

2004 CATALOG

Orbeco Analytical Systems, Inc.



ORBECO HELLIGE

www.orbeco.com
1-800-922-5242

Your Source for Water & Wastewater Testing Instruments

The Analyst



Handheld & Portable *The Analyst* operates on 4 AA batteries or AC Adapter (both supplied). Shown above with optional larger foam-lined carrying case, printer and accessories.

The Analyst provides far greater accuracy and convenience for water testing.

Using the latest advances in microprocessor technology, *The Analyst* provides a direct-reading, user-friendly analysis system for your choice of 90+ water tests. Most test kits use convenient tablet reagents. Compact, rugged and portable, *The Analyst* is equally reliable in lab, plant, classroom or field.

Model 975 MP Portable Water Analysis System

Microprocessor Controlled for Direct-reading in mg/L, Absorbance & % Transmittance

Choose from OVER 90 pre-standardized important tests

Permanent calibrations for 90+ tests are stored in the memory of *The Analyst* microprocessor. No standard solutions, calibrations, charts, graphs, or calculations are needed. Procedures manual (supplied) contains all 90+ test instructions. (see list on page 3) Just read the accurate result directly from the liquid crystal display.

General purpose photometer mode

The Analyst is not only for water analysis, but may be used as a precise photometer with wide applications in lab and colorimetric testing.

Direct-reading display

LCD has 32 characters to display system diagnostics, low battery, test name, filter, procedure prompts and test result.

Wide, uniform 28mm sample tubes for high sensitivity and reproducibility

Most tests are performed directly in the tube. Has 10 ml graduation with screw-cap for easy mixing. Both glass and unbreakable plastic tubes supplied.

Automatic zero and standardization

Microprocessor automatically sets zero and standardization. *The Analyst* automatically compensates for different lighting conditions without need for light shield. Internal microswitch senses insertion and removal of sample tubes and automatically activates readings.

Automatic battery saver

After 15 minutes of non-use, microprocessor turns power off. Low battery warning is indicated on display.

7 Built-in precision wavelength filters, guaranteed never to fade

Serve for all 90+ tests covering the 420-640nm span. Internal turret protects filters from spill or loss. *The Analyst* doesn't need extra cost, limited-use wavelength modules – everything you require is right in the instrument! Optional custom wavelengths available.

RS-232 interfaces *The Analyst* to printers or computers with 8 bit RS-232 serial ports

Optional software permits entering sample identification numbers. Optional data retention model allows storage and downloading to computer after field trips.

975 MP-01

975 MP-02-CE

975-TG

975-TP

B-PR-01

B-PR-02

975-C60

The Analyst

Transmittance

User-Friendly Function Keys:



C-A-T To select test results in Concentration, Absorbance, or % Transmittance.



Yes Gives affirmative response to Yes/No program choice.
Enter Sequence to next program step.



No Gives negative response to Yes/No program choice.
Exit Permits leaving program to proceed to your next test.



Save Collects test data for later downloading.
Menu Permits selection for user calibrations, data retention and other options.



***** Proceeds to an "Extended" test.
Up Arrow Scrolls screen to higher test code numbers.



Print Sends test data to your printer.
Down Arrow Scrolls screen to lower test code numbers.



The Analyst 975 MP-10
(see p. 4 for datalogging,
p. 7 for COD testing)

Ordering Information

The Analyst Model 975 MP Water Analyzer with RS-232 serial port, complete with 90+ test procedure manual, 4 plastic and 4 glass precision sample tubes. AC Adapter (110-200v, 50/60Hz), 4 AA batteries and carrying case. Case accommodates up to 14 boxes of tablet reagent kits. Same as 975 MP-01, but CE certified with European plug AC adapter.

Replacement Glass Sample Tubes, Pkg. of 4.

Replacement Plastic Sample Tubes, Pkg. of 4.

Portable Serial Printer, to interface with The Analyst for test result printout, complete with batteries, AC Adapter (110v 50/60Hz) and RS-232 connector.

Same as B-PR-01, but for 220v 50/60 Hz AC.

Optional larger carrying case

(18 1/2"L x 15 9/16"W x 5"D) for The Analyst, all accessories, portable printer and up to 60 boxes of tablet reagent kits.

The Analyst uses safe, low cost reagent tablet test kits

Kit No.	Test Name — Method	Range mg/L**	Tests/Kit
975-33	• Alkalinity, Total (as CaCO ₃) — Buff. pH Indicator	0-500	50
975-80	• Alkalinity, M (as CaCO ₃) — Buff. pH Indicator	0-500	50
975-58	• Alkalinity, P (as CaCO ₃) — Buff. pH Indicator	0-500	50
975-37	• Aluminum — Eriochrome Cyanine R	0-0.5	50
975-43	• Ammonia Nitrogen, Low (as N) † — Indophenol	0-0.8	50
975-21	• Ammonia Nitrogen, High (as N) — Nessler	0-6.8	100
-	• Anionic Surfactants - use Surfactant Kit No. 975-15	-	-
975-20	• Barium — Sulfate Turbidimetric	0-400	50
-	• Bicarbonate Alkalinity - see Alkalinity	-	-
975-40	• Boron — Azomethine	0-2.5	50
-	• Bromide - Use Chloride Kit No. 975-34	-	-
975-81	• Bromine, Free, Combined and Total — DPD	0-6.0	50
-	• Calcium - see Calcium Hardness	-	-
975-31	• Calcium Hardness (as CaCO ₃) - Indicator	0-500	50
-	• Carbonate Alkalinity - see Alkalinity	-	-
975-38	• Chloramines, Mono & Di (as Cl ₂) — DPD	0-5.0	50
975-34	• Chloride (as Cl ⁻) — Silver Nitrate Turbidimetric	0-500/500	50
975-01	• Chlorine, Free, Combined and Total ‡ — DPD	0-5.0	50
975-83	• Chlorine, High Range — Iodometric	0-250	50
975-22	• Chlorine, Total † — DPD	0-5.0	50
975-84	• Chlorine Demand — DPD	Unlimited	50
975-85	• Chlorine Dioxide — DPD	0-9.5	50
-	• Chloroisocyanurate (as Cl ₂) - use Kit No. 975-01	-	-
975-02	• Chromate (as CrO ₄) — Iodometric	0-60	50
975-03	• Chromium Hexavalent ‡ — Diphenylcarbazide	0-1.4	107
975-60	• COD, Low Range ‡ ‡ — Dichromate Digestion	5-150	50
975-60MF	• COD, Low Range, Mercury Free ‡ — Dichromate Dig.	5-150	50
975-61	• COD, Mid Range ‡ ‡ — Dichromate Digestion	20-900	50
975-61MF	• COD, Mid Range, Mercury Free ‡ — Dichromate Dig.	20-900	50
975-62	• COD, High Range ‡ ‡ — Dichromate Digestion	100-4500	50
-	• Color — APHA Platinum Cobalt Color Scale	0-500	-
-	• Combined Chlorine - use Chlorine Kit No. 975-01	-	-
975-04	• Copper, Free, Chelated and Total ‡ — Bicinchoninate	0-5.0	50
-	• Copper, Total - use Copper, Free Kit No. 975-04	-	-
-	• Copper, Chelated - use Copper, Free Kit No. 975-04	-	-
975-32	• Cyanide, Free — Cyanogen Chloride	0-0.4	50
975-29	• Cyanuric Acid — Melamine Turbidimetric	0-200	50
-	• Detergent - use Surfactant Kit No. 975-15	-	-
975-59	• DEHA — Iron Reduction	0-500ppb	75
-	• DO (Dissolved Oxygen) - use Oxygen Kit No. 975-08	-	-
-	• Erythorbic Acid - use DEHA Kit No. 975-59	-	-
975-05	• Fluoride — Zirconyl Chloride & Eriochrome R	0-3.0	50
-	• Free Chlorine - use Chlorine Kit No. 975-01	-	-
975-95	• Hardness, Total, Low Range (as CaCO ₃)	0-1.5	50
975-76	• Hardness, Total (as CaCO ₃) — Eriochrome	0-500	50
975-25	• Hydrazine — Dimethylaminobenzaldehyde	0-0.5	50
975-53	• Hydrogen Peroxide, Low — DPD	0-2.0	50
975-87	• Hydrogen Peroxide, High — Iodometric	0-100	50
-	• Hydroquinone - use DEHA Kit No. 975-59	-	-
-	• Hydroxide Alkalinity - see Alkalinity	-	-
-	• Hypochlorite - use Chlorine, High Kit No. 975-83	-	-
-	• Iodide - use Chloride Kit No. 975-34	-	-

