

DR 2800™ Portable Spectrophotometer

Spectrophotometry

Features and Benefits

More than 240 Analytical Methods and Chemistries

The Hach DR 2800 Portable Spectrophotometer can be used for more than 240 analytical methods. (Test parameters are listed on page 3.) These methods include more than 30 TNTplus™ reagent vial tests that provide innovative barcode labeling for reliable, automatic method detection. All of the chemistries and supplies needed for these tests are available from Hach. The spectrophotometer can store up to 50 user programs and 500 data points, including sample and operator ID.

Use a USB Memory Stick to Update the Instrument or Transfer Data

Easily update DR 2800 spectrophotometer systems and transfer measurement data with a USB memory stick. Use it to stay current as Hach releases new test methods and chemistries. Two USB ports on the instrument allow for a computer to be connected in one port, when used with an upcoming software package, while the other is used to connect the spectrophotometer to a memory device or hand-held bar code scanner.

Small Footprint and Large Touch Screen Interface

The small footprint of the DR 2800 spectrophotometer—only 8.7 by 13.1 inches—lets it easily fit into any lab as well as being completely portable. The touch screen display is intuitive to use and ergonomic in design.

Runs on Either Line Power or Battery Power

Use the DR 2800 spectrophotometer in the lab with regular line power or in the field with the optional lithium-ion battery.

Accommodates Multiple Cell Sizes and Sample Delivery Methods

The DR 2800 spectrophotometer holds eight types of Hach cells—including 1-in. square cells, 1x5-cm cells, 13-mm round vials (TNTplus), and 16-mm round vials. Three adapters are included with the spectrophotometer for other vial types such as 1-in. round/AccuVac® cells, multi-path 1-in./1-cm cells, 1x1-cm square cells, and Pour-Thru™ cells. The optional Pour-Thru cell kit is ideal for rapid liquid methods when high throughput of analysis is needed.



The Hach DR 2800 Portable Spectrophotometer offers automatic method detection when used with TNTplus reagent vials. It also has an intuitive touch screen user interface and accommodates a wide range of pre-programmed water analysis methods. The small footprint is an advantage whenever you need a reliable portable analytical tool.

TNTplus Reagent Vials Designed for the DR 2800 Spectrophotometer

Hach has developed TNTplus reagent vials for selected analytical methods that provide the following features when used with the Hach DR 2800 Portable Spectrophotometer:

- *Automatic method detection*—the spectrophotometer automatically reads the bar code, identifies the appropriate method, and takes the measurement to help eliminate human error, saving time and money.
- *No reagent blank is necessary*—high quality vials, tight reagent production controls, 10-absorbance readings averaged for results determination, instrument calibration verification, and negligible instrument drift, all combine to eliminate the need to run reagent blanks.
- *Built-in accuracy*—while rotating the vial, the spectrophotometer takes 10 absorbance measurements in less than 5 seconds. The average value is used to calculate the results.

DW

WW

PW

IW

E

FB

DW = drinking water WW = wastewater municipal PW = pure water / power
IW = industrial water E = environmental C = collections FB = food and beverage



Be Right™

Specifications*

Operating Mode

Transmittance (%), Absorbance, and Concentration

Source Lamp

Tungsten

Pre-Installed Programs

More than 240

Available User Programs

50

Data Storage

500 points

Export Capability

.csv (comma-separated values) file format

Wavelength Range

340 to 900 nm

Wavelength Accuracy

±1.5 nm

Wavelength Resolution

1 nm

Spectral Bandwidth

5 nm

Wavelength Calibration

Internal, automatic at power-on, visual feedback

Wavelength Selection

Automatic: based on selected program

Automatic: based on barcode printed on TNTplus™ reagent vials

Manual: in all modes except stored programs

Enclosure Rating

IP 41

Operating Temperature

10 to 40°C (50 to 104°F)

