

Water Analysis

Photometer PF-12



Maximum flexibility

Compact photometer PF-12

- More than 100 preprogrammed methods
- Automatic wavelength adjustment
- Backlit graphic display with intuitive user guidance
- Data storage according to GLP
- USB interface for data transfer, update and power supply

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Compact photometer PF-12

Experience flexibility

The compact photometer PF-12 is the logical result of a further development based on our very successful photometer PF-11. Adapted to our customers' requirements the PF-12 impresses with modern design and precise analytic. Preprogrammed tests, automatic wavelength adjustment and the intuitive user guidance allow fast and easy operation. Results are stored according to GLP and transferred safely to your PC with the included PC-software. The PF-12 features an unrivaled flexibility with variable power supply via mains supply, standard and rechargeable batteries, PC and 12 V car adapter. Additionally, the PF-12 offers photometric analysis of *VISOCOLOR*® ECO tests and *NANOCOLOR*® tube tests including all relevant parameters for water and waste water analysis and individual combination of tests in the new reagent cases.

Save time

Backlit graphic display with self-explanatory user guidance

- All tests and menu items can be activated fast and easily
- Operation without complex and time-consuming training

Results within seconds

The progressively designed optics is insensitive to external light and makes measuring straightforward

Assure results

Documentation of results according to GLP

- Individual entries of sample number, sample location and dilution

Clear memory management

- GLP-conform storage of results with all supplementary information such as date, time, sample number, sample location and dilution
- Fast and easy access to stored results and data sets



Convenient data export

- *NANOCOLOR*® Software DVD included in delivery
- Easy transfer of results to PC
- Data export directly to MS Excel
- Recording of calibration curves to programme user-defined methods

Internal quality control according to ISO 9001

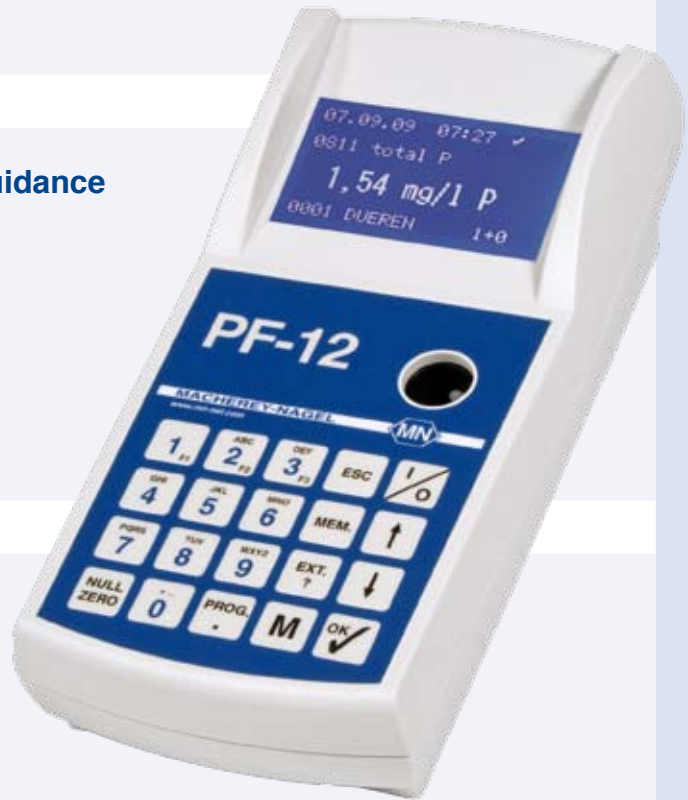
- Fulfill supervisor and authority requirements
- Fast and easy self-monitoring of photometric accuracy with *NANOCONTROL* *NANOCHECK* (REF 925 701)

Be prepared for the future



Fast photometer update – free of charge

- At any time, stay up-to-date with our easy online software update
- For current software updates please visit www.mn-net.com