Kit No.	Test Name — Method	Range mg/L**	Tests/Kit
975-88	• Iodine — DPD	0-18	50
975-54	• Iron, Total Soluble, Low — PPST	0-1.5	50
975-06	• Iron, High ‡ — o-Phenanthroline	0-10	50
-	• LAS - use Surfactant Kit No. 975-15	-	-
975-63	†† Lead ‡ — Dithizone	0-150ppb	15
975-89	• Magnesium	0-100	50
975-90	• Magnesium Hardness (as CaCO ₃)	0-420	50
975-56	• Manganese, Low — Leucomalachite Green	0-0.03	50
975-17	• Manganese, High ‡ — Periodate Oxidation	0-23	50
-	• MBAS - use Surfactant Kit No. 975-15	-	-
-	• Methylthylketoxime - use DEHA Kit No. 975-59	-	-
975-66	• Molybdate, Low (as MoO ₄) — Dthyd. Dsa.	0-20	50
975-91	• Molybdate, High (as MoO ₄) — Thioglycolate	0-100	50
-	• Molybdenum - see Molybdate	-	-
975-41	† Nickel ‡ — Dimethylglyoxime	0-12	30
-	• Nickel Sulfate — Direct Photometric	0-200g/L	-
975-07	• Nitrate, (as N) ‡ — Reduction & diazotization	0-1.0/0-20	50
975-24	• Nitrite, Low (as N) ‡ — Diazotization	0-0.5	50
975-92	• Nitrite, High (as NaNO ₂) — Iodometric	0-450	50
-	• Nitrogen, Ammonia - see Ammonia	-	-
-	• Nitrogen, (Nitrate) - use Nitrate Kit No. 975-07	-	-
-	• Nitrogen Nitrite - see Nitrite	-	-
975-93	• Organophosphonate & Total Phosphate (as PO ₄)	0-20	50
975-08	† Oxygen, Dissolved ‡ — Modified Winkler	0-14	90
975-94	• Ozone — DPD	0-3.5	50
975-09	pH, Low Range — Mixed Indicator	0.5-6.0 pH	60
975-23	pH, High Range — Mixed Indicator	6.0-10.0 pH	60
975-44	• pH, Phenol Red	6.2-8.2 pH	50
975-42	†† Phenol ‡ — 4-Aminoantipyrine	0-1.0	24
975-75	• Phosphate, Reactive/Ortho, Low (as PO ₄)	0-4.0	50
975-77	• Phosphate, Reactive/Ortho, High (as PO ₄)	0-100	50
975-39	• Phosphate, Total Inorganic/Poly (as PO ₄)	0-4.0	50
975-10	† Phosphate Total & Organophosphonate (as PO ₄)	0-4.0	50
-	• Phosphorus - use any Phosphate Test	-	-
975-96	• Potassium — Sodium Tetraphenylborate	0-12	50
-	• Salinity - use Chloride Kit No. 975-34	-	-
975-11	• Silica, Low (as SiO ₂) — Heteropoly Blue	0-4.0	50
975-12	• Silica, Medium (as SiO ₂) — Mdate-Sulfate Reduction	0-15	55
975-19	• Silica, High (as SiO ₂) — Molybdisulfate	0-80	100
-	• Sodium Chloride - use Chloride Kit No. 975-34	-	-
-	• Sodium Chromate — Direct Photometric	0-1500	-
-	• Sodium Molybdate - see Molybdate	-	-
-	• Sodium Nitrite - use Nitrite, High Kit No. 975-92	-	-
975-13	• Sulfate (SO ₄) ‡ — Turbidimetric	0-200	50
975-57	• Sulfide (as S) ‡ — Methylene Blue	0-0.5	50
975-97	• Sulfite (as Na ₂ SO ₃)	0-500	50
975-15	†† Surfactant (as LAS) ‡ — Methylene Blue	0-1.0	24
975-35	• Tannin & Lignin — Tungsto.Molybdo. Phos.	0-9.0	100
-	• Total Chlorine - use Chlorine Kit No. 975-01 or 22	-	-
975-98	• Triazoli (Benzo & Toly) - (Available Soon)	-	-
-	• Turbidity, FTU — Absorption	0-800 FTU	-
975-27	• Zinc ‡ — Zincon	0-4.0	50



Over 90 test kits available. Most kits use convenient, pre-measured, single dose, stable tablets that are safe and economical*. Kits contain everything needed for each test. Ready for immediate use, they eliminate pipetting, glassware clean-up, and provide lower cost per test.

2 Year warranty protects your investment

Quality made in the U.S.A.
Your satisfaction is guaranteed!

* Indicates test kit uses tablet or powder reagent.

‡ Based on USEPA approved/accepted methods.

† Contains hazardous reagent(s); shipping restrictions and extra charges may apply.

†† Poison packaging required.

Reads directly, reagents not required.

** Higher range by sample dilution.

§ Requires use with special tube adapter, digester and shield.

The Analyst

Datalogging & Retrieval with The Analyst 975MP-10

Now save and organize up to **2000 test results** and print them out as needed.

SAVE
MENU

One touch of the 975 MP-10 MENU/SAVE key calls up datalogging and retrieval modes expanding the versatility and performance of *The Analyst*. Menu key provides access to the following modes:

Batching	Saving	Erasing
Downloading	Viewing	Real Time Clock
System Setup		Printing

PRINT

One touch of the 975 MP-10 PRINT key provides a hardcopy printout for a permanent record of every test result.

Display prompts users through procedures featuring:

- **Datalogging and Organizing Capability:** Store up to 2000 test results. Organize them by user, customer, location, test and date. Data may be saved automatically or manually by a keystroke. Data may be viewed, printed out or downloaded to a computer at any time. That's Versatility!
- **Sorting Capability:** Batch mode allows all functions to be sorted by operator, customer, location, time & date.
- **Multiple Users:** In the field, several operators can use the 975 MP-10 performing tests at numerous locations and storing data by operator and location code.
- **View Mode:** Data can be retrieved and viewed directly on the instrument display.
- **Data Erase Mode:** Stored test data cannot be lost from memory unless intentionally erased by the user.
- **Realtime Clock and Calendar:** The 975 MP-10 records the time (hour & minute) and date (year, month, day) that each test was performed.
- **System Setup:** Individually program beeper modes, automatic shutdown times and printer port transmission rates (baud rates).
- **Printouts Through The Serial Port:** Print data with test name, results in Concentration / %T/Abs, filter wavelength, location & operator, date/time for a permanent record.



Model 975 MP-10 and Model B-PR-03 Portable Serial Printer showing Orbeco's Data Base printout

Orbeco's Exclusive Data Base Printout - the most complete listing of test result information available.

Time	Conc	%T	Abs	Filter	Operator	Date
10:00	100	100	0.00	660nm	J. Smith	10/10/80
10:05	100	100	0.00	660nm	J. Smith	10/10/80
10:10	100	100	0.00	660nm	J. Smith	10/10/80
10:15	100	100	0.00	660nm	J. Smith	10/10/80
10:20	100	100	0.00	660nm	J. Smith	10/10/80
10:25	100	100	0.00	660nm	J. Smith	10/10/80
10:30	100	100	0.00	660nm	J. Smith	10/10/80
10:35	100	100	0.00	660nm	J. Smith	10/10/80
10:40	100	100	0.00	660nm	J. Smith	10/10/80
10:45	100	100	0.00	660nm	J. Smith	10/10/80
10:50	100	100	0.00	660nm	J. Smith	10/10/80
10:55	100	100	0.00	660nm	J. Smith	10/10/80
11:00	100	100	0.00	660nm	J. Smith	10/10/80

Title Block

Identification information

Designation numbers for, and a line to write out operator, customer, location and batch names. Instrument serial number is also printed out.

Instrument serial number

Test results in Concentration/%T/Abs

Full test name with test number

Test order

Date & Time

Filter wavelength used

Operator signature & date

Ordering Information

- 975 MP-10** Same as 975 MP-01, but with datalogging capability.
- 975 MP-20-CE** Same as 975 MP-10, but CE certified with European plug adapter.
- 975-TG** Replacement Glass Sample Tubes, Pkg. of 4.
- 975-TP** Replacement Plastic Sample Tubes, Pkg. of 4.
- B-PR-03** Portable Serial Printer, to interface with The Analyst for test result printout, complete with batteries, AC Adapter(110v, 50/60Hz) and RS-232 connector.
- B-PR-04** Same as B-PR-03 but for 220v
- 975-C60** Optional larger carrying case (18 1/2"L x 15 9/16"W x 5"D) for The Analyst, all accessories, portable printer and up to 60 boxes of tablet reagent kits.