Operating Humidity

80% relative humidity, non-condensing, maximum

Storage Requirements

Temperature: -25 to 60°C

(-13 to 140°F)

Humidity: 80% relative humidity, non-condensing, maximum

Power Requirements

Line: 100 to 240 V; 47/63 Hz;

automatic changeover

Battery: Lithium-Ion 11V/4400mAh

Interface

USB 1.1 (10 ft. (3 m) cable, maximum)

Languages

English, French, German, Italian, Spanish, Portuguese, Chinese, Japanese, and Korean (please contact your Hach representative for availability of additional languages)

Connections

1 x USB type B (PC)

1 x USB type A

(USB storage device, printer, keyboard)

Sample Cell Compatibility

1-in. square

1-in. round

1 cm square

1x5 cm

13 mm round

16 mm round

Multipath 1-in./1 cm

Pour-Thru™ with 1-in./1 cm path lengths

Accessories

Included:

– 1-in. square matched glass sample cells

– Cell adapters for 1-in. round/AccuVac cells, 1x1 cm cells, and multi-path 1-in./1 cm cells

– Universal power supply, 100 to 240V, 47/63Hz, with plug adapters for EU, GB, US, China

– Protective cover for storing adapters

– Dust cover

Optional:

– Hach Pour-Thru cell

– External USB keyboard

– Rechargeable lithium-ion battery

– Carrying Case

– DataTrans™ Software

Dimensions

220 x 137 x 332 mm (8.7 x 5.4 x 13.1 in.) width, height, depth

Weight

Without battery: 4.06 kg (8.95 lbs.)

With battery: 4.38 kg (9.65 lbs.)

*Specifications subject to change without notice.

Engineering Specifications

- The spectrophotometer instrument shall be a multi-wavelength spectrophotometer designed for laboratory or field analysis of multiple analytes.
- The instrument shall be capable of measuring the following substances or characteristics:alachlor; aluminum; arsenic; atrazine; barium; benzotriazole; boron; bromine; cadmium; chloride; chlorine dioxide; chlorine; chromium; cobalt; color; copper; cyanide; cyanuric acid; dissolved oxygen; fluoride; formaldehyde; hardness; hydrazine; iodine; iron; lead; manganese; mercury; molybdenum/molybdate; monochloramines; nickel; nitrogen (as ammonia, nitrate, nitrite, total nitrogen, total Kjeldahl nitrogen); chemical oxygen demand; oxygen scavengers; ozone; polychlorinated biphenyls; phenols; phosphonates; phosphorus; potassium; quaternary ammonium compounds; selenium; silica; silver; sulfate; sulfide; surfactants; suspended solids; tannin and lignin; total organic carbon; tolyltriazole; total petroleum hydrocarbons; trihalomethanes; toxicity; volatile acids; and zinc.
- The following tests shall conform to USEPA-compliant methods: arsenic; chlorine (free); chlorine (total); chlorine dioxide; chromium (hexavalent); copper; fluoride; iron (total); lead; manganese; nickel; nitrogen (ammonia); nitrogen (nitrite); chemical oxygen demand; phenols; phosphorus (reactive); phosphorus (total); sulfate; sulfide; and zinc.
- The wavelength range of the instrument shall be 340 to 900 nm with accuracy of ±1.5 nm, resolution of 1 nm, and maximum bandwidth of 5 nm.
- The instrument, depending on the test selection, shall automatically select the wavelength.
- Readout modes shall include transmittance, absorbance, and concentration.
- The interface of the instrument shall be graphical with touch screen.
- The instrument shall provide graphical display and be capable of printing test results.
- The instrument shall be equipped with storage capacity for 500 data points (date, time, results, sample ID, user ID) and 50 user-defined calibrations.
- Information stored in the instrument shall be capable of being downloaded in standard report format.
- The instrument shall be capable of accepting 1-in. (25 mm) round cells/vials, 1-in. square cells, 13 mm round vials, 16 mm round vials, 1x5 cm cells, and Pour-Thru cells with 1-in./1 cm paths.
- Power requirement shall be line voltage or optional battery pack.
- The instrument shall be warranted for one full year against defects in materials and workmanship.
- The instrument shall be model DR 2800 Portable Spectrophotometer, manufactured by Hach Company.