Be mobile

Works under any condition

- Variable power supply for mobile use:
 - USB cable for power supply via PC
 - USB adaptor (REF 919 220) for mains supply and cigarette lighter in the car
 - Standard and rechargeable batteries for more than 2000 off the line measurements
- Power saving auto-off function after 5, 10, 15 or 20 min
- Waterproof housing (IP 67)



Enjoy versatility

Complete water and waste water analysis

- Ammonium, Chlorine, *total*-N, *total*-P, Nitrate, Nitrite, all COD tests and many more
- More than 100 preprogrammed tests
 - VISOCOLOR® ECO tests
 - NANOCOLOR® tube tests
- Programmable for 10 user-defined methods
- Photometric basic functions: absorbance, transmission, factor and standard



Endless opportunities

Individual mini-labs

- Portable reagent cases with photometer PF-12
- Photometric analysis of VISOCOLOR® ECO tests can be combined with VISOCOLOR® alpha tests, VISOCOLOR® HE tests, pH indicator papers, pH-Fix test strips, qualitative test papers and semi-quantitative QUANTOFIX® test strips

QUANTOFIX® test strips
pH-Fix test strips
pH indicator papers

Integrated cuvette holder



Photometer PF-12
for photometric analysis of
VISOCOLOR® ECO tests



Accessories



Qualitative test papers
VISOCOLOR® reagent bottles



Compact photometer PF-12

The right test for any application



Test	Ranges	Test no	Wave-length	No of tests	Shelf life (months)	Seawater	REF
VISOCOLOR® ECO							
Ammonium 3	0.1 – 2.5 mg/l NH_4^+	5-08	690	50	18	1+9	931 208
Ammonium 15	0.5 – 8.0 mg/l NH_4^+	5-10	585	50	18	1+9	931 210
Chloride	1 – 50 mg/l Cl^-	5-18	470	90	12	no	931 218
Chlorine 2, free + total	0.10 – 2.00 mg/l Cl_2	5-15	540	150	18	yes	931 215
free Chlorine 2	0.10 – 2.00 mg/l Cl_2	5-16	540	150	18	yes	931 216
Chlorine 6, free + total	0.05 – 6.00 mg/l Cl_2	5-17	540	200	24	yes	931 217
free Chlorine 6	0.05 – 6.00 mg/l Cl_2	5-19	540	400	24	yes	931 219
Chromium(VI)	0.04 – 1.00 CrO_4^{2-}	5-20	540	140	18	yes	931 220
Copper	0.1 – 5.0 mg/l Cu^{2+}	5-37	585	100	24	yes	931 237
Cyanide	0.01 – 0.20 mg/l CN^-	5-22	585	100	12	1+3	931 222
Cyanuric acid	10 – 100 mg/l Cya	5-23	540	100	18	yes	931 223
Fluoride	0.1 – 2.0 mg/l F^-	5-27	585	150	18	yes, after distillation	931 227
Hydrazine	0.05 – 0.40 mg/l N_2H_4	5-30	436	130	12	yes	931 230
Iron	0.04 – 2.00 mg/l Fe	5-26	540	100	24	yes	931 226
Iron (Triazine)	0.10 – 2.00 mg/l Fe	5-25	540	180	24	yes	914 239
Manganese	0.1 – 5.0 mg/l Mn^{2+}	5-38	436	70	18	yes	931 238
Nickel	0.1 – 5.0 mg/l Ni^{2+}	5-40	470	150	18	1+9	931 240
Nitrate	4 – 60 mg/l NO_3^-	5-41	436	110	18	yes	931 241