Series 942 Mini Analyst

Specific Test Water Analyzers

Mini Analyst specific test water analyzers are easy-to-use and easy-to-carry for fast, precise water tests. Economically priced. Ideal for use when the specific test is performed frequently. All models complete with reagents and carrying case. Most use innovative, single dose reagent tablets.

Every Mini Analyst is designed and programmed to perform one specific test, with the highest level of accuracy and convenience, at a low, affordable price. No resources are wasted for tests you will never use. All Mini Analysts provide direct-reading digital display test results in concentration (mg/L or ppm). Orbeco offers you your choice of the most models available to perform water & wastewater tests covering a wide variety of uses and applications. No other single-test water analyzers are easier to use! After turning the Mini Analyst on, the display prompts you to insert the blank tube containing an untreated sample. Zero and standardization are automatically set by the Mini Analyst microprocessor. The display then prompts you to insert the sample tube and in a few seconds, the test result is displayed in concentration units. All models come complete with reagents, batteries, carrying case and 3 year warranty.

CONVENIENT & SAFE REAGENT TABLETS

Most Mini Analysts use innovative single dose reagent tablets. Tablets are convenient, easy to transport, pre-measured and stable for safe & economical use. Tablets are hermetically sealed for long life.



Select From 68 Mini Analysts

MODEL No.	TESTER/METHOD	RANGE mg/L **	TEST PER KIT	REFILL REAGENT KIT No.
942-080	* Alkalinity, M (as CaCO ₃)	0-500	50	975-80
942-058	* Alkalinity, P (as CaCO ₃)	0-500	50	975-58
942-033	* Alkalinity, Total (as CaCO ₃)	0-500	50	975-33
942-037	* Aluminum/ECR	0-0.5	50	975-37
942-072	Aluminum/PCV	0-250ppb	50	975-72
942-043	* Ammonia, Nitrogen, Low/Indophenol †	0-1.0	50	975-43
942-021	Ammonia, Nitrogen, High/Nessler	0-6.2	100	975-21
942-070	†† Arsenic	0-0.2	15	975-70
942-020	Barium/Turbidimetric	0-200	50	975-20
942-040	* Boron/Azomethine	0-2.5	50	975-40
942-081	* Bromine/DPD	0-6	50	975-81
942-071	† Cadmium	0-80 ppb	15	975-71
942-031	* Calcium Hardness (as CaCO ₃)	0-500	50	975-31
942-034	* Chloride (as Cl ⁻)/Argentometric	0-25/0-250	50	975-34
942-001	* Chlorine, Free & Total/DPD ‡	0-3.5/7.0	50	975-01
942-022	* Chlorine, Total/DPD ‡	0-5.0	50	975-22
942-084	* Chlorine Demand/DPD	Unlimited	50	975-84
942-083	* Chlorine, High/Iodometric	0-250	50	975-83
942-085	* Chlorine Dioxide/DPD	0-9.5	50	975-85
942-002	Chromate (as CrO ₄)/Iodometric	0-60	50	975-02
942-003	Chromium, Hexavalent/Diphenylcarb. ‡	0-1.25	107	975-03
942-060	COD, Low 1/2 Micro-reflux ‡	5-150	50	975-60/60MF
942-061	COD, Medium 1/2 Micro-reflux ‡	20-900	50	975-61/61MF
942-062	COD, High 1/2 Micro-reflux ‡	100-4500	50	975-62
942-004	* Copper, Free & Total/Bicinchoninate	0-5.0	50	975-04
942-032	Cyanide, Free/Cyanogen Chloride	0-0.4	50	975-32
942-029	* Cyanuric Acid/Turbidimetric	0-200	50	975-29
942-059	DEHA	0-500ppb	75	975-59
942-005	* Fluoride/ECR	0-2.5	50	975-05
942-S05	† Fluoride/(SPADNS) ‡	0-2.0	50	975-S05
942-095	* Hardness, Total Low/Calmagite	0-1.5	50	975-95
942-076	* Hardness, Total (as CaCO ₃)	0-500	50	975-76
942-025	* Hydrazine/Dimethylaminobenz.	0-500ppb	50	975-25
942-053	* Hydrogen Peroxide, Low/DPD	0-2.0	50	975-53
942-087	* Hydrogen Peroxide, High	0-100	50	975-87

* Indicates test kit uses tablet or powder reagent. † Contains hazardous reagent(s); shipping restriction ‡ Based on USEPA approved/accepted methods. †† Requires use with reactor ** Higher range by volume

See page 7 for COD Testing



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Mini Analyst Models

MODEL No.	TESTER/METHOD	RANGE mg/L **	TEST PER KIT	REFILL REAGENT KIT No.
942-088	* Iodine/DPD	0-18	50	975-88
942-054	* Iron, Total Low/PPST	0-1.5	50	975-54
942-006	* Iron, Total High/o-Phenanthroline ‡	0-10	50	975-06
942-063	†† Lead /Dithizone ‡	0-150 ppb	15	975-63
942-089	* Magnesium	0-80	50	975-89
942-090	* Magnesium Hardness (as CaCO ₃)	0-420	50	975-90
942-056	* Manganese, Low/Lucomalachite	0-23ppb	50	975-56
942-017	* Manganese, High/Periodate	0-23	50	975-17
942-066	* Molybdate, Low	0-20	50	975-66
942-067	Molybdate, Medium/Thiocyanate	0-20	30	975-67
942-091	* Molybdate, High/Thioglycollate	0-100	50	975-91
942-041	† Nickel/Dimethylglyoxime ‡	0-12	30	975-41
942-007	* Nitrate (as N)/Reduction ‡	0-1.0/0-20	50	975-07
942-024	* Nitrite, Low (as N)/Diazotization ‡	0-0.5	50	975-24
942-092	* Nitrite, High (as NaNO ₂) Iodometric	0-450	50	975-92
942-093	* Organophosphonate & T. Phosphate	0-20	50	975-93
942-008	† Oxygen, Dissolved/Winkler ‡	0-14	90	975-08
942-094	* Ozone/DPD	0-2.0	50	975-94
942-042	†† Phenol/Aminoantipyrine	0-1.0	24	975-42
942-075	* Phosphate, Ortho, Low/Moly. Blue	0-4.0	50	975-75
942-074	Phosphate, Ortho, Medium/Ascorbid	0-50	50	975-74
942-077	* Phosphate, Ortho, High/Vanadomoly	0-86	50	975-77
F 942-010	† Phosphate, Total	0-4.0	50	975-10
942-039	* Phosphate, Total Inorganic/Poly ‡	0-4.0	50	975-39
942-096	* Potassium	0-12	50	975-96
942-011	* Silica, Low/Heteropoly Blue	0-4.0	50	975-11
942-012	Silica, Medium	0-15	55	975-12
942-019	Silica, High/Molybdosilicate	0-80	100	975-19
942-013	* Sulfate/Turbidimetric ‡	0-200	50	975-13
942-057	* Sulfide/Methylene Blue ‡	0-0.5	50	975-57
942-097	* Sulfite (as Na ₂ SO ₃)	0-500	50	975-97
942-015	†† Surfactant (as LAS) ‡	0-1	24	975-15
942-035	Tannin & Lignin	0-9.0	100	975-35
942-027	* Zinc/Zincon ‡	0-3	50	975-27

restrictions and extra charges may apply. †† Poison packaging required.
 ‡ by sample dilution. (See page 7 for COD Testing).

Important Features:

- **Direct-reading digital display of procedure prompts, test result, low battery level.**
- **LED narrow-band light source assures high sensitivity and long bulb/battery life.**
- **1 touch operation and read test result in concentration units.**
- **Factory calibrated, no user adjustments are ever needed.**
- **Microprocessor controlled self diagnostics of power, circuitry and lamp readiness.**
- **Auto zero & standardization by microprocessor eliminates need for a light shield.**
- **Auto-blank, insert blank once for faster multiple testing.**
- **Uniform, flat bottomed, large diameter tubes for reproducibility, convenience and high sensitivity.**
- **Powered by 3 AA batteries.**
- **Auto shut-off after 15 minutes of non-use.**
- **3-year instrument warranty.**
- **Complete with all reagents, labware, AA batteries, directions. Carrying case included.**



Do you have a special test or want to perform a test using a different test method than our standard models?

OEM & QUANTITY USERS:

The Orbeco Mini Analyst is ideal for all colorimetric testing, no matter what your industry. Let us know your application. Our expert technical support staff will be pleased to work with you on designing an instrument to fit your exact needs. Private labeling, custom modifications and special calibrations are our specialty. Please contact Orbeco's customer service for more information.

