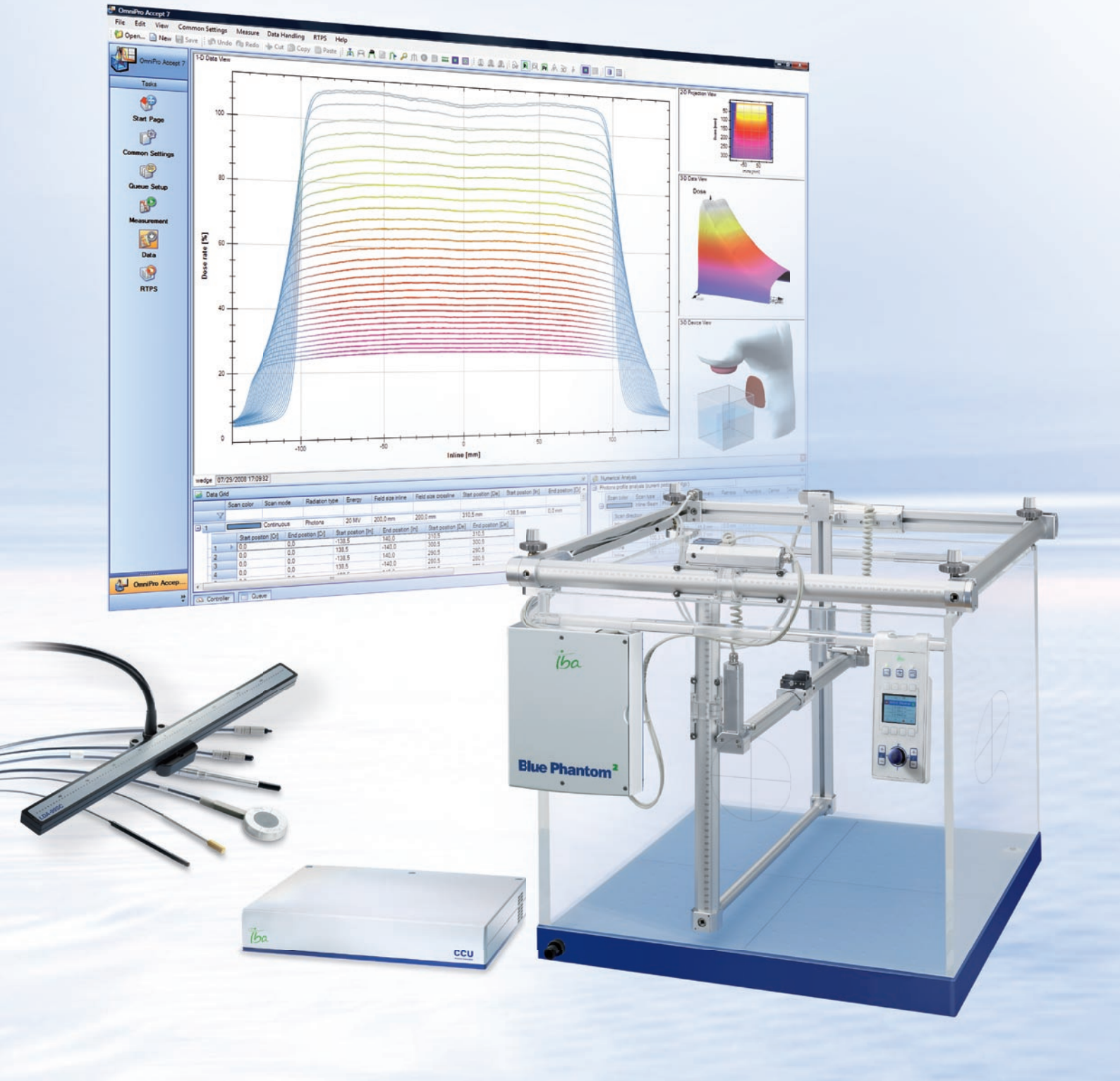
Blue Phantom² with OmniPro-Accept (V 7)

Built for the next generation



Relative Dosimetry – to surpass the best

For over 30 years IBA Dosimetry has been providing the highest quality dosimetry equipment to more than 10.000 satisfied customers worldwide. The new Blue Phantom^2 embodies decades of expertise, research and experience in the development of water phantom systems.