Nitrite	0.02 – 0.50 mg/l NO_2^-	5-44	540	120	18	yes	931 244
Oxygen	1 – 8 mg/l O_2	5-88	540	50	12	yes	931 288
pH 6.0 – 8.2	pH 6.0 – 8.2	5-70	436/540	150	18	yes	931 270
Phosphate	0.2 – 5.0 mg/l $\text{PO}_4\text{-P}$	5-84	690	80	36	yes	931 284
	0.6 – 15 mg/l PO_4^{3-}						
Potassium	2 – 25 mg/l K^+	5-32	690	60	36	1+1	931 232
Silica	0.2 – 3.0 mg/l SiO_2	5-33	690	80	36	yes	931 233
Sulphate	20 – 200 mg/l SO_4^{2-}	5-92	436	100	36	1:50	931 292
Sulphide	0.05 – 0.80 mg/l S^{2-}	5-94	620	90	36	yes	931 294
Zinc	0.1 – 3.0 mg/l Zn^{2+}	5-98	620	120	12	1+9	931 298
NANOCOLOR® tube tests							
Aluminium 07	0.02 – 0.70 mg/l Al^{3+}	0-98	540	19	12	yes	985 098
Ammonium 3	0.04 – 2.30 mg/l $\text{NH}_4\text{-N}$	0-03	690	20	12	1+1	985 003
	0.05 – 3.00 mg/l NH_4^+						
Ammonium 10	0.2 – 8.0 mg/l $\text{NH}_4\text{-N}$	0-04	690	20	12	yes	985 004
	0.2 – 10 mg/l NH_4^+						
Ammonium 50	1 – 40 mg/l $\text{NH}_4\text{-N}$	0-05	690	20	12	yes	985 005
	1 – 50 mg/l NH_4^+						
Ammonium 100	4 – 80 mg/l $\text{NH}_4\text{-N}$	0-08	585	20	12	yes	985 008
	5 – 100 mg/l NH_4^+						
Ammonium 200	30 – 160 mg/l $\text{NH}_4\text{-N}$	0-06	585	20	12	yes	985 006
	40 – 200 mg/l NH_4^+						
AOX 3	0.1 – 3.0 mg/l AOX	0-07	470	20	12	yes	985 007
	0.01 – 0.30 mg/l AOX						
BOD ₅	0.5 – 12.0 mg/l O_2	8-22	470	25-50	24	yes	985 822
BOD ₅ -TT	0.5 – 3000 mg/l O_2	8-25	470	11-21	24	yes	985 825
Cadmium 2	0.05 – 2.00 mg/l Cd^{2+}	0-14	540	10-19	12	yes	985 014
Carbonate hardness 15	1.0 – 15.0 °d	0-15	436/585	20	12	yes	985 015
	0.4 – 5.4 mmol/l H^+						
Chloride 50	0.5 – 50.0 mg/l Cl^-	0-21	470	20	12	no	985 021
Chloride 200	5 – 200 mg/l Cl^-	0-19	470	20	12	1:200	985 019
Chlorine/Ozone 2	0.05 – 2.50 mg/l Cl_2	0-17	540	20	12	yes	985 017
	0.05 – 2.00 mg/l O_3						
Chlorine dioxide 5	0.15 – 5.00 mg/l ClO_2	0-18	540	20	12	yes	985 018
Chromate 5	0.05 – 2.00 mg/l Cr(VI)	0-24	540	20	24	yes	985 024
	0.1 – 4.0 mg/l CrO_4^{2-}						
COD 40	2 – 40 mg/l O_2	0-27	345	20	12 at 2-8°C	no	985 027
COD 60	5 – 60 mg/l O_2	0-22	345	20	12 at 2-8°C	no	985 022
COD 160	15 – 160 mg/l O_2	0-26	436	20	12	no	985 026
COD 160 Hg-free	15 – 160 mg/l O_2	0-26	436	20	12 at 2-8°C	no	963 026
COD 300	50 – 300 mg/l O_2	0-33	436	20	12	no	985 033
COD 1500	100 – 1500 mg/l O_2	0-29	620	20	12	no	985 029
COD 10000	1.00 – 10.00 g/l O_2	0-23	620	20	12	no	985 023
COD 15000	1.0 – 15.0 g/l O_2	0-28	620	20	12	no	985 028
COD 60000	5.0 – 60.0 g/l O_2	0-12	620	20	12	no	985 012
org. Complexing agents 10 (Screeningtest)	0.5 – 10.0 mg/l IBIC	0-52	540	10-19	12	1:20	985 052