ABSORBANCE (942-ABS-*) AND %T (942-%T-*) MODELS

Fixed wavelength Mini Analysts are available for custom or proprietary testing applications. Test results can be displayed in your choice of either Absorbance or % T. LED light sources are available in the following fixed wavelengths: 430nm, 505, 525, 565, 595, 620, and 660. Special order can be placed for other wavelengths, please inquire. *Specify wavelength from above list.

Order as 942-ABS-* or 942-%T-*

COD Testing with *The Analyst & Mini Analyst*

Orbeco-Hellige's micro-COD Method, when performed with The Analyst or The Mini Analyst, offers low-cost, simple Chemical Oxygen Demand testing fully compatible with USEPA 410.4 and Standard Methods 5220. Uses convenient 16mm diameter screw-cap tubes containing a specific oxidizing agent. The tubes, containing reagents and samples, are heated with a convenient COD reactor (see below) at 150°C for 2 hours (or less under certain conditions) and then are inserted into the Analyst or the Mini Analyst for a direct test reading. The 2 hour time period is mandatory for EPA approved methods, but COD readings for non-reporting purposes may be obtained in as little as 15 minutes for readily oxidized wastes.

COD - the better way to test!

The Chemical Oxygen Demand (COD) test is widely used as a measure of organic contamination by determining the quantity of oxygen required for oxidation of reduced species including organic matter, in a water sample using a specific oxidizing agent, temperature and time reduction. COD testing is more reliable and is preferred to BOD testing as test results are more reproducible and are ready in two hours (or less) rather than 5 days. In addition, COD testing is a better indicator of organic pollutants in industrial wastewater containing cyanides and heavy metals. COD testing affords rapid response to changing conditions before critical problems develop.



The Analyst 975MP-01 with Tube Adapter 975-TA

(The Analyst needs the Tube Adapter to accept 16mm diameter COD tubes.

The Mini Analyst 942-061 Mid Range COD Tester

COD Reactors

Hold up to 15 or 30 reagent tubes (16mm) for digestion at 150°C. Compact and solidly built, the units are factory set to the correct temperature. Units include a chemical-resistant safety shield and a thermometer.



Ordering Information COD Test Accessories

COD Reactors with tube capacities listed below, each complete with safety shield and thermometer. For 16mm diameter tubes.

B-300	15-tube capacity, for 110v 50/60Hz
B-301	30-tube capacity, for 110v 50/60Hz
B-300E	15-tube capacity, for 220v 50/60Hz
B-301E	30-tube capacity, for 220v 50/60Hz

Standard COD tubes, 50 per package

975-60	Low Range, 5-150 mg/L, sensitivity 1.0 mg/L
975-61	Mid Range, 20-900 mg/L, sensitivity 15 mg/L
975-62	High Range, 100-4500 mg/L, sensitivity 60 mg/L

Mercury-Free COD tubes, 50 per package

975-60MF	Low Range, 5-150 mg/L, sensitivity 1.0 mg/L
975-61MF	Mid Range, 20-900 mg/L, sensitivity 15 mg/L
975-TA	Tube Adapter for 975 only.

COD Tubes

Standard tubes meet the official requirements of USEPA. They contain enough mercury to compensate for chloride concentrations as high as 2000 mg/L. Mercury-free tubes, although not USEPA approved, avoid the trouble of disposal. Each package contains 50 screw-cap 16mm diameter tubes with reagent.



Features of the Orbeco-Hellige micro-COD Method

- Up to 75% savings over other methods.
- Full compatibility with EPA 410.4 and Standard Methods 5220.
- Mercury-free reagents.
- Lower waste disposal costs.
- Superior optical quality glassware for more consistent results.

Aqua Tester

Nessler Tube Comparator and Color Discs For Color of Water & Very Low Concentrations

Precise analysis of Water, Sewage, and Industrial Wastes...Accurate pH Measurements of Both Buffered and Unbuffered Solutions

The Aqua Tester is a precise, visual instrument for rapid and accurate tests in the modern water laboratory. It is the most advanced visual instrument for measuring color of water, fluoride, and low chemical concentrations of chlorine, ammonia, nitrogen, silica, etc. in which extremely pale color are developed. These tests cannot be made with ordinary comparator methods because the steps between the colors are too small for sufficient visual discrimination. The Nessler tubes of the Aqua Tester easily overcome this difficulty because their long viewing depth (200 mm...about 8 inches) greatly increases the intensity of the colors and produces distinct easy-to-see steps.

The Aqua Tester is also widely used for measuring the pH of solutions, particularly unbuffered ones such as distilled water, steam condensates, boiler make-up water, etc. Ordinary colorimetric methods cannot be used for this purpose because the pH of the unbuffered sample is affected by the indicator solution. The problem is eliminated with the Aqua Tester, because an extremely small ratio of indicator to test sample is employed. The accuracy achieved with the simple procedure of the Aqua Tester compares very favorably with results obtained with the more complicated electrometric method.

The Aqua Tester includes a magnifying eyepiece which allows the color fields of the sample and color disc to be enlarged and brought side-by-side for more accurate comparison.

IMPORTANT FEATURES:

- **Measure 5 ranges of color of water (APHA Pt-Co Color, ASTM D-1209).**
- **15 times more sensitivity than conventional comparator methods.**
- **Guaranteed permanent color standards.**
- **Magnified side-by-side comparisons of color standards and test samples.**
- **"No-Meniscus" Nessler tube system. Polished plungers eliminate annoying reflections from meniscus curvature, makes color comparisons easy.**
- **Built-in daylight-corrected lamp assures accurate results.**



Model 611-A Aqua Tester with Magnifying Prism

Color Disc Test Kits for 611-A Aqua Tester

OUTFIT	TEST NAME	RANGE	METHOD
611-12A	Aluminum	0-1.0 ppm Al	Aluminon
611-15A	Ammonia Nitrogen	0-0.6 ppm N	Nessler
611-32A	Chlorine (Very Low)	0-0.3 ppm Cl ₂	DPD
611-30A	Chlorine (Very Low)	0-0.3 ppm Cl ₂	O-Tol.
611-31A	Chlorine	0-1.0 ppm Cl ₂	O-Tol.
611-14A	Chromate	0-0.12 ppm Cr	Carbazide
611-9	Color of Water	0-25 color units	Pt-Co.
611-10A	Color of Water	0-50 color units	Pt-Co.
611-10	Color of Water	0-70 color units	Pt-Co.
611-11	Color of Water	5-100 color units	Pt-Co.
611-100	Color of Water	0-500 color units	Pt-Co.
611-18A	Copper	0-1.0 ppm Cu	Dithiocarb.
611-75A	Fluoride	0-1.6 ppm F	Scotts-Sanchis
611-76A	Hydrazine	0-0.5 ppm	DMAB
611-35A	Iron	0-3.0 ppm Fe	Thiocyanate
611-50A	Lead	0-0.9 ppm Pb	Sulfide
611-45A	Manganese	0-1.0 ppm Mn	Periodate
611-20A	Nitrite	0-0.025 ppm N	S.Nitamine S
611-41A	Oxygen, Dissolved	0-12 ppm O ₂	Winkler
611-145	pH (4.0-5.6)	4.0-5.6 pH	B.C. Green
611-160	pH (5.2-6.8)	5.2-6.8 pH	C.P. Red
611-170	pH (6.0-7.6)	6.0-7.6 pH	BT Blue
611-180	pH (6.8-8.4)	6.8-8.4 pH	Phenol Red
611-190	pH (8.0-9.6)	8.0-9.6 pH	Thymol Blue
611-250A	pH Wide Range	2.0-11.0 pH	WR Ind.
611-56A	Phosphate	0-24 ppm PO ₄	P. Molybd. ANS
611-55A	Phosphate, ortho	0-120 ppm PO ₄	P. Molybd. ANS
611-61A	Silica	0-1.6 ppm SiO ₂	M. Reduct.
611-60A	Silica	0-25 ppm SiO ₂	Molybdate
611-65	Sulfide	0-5 ppm S	Antimony Rgt.

Ordering Information

Disc and all replacements for 611-A Test Kits (color discs, solutions, labware) can be purchased individually. For disc only, delete "A" from outfit number (eg. 611-12).

Ordering Information

Aqua Tester with 2 Nessler tubes and 2 optical plungers, built-in magnifying prism eyepiece, color-corrected lamp and directions.