The Blue Phantom^2 is the only water phantom which can be customized to the required specifications to gain maximum efficiency and accuracy. The physicist can select among various premium value adding features and consequently the system can be configured to the individual needs.

Maximum flexibility for a wide range of use and budget!

FASTest + mostACCURATE + mostRELIABLE

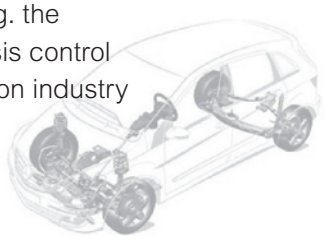
Looking at this new series of *Blue Phantom*, I am happy to see a continuous and significant progress in accuracy, flexibility, long term mechanical stability and reliability since Wellhofer Dosimetry started developing and producing water phantoms 35 years ago. Take advantage of experience, knowhow and consequent innovation by having a *Blue Phantom^2*.

Manfred Wellhöfer, Predecessor of IBA Dosimetry

The gold standard redefined – Blue Phantom²

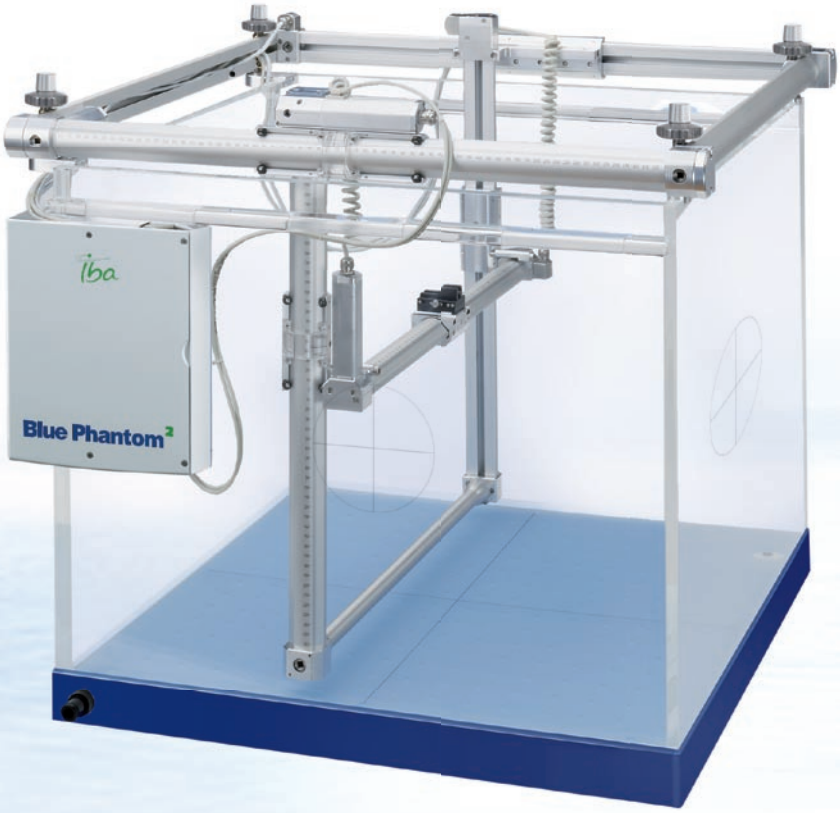
Magnetostrictive sensor

The mechanics of the Blue Phantom² tank is equipped with the high-precision magnetostrictive sensor technology. The superior magnetostrictive sensor is a non contact linear, absolute position sensor that enables the highest detector positioning accuracy. So far, this technology is also used in e.g. the automotive industry for chassis control or in the robots and automation industry for movement control.



Continuous & step-by-step scanning mode

The Blue Phantom² retains both step-by-step and the unique and advanced continuous scanning mode. The continuous scanning mode ensures the shortest measuring time combined with a high spatial resolution.



Leveling frame

The mechanical leveling allows for fast and accurate horizontal alignment of the scanning mechanism to the water surface.

