

multi N/C pharma Series TOC/TN_b Analyzers



Technical Data

multi N/C pharma series

General

- The multi N/C pharma series offers a range of TOC analyzers (multi N/C pharma UV, multi N/C pharma HT and multi N/C 3100 pharma) for the determination of the parameters TOC, NPOC, TC and TIC in aqueous samples
- The combustion-based systems can optionally be upgraded for TN_b determination by chemiluminescence determination (CLD), multi N/C 3100 pharma can be upgraded for direct POC measurement.
- The multi N/C 2100S pharma is a dedicated TN analyzer for total protein determination and equipped with a CLD detector and AS 60 autosampler by default.

Standard compliance

Parameter	multi N/C pharma UV	multi N/C pharma HT	multi N/C 3100 pharma	multi N/C 2100 S pharma
TOC	USP <643>, USP <661.1>, USP <661.2>, Pharm. Eur. 2.2.44, JP 2.59			-
TN _b	-	Total Protein Assay: Pharm. Eur. 2.5.33, 7B, USP <1047,7.2>, JP XVII, Method 7B		

Control and data evaluation

Software	multiWin 4.X with 21 CRF Part 11 compliance, export function in .csv, .pdf or LIMS-system
Requirements	<ul style="list-style-type: none"> ▪ Operating system: PC - Windows 7 (32-Bit or 64-Bit) or higher, Processor 3.2 GHz or higher, min. 4 GB RAM, min 40 GB hard disk drive, CD-ROM drive, Interfaces: USB 2.0 (min. 1 for connection to BU) ▪ PC: Graphic resolution 1024 x 768 pixels or higher

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Models

	multi N/C pharma UV	multi N/C pharma HT	multi N/C 3100 pharma	multi N/C 2100 S pharma
Digestion mode	UV/ Wet chemical oxidation (254 nm+185 nm) / persulfate		High temperature combustion up to 950 °C	
Parameters	TC, TIC, TOC, NPOC, NPOCplus, POC			TN (CLD)
Optional parameters	-	TN	TN	-
Measurement range	0–10,000 mg/L C	0–30,000 mg/L C		0–200 mg/L N
Limit of Detection	1 µg/L C	4 µg/L C/ 5 µg/L N	4 µg/L C/ 5 µg/L N	5 µg/L N
Reproducibility ¹⁾	CV 1–2%			
Measuring time	Approx. 3–5 min for each parameter			
Sample injection	Automatic flow injection			Septum-free direct injection
Injection volume	50–20,000 µL variable	50–3,000 µL variable	100–1,000 µL variable	50–500 µL variable
Automatic leak check (SCS)	yes			
Gas quality requirements	Nitrogen 5.0 or argon 4.6		Oxygen 4.5 or synthetic air ²⁾	
Gas consumption (8 h/d, 5 d/w)	Approx. 1,600 L/month	Approx. 1,400 L/month	Approx. 2,200 L/month	Approx. 1,800 L/month
Swab-Test Module	-	X	-	-
Sampler options	AS 10e, AS 21hp, AS vario, AS vario ER ³⁾ , EPA Sampler			AS 60

¹⁾ CV = coefficient of variation, equivalent to RSD (relative standard deviation)

²⁾ Purified air can be supplied from gas cylinders or after clean-up of pressurized air by a TOC gas generator. Purity specifications to be met: CO₂ < 1 ppm, hydrocarbons <0.5 ppm (as CH₄), supply pressure: min. 5 bar (72 psi), provided flow rate: min. 300 mL/min, recommendations for TOC gas generator models on request.

³⁾ Not for multi N/C pharma HT

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Accessories

Autosampler AS 60 with multi N/C 2100S pharma

	No. of positions	Vial size	Syringe size
Standard rack	60	8 mL/100 pc. + magnetic stir bars 60 pc. incl.	500 µL incl.
Additional rack	112	1.8 mL/200 pc. + 200 septa/caps incl.	250 µL incl.
Sample homogenization	Yes		
Dimensions W x H x D	Approx. 500 mm x 500 mm x 380 mm		
Weight	Approx. 9 kg		

Autosampler AS 10e

	No. of positions	Vial size
Standard rack	10	50 mL/10 pc.
Optional racks	No	
Automatic Acidification / Reverse Rinse	No	
Automatic purging	Yes	
Parallel purging and analyzing	No	
Sample homogenization	No	
Dimensions W x H x D	Approx. 250 mm x 350 mm x 310 mm	
Weight	Approx. 4.5 kg	