The right test for any application

Test	Ranges	Test no	Wave-length	No of tests	Shelf life (months)	Seawater	REF
Copper 7	0.10 – 7.00 mg/l Cu ²⁺	0-54	585	20	12	yes	985 054
Cyanide 08	0.02 – 0.80 mg/l CN ⁻	0-31	585	20	12	1+3	985 031
DEHA 1 (Diethylhydroxylamine)	0.05 – 1.00 mg/l DEHA	0-35	540	20	12	yes	985 035
Ethanol 1000	0.10 – 1.00 g/l EtOH	8-38	620	23	24 at <0°C	no	985 838
Fluoride 2	0.1 – 2.0 mg/l F ⁻	0-40	620	20	18	1+9	985 040
Formaldehyde 8	0.1 – 8.0 mg/l HCHO	0-41	585	20	24	no	985 041
Formaldehyde 10	0.20 – 10.00 mg/l HCHO	0-46	436	20	24	yes	985 046
Hardness 20	1.0 – 20.0 °d 5 – 50 mg/l Mg ²⁺ 0.2 – 3.6 mmol/l 10 – 100 mg/l Ca ²⁺	0-43	540	20	18	1:30	985 043
HC 300 (hydrocarbons)	0.5 – 5.6 mg/l HC 30 – 300 mg/kg HC	0-57	436	20	12	yes	985 057
Iron 3	0.10 – 3.00 mg/l Fe	0-37	540	20	12	yes	985 037
Lead 5	0.10 – 5.00 mg/l Pb ²⁺	0-09	540	20	12	no	985 009
Manganese 10	0.1 – 10.0 mg/l Mn ²⁺	0-58	470	20	18	yes	985 058
Methanol 15	0.2 – 15.0 mg/l MeOH	8-59	620	23	12 at <0°C	no	985 859
Molybdenum 40	1.0 – 30.0 mg/l Mo (VI) 1.6 – 50.0 mg/l MoO ₄ ⁻	0-56	345	20	24	no	985 056
Nickel 7	0.10 – 7.00 mg/l Ni ²⁺	0-61	470	20	24	1+9	985 061
Nitrate 8	0.30 – 8.00 mg/l NO ₃ ⁻ -N 1.3 – 35.0 mg/l NO ₃ ⁻	0-65	345	20	24	no	985 065
Nitrate 50	0.3 – 22.0 mg/l NO ₃ ⁻ -N 2 – 100 mg/l NO ₃ ⁻	0-64	345	20	24	no	985 064
Nitrate 250	4 – 60 mg/l NO ₃ ⁻ -N 20 – 250 mg/l NO ₃ ⁻	0-66	345	20	24	no	985 066
Nitrite 2	0.003 – 0.460 mg/l NO ₂ ⁻ -N 0.02 – 1.50 mg/l NO ₂ ⁻	0-68	540	20	12	yes	985 068
Nitrite 4	0.1 – 4.0 mg/l NO ₂ ⁻ -N 0.3 – 13.0 mg/l NO ₂ ⁻	0-69	540	20	18	yes	985 069
total-Nitrogen TN _b 22	0.5 – 22.0 mg/l N	0-83	345	20	12	no	985 083
total-Nitrogen TN _b 60	3 – 60 mg/l N	0-92	345	20	12	no	985 092
total-Nitrogen TN _b 220	5 – 220 mg/l N	0-88	345	20	12	no	985 088
Organic acids 3000	30 – 3000 mg/l CH ₃ COOH 0.5 – 50.0 mmol/l CH ₃ COOH	0-50	470	20	18	yes	985 050
Oxygen 12	0.5 – 12.0 mg/l O ₂	0-82	436	22	24	yes	985 082
Peroxide 2	0.03 – 2.00 mg/l H ₂ O ₂	8-71	620	10 – 19	12 at 2-8°C	yes	985 871
pH 6.5-8.2	pH 6.5 – 8.2	0-72	436/540	100	18	yes	918 72
Phenolic index 5	0.2 – 5.0 mg/l Phenol	0-74	470	20	18	yes, after extraction	985 074