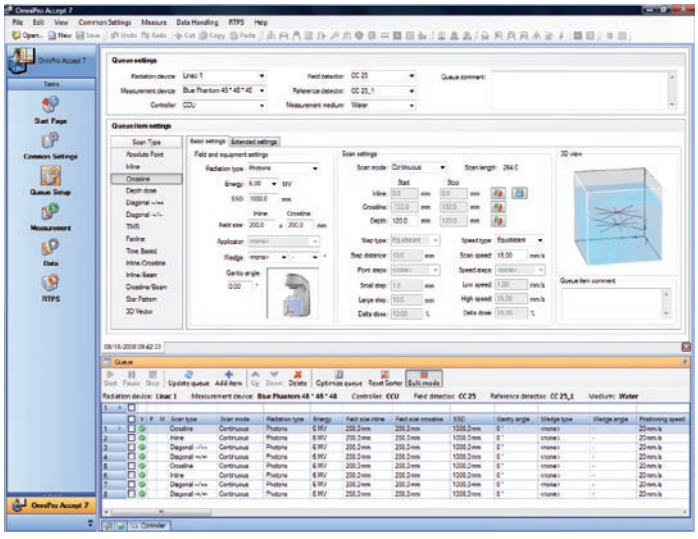
Efficient and accurate Linac commissioning and QA. Our common focus, your peace of mind

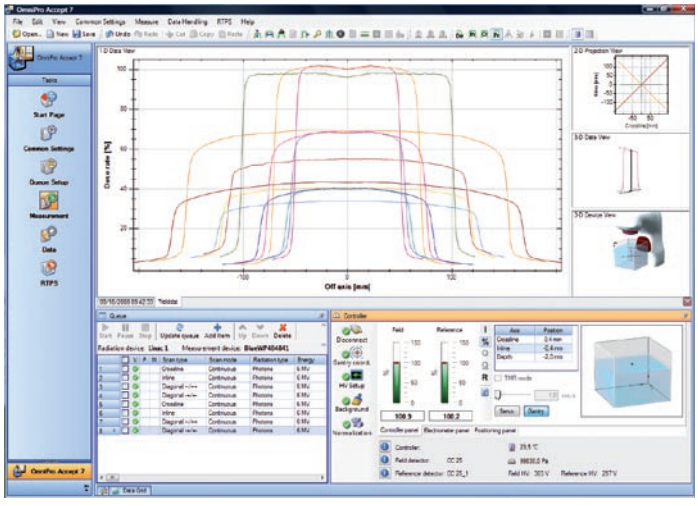
Fast and accurate set-up

- **Modular design** of the Blue Phantom² for customization of the system to the specific measurement requirements (such as IMRT / IGRT, Stereotactic and Proton Therapy)
- **Common Control Unit (CCU)** combines a controller and two independent integrated electrometers, both with independent bias voltage sources. Built-in pressure sensor and temperature sensor interface (located in the water phantom) enables automatic Kt,p correction for output factor determination or Absolute Dosimetry
- **One hand pendant** for easy and intuitive control of the Blue Phantom² and water reservoir increases efficiency
- Improved **leveling** consisting of a 4 point leveling mechanism for easy set-up increases accuracy

