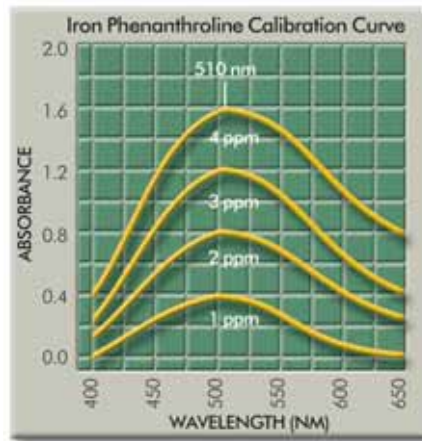


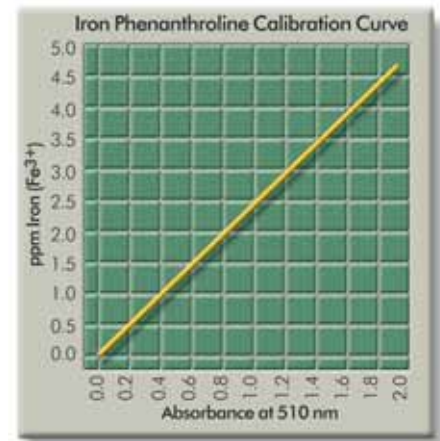
Instrumentation

SMART Spectro™ Spectrophotometer

A portable spectrophotometer that is easier to use and more accurate than anything in its price range. With automatic wavelength selection, pre-programmed tests, and superior performance – this is the best spectrophotometer for the money!



Fully functional spectrophotometer allows the user to select the optimum wavelength for creating calibration curves.



The user calibration software automatically calculates the best straight line fit.

1 MAIN MENU 09:50
* CALIBRATE WL
PROGRAMMED TESTS
%T/ABS
Select from main menu

2 15. CHLORINE
* SCAN BLANK
SCAN SIMPLE
END 515NM
Scan blank and sample

3 15. CHLORINE
* 12.5%T 0.9031A
1.51 PPM
PRINT PRESS ENTER
Results shown as %T, ABS, ppm

Create

* EDIT USER TEST 1
NAME THE TEST
SELECT WL
NEW CALIBRATION
Create new tests

Customize

* SEQUENCE 1
9. BROMINE-LR
32. COPPER DDC
64. NITRATE-N LR
Customize test sequences

Menu Driven Display

Tests and functions are selected from scrolling menus for ultimate simplicity. Results are displayed as %T, absorbance, and concentration.

Pre-Programmed Tests, User Tests & Automatic Wavelength Selection

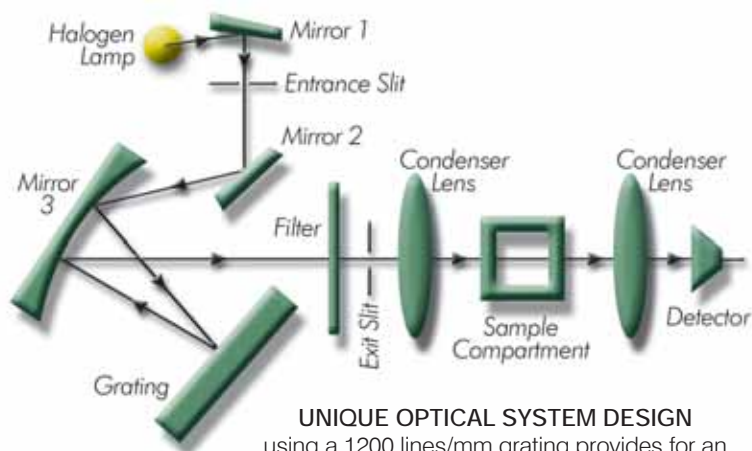
Over 80 pre-programmed tests. Up to 25 calibrations for additional tests can be entered into the memory. The user can also customize sequences for frequently run tests. The meter automatically moves the grating to the required wavelength.



Instrumentation

SMART Spectro[™] Spectrophotometer

A wider wavelength range	The same accuracy, every test	Extremely high resolution	Better linearity for higher concentrations	Better for higher absorbance samples	Better linearity for higher concentrations
350-1000 nm	±2 nm continuous wavelength accuracy	1 nm resolution with 5 nm (max) bandpass over entire range	Modified Ebert mounting, 1200 lines/mm grating	-0.1 to 2.5A photometric range	±0.005A continuous photometric accuracy



UNIQUE OPTICAL SYSTEM DESIGN
using a 1200 lines/mm grating provides for an excellent range, greater accuracy, and high resolution.