611-A Aqua Tester, complete for 110v, AC/DC

Replacement Parts / Accessories

611-T Nessler Tube, 200mm, borosilicate glass.
611-PL Plunger, optically polished.
611-FHC, Filter plate.

272 Replacement Bulb, for 611-A, for 110v, AC/DC.
249-3 Voltage Reducer, for 220v, 50/60Hz operation.

Order Color Disc Test Outfits separately from chart.

Pocket Color Comparators & Color Discs



Model 605-AHT Pocket Comparator with "Daylite" Illuminator and Magnifying Prism

Model 605-HT Pocket Comparator

EXCLUSIVE FEATURES

- **Pocket Comparator is made of tough, chemical resistant phenolic. Compact, only 3-3/4 inches square. Precision diffuser provides even illumination to color standard and sample, without distortion or shadow.**
- **Color discs contain 9 to 10 guaranteed permanent color standards. Color discs fit interchangeably in the comparator.**
- **Precision standards have uniform colors edge to edge. Much easier to compare than continuous color wedges having different colors from top to bottom.**
- **Square precision tubes supplied with comparator show uniform colors edge to edge. Superior to round tubes, which cause errors because colors seen are not uniform.**

Hand-held and completely portable, comparator outfits are ideal for testing water, wastes, boiler and cooling water, process fluids, swimming pools, spas, and more... Ideal for lab, plant, field or classroom. These outfits employ guaranteed, non-fading precision color standards, housed in unbreakable plastic discs.

Color Disc Test Kits for use with Model 605 Comparators

Test Kits For pH			
Outfit (1)	TEST NAME	RANGE (2) ppm-mg/L	METHOD
250-DA1	pH Wide Range	1.0-6.5	Wide Range Ind.
250-DA2	pH Wide Range	5.5-7.5	Wide Range Ind.
250-DA3	pH Wide Range	7.5-11.0	Wide Range Ind.
250-D1	pH Wide Range	2.0-11.0	Wide Range Ind.
100-D	pH Narrow Range	0.2-1.8	Cresol Red-A Ind.
110-D	pH Narrow Range	1.2-2.8	Thymol Blue-A
120-D	pH Narrow Range	2.2-3.8	Dimethylphenol-B
130-D	pH Narrow Range	2.8-4.4	Dimethylphenol-A
135-D	pH Narrow Range	3.0-4.6	Bromphenol Blue-D
145-D	pH Narrow Range	4.0-5.6	Bromocresol Green-D
150-D	pH Narrow Range	4.4-6.0	Methyl Red-D
155-D	pH Narrow Range	5.0-6.6	Bromocresol Purple-D
160-D	pH Narrow Range	5.2-6.8	Chlorophenol Red-D
170-D	pH Narrow Range	6.0-7.6	Bromthymol Blue-D
180-D	pH Narrow Range	6.8-8.4	Phenol Red-D Ind.
185-D	pH Narrow Range	7.2-8.8	Cresol Red-B
187-D	pH Narrow Range	7.6-9.2	Thymol Purple-D
190-D	pH Narrow Range	8.0-9.6	Thymol Blue-B
195-D	pH Narrow Range	8.4-10.0	Cresol Phthalein-D
200-D	pH Narrow Range	8.6-10.2	Phenol Phthalein-D
205-D	pH Narrow Range	9.2-10.8	Thymol Phthalein-D
207-D	pH Narrow Range	9.8-11.4	Alizarin-D Ind.
225-D	pH Narrow Range	11.2-12.8	Tropaeolin-D
230-D	pH Narrow Range	12.0-13.6	Violet-D Ind.

Test Kits For Other Water Tests			
Outfit (1)	TEST NAME	RANGE (2) ppm-mg/L	METHOD
328-DA	Bromine	0-3.0	Acid o-tolidine
366-DA	Chromate	0-30	Diphenylcarbazide
317-DB	Chromate, NaCrO ₄	20-200 ppb	Color Comparison
317-DA	Chromate, NaCrO ₄	6-250 lbs.	Color Comparison
317-DC	Chromate, NaCrO ₄	50-600	Color Comparison
342-DA	* Dissolved Oxygen	0-1.5	Modified Winkler
376-DA	Hydrazine	0-0.5	DMAB
335-DA	Iron	0-0.5	Thio-cyanate
351-DA	Lead	0-1.0	Dithizonne
345-DA	Manganese	0-1.0	Periodate
437-DA	Molybdenum	0-250	Thiocyanate
326-DA	* Nitrate, NO ₃	0-120	Bruceine
368-DA	Phosphate, ortho	0-100	Vanadomolybdate
355-DA	Phosphate, ortho	0-120	P-molybdate/ANS
356-DA	Phosphate, o. & poly	0-24	P-molybdate/ANS
357-DA	Phosphate, o. & poly	0-120	P-molybdate/ANS
322-DA	O.A.C.	0-400	Dibromot Sulphonphthalein
361-DA	Silica as SiO ₂	0-24	S-molybdate/SO ₂
362-DA	Silica as SiO ₂	0-120	S-molybdate/SO ₂
318-DA	Sodium Nitrite	0-1200	Bruceine
365-DA	Sulfide	0-5.0	Colloidal Pbs
319-DA	* Sulfite as SO ₃	0-70	Iodometric
367-DA	Surfactant as ABS	0-2	MBAS
370-DA	Tannin	1-5	Color Comparison

Test Kits For Chlorine

Outfit (1)	TEST NAME	RANGE (2) ppm-mg/L	METHOD
432-D	*Chlorine*	0.1-1.0	DPD
431-D	*Chlorine*	0.1-2.0	DPD
430-D	*Chlorine*	0.2-4.0	DPD
433-D13	*Chlorine*	0-5.0	DPD
336-D	Chlorine	0-20	Acid o-tolidine

Outfit (1)	TEST NAME	RANGE (2) ppm-mg/L	METHOD
330-D	Chlorine	0-3.0	Acid o-tolidine
332-D	Chlorine	0-1.0	Acid o-tolidine
331-D	Chlorine	0-10	Acid o-tolidine
333-D13	Chlorine	0-20	Acid o-tolidine
334-D	Chlorine	0-250	Acid o-tolidine

Each kit contains everything needed; color disc, reagents, labware and directions. See price list for other tablets, solutions and replacement parts.

DPD Tablets For Chlorine Testing

Supplied in hermetically sealed foil strips. 50 tablets per box.



	Regular		Fast Dissolving
431-T	DPD#1	For Free Chlorine	431-ITG
432-T	DPD#2	For Monochloramine	-
433-T	DPD#3	For Combined Chlorine	433-ITG
434-T	DPD#4	For Total Chlorine	434-ITG

Footnotes

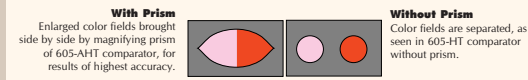
*EPA accepted method. † Tests for free, combined and total chlorine; accepted by EPA for NPDES compliance monitoring.
Note 1 - Includes disc, reagents and labware, but without comparator. **For disc only, delete "A" from outfit number (eg.356D).**
Note 2 - Most tests include directions for higher and/or lower ranges.

Note 3 - This disc can also test for Chlorine Dioxide, Bromine, Iodine, Hydrogen Peroxide, Chlorisocyanurates and Ozone, directions included.

Model 600-PA Magnifying Prism

(Shown with Comparator on page 9)

Comparator incorporates exclusive magnifying prism which brings colors of standards and test sample side by side to one enlarged image for the most accurate comparisons. Helps make exact color match; results unmistakable.



Model 600-DA "Daylite" Illuminator

(Shown on page 9)

Provides corrected color matching irrespective of weather or poor lighting conditions. Assures highest accuracy and agreement among operators. Has color-correcting lamp and filter, sloped housing for easy viewing.

ORDERING INFORMATION for 605-AHT & 605-HT

Select Comparator with or without Prism.
Supplied with two 13mm Square Precision Tubes.

- 605-AHT** Pocket Comparator with Magnifying Prism
605-HT Pocket Comparator without Magnifying Prism

Accessories

- 600-T13** Square Precision Tube, 13mm.
600-PA Magnifying Prism, for 605-HT Comparator.
600-DA "Daylite" Illuminator, for 110v, AC/DC.
600-B Replacement Bulb, for illuminator.
249-3 Voltage Reducer, for 220v, 50/60Hz operation.
605A-CA Case, 2 Test holds Comparator, 2 Disc, 4 Tubes.

Select Color Disc Test Kits desired, from charts.