True workflow efficiency

Queue set-up & data acquisition

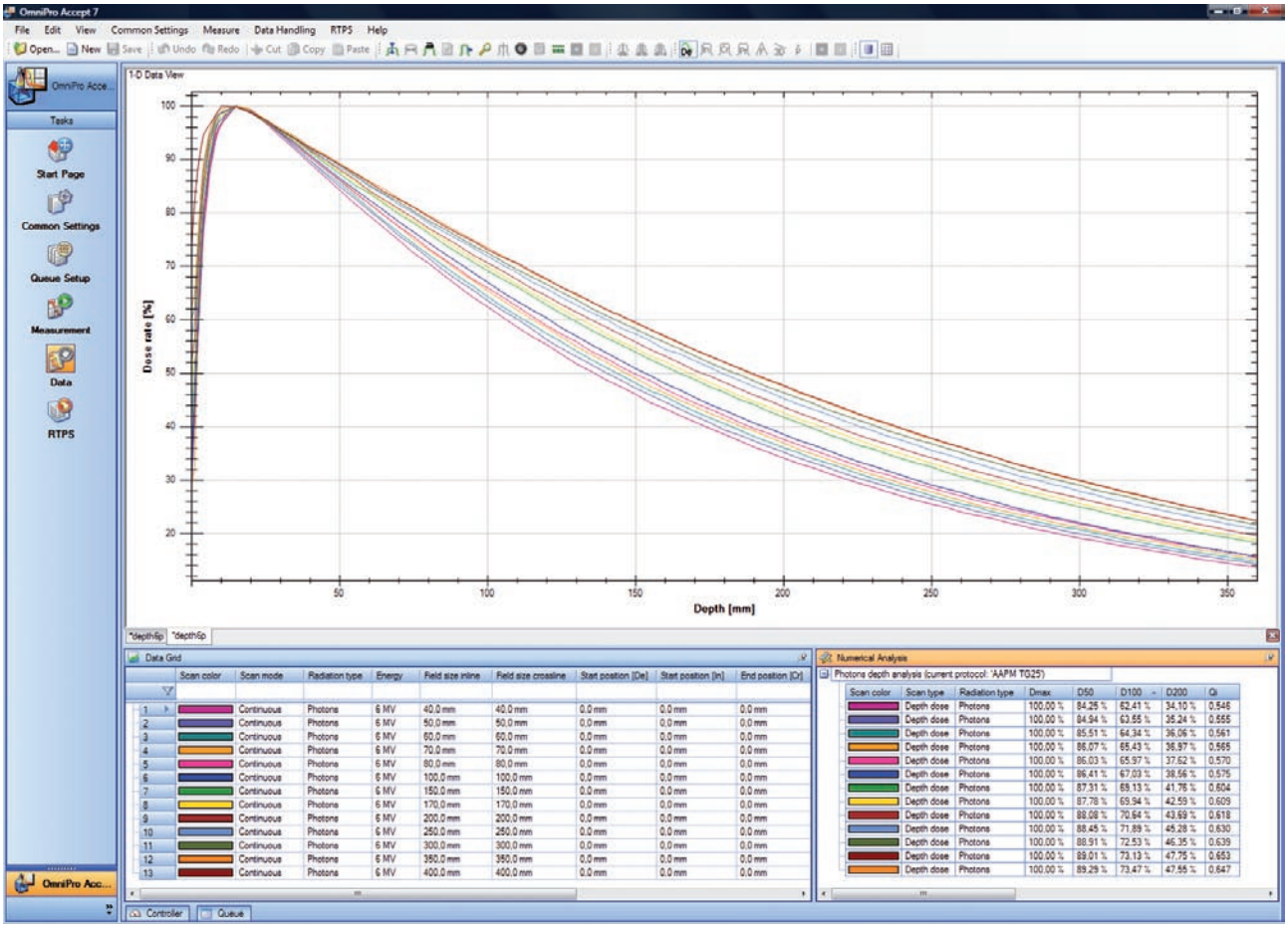




- Fast queue generation for customized measurement scan sequences
- Sorting, prioritizing and multiple edit of scan queue to maximize efficiency

- Adjustable scanning parameters for optimized measurements
- 1D, 2D and 3D graphical and geometrical visualization of detector position during scanning

Data analysis and processing



- Accurate analysis of the measured data via the use of selectable clinical dosimetry protocols
- Overlaying profiles for quantitative comparison
- 2D array and isodose calculation and display
- Library of mathematical smoothing and interpolation functions

Budgets may differ. Customize to your needs, without compromising on quality

The Blue Phantom^2 can be uniquely ordered with individually selected options designed to save time and increase accuracy and flexibility.

Save time

Leveling frame
➤ For fast and accurate horizontal alignment of the scanning mechanism

Advanced scanning mode
➤ Unique continuous scanning mode for fast and accurate measurements

Maximum accuracy

Scan optimization module
➤ Pre-defined regions combine most optimal scan measurements with the highest number of data points

Automatic Kt,p correction
➤ Built-in pressure and temperature sensors enable automatic Kt,p correction for output factor determination or Absolute Dosimetry

CAX Correction
➤ Central axis correction via automated measurement routine

Most flexible

Software controlled CCU
➤ Selectable input: floated and grounded, to use with all commonly used detectors

Wedge check module
➤ Wedge factor determination
➤ Wedge angle determination

Output factor table
➤ Output factor determination module

TMR-set
➤ Measurement of TMR depth dose curve in continuous mode with real-time display of dose versus water level

The difference between good and excellent software? You will feel it when you use it: OmniPro-Accept

Fully workflow oriented OmniPro-Accept software to increase efficiency and reduce the commissioning and QA time of the Linac.