<i>Wavelength Range:</i>	350-1000 nm
<i>Wavelength Accuracy:</i>	±2 nm
<i>Wavelength Resolution:</i>	1 nm
<i>Wavelength Bandwidth:</i>	5 nm (max)
<i>Photometric Range:</i>	0-125%T, -0.1-2.5A
<i>Photometric Accuracy:</i>	±0.005A
<i>Photometric Noise:</i>	<0.001A at 0A; <0.002A at 2A
<i>Photometric Drift:</i>	±0.002A/hr @500 nm
<i>Photometric Stray Light:</i>	<0.5 %T
<i>Dispersive Device:</i>	Grating - based system
<i>Optical Mount:</i>	Modified Ebert
<i>Grating:</i>	1200 grooves/mm ruled grating
<i>Light Source:</i>	Quartz halogen
<i>Bulb Life:</i>	1000 hours minimum
<i>Sample Chambers:</i>	25 mm round cell, 10 mm square cuvette UDV, COD
<i>Detector:</i>	Silicon photodiode
<i>Temperature Range:</i>	0-40°C
<i>Modes:</i>	Conc., %T, ABS
<i>Pre-Programmed Tests:</i>	Yes
<i>Wavelength Selection:</i>	Automatic
<i>User Tests:</i>	Yes, up to 25 can be entered and edited
<i>Datalogging:</i>	Yes, RS-232
<i>Diagnostics:</i>	Yes
<i>Power:</i>	110/220 volt or battery pack (rechargeable)
<i>Weight:</i>	4.65 kgs (10.3 lbs)
<i>Size (WxDxH):</i>	35 cm x 28 cm x 17 cm

To Order:

Order Code 2000 (120V/60Hz and 220V/50Hz)

Includes 6 sample cells (25mm round), 2 sample cell holders (25mm round and COD, 10mm cuvettes), power supply, battery charger, and diagrammed manual.

Options:

- Carrying Case • Order Code 2000-CS
- Battery Pack with holder (rechargeable) Order Code 2000-BP
- SMARTLink 2 Software with cable Order Code 1912-CD, See page 13
- Replacement sample cells (round) Order Code 0290-6
- Cuvettes • Order Code 29653-10



See pages 15-16 for complete reagent system listing

An error-free design	Much easier to operate	A full function display screen	Truly superior utility	Download results	A wider wavelength range
Wavelength selection is fully automatic	Menu prompting with six-button simplicity	Display %T, ABS, concentration; 4 line, 40 character	Pre-programmed tests, additional 25 user tests	RS232 compatible	Optional battery pack, rugged optical bench

Instrumentation

Instrument Reagent Listing

New tests are being developed for the SMART Spectro and SMART 2. Please contact our Technical Service Department for information regarding additions of new tests to the SMART2.