Available Tests

The following table lists available tests and overall ranges for the Hach DR 2800 Portable Spectrophotometer. The ranges may represent more than one available test for the instrument. Consult your Hach representative, Customer Service, the Hach Master Catalog (Lit. #2550), or the Hach web site at www.hach.com for complete details of all available tests for this instrument.

Parameter	Range	TNTplus Test	Parameter	Range	TNTplus Test
Alachlor	0.1 to 0.5 ppb, threshold		Lead	3 µg/L to 2.0 mg/L	•
Alkalinity, Total	25 to 400 mg/L	•	Manganese	0.006 to 20.0 mg/L	
Aluminum	0.002 to 0.800 mg/L	•	MEKO (Methylethylketoxime)	15 to 1000 µg/L	
Ammonia, Nitrogen	0.015 to 50.0 mg/L	•	Mercury	0.1 to 2.5 µg/L	
Arsenic	0.020 to 0.200 mg/L		Molybdenum, Molybdate	0.02 to 40.0 mg/L	
Atrazine	0.5 to 3.0 ppb, threshold		Nickel	0.006 to 6.0 mg/L	•
Barium	2 to 100 mg/L		Nitrate, Nitrogen	0.01 to 35 mg/L	•
Benzotriazole	0.2 to 16.0 mg/L		Nitrite, Nitrogen	0.002 to 250 mg/L	•
Boron	0.2 to 14.0 mg/L		Nitrogen, Simplified Total Kjeldahl	0 to 16 mg/L	•
Bromine	0.05 to 4.50 mg/L		Nitrogen, Total	0.5 to 150 mg/L	•
Cadmium	1.3 µg/L to 0.30 mg/L	•	Nitrogen, Total Inorganic	0.2 to 25.0 mg/L	
Carbohydrazide	5 to 600 µg/L		Nitrogen, Total Kjeldahl	1 to 150 mg/L	
Chloramine, Mono	0.04 to 10.0 mg/L		Ozone	0.01 to 1.50 mg/L	
Chloride	0.1 to 25.0 mg/L		PCB (Polychlorinated Biphenyls)	1 to 50 ppm, threshold	
Chlorine Dioxide	0.01 to 1000 mg/L		Phenols	0.002 to 0.200 mg/L	
Chlorine, Free	0.02 to 10.0 mg/L	•	Phosphonates	0.02 to 125.0 mg/L	
Chlorine, Total	2 µg/L to 10.0 mg/L	•	Phosphorus, Acid Hydrolyzable	0.06 to 100.0 mg/L	
Chromium, Hexavalent	0.010 to 1.00 mg/L	•	Phosphorus, Reactive (Orthophosphate)	19 µg/L to 100.0 mg/L	•
Chromium, Total	0.01 to 0.70 mg/L	•	Phosphorus, Total	0.06 to 100.0 mg/L	•
Cobalt	0.01 to 2.00 mg/L		Potassium	0.1 to 7.0 mg/L	
Color	3 to 500 units		Quaternary Ammonium Compounds	0.2 to 5.0 mg/L	
COD (Oxygen Demand, Chemical)	0.7 to 15,000 mg/L	•	Selenium	0.01 to 1.00 mg/L	
Copper	1 µg/L to 8.0 mg/L	•	Silica	3 µg/L to 100 mg/L	
Cyanide	0.002 to 0.240 mg/L		Silver	0.005 to 0.700 mg/L	
Cyanuric Acid	5 to 50 mg/L		Sulfate	2 to 900 mg/L	•
DEHA (Diethylhydroxylamine)	3 to 450 µg/L		Sulfide	5 to 800 µg/L	
Dissolved Oxygen	6 µg/L to 40 mg/L		Surfactants, Anionic (Detergents)	0.002 to 0.275 mg/L	
Erythorbic Acid (Isoascorbic Acid)	13 to 1500 µg/L		Suspended Solids	5 to 750 mg/L	
Fluoride	0.02 to 2.00 mg/L		Tannin and Lignin	0.1 to 9.0 mg/L	
Formaldehyde	2 to 500 µg/L		TOC (Total Organic Carbon)	0.3 to 700 mg/L	
Hardness, Total (Calcium and Magnesium as CaCO₃)	4 µg/L to 4.00 mg/L		Tolyltriazole	1.0 to 20.0 mg/L	
Hydrazine	4 to 600 µg/L		Toxicity	0 to 100% Inhibition	
Hydroquinone	9 to 1000 µg/L		TTHM (Trihalomethanes, Total)	10 to 600 µg/L	
Iodine	0.07 to 7.00 mg/L		TPH (Total Petroleum Hydrocarbons)	2 to 200 ppm, threshold	
Iron, Ferrous	0.02 to 3.00 mg/L		Volatile Acids	27 to 2800 mg/L	•
Iron, Total	0.009 to 6.0 mg/L	•	Zinc	0.01 to 3.00 mg/L	