Measurement modules

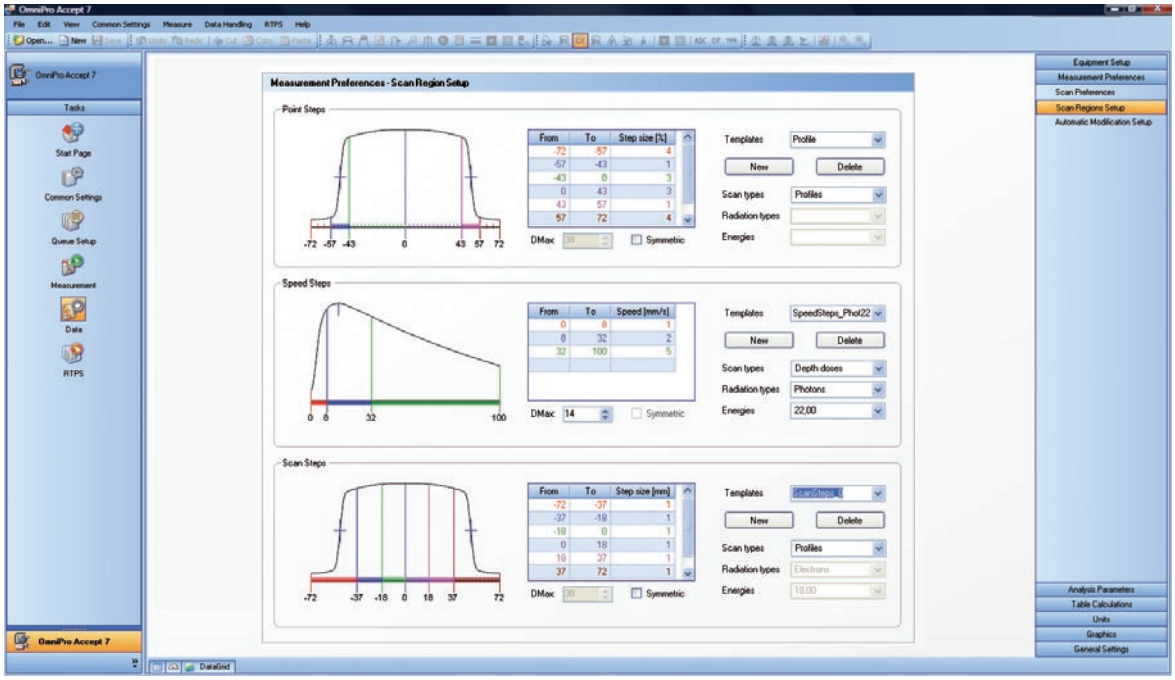
- Output factor determination
- Central axis correction via automated measurement routine

Advanced scanning mode

- Step-by-step scanning
- Continuous scanning: This unique scanning mode ensures the shortest measuring time combined with a high spatial resolution

