Product specification

Exaqua PRO3 fluoro CHA/CHB

Portable photometer for early fluorometric detection of algae growth and photometric measurement of parameters in fresh and marine water

GENERAL DESCRIPTION

Exaqua PRO3 fluoro CHA/CHB allows to perform chlorophyll A and chlorophyll B concentration measurements with exceptional detection level of 20 ng/l. Standard photometric measurements can be taken in 3 different wavelengths. The photometer enables also performing measurements with all reagent sets available in Exaqua range for wide parameter control both in fresh and marine water.

FIELD OF APPLICATION

- Measurements of chlorophyll A and B content in fresh water for monitoring the ecological status (eutrophication) of natural waters and the development of algae in industrial installations and fish farms.
- Measurements of over 30 chemical parameters in fresh and marine water in number of applications like fresh and saltwater aquariums, garden ponds, hydroponic cultivations, swimming pools, water quality control and many others.

PRODUCT OPTIONS

	Product code:
Exaqua PRO3 fluoro set 1	9114

Contain:
- transport case
- photometer
- calibration standard
- 5 ml syringe
- USB cable with power adaptor
- vial with cap (4 pcs.)
- instruction manual
- instrument quality certificate
- Z-licence pack
- warranty card

OTHER PARAMETERS

Exaqua PRO3 fluoro CHA/CHB offers also a possibility to measure many water parameters using a wide range of Exaqua reagent kits.

Parameter	Range	Resolution
Alkalinity KH Fresh | Marine	0.5 –30 °d | 0.5 –20 °d	0.5 °d
Total hardness GH	1 – 50 °d	0.5 °d
Total hardness GH Low range	0.1 – 5 °d	0.05 °d
pH 4.5 – 6	4.5 – 6.0 pH	0.05 pH
pH 6 – 8.5	6.0 – 8.5 pH	0.05 pH
pH 4.5 - 9 Fresh | Marine	4.5 – 9.0 pH	0.05 pH
Nitrate NO3 High | Low range	5 - 150 mg/l | 0,5 - 30 mg/l	1.0 | 0.5 mg/l
Nitrite NO2 High | Low range	1-6 mg/l | 0.02-1.5 mg/l	0.05|0.01 mg/l
Total ammonia NH4 Fresh	0.1 -5 mg/l	0.05 mg/l
Total ammonia NH4 Marine	0.1 -3 mg/l	0.05 mg/l
Phosphate PO4 Fresh |Marine	0.05-10 mg/l	0.01 mg/l
Iron Fe	0.05-10 mg/l	0.01 mg/l
Manganese Mn	0.05-5 mg/l	0.01 mg/l
Copper Cu Fresh | Marine	0.02-5 mg/l | 0.08-3 mg/l	0.02 mg/l
Silicone Si	0.05 - 7 mg/l	0.01 mg/l
Potassium K High | Low range	10 – 150 mg/l | 2 - 20 mg/l	0.5 | 0.1 mg/l
Potassium K Marine	50 – 500 mg/l	2.5 mg/l
Calcium Ca Marine	200-600 mg/l	8 mg/l
Magnesium Mg Marine	500-1600 mg/l	18 mg/l
Calcium Ca Fresh	5-300 mg/l	3.2 mg/l
Magnesium Mg Fresh	3-150 mg/l	1 mg/l
Iodine I2	10-200 µg/l	5 µg/l
Sulphate SO4 Fresh | Marine	8-200 mg/l | 200-3000 mg/l	2 | 20 mg/l
Dissolved oxygen O2	1 – 10 mg/l	0.1 mg/l
Carbon dioxide CO2	1 – 50 mg/l	0.25 mg/l
Pool reagents		
Alkalinity KH	0.5 – 20 °d	0.5 °d
pH 6.5 – 8.5	6.5 – 8.5 pH	0.1 pH
Active oxygen (MPS)	0.1 – 30 mg/l	0.1 mg/l
Free chlorine Cl2	0.1 – 5 mg/l	0.01 mg/l
Total chlorine Cl2	0.1 – 5 mg/l	0.01 mg/l
Cyanuric acid (CYA)	3 – 160 mg/l	0.01 mg/l