Autosampler AS 21hp

	No. of positions	Vial size
Standard rack	21	50 mL/21 pc. + magnetic stir bars 21 pc. incl.
Optional racks	No	
Automatic Acidification / Reverse Rinse	No	
Automatic purging	Yes	
Parallel purging and analyzing	Yes	
Sample homogenization	Yes	
Dimensions W x H x D	Approx. 250 mm x 350 mm x 310 mm	
Weight	Approx. 4.5 kg	

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Autosampler AS vario / ER (ER: external needle rinse function)

Automation for multi N/C pharma HT, pharma UV and 3100 pharma (ER function only in combination with multi N/C 3100 pharma and multi N/C pharma UV)

	No. of positions	Vial size
Standard rack	No	
Optional racks	72/ER	40 mL/100 pc. + magnetic stir bars/100 pc. incl.
	100/ER	20 mL/100 pc. + magnetic stir bars/100 pc. incl.
	52	100 mL /100 pc. incl.
	20	100 mL (Schott bottles)/20 pc. incl.
Automatic acidification	Yes ¹⁾	
Automatic purging / Reverse rinse	Yes ²⁾	
Parallel purge and analyzing	Yes ³⁾	
Sample homogenization	Yes	
Dimensions W x H x D	Approx. 350 mm x 400 mm x 470 mm	
Weight	Approx. 15 kg	

¹⁾ not for multi N/C pharma HT

²⁾ reverse rinse not for multi N/C pharma HT

³⁾ not available for rack with 20 positions

EPA sampler with "piercing function"– for sampling from septum-capped vials

	No. of positions	Vial size
Standard rack	64	40 mL/100 pc. + 100 septa/caps + magnetic stir bars 70 pc. incl.
Optional racks ¹⁾	61	40 mL/5 pc. + septa/caps 5 pc. incl.
Automatic Acidification / Reverse rinse	Yes ²⁾	
Automatic purging	Yes	
Parallel purging and analyzing	Yes	
Sample homogenization	Yes	
Dimensions W x H x D	Approx. 500 mm x 550 mm x 540 mm	
Weight	Approx. 15 kg	

¹⁾ included in the POC automatic module only available for multi N/C 3100 pharma

²⁾ not for multi N/C pharma HT

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TN option: CLD

	CLD
Detection principle	Chemiluminescence detector
Parameters	TN _b (Total bound Nitrogen)
Measuring range	0–200 mg/L TN _b ,
Limit of detection	0.005 mg/L TN _b
Reproducibility ¹⁾	CV 2–3%
Analysis time	3–5 min
Ozone source gas	Synthetic air (recommended) or oxygen, 60 mL/min
Dimensions	Approx. 300 mm x 460 mm x 550 mm
Weight	Approx. 12.5 kg

¹⁾ CV = coefficient of variation, equivalent to RSD (relative standard deviation)

Solid TOC options: Swab test module (C determination only)

	Swab Test Module
Method	Catalytic high temperature combustion
Max. furnace temperature	950 °C
Type of combustion tube	Quartz
Parameters	TC, TOC (after acidification)
Measuring range	0–100 mg C absolute
Detection limits	0.5 µg C abs., equivalent to 1 mg/kg at max. sample weight
Sample amount	Up to 0.5 g
Analysis time	3–5 min
Carrier gas	Oxygen 4.5 (opt. synth. air) at 24 L/h
Dimensions	Approx. 300 mm x 80 mm x 80 mm
Weight	Approx. 3 kg

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Physical data (Basic unit)

Dimensions (BU)	513 mm x 464 x 550 mm (W x D x H)
Weight (BU)	ca. 30 kg
Installation Requirements	Ambient temperature: 10–35 °C Relative humidity: 5–90% Air pressure: 0.7–1.06 bar
Power requirements	<ul style="list-style-type: none"> ▪ multi N/C 2100S pharma, multi N/C 3100 pharma, multi N/C pharma HT: 115/230 V AC; 50/60 Hz; T6.3 A H; typical power consumption: 400 VA, max.: 500 VA ▪ multi N/C pharma UV: 100–240 V AC, 50/60 Hz; T4.0 A H; typical power consumption: 150 VA, max.: 200 VA

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