Test Name	Test Method (# of reagents)	Spectro Range	Smart 2 Range	COD Plus Range	# of Tests	Order Code#	Ship Code
Alkalinity UDV*	UDV (1)	0-200	0-200	---	50	4318-H	NH
Aluminum	Eriochrome Cyanine R (4)	0-0.3	0-0.3	---	50	3641-SC	NH
Ammonia Nitrogen (Fresh/Salt)	Salicylate (3)	0-1.0	0-1.0	0-1.0	25	3659-01-SC	R2
Ammonia Nitrogen HR	Nesslerization (2)	0-4.0	0-4.0	0-4.0	50	3642-SC	R2
Benzotriazole	UV Oxidation/Dichromate	0-30	0-30	---	50	4047	R1
Biguanide	Colorimetric	0-70	0-70	---	50	4044	NH
Boron	Azomethine-H	0-0.8	0-0.8	0-0.8	50	4868	NH
Bromine LR	DPD Tablets (2)	0-9.0	0-9.0	---	100	3643-SC	NH
Bromine UDV*	Unit Dose Vial DPD (1)	0-22	0-22	---	50	4311-H	NH
Cadmium	PAN (4)	0-1.0	0-1.0	---	50	4017	R1
Ca & Mg Hardness UDV	UDV (1)	10-500	10-500	---	50	4309-H	NH
Carbohydrazide	Iron Reduction (3)	0-0.9	0-0.9	---	100	4857	R1
Chloride TT	Test Tab	0-50	0-50	---	50	3693-SC	NH
Chlorine - Free & Total	DPD Tablets (3)	0-4	0-4	---	100	3643-SC	NH
Chlorine - Free UDV*	Unit Dose Vial (1)	0-10	0-10	---	50	4311-H	NH
Chlorine - Liquid DPD	DPD (3)	0-4	0-4	---	144	4859	R1
Chlorine - Total UDV*	Unit Dose Vial (1)	0-10	0-10	---	50	4312-H	NH
Chlorine Dioxide	DPD tablet/Glycine (2)	0-7.0	0-8.0	---	50	3644-SC	NH
Chromium Hexavalent	Diphenylcarbohydrazide (1)	0-1.0	0-1.0	---	100	3645-SC	HA
Chromium TT	TestTab	0-1.0	0-1.0	---	50	3889A-H	NH
Chromium (Total, Hex & Trivalent)	Diphenylcarbohydrazide (1)	0-1.0	0-1.0	---	100	3698-SC	HF
Cobalt	PAN	0-2.0	0-2.0	0-2.0	50	4851	HF
COD LR 0-150 w/ Mercury**	Digestion (1)	0-150	0-150	0-150	25	0075-SC	R1
COD LR 0-150 w/o Mercury**	Digestion (1)	0-150	0-150	0-150	25	0072-SC	R1
COD SR 0-1500 w/ Mercury**	Digestion (1)	0-1,500	0-1,500	0-1,500	25	0076-SC	R1
COD SR 0-1500 w/o Mercury**	Digestion (1)	0-1,500	0-1,500	0-1,500	25	0073-SC	R1
COD HR 0-15,000 w/ Mercury**	Digestion (1)	0-15,000	0-15,000	0-15,000	25	0077-SC	R1
COD HR 0-15,000 w/o Mercury**	Digestion (1)	0-15,000	0-15,000	0-15,000	25	0074-SC	R1
Color	Platinum Cobalt	0-1,000	0-1,000	0-1,000	∞	NA	NH
Copper BCA - LR	Bicinchoninic Acid (1)	0-3.5	0-3.5	---	50	3640-SC	NH
Copper Cuprizone	Cuprizone (2)	0-2.0	0-2.0	---	50	4023	R1
Copper DDC	Diethyldithiocarbamate (1)	0-6.0	0-6.0	0-6.0	100	3646-SC	NH
Copper UDV*	UDV, Bicinchoninic Acid (1)	0-4.0	0-4.0	---	50	4314-H	NH
Cyanide	Pyridine-Barbituric Acid (5)	0-0.50	0-0.35	---	50	3660-SC	R1
Cyanuric Acid	Melamine (1)	0-200	0-200	0-200	50	3661-SC	NH
Cyanuric Acid UDV*	Melamine, UDV (1)	0-150	0-150	---	50	4313-H	NH
DEHA	Iron Reduction (3)	0-0.7	0-0.7	---	100	4857	R1
Dissolved Oxygen (DO)	Winkler Colorimetric (3)	0-12	0-11	0-11	200	3688-SC	R1
Erythorbic Acid	Iron Reduction (3)	0-3.0	0-3.0	---	100	4857	R1
Fluoride	SPADNS (2)	0-2.0	0-2.0	0-2.0	50	3647-01-SC	R1
Hydrazine	P-dimethylaminobenzaldehyde (2)	0-0.75	0-1.0	0-1.0	50	3656-SC	R2
Hydrogen Peroxide LR	DPD Tablets (2)	0-1.5	0-1.5	---	100	3662-SC	NH
Hydrogen Peroxide HR	DPD (2)	0-60	0-60	---	50	4045	NH
Hydrogen Peroxide Shock	DPD (2)	0-225	0-225	---	100	4045	NH
Hydroquinone	Iron Reduction (3)	0-1.8	0-2.0	---	100	4857	R1

* Requires UDV Adapter Code Number 5-0086 and Accessory Package 1961 or 1962

** Requires COD Adapter Code 5-0087 and Heater Block

Continue next page...