Feel the difference

Scan optimization

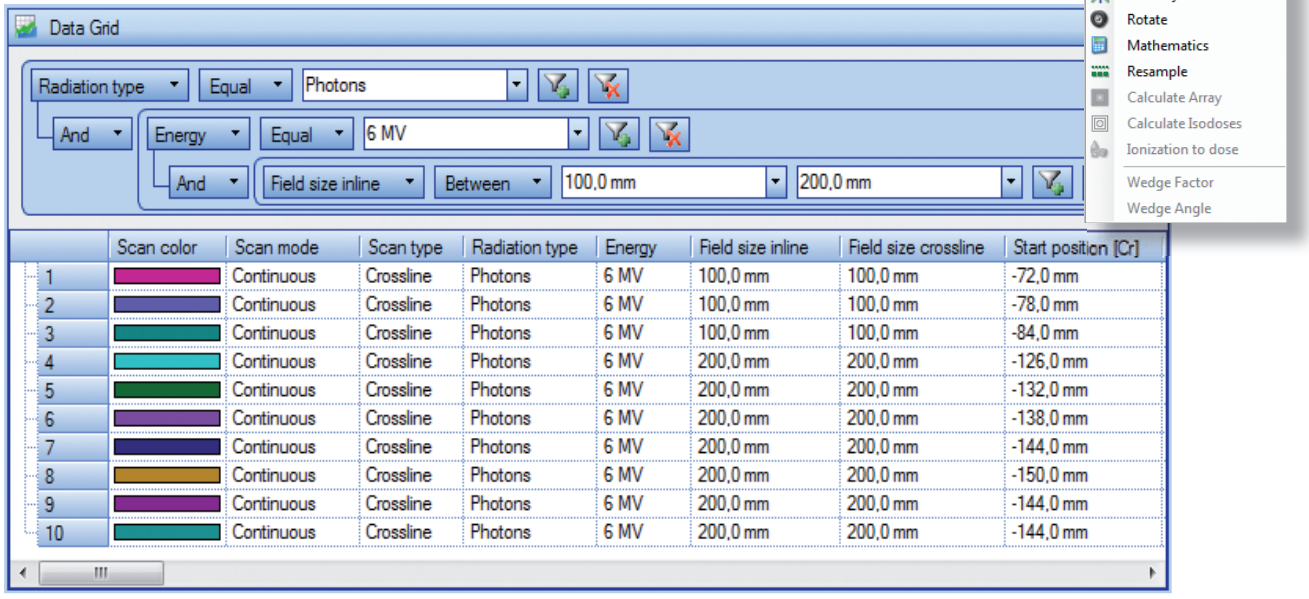


➤ The user can select different scan speeds or data point densities in different regions of the scan, thus optimizing the overall measurement

Automatic queue generation

➤ Predefined queues are available for all major TPS systems, making the data acquisition process fast and automatic

Data handling



	Scan color	Scan mode	Scan type	Radiation type	Energy	Field size inline	Field size crossline	Start position [Cr]
1		Continuous	Crossline	Photons	6 MV	100,0 mm	100,0 mm	-72,0 mm
2		Continuous	Crossline	Photons	6 MV	100,0 mm	100,0 mm	-78,0 mm
3		Continuous	Crossline	Photons	6 MV	100,0 mm	100,0 mm	-84,0 mm
4		Continuous	Crossline	Photons	6 MV	200,0 mm	200,0 mm	-126,0 mm
5		Continuous	Crossline	Photons	6 MV	200,0 mm	200,0 mm	-132,0 mm
6		Continuous	Crossline	Photons	6 MV	200,0 mm	200,0 mm	-138,0 mm
7		Continuous	Crossline	Photons	6 MV	200,0 mm	200,0 mm	-144,0 mm
8		Continuous	Crossline	Photons	6 MV	200,0 mm	200,0 mm	-150,0 mm
9		Continuous	Crossline	Photons	6 MV	200,0 mm	200,0 mm	-144,0 mm
10		Continuous	Crossline	Photons	6 MV	200,0 mm	200,0 mm	-144,0 mm

➤ Easy filtering and sorting
➤ Easy creation and export of data tables (PDD, TMR, OAR, etc.)
➤ Cut and paste to Windows® applications
➤ Exchange data with other IBA Dosimetry applications e.g. OmniPro-I'm*RT*, OmniPro-Advance

Our variety of detectors increases. To surpass accuracy, to treat your patient right

IBA Dosimetry offers a complete range of detectors, including ionization chambers and semiconductor detectors. The detectors are calibrated in our Calibration Laboratory, accredited by DKD and member of the IAEA/WHO SSDL Network.

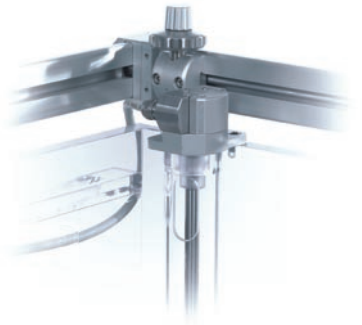
The multi-detector array LDA-99SC is designed with 99 high spatial resolution *p*-type semiconductor detectors, suitable for electrons and photons. With a single measurement, the LDA-99SC linear array captures 99 data points at 5 mm intervals. Computer controlled longitudinal movement by user-defined distance increases the resolution up to 1 mm or better if needed.

Main applications:

- Commissioning and quality assurance of dynamic radiation fields and multileaf collimated fields
- Fast measurements of one-dimensional or two-dimensional dose distributions of radiation fields
- Measurement and analysis of real-time dose distribution for online adjustment of the linear accelerator
- Wedge angle measurement and calculation according to IEC and ICRU protocols
- In-water and in-air measurements

Accessories to complete your system

TMR-set: For online measurement of tissue maximum ratio (TMR) with fixed source detector distance. A linear displacement transducer, operating by means of a pulse echo principle, accurately measures the changing water level. The TMR depth dose curve is measured in continuous mode with real-time display of dose versus water level.



Water reservoir: Separate tank trolley on wheels with a polyethylene water reservoir and a pump for uni-directional or bi-directional water transport to and from the water phantom. Prepared with an electronic pump control for TMR/TPR measurement (option).