Model 607 Low Range Comparator

For measuring unusually low concentrations
in water and chemical analysis orimet



Uses flat walled tubes of 26 and 40mm "viewing depth" to double and triple test sensitivity of the outfits listed in chart below. These tubes reduce the ranges of all tests (see list on page 9, except pH) to 1/2 or 1/3 normal while maintaining 10 easy-to-distinguish color steps. By using two 26 or 40mm tubes, a normal 0-24 ppm range becomes 0-12 or 0-8 ppm. No. 600-T13, 13mm Square Tube, may also be used for normal ranges.

Color Disc Test Kits for use with 607-A40 Comparator only

Outfit	Test NAME	Range	Method
315-DA	Ammonia	0-1.2	Nessler
435-D	Chlorine, Very Low Range	0-500ppb	DPD

ORDERING INFORMATION

- 607-A40** Hellige Standard Comparator, with two No. 607-T40 drawn Tubes of 40mm. viewing depth, but with out color disc*
607-A26 Hellige Standard Comparator, with two No. 607-T26 Tubes of 26mm. viewing depth, but with out color disc*
607-A13 Hellige Standard Comparator, with two No. 607-T13 Tubes of 13mm. viewing depth, but with out color disc*
Accessories
607-T40 Precision Tube, 40mm, triples sensitivity, divides range by 3.
607-T26 Precision Tubes, 26mm, doubles sensitivity, divides range by 2.
600-T13 Precision Tubes, 13mm, for normal ranges.

Simplex Testers

Low Cost Chlorine & pH Comparator Test Kits



Model 608-01A Chlorine, Free & Total and Carrying Case

Low in Cost...High in Quality. When low cost testing is most important, compact & inexpensive Simplex test kits permit anyone to make accurate on-site tests for Chlorine (DPD or Ortho-tolidine) and pH easily and quickly. Every Simplex test kit uses eight (8) built-in, guaranteed non-fading, color standards mounted in a durable, corrosion-resistant housing. All standards can be seen at a glance and compared directly to the color of the test sample. No color discs or slides needed. Readings are simple and foolproof. Each Simplex test kit comes complete with comparator, carrying case, reagents and instructions. No other test kits are easier to operate...or lower in price!

Testing is easy as 1...2...3

- 1 Fill the three tubes to the 10 ml. mark with sample water and place them in the three openings at the top of the Simplex tester.
- 2 Add reagent to center tube to develop a color.
- 3 Hold the Simplex tester toward the light and read the result directly from the number beside the color standard which matches the color in the central column. The large size and close proximity of the color fields assure accurate color comparisons!

Drop Count Titration Kits

These kits use precise "drop count" dispensers to assure completely reproducible, accurate results. Most based on officially-approved methods. Everything needed is supplied. Reagents in stable liquid, powder or tablet form.

Custom carrying cases available in quantity. Order directly from charts below.

Name of Test	Kit No.	Ranges	Test/ Kit
Acidity, M&P	64-010	0-1,250 mg/L	50
Alkalinity, All Forms (P,M&OH)	64-030	0-6,250 mg/L	100
Alkalinity, Total (M)	64-040	0-6,250 mg/L	100
Carbon Dioxide	64-050	0-1,250 mg/L	100
Caustic Soda	64-060	0-5%	50
Chloride ³	64-070	0-6,250 mg/L	50
Chloride in Boiler Water ²	64-080	0-6,250 mg/L	50
Dissolved Solids, Total (TDS)	64-150	0-12,500 mg/L	50
Hardness Total	62-030	1.2-2,000 mg/L, 3 ranges ²	150
Hardness Total	63-070	0.4-1000 mg/L, 3 ranges ¹	50
* Hardness All Forms (Ca, Mg & Total)	64-190	0.6-250 mg/L	100
Hypochlorite (Bleach)	64-210	0-12.5%	50

Note 1: Tablet titration. Note 2: Tablet back titration. Note 3: Chloride test also covers Salinity, Sodium Chloride, Bromide & Iodide. Tests/Kit: Depends on concentration of sample: numbers given are typical. Subject to change without notice. *EPA accepted method.

Ordering Information

DPD Test Kits For Free & Total Chlorine

MODEL No.	RANGE (ppm/mg/L)	METHOD
608-01A	0.1-1.0	DPD*
608-01	0.2-3.0	DPD*

Ortho-tolidine Test Kits For Chlorine

MODEL No.	RANGE (ppm/mg/L)	METHOD
608-01D	0.2-3.0	Acid 0-tolidine

pH Test Kits

MODEL No.	RANGE (pH)	METHOD
608-45	6.0-7.4	Bromthymol Blue
608-44	6.8-8.2	Phenol Red

Chlorine/pH Kit

MODEL No.	RANGE	METHOD
608-C01/44	0.2-3.0 ppm Cl ₂ 6.8-8.2 pH	DPD* Phenol Red

*Use DPD tablets-see page 9.

Oil & Varnish ASTM Color Grading

Orbeco-Hellige color grading outfits employ guaranteed, non-fading precision color standards. Standards are housed in unbreakable plastic discs. Test outfits are portable and are ideally suited for field testing, laboratory or plant.



Model 605-VA2 ASTM Gardner-Hellige Varnish Color Test Outfit

605-VA2 measures the colors of varnishes, drying oils, resins, nitro-cellulose, lacquers, fatty acids and similar transparent colored liquids.

Conforms to ASTM D-1544 and AOCS Method Td 1a. Uses 18 permanent color standards in two discs with values of 1-9 (No. 620C-43) and 9-18 (No. 620C-44).

Comparator has magnifying prism, 2 discs, 2 round sample tubes (No. 605-VT), and Daylite Illuminator (No. 600-DA) for highest accuracy and easy, positive readings.

Model 607-OC ASTM Oil Color Test Outfit

Model 607-OC meets ASTM specification D-1524 and ASTM D-1500. Uses 17 permanent color standards in two discs ranging from values 0.5 to 5.0 in 10 steps (No. 620C-53) and 5.0 to 8.0 in 7 steps (No. 620C-54).

Comparator incorporates exclusive magnifying prism which brings colors side by side for the most accurate comparisons. Complete with 2 precisions 33mm rectangular glass cells (No 607-T33), rugged carrying case and directions.



Ordering Information 607-OC / 605-VA2

607-OC	ASTM Oil Color Test Outfit.
607-T33	Replacement Oil Tubes.
605-VA2	ASTM Varnish Color Test Outfit complete with Prism and Daylite Illuminator.
605-V2	ASTM Varnish Color Test Outfit without Prism and Daylite Illuminator.
605-VT	Replacement Varnish Tubes box of dozen.

**Guaranteed Non-Fading
Glass Color Standards.
They won't change,
won't freeze...won't ever
give you wrong results.**

694 Hellige-Truog Soil pH Tester



The most accurate inexpensive outfit for testing pH of any soil, sand, clay or peat. Does 200 tests.

- Triplex indicator solution produces distinct shades of color over all ranges of the pH scale.
- Eliminates errors by use of an inert white powder to draw the reagent from soil to its surface for comparison.
- Accurate color comparisons with laminated color chart supplied.

697-A All Purpose Soil Tester



- Permanent color standards, guaranteed never to fade, results always accurate.
- All reagents stable for minimum one year. Tester ready for immediate use.
- Accurate results - uses proven scientific methods and latest findings in plant nutrition and soil science.
- Portable, rugged, water resistant carrying case, measuring 24W x 10D x 8H inches, weighs 16 lbs.

Soil Tests Performed

- | | | |
|----------------------|--------------------|--------------------------|
| • Phosphorus | • Potassium | • Soil Reaction (pH) |
| • Calcium | • Magnesium | • Chlorides |
| • Nitrates | • Ammonia | • Active Aluminum |
| • Sulfates | • Nitrite Nitrogen | • Manganese |
| • Plant Tissue Tests | • Ferric Iron | • Humus (Organic Matter) |

Ordering Information 694/697-A

697-A	All Purpose Soil Tester.
694	Hellige-Truog Soil pH Tester.

Both testers come complete with instructions to correct improper soil pH conditions.

USEPA Approved Design Turbidimeter



Model 965-10A Bench-top Turbidimeter

Orbeco-Hellige Model 966 Portable and Model 965-10A Bench-top Turbidimeters meet the official specifications of USEPA, ASTM, Standard Methods of APHA, AWWA, WEF and other world recognized authorities. Both are true nephelometers, detecting light from a tungsten filament lamp, at the officially mandated 90° angle between the photo-detector and incident light beam. Direct-reading digital display gives results in NTUs (Nephelometric Turbidity Units) over the full 0-1000 NTU span of turbidity in 3 ranges. Both models meet the design requirements of USEPA Method 180.1 and are ideal for NPDES and NPDWR compliance reporting.