Potassium 50	2 – 50 mg/l K ⁺	0-45	690	20	24	1+9	985 045
ortho- and total-Phosphate 1	0.05 – 1.50 mg/l P 0.2 – 5.0 mg/l PO ₄ ³⁻	0-76	690	19	12	yes (ortho-P)	985 076
ortho- and total-Phosphate 5	0.20 – 5.00 mg/l P 0.5 – 15.0 mg/l PO ₄ ³⁻	0-81	690	19	12	yes (ortho-P)	985 081
ortho- and total-Phosphate 15	0.30 – 15.00 mg/l P 1.0 – 45.0 mg/l PO ₄ ³⁻	0-80	690	19	12	yes (ortho-P)	985 080
ortho- and total-Phosphate 45	5.0 – 50.0 mg/l P 15 – 150 mg/l PO ₄ ³⁻	0-55	690	19	12	yes (ortho-P)	985 055
ortho- and total-Phosphate 50	10.0 – 50.0 mg/l P 30 – 150 mg/l PO ₄ ³⁻	0-79	436	19	36	yes	985 079
POC 200 (polyoxycarboxylic acids)	20 – 200 mg/l	0-70	436	20	18	1+3	985 070
Residual hardness 1	0.02 – 1.00 °d 0.004 – 0.180 mmol/l	0-84	540	20	12	no	985 084
Silver 3	0.20 – 3.00 mg/l Ag ⁺	0-49	620	20	18	no	985 049
Starch 100	5 – 100 mg/l Starch	0-85	540	19	12	1+1	985 085
Sulphate 200	10 – 200 mg/l SO ₄ ²⁻	0-86	436	20	36	no	985 086
Sulphate 1000	200 – 1000 mg/l SO ₄ ²⁻	0-87	436	20	36	no	985 087
Sulphide 3	0.05 – 3.00 mg/l S ²⁻	0-73	620	20	36	yes	985 073
Sulphite 10	0.2 – 10.0 mg/l SO ₃ ²⁻	0-89	436	20	12	1:20	985 089
Sulphite 100	5 – 100 mg/l SO ₃ ²⁻	0-90	470	19	12	yes	985 090
Surfactants: Anionic surfactants 4	0.20 – 4.00 mg/l MBAS	0-32	620	20	24	1+19	985 032
Surfactants: Cationic surfactants 4	0.20 – 4.00 mg/l CTAB	0-34	620	20	24	1+19	985 034
Surfactants: Nonionic surfactants 15	0.3 – 15.0 mg/l Triton® X-100	0-47	620	20	24	no	985 047
Thiocyanate 50	0.5 – 50.0 mg/l SCN ⁻	0-91	470	20	24	1+1	985 091
Tin 3	0.10 – 3.00 mg/l Sn	0-97	436	18	12	1+9	985 097
TOC 25	2.0 – 25.0 mg/l TOC	0-93	585	10	12	no	985 093
TOC 60	10 – 60 mg/l TOC	0-94	585	10	12	no	985 094
TOC 600	40 – 600 mg/l TOC	0-99	585	10	12	no	985 099
TTC/Sludge activity 150	5 – 150 µg TPF 0.050 – 2.300 E	8-90	470	20	24 at 2-8°C	no	985 890
Zinc 4	0.10 – 4.00 mg/l Zn ²⁺	0-96	620	20	12	1+1	985 096

Compact photometer PF-12

Industry-sector-specific applications

Sugar industry



Breweries



Sewage plants



Meat processing



Food and vegetable production



Fish processing



Bottling of drinks



Parameters:

Ammonium, BOD₅, COD, Nitrate, Nitrite, *total*-Nitrogen, *total*-Phosphorus ...