Lift table: Separate water phantom carriage with manually or electrically (telescopic) operated lifting mechanism for positioning of the water phantom. The carriage has two fixed and two steerable rollers with brakes, as well as one compartment and two drawers for storing accessories. Equipped with a levelling frame for fine adjustment in vertical and horizontal (only electrical version) directions.

Temperature sensor: The sensor is set up inside the water tank thanks to a dedicated holder and is intended for measurement of the water temperature within ±0.3º C. The water temperature measurement is used in combination with the pressure measurement (build-in pressure sensor provided in the CCU) to allow an automatic Kt,p correction for output factor determination or Absolute Dosimetry.

Reliability you can count on:

Water tank

Exterior water tank dimensions (LxWxH):	675 mm x 645 mm x 560 mm
Scanning volume (LxWxH):	480 mm x 480 mm x 410 mm
Position resolution:	0.1 mm
Position accuracy:	± 0.1 mm
Position reproducibility:	± 0.1 mm
Scanning speed:	50 mm/s
Approximate volume:	200 l
Wall thickness / material:	15 mm / acrylic
Weight:	45 kg

Common Control Unit (CCU)

Maximum resolution:	0.5 fA at 0.4 nA full scale; 5 fA at 40 nA full scale; 0.5 pA at 4 uA full scale
Full scale range:	0.4 nA / 40 nA / 4uA
Leakage current:	typically <1 fA
Time constant:	20 ms
Bias voltage range:	± 50 through ± 500 V
Trigger interface:	RS 485 (custom specific)
Common interface:	ETHERNET (100BaseT)
Main supply:	100 – 240 V AC ± 10 %; 50/60 Hz

LDA-99SC

Number of diodes:	99
Diode spacing:	5 mm (center-to-center)
Diode specifications	
Type of silicon:	Hi-*p*Si diode detectors
Chip size:	2.45 mm x 2.45 mm
Diameter of active area:	2.0 mm
Sensitivity:	35 gy/nC
Effective measurement point:	<1 mm
Positioning in phantom:	0, 45, 90 and 135 degrees

Water reservoirs — HA05 / HA06

Pump direction:	bi-directional / uni-directional
Tank volume:	220 l
Flow control:	20 l/min
Dimensions (LxWxH):	970 mm x 660 mm x 830 mm
Weight (empty):	70 k

Lift tables — HA01 / HA03

Operation:	manual / electric
Vertical range:	660-1020 mm / 740-1240 mm
Vertical adjustable range (tilt):	± 15 mm / 20 mm
Horizontal adjustable range:	– 15 mm in X/Y direction
Rotation in XY plane:	n.a. / ± 5°
Table size:	635 mm x 635 mm / 680 mm x 680 mm
Dimensions (LxWxH):	790 mm x 630 mm x 660 mm / 840 mm x 680 mm x 740 mm
Weight (empty):	69 kg / 116 kg

TMR Set (requires water reservoir HA05)

Scan length:	30 cm
Position reproducibility:	± 0.3 mm
Filling / draining speed:	50 mm / min

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Number of channels:	99+1
Measurement mode:	dose, dose rate (incl. real-time), simultaneous measurements of all channels
Characteristics (Dose/Dose rate)	
Input range:	0 nA to 500 nA
Accuracy:	± 1 % for currents > 10 pA
Resolution:	100 fC (for charge values up to 0.2 mC)
A/D converter:	120 simultaneous working A/D converters
Dimensions (LxWxH):	320 mm x 265 mm x 70 mm
Weight:	3.75 kg

Minimum computer requirements

Operating system:	Windows® XP Professional, Service Pack 2, 32 bit, Windows® Vista™ Ultimate Edition, 32 bit, US-English versions only
OS language:	US English
Processor:	Dual Core (or equivalent), 2 GHz or better
RAM:	2 GB of RAM
Graphics card:	DirectX 9c compatible, 256 MB video RAM, no shared memory
Screen resolution:	minimum 1280x1024 with 32 bit color
Network:	Ethernet (RJ-45) connection to connect controllers (e.g. the CCU)
Interface:	available USB 2.0 interface to connect external devices
Free space on harddisk:	minimum 300 MB free disk space before installation and 80 MB after installation: For archieving of data, much more disk space is needed
Mouse:	any Microsoft® compatible mouse

Technical data is subject to change without prior notice.

Made in Germany. Supported globally.

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