Instrumentation

Instrument Reagent Listing



Test Name	Test Method (# of reagents)	Spectro Range	Smart 2 Range	COD Plus Range	# of Tests	Order Code#	Ship Code
Iodine	DPD Tablets (2)	0-14	0-14	---	100	3643-SC	NH
Iron	Bipyridyl (2)	0-6	0-6	---	50	3648-SC	R1
Iron UDV*	Bipyridyl UDV (1)	0-10	0-10	---	50	4315-H	NH
Iron Phen	1,10 Phenanthroline (2)	0-4.5	0-5.0	---	50	3668-SC	R1
Lead	PAR (5)	0-5.0	0-5.0	---	50	4031	R1
Manganese LR	PAN (3)	0-0.50	0-0.7	---	50	3658-SC	HF
Manganese HR	Periodate (2)	0-15	0-15	---	50	3669-SC	R1
Mercury	TMK	0-1.5	0-1.5	---	50	4861	HF
Methylethylketoxime	Iron Reduction (3)	0-3.0	0-3.0	---	100	4857	R1
Molybdenum HR	Thioglycolate (3)	0-30	0-50	0-50	50	3699-02-SC	R1
Nickel	Dimethylglyoxime (6)	0-8.0	0-8.0	---	50	3663-SC	HF
Nitrate Nitrogen LR	Cadmium Reduction (2)	0-3.0	0-3.0	---	20	3649-SC	R1
Nitrate TT	Zinc Reduction (1)	0-60	0-60	---	50	3689-SC	NH
Nitrite Nitrogen LR	Diazotization (2)	0-0.8	0-0.8	---	20	3650-SC	NH
Nitrite TT	Diazotization (1)	0-1.6	0-1.6	---	50	3886-H	NH
Nitrogen, Total**	CTA/Digestion (7)	0-25	0-25	---	25	4026	R1
Ozone LR	Indigo Trisulfonate (3)	0-0.4	0-0.4	0-0.4	100	3651-SC	NH
Ozone HR	Indigo Trisulfonate (3)	0-1.5	0-2.5	0-2.5	20	3651-SC	NH
pH CPR (Chlorphenol Red)	Colorimetric (3)	5-7	5-6.8	---	100	3700-SC	NH
pH PR (Phenol Red)	Colorimetric (3)	6.6-8.4	6.6-8.4	---	100	3700-SC	NH
pH TB (Thymol Blue)	Colorimetric (3)	8-9.5	8-9.6	---	100	3700-SC	NH
Phenol	4-Aminoantipyrine (3)	0-6	0-6	---	50	3652-SC	NH
Phosphate LR	Ascorbic Acid Reduction (2)	0-3.0	0-3.0	0-3.0	50	3653-SC	R2
Phosphate HR	Molybdovanadate (1)	0-70	0-70	0-70	50	3655-SC	R1
Phosphorus, Total - LR**	Ascorbic Acid/Digestion (5)	0.0-3.0	0.0-3.5	---	25	4024	R1
Phosphorus, Total - HR**	Molybdovanadate/Digestion (5)	0-100	0-100	---	25	4025	R1
Potassium	Tetraphenylboron (2)	0-10	0.5-10.0	0.5-10.0	100	3639-SC	R1
Silica LR	Heteropoly Blue (4)	0-2.5	0-4.0	0-4.0	100	3664-SC	R1
Silica HR	Silicomolybdate	0-50	0-75	0-75	50	3687-SC	R1
Sulfate HR	Barium Chloride (1)	5-100	0-100	0-100	100	3665-SC	R1
Sulfide LR	Methylene Blue (3)	0-1.0	0-1.5	0-1.5	50	3654-01-SC	R1
Surfactants	Ion Pair Extraction (3)	0-8.0	0-8.0	---	100	4876	HF
Tannin	Tungsto-Molybdophosphoric Acid (2)	0-10	0-10	0-10	50	3666-SC	R1
Tolytriazole	UV Oxidation/Dichromate	0-30	0-30	---	50	4047	R1
Turbidity	Absorptimetric	2-400	2-400	2-400	∞	NA	NH
Zinc LR	Zincon (6)	0-3.0	0-3.0	0-3.0	50	3667-SC	HF

* Requires UDV Adapter Code Number 5-0086 and Accessory Package 1961 or 1962

** Requires COD Adapter Code 5-0087 and Heater Block