Leather industry



Paper industry



Oil-processing industry



Iron and steel production



Textile industry



Metal processing



Printing industry



Parameters:

AOX, Aluminium, Cadmium, Chromium, Copper, Cyanide, Fluoride, Iron, Hydrocarbons, Lead, Nickel, Silver, Sulphate, Sulphide, Sulphite, Tin, TOC, Zinc ...

Industry-sector-specific applications



Photo industry



Waste storage



Laundries



Waste treatment



Chemical industry



Boiler feed water



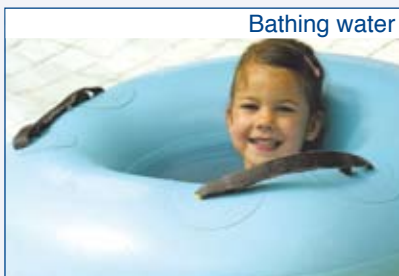
Nonmetallic mineral processing

Parameters:

AOX, Aluminium, Cadmium, Chrome, Copper, Cyanide, Fluoride, Hydrocarbons, Lead, Nickel, Sulphide, Sulphite, Tin, TOC, Zinc ...



Aquarium water



Bathing water



Biogas plants



Schools and universities



Drinking water



Ponds



Fish farming

Parameters:

Aluminium, Ammonium, Calcium, Chlorine, Carbonate hardness, Hardness, Iron, Nitrate, Nitrite, Phosphate, pH, Oxygen

Compact photometer PF-12

Technical data

Type:	Filter photometer with microprocessor control, self-test and auto-calibration Wavelength range 340 – 860 nm
Optics:	Automatic filter wheel with 7 interference filters Insensitive to external light – no light shield required
Wavelengths:	345 / 436 / 470 / 540 / 585 / 620 / 690 nm plus 1 compartment for an additional filter
Wavelength accuracy:	± 2 nm, bandwidth at half transmission 10 – 12 nm
Light source:	Tungsten lamp
Detector:	Silicon photodiode
Blank value:	Automatic
Measuring modes:	Over 100 preprogrammed tests (<i>NANOCOLOR</i> [®] tube tests and <i>VISOCOLOR</i> [®] <i>ECO</i> tests) Absorbance, transmission, factor, standard 10 freely programmable methods
Photometric accuracy:	± 1 %
Stability:	< 0.002 E/h
Cuvette holder:	Round tubes 16 mm OD
Data memory:	200 results, GLP conform
Display:	Backlit graphic display, 64 x 128 pixels All important data at a glance: Result in respective unit, date, time, sample number, sample location and dilution
Operation:	Display user guidance, plastic foil keyboard Test selection via test number or parameter lists 12 languages (de, en, fr, es, it, nl, hu, pl, pt, cz, id, si)
Quality Control:	With <i>NANOCONTROL</i> <i>NANOCHECK</i>
Interface:	USB 2.0
Update:	Via Internet / PC, free of charge
Operating range:	0 – 50 °C, up to 90 % relative humidity
Power supply:	Via USB power supply, standard or rechargeable batteries
Housing:	Waterproof, IP 67
Dimensions:	215 x 100 x 65 mm
Weight:	0.7 kg
Warranty:	2 years



This device complies with the following directives:
- 2006/95/EG - Low-Voltage Directive
- 2004/108/EG - EMC-Directive

Ordering information:

Compact photometer PF-12

REF 919 200

Incl. software DVD, manual,
manual „*VISOCOLOR*[®] *ECO* test instructions for
compact photometer PF-12“, 4 batteries,
4 empty test tubes, funnel, beaker, syringe,
USB cable, calibration cuvette and
certificate in rugged case

Accessories:

USB power supply
Charger

REF 919 220

REF 919 221



www.mn-net.com

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Since 1911