Technical Data

MULTIDOS Type 10004

Type of instrument	*Field class therapy dosemeter according to DIN 6817 and IEC 731*
Application	*Dose and dose rate measurements (charge and current measurements) in radiation therapy for quality assurance, patient dosimetry and field analysis*
Electrical safety class	*IEC 601-1 and IEC 1010-1 (EN 60601-1 and EN 61010-1)*
Number of channels	*12*
Sampling frequency	*500 Hz*
Warming up period	*< 15 min*
Internal adjustment time	*< 1.5 s*
Accuracy of the current and charge measurement	*< ± 0.5%*
Interval time	*(6 ... 9999) s*
Chamber voltage	*+ 400 V ± 2%*
Long term stability	*< ± 0.5% per year*
Linearity	*< ± 0.5% according to IEC 731*
Maximum integration time	*18 h*
Measuring range for dose rate measurements with 0.5% resolution (with semi-conductor probe type 9111)	*Low: (0.4 · 10^{-3} ... 0.4) Gy/min* *High: (40 · 10^{-3} ... 40) Gy/min*
Measuring range for dose rate measurements with 0.5% resolution (with ionization chamber type 31002)	*Low: (0.14 ... 140) Gy/min*
Measuring range for current measurements with 0.5% resolution	*Low: (10^{-11} ... 10^{-8}) A* *High: (10^{-9} ... 10^{-6}) A*
Measuring quantities and units	*Absorbed dose to water, air kerma [Gy]* *Absorbed dose rate to water, air kerma rate [Gy/min]* *exposure [R]* *exposure rate [R/min]* *Charge [C]* *Current [A]*
Temperature range	*(10 ... 40) °C*
Range of air humidity	*(10 ... 80)% rel. humidity; maximum 20 g/m³*
Range of air pressure	*(700 ... 1060) hPa*
Zeroing of the amplifier	*automatically in approx. 30 s*
Leakage current (zero drift)	*< ± 5 · 10^{-14} A*
Power supply	*115 V / 230 V; (50 ... 60) Hz*
Current limitation of the high voltage supply	*0.5 mA by combined active and passive current limitation*
Time constant for current and dose rate measurements	*< 0.5 s*
Weight	*approx. 5.1 kg*
Outer dimensions	*Width: 25.9 cm; height: 11.5 cm; depth 32.6 cm*

PTW-Freiburg is an accredited calibration laboratory of the German Calibration Service for dosemeters and sensitometers.

Subject to change without notice 5/00 – 1B

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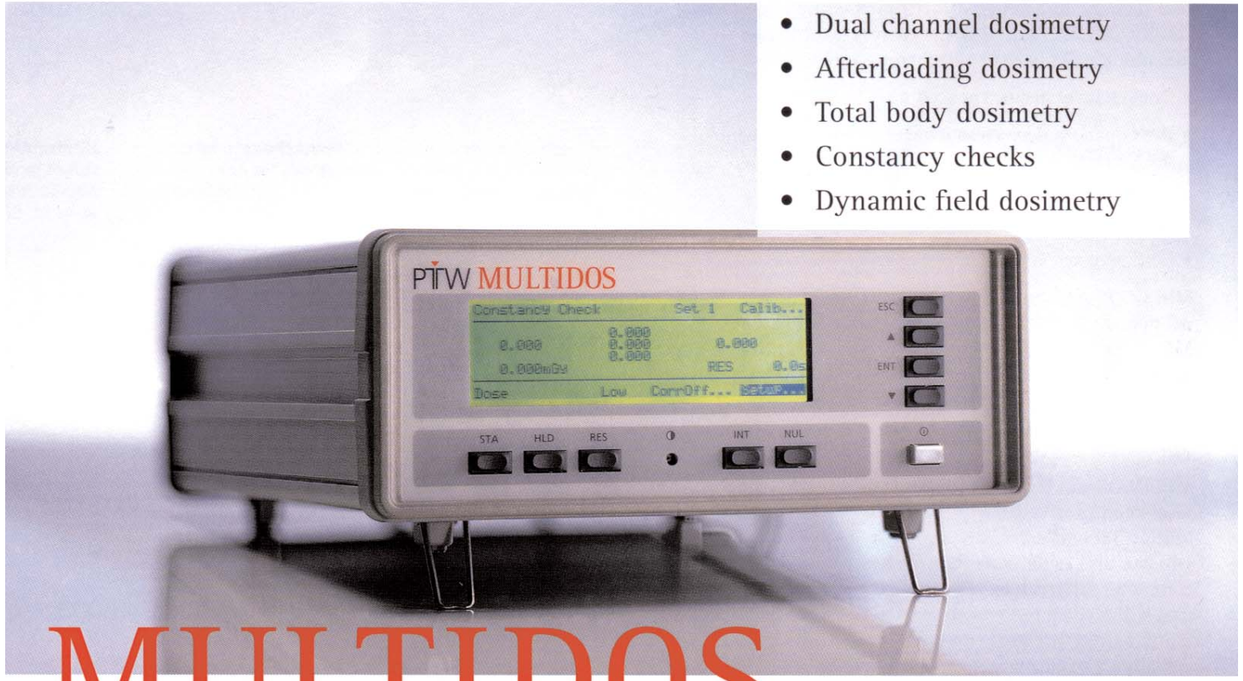
One multi channel dosemeter offers five applications:

- Dual channel dosimetry
- Afterloading dosimetry
- Total body dosimetry
- Constancy checks
- Dynamic field dosimetry



MULTIDOS

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Overview

MULTIDOS is a multi channel dosemeter which combines the latest developments in microprocessor based electrometer technology with state-of-the-art electronics to produce a truly superior multi channel radiation therapy dosemeter. MULTIDOS is easily configured by the user for a wide variety and range of measuring tasks in radiation therapy which include:

- Dual channel dosimetry according to IEC 731
- Direct patient dose measurements during afterloading, external beam and total body treatments
- Quality assurance constancy checks including flatness, symmetry and energy stability
- Dosimetry and analysis of dynamic and irregular fields

MULTIDOS may be used as a dual, six or twelve channel dosemeter. With the optional MULTIDOS extender ME 48 you will have the ability of making 47+1 simultaneous measurements. 47+1 means 47 field measurements and 1 reference channel measurement for a total of 48 channels and 48 simultaneous measurements.

MULTIDOS can be used with ionization chambers and semi-conductor detectors. Chamber and detector calibration factors are easily stored in MULTIDOS and you can also enter correction factors, for example to correct for different beam qualitites. If you are measuring with vented ion chambers, you can input temperature and air pressure and MULTIDOS will calculate and apply the air density correction factor.

MULTIDOS offers 5 different configurations and meets or exceeds the standards for field class electrometers as specified in DIN 6817 and IEC 731. With a sampling frequency of 500 Hz, you will find that all of the data you collect with MULTIDOS will always be accurate, reproducible and extremely reliable. You can depend on MULTIDOS when simultaneous measurements of multiple channels is a must.

MULTIDOS configurations

MULTIDOS applications	Measuring task
2-channel dosemeter	*Constancy check of the energy by measuring the dose in different depths*
6-channel dosemeter	*Patient dosimetry during afterloading therapy (single probe for the bladder and fivefold probe for the rectum)*
6-channel dosemeter	*Constancy check of flatness, symmetry and energy, using a test object (solid state phantom)*
12-channel dosemeter	*Patient dosimetry with 12 detectors during total body irradiation*
47+1-channel dosemeter (extender ME 48 required)	*Analysis of dynamic fields with the optional linear array LA 48 and the MULTIDOS extender ME 48, using the therapy beam analysers PTW-MP3 or MP3-S*