Portable Model 966 and Bench-top Model 965-10A Turbidimeters quickly and precisely measure the clarity or cloudiness of any type of fluid. Both meet the official specifications of USEPA, ASTM, Standard Methods of APHA, AWWA, WEF and other world-recognized authorities. True nephelometers, both test at the officially mandated 90° angle between photo-detector and incident light beam. Both Models are equipped with a tungsten filament lamp. Direct-reading displays give results in NTU's (Nephelometric Turbidity Units) over the full span of turbidity in 3 ranges. Both meet design requirements of USEPA Method 180.1 and are ideal for NPDES and NPDWR compliance reporting. Also can be used to test water for Barium, Sulfate, Nitrate, Silver and Chloride using turbidimetric chemical analysis.



Model 966
Portable Turbidimeter

USEPA Approved Calibration Standard

The supplied 40NTU USEPA approved styrene divinylbenzene copolymer standard easily confirms calibration validity of all 3 ranges as required by the USEPA. Standard is highly accurate, reproducible, safe, non-toxic and non-carcinogenic. No volumetric dilutions are ever required. Standard has a guaranteed shelf life of one year.

Improved for Greater Accuracy

Infrared (IR) Turbidimeters

Meet ISO 7027 Specs



Portable Model 966-IR

New model 966-IR Portable and 965-IR Bench-top Turbidimeters fully meet worldwide ISO 7027 requirements. Using a long life IR (infrared) LED (860nm wavelength), Orbeco-Hellige IR turbidimeters accurately measure turbidity from 0-1000 FNU/NTU over 3 ranges. Readings are unaffected by color thereby making Orbeco IR turbidimeters ideal when testing the turbidity of all liquids, whether clear or colored.

Ideal for colored liquids

Portable Model 966-IR and Bench-top model 965-IR Infrared Turbidimeters are low in cost, highly accurate and simple to use. Both models fully comply with ISO 7027 turbidity measurement standards. Using a long life, constant output infrared LED (860nm wavelength) light source, Orbeco-Hellige IR turbidimeters accurately measure turbidity from 0-1000 FNU/NTU over 3 ranges. Both models detect scattered light by means of a photo-detector positioned 90° from the incident light beam. Supplied with 0 and 40 NTU standards for easy calibration. Automatic shut-off on the Portable Model 966-IR conserves its battery life.

IR Turbidimeters Measure Turbidity in Both Colored and Clear Liquids

Testing turbidity in liquids with color is quick 'n' easy with Orbeco-Hellige IR turbidimeters. Using a constant output, infrared LED light source, Orbeco-Hellige IR turbidimeter readings are unaffected by color. This makes them ideal for measuring turbidity in water and wastewater and to control quality in processing pharmaceuticals, foods and beverages, beer and wine, cosmetics, textiles and a wide range of similar applications.

Important Features of both EPA Approved and IR Models:

- All models measure turbidity in 3 ranges: 0-20,0-200, and 0-1000 NTU. Resolution is 0.01 NTU in the 0-20 range.
- Improved optics further reduce the amount of stray light effecting the photocell, improving the accuracy of readings, particularly of low turbidity samples.
- Direct-reading digital display. Eliminates incorrectly interpreting analog meter scale divisions.
- Portable models feature auto shut-off. Models operate on 4 AA batteries, supplied, providing over 700 tests. Automatic shut-off conserves battery life. This assures lab accuracy and precision in our "field friendly" turbidimeters. Easily hand held, each weighs just 1 lb. 3 oz. (0.6 kg).
- Simple 2-step operation without the need for standardizing. No prior training is required.
- Easy calibration. Factory standardized calibration of all 3 ranges is easily confirmed as per USEPA requirements using supplied permanent, stable USEPA approved standards.
- Bench-top models switch-adjustable for 110v or 220v operation.
- 2-year instrument warranty with toll-free technical backup.
- Automatic decimal point shift and over-range indication.
- Precision made in U.S.A.



Bench-top Model 965-IR

www.orbeco.com
1-800-922-5242



Factory Standardized For All 3 Ranges

All Orbeco-Hellige turbidimeters have been factory set allowing for immediate use without calibration. Operation is simplicity itself. Just select the range and insert the sample tube. The test result is then easily read on the digital display.

Uses and Applications

Orbeco-Hellige turbidimeters are ideal for on-site or laboratory testing for a wide variety of applications and industries.



- **Drinking/Potable water.**
- **Municipal and Industrial water/wastewater treatment.**
- **Quality control in processing food, beverages, cosmetics, textiles, pharmaceuticals, plastics, lumber and paper products, etc.**
- **Ecological studies for environmental applications including hazardous spills, irrigation silt, etc.**
- **Chemical analysis of water containing barium, sulfate, nitrate, silver, chloride, etc. by turbidimetric chemical methods.**
- **Storm water runoff testing.**
- **Lakes, rivers and streams.**
- **Sulfate testing in power generation, by turbidimetric analysis.**
- **Monitoring oil leakage in power and marine boilers.**

SPECIFICATIONS and FE

USEPA Turbidimeters

	Bench-top 965-10A	Portable 966
RANGES AND SENSITIVITY	LOW: 0.00 to 19.99 NTU, resolution 0.01 NTU MEDIUM: 00.0 to 199.9 NTU, resolution 0.1 NTU HIGH: 000 to 999 NTU, resolution 1 NTU	LOW: 0.00 to 19.99 NTU, resolution 0.01 NTU MEDIUM: 00.0 to 199.9 NTU, resolution 0.1 NTU HIGH: 000 to 999 NTU, resolution 1 NTU
READOUT	3.5 digit 1/2" H LCD with automatic decimal point shift and over-range indication	3.5 digit 1/2" H LCD with automatic decimal point shift and over-range indication
LIGHT SOURCE	Tungsten Filament Lamp	Tungsten Filament Lamp
ACCURACY	± 3% of reading for low and medium ranges.	± 3% of reading for low and medium ranges.
REPEATABILITY	± 1%	± 1%
POWER	User selectable by switch for 100-130v or 210-240v, 50/60Hz, and also for 12v DC battery with optional voltage converter	4 AA alkaline batteries (over 700 tests), or optional, 110/220 volt AC adapter
SAMPLE VOLUME	15 mL.	15 mL.
SAMPLE TUBE	Optically reproducible 28mm OD X 61mm glass vial, with screw cap.	Optically reproducible 28mm OD X 61mm glass vial, with screw cap.
PERMANENT STANDARD	USEPA approved primary, non-hazardous, 40 NTU.	USEPA approved primary, non-hazardous, 40 NTU.
INSTRUMENT DIMENSIONS:	11" x9.3"D x 5.3" H (28 x 24 x13.5 cm)	7.5"L x4"W x 3" H (19 x10.2 x7.6 cm)
SHIPPING WEIGHT:	13 lbs., (5.9 Kg.)	5 lbs., (2.2 Kg.)

Flow-Through Cell for Continuous Reading of Pumped or Flowing Samples.



Model 965-56
Flow-through Cell

Flow-through cell has a unique “self-cleaning” design whereby incoming fluid impinges forcefully against the interior cell wall and swirls for continuous scouring action. Installed in seconds. No need to disconnect flow for calibration check. Just lift out the cell with flow tubes intact and substitute the calibration cell. Flow rate is 1-2 liters/minute, 0-5 psi.

For use with bench-top turbidimeter models 965-IR, 965-10AR and portable turbidimeter models 966-IR and 966-IR-R, which have recorder outputs.



FEATURES

Infrared Turbidimeters



Bench-top 965-IR

LOW: 0.00 to 19.99 NTU,
resolution 0.01 NTU
MEDIUM: 00.0 to 199.9 NTU,
resolution 0.1 NTU
HIGH: 000 to 999 NTU,
resolution 1 NTU

3.5 digit 1/2" H LCD with
automatic decimal point shift
and over-range indication

Infrared LED (860nm)

± 3% of reading for low and
medium ranges.

± 1%

User selectable by switch for
100-130v or 210-240v, 50/60Hz,
and also for 12v DC battery with
optional voltage converter

15 mL

Optically reproducible 28mm
OD X 61mm glass vial,
with screw cap.

USEPA approved primary,
non-hazardous, 40 NTU.

11" x 9.3"D x 5.3" H
(28 x 24 x 13.5 cm)

13 lbs., (5.9 Kg.)

Portable 966-IR

LOW: 0.00 to 19.99 NTU,
resolution 0.01 NTU
MEDIUM: 00.0 to 199.9 NTU,
resolution 0.1 NTU
HIGH: 000 to 999 NTU,
resolution 1 NTU

3.5 digit 1/2" H LCD with
automatic decimal point shift
and over-range indication

Infrared LED (860nm)

± 3% of reading for low and
medium ranges.