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FLUOROMETRIC MEASUREMENTS

Chlorophyll A (CHA)	range – 0.000-1000 µg/l (ppb) resolution - 0.001 µg/l (ppb) detection limit - 20 ng/l (0.02 ppb) **Specificity - readings for various interferents:** turbidity 10 NTU - 0.05 ppb 10 ppb CHB (chlorophyll B) - 1.02 ppb 100 ppb PC (phycocyanine) - 0.215 ppb 100 ppb PE (phycoerythrine) - 0.050 ppb
Chlorophyll B (CHB)	range 0.000-1000 µg/l (ppb) resolution 0.001 µg/l (ppb) detection limit - 20 ng/l (0.02 ppb) **Specificity - readings for various interferents:** turbidity 10 NTU - 0.08 ppb 10 ppb CHA (chlorophyll A) - 0.800 ppb 100 ppb PC (phycocyanine) - 0.100 ppb 100 ppb PE (phycoerythrine) - 0.600 ppb

PHOTOMETRY

Photometric channels	3 optical channels: 470 nm, 520 nm, 610 nm
Excitation	chlorophyll A (CHA) – 415 nm (FWHM 30 nm, +/-10 nm) chlorophyll B (CHB) - 470 nm (FWHM 30 nm, +/-10 nm)
Emission low pass	chlorophyll A (CHA) – 650 nm chlorophyll B (CHB) – 650 nm
Bandpass filters	hard coated interference filters, accuracy ±1nm, FWHM - 8 nm
Detectors	large area PIN photodiodes
Light sources	selected LEDs with controlled spectral profile, temperature compensated
Absorbance max. displayed values range	- 4.000 to 4.000 ABS
Absorbance resolution	0.001 ABS
Photometric accuracy@1 ABS	±2 mABS
Photometric engine	Rayject type of full protection for interfering ambient light, max. constant illuminance 30000 LUX, overload indication
Cuvette	round, diameter 24 mm
Minimum sample volume	4 ml

POWER SUPPLY

Charging source	USB, type micro connector
Battery capacity	1050 mAh Li-ion cell
Working time	typically 8 h of continuous operation, adjustable shut-off function for extending working time

USER INTERFACE

Display	OLED type, high brightness, infinite contrast, resolution 128x64
Keyboard	16-button keyboard with reinforced display window

COMMUNICATION

USB 2.0 access to:	results log; tags and users list, user's methods configuration files
Bluetooth 5.1 - access to:	results log; tags and users list, user's methods configuration files and remote control of the instrument (under development)

SOFTWARE FEATURES

Measurement methods	selection of the built-in methods with guide
Exatitr system	photometer aided titration methods
User methods	up to 4 user methods with up to 10 reference points, user methods are transferable to other Exaqua units
User names	selection of 5 user names
Editable tags	selection of 10 user editable tags
Data logger	max. 2000 entries available in the log file, last 100 entries can be viewed and sorted in the instrument

ENVIRONMENTAL

Operating temperature range	10 to 40 °C
Enclosure rating	IP65 - dust and splash proof
USB interface	USB type micro IP67

MECHANICAL

Dimensions	86 x 200 x 37 mm
Weight	approx. 290 g

SPECIAL FEATURES DESCRIPTION

PRO3 fluoro CHA/CHB photometers are equipped with a number of features that simplify operation and improve measurement quality.
The most important include:

rayject technology	The Rayject technology used in Exaqua photometers makes them the only photometers on the market that have total resistance to ambient light. Measurements can be carried out even with the uncovered vial, in the field in full sun, as well as in a well-lit laboratory, without worrying about measurement performance.
Method guide function	Each Exaqua photometer is equipped with the function of guide system. It provides users step by step with all necessary instructions through the whole test procedure. It indicates, among others, which reagent and in what quantity should be added, counts down the reaction time if necessary and signals the end of the operation.
exatitr system	Exatitr feature applied in Exaqua devices is an innovative photometer aided method system for easy and convenient titration measurement. One of the most significant function of this system is to recognise and indicate the end of the titration. This eliminates the need for the user to observe the sample's colour change when adding titrant to the sample.
Exaqua REPORTER mobile application	Mobile application Exaqua reporter allows users to: ▪ manage registered data in a convenient way thanks to the highly intuitive user interface of the Exaqua photometer, ▪ create reports and overviews of collected data, ▪ filter results according to selected criteria, ▪ share experience and knowledge thanks to the option to export data to PDF or CSV files.

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