Ordering Information

DR 2800-01 DR 2800 Portable Spectrophotometer; includes printed instrument manual, procedure manual on CD-ROM, universal power supply with exchangeable plug adapters for EU, GB, US, and China, dust cover, and 1-in. square matched glass sample cells

DR 2800-01B1 Same as above, but includes a Lithium-ion Battery Pack

Replacement Parts

LZV610	Power Supply; 100 to 240V, 47 to 63 Hz, international (exchangeable plug adapters for EU, GB, US, and China)
LZV583	Adapter A; 1 cm square cells
LZV585	Adapter B; multi-path cell, 1-in./1 cm, or Pour-Thru cell
LZV584	Adapter C; 1-in. round cells
LZV565	Replacement Bulb; 6V, 10W
LZV642	Protective Cover for storing adapters
LZV646	Light Shield
HYH019	Dust Cover

Optional Accessories

5940400	Pour-Thru Cell Kit; includes 1-in. Pour-Thru cell, holder, funnel, and tubing
LZV537	Certified Test Filter Set
2960100	Citizen PD-24 Printer Package
LZV582	USB Keyboard
LZV566	USB Hand-held Barcode Scanner
LZV551	Battery Pack (lithium-ion 11 V/4400 mAh)
5839700	DR 2800 Carrying Case
LZY274	DataTrans™ Software

To complete your laboratory analytical instrumentation, choose from these new chemistries...

TNTplus™ Reagent Vials

Hach TNTplus reagent vials are bar-coded for automatic method detection when used with the DR 2800 Portable Spectrophotometer to save time, minimize errors, and reduce laboratory costs. 10-fold measurement and rejection of outliers allows for improved accuracy and precision. (Complete list of available parameters on page 3.)



Lit. No. 2489 Rev 2
A10 Printed in U.S.A.

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In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications to equipment at any time.

At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

In the United States, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 800-227-4224
Fax: 970-669-2932
E-mail: orders@hach.com
www.hach.com

U.S. exporters and customers in Canada, Latin America, sub-Saharan Africa, Asia, and Australia/New Zealand, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 970-669-3050
Fax: 970-461-3939
E-mail: intl@hach.com
www.hach.com

In Europe, the Middle East, and Mediterranean Africa, contact:

HACH LANGE GmbH
Willstätterstraße 11
D-40549 Düsseldorf
GERMANY
Tel: +49 (0) 211 5288-0
Fax: +49 (0) 211 5288-143
E-mail: info@hach-lange.de
www.hach-lange.com



Be Right™