± 1%

4 AA alkaline batteries
(over 700 tests), or optional,
110/220 volt AC adapter

15 mL

Optically reproducible 28mm
OD X 61mm glass vial,
with screw cap.

USEPA approved primary,
non-hazardous, 40 NTU.

7.5"L x 4"W x 3" H
(19 x 10.2 x 7.6 cm)

5 lbs., (2.2 Kg.)

ORDERING INFORMATION

- 965-10A* / 965-IR*** Bench-top models complete with 0 and 40 NTU standards, 6 sample tubes, well cap and operators manual. Switch adjustable for 110/220v, 50/60Hz operation, and (with optional No.9994 converter listed below) with any 12v DC auto or boat battery.
- 965-10AR* / 965-IR-R*** Same as above, **but with recorder output terminals** for 0-1v, 0-5ma, adjustable for 10K ohm or higher impedance.
- 966-01* / 966-IR*** Portable models complete with zero and 40 NTU standards, 6 sample tubes, 4 AA batteries, well cap, instruction manual and No. 966-CC rugged foam-lined carrying case.
- 966-R1* / 966-IR-R*** Same as 966-01, 966-IR, but with recorder output terminals and with regulated AC adapter for 110v/220v, 50/60 Hz.

* Add “CE” to model number to meet CE requirements. No extra charge.

Questions? Call Orbeco’s customer service for assistance in selecting which Orbeco turbidimeter is right for your needs.

ACCESSORIES

Regulated AC Adapters, for Models 966-01, 966-IR:

4000-021 For 110v/220v 50/60 Hz **4000-022** For 220v 50/60 Hz, CE Certified

- 965-50** **Optically Selected Glass Sample Tubes**, with screw-caps. Box of 6.
- 966-51** **Set of Zero and 40.0 NTU Standards.**
- 965-56** **Flow-through Cell**, for continuous reading of pumped or flowing samples. Flow rate 1-2 Liters/minute, 0-5 psi. Has “self-cleaning” design. For use with all models with recorder outputs.
- 9994** **Voltage Converter**, for portable use of bench-top models from any 12v auto or boat battery.
- 965-59** **Carrying Case**, watertight, impact resistant, foam lined. Holds bench-top turbidimeter, converter, 6 sample tubes, calibration standards.
- 965-65** **Sulfate Testing Outfit**, for 0-210 mg/L SO₄ range.
- 965-55** **Replacement Well Cap**, for bench-top models.
- 966-55** **Replacement Well Cap**, for portable models.

www.orbeco.com
1-800-922-5242

Organic Matter Tester



Model 815 ASTM Organic Matter in Sand Tester

The 815 Tester is used for quick and accurate tests of organic matter in sand and aggregate for concrete, in accordance with ASTM C-40-60. Five permanent standards are mounted in a non-corrosive frame. The Model 815 Tester eliminates preparation of unstable liquid standards used by other test methods. Complete with directions.

Ordering Information

815 ASTM Organic Matter in Sand Tester

Colony Counters APHA Approved

Model 4200-015 Quebec design, conforms to official APHA and AWWA specifications. Provides distortion-free magnification and uniform glare free "Dark-Field" illumination. Supplied with Wolffhuegel ruling.



Complete with built-in electronic counter, felt tip counter pen, open dish probe counter, manual hand-held counter, white grid background plate for stained colonies.

Ordering Information

- 4200-015 Colony Counter, for 105-115v, 50/60Hz
- 4200-025 Colony Counter, for 210-220v, 50/60Hz
- 4200-01 Colony Counter, same as 4200-015, but without counter and pen.
- 4200-02 Colony Counter, same as 4200-025, but without counter and pen.

Dissolved Oxygen Meter For Water & Air

Model B-310 uses a unique galvanic sensor to read 0-20.0 ppm dissolved oxygen in aqueous solutions and 0-100% oxygen in air.

Galvanic sensor is totally sealed requiring no membrane or replacement filling solutions. Temperature compensated to maintain accuracy for air calibration. Requires only 0.5 ft./ second flow rate for accurate readings. Sensor withstands 25 psi (60 ft. depth in water). Digital display meter comes complete with 9-volt battery, galvanic sensor with 5-foot cable, carrying case and instructions.

Custom sensor cable lengths available up to 100 feet. Optional Oxan Extender Kit extends the life of the B-310 sensor.



Ordering Information

- B-310 Dissolved Oxygen Meter, 0-20.0 ppm DO; 0-100% Concentration.
- B-312 Replacement Oxygen Electrode
- B-311 Electrode Extender Kit

Portable Meters For pH/Conductivity/mV/Temperature

pH Meters (Microprocessor-based)



Models B-266, B-267, B-269 pH Meters,
Carrying Case & PowerMate™ Rechargeable Base

Low priced, quality pH meters with features found only in expensive bench-top models. Auto buffer recognition. Auto Temperature Compensation (ATC) for buffers and samples. Auto end-point sensing. Advanced software provides for data acquisition, computer and printer interface. Optional PowerMate™ rechargeable base is available for all models.

Ordering Information

B-266 Digital pH/Temp. Meter With ATC, covers -2.00 to 19.99 pH with ± 0.02 pH accuracy. Large LCD Slope adjusts 80 to 120%. Temperature display -5.0 to 105.0° C, BNC connector. Four 1.2 volt NiCad rechargeable batteries and recharging carrying case supplied. Complete with pH and temperature probes, 3 pH buffers (4,7,10) and instruction manual. Order B-266PM for meter with Power Mate™ instead of case.

B-267 Digital pH/mV/Temp. Meter With ATC, same features as model B-266 and also covers $\pm 1,600$ mV with accuracy of ± 0.2 mV. RS-232 standard. Complete with temp. probe. Order B-267PM for meter with Power Mate™ instead of case

B-269 Digital pH/mV/Temp. /Concentration Meter With ATC, same features as model B-267 and also covers 0.0 to 19,999 concentration with accuracy of $\pm 0.5\%$ of reading. Complete with temp. probe. Order B-269PM for meter with Power Mate™ instead of case.
Ask for ISE electrode details.

pH/mV Meters, General Purpose

Lightweight, economically priced, fully portable. Digital display. Complete with combination gel filled pH electrode, 3 pH buffer solutions (4,7,10), 9-volt battery, carrying case and instructions.

Ordering Information

- B-171 pH Meter, with Manual Temp. Compensation**, 0-14.0pH
- B-170 pH Meter, with Manual Temp. Compensation**, 0-14.00pH
- B-245 pH/mV Meter With Manual Temp. Compensation**, covers 0-14.00 pH, 0-1,999 mV, -50 to 150° C Temp.
- B-164 pH/mV/T Meter With Automatic Temp. Compensation**, covers 0-14.00 pH, 0-1,900 mV, -50 to 150° C Temp., with temperature probe.
- 785-3 replacement pH Combination electrode**, gel-filled, polymer body, BNC connector.



Conductivity/TDS Meters

Single and multi-range models instantly read conductivity (micromhos/cm) or total dissolved solids (TDS). Easy-to-use, hand-held, digital display meters come complete with electrode, 9-volt battery, carrying case and instructions.



Ordering Information

- B-150 Multi-range Digital Conductivity/TDS Meter**, Conductivity ranges 10, 100, 1,000, 10,000 micromhos/cm. TDS 0 to 7, 70, 700, 7,000 mg/L.
- B-151 Multi-range Digital Conductivity/TDS Meter**, Conductivity ranges 100, 1,000, 10,000, 100,000 micromhos/cm. TDS 0 to 70, 700, 7,000, 70,000 mg/L.
- B-155 Single-range Digital Conductivity/TDS Meter**, specify one range from 0 to 100, 1,000, 10,000 micromhos/cm. 100, 1,000, 10,000, ppm.
- B-273 Single-range Digital Conductivity/TDS Meter**, with Temperature Display and sensor. Specify one range from 0 to 100, 1,000, 10,000 micromhos/cm; 100, 1,000, 10,000, ppm.

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*Not shown in catalog, but available. Call for information. Note: All specifications are subject to change without prior notice.

Orbeco-Hellige

A.B.S.

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1.631.293.4110 (International)
Customer Service Hours:
M-F: 8:30 a.m. - 4:30 p.m. E.S.T.

Fax us: 1.631.293.8258

E-mail us: service@orbeco.com

Please include detail contact information, shipping information and a brief product description and the total quantity of the items you want.

Our local distributor: