PART 1 PRODUCTS

1.1 Manufacturer

A. Hach Company, Loveland, CO
   1. Model DR 6000 Laboratory Spectrophometer

1.2 Manufactured Unit

A. The power requirements for the DR 6000 spectrophotometer 100/240 Vac, 50/60 Hz.
B. The wavelength capability is 190-1100 nm.
C. The characteristics of the optical system are:
   1. Accuracy 5 mAbs at 0.0-0.5 Abs, <1% at 0.5-2.0 Abs at 546 nm
   2. Linearity: 0.01 nm at <2 Abs (with neutral glass at 546 nm)
   3. Bandwith: 2nm
   4. Wavelength accuracy: +/- 1 nm
   5. Wavelength Reproducibility: < 0.1 nm

D. Readout modes of the DR 6000 are:
   1. Transmittance (%)
   2. Absorbance
   3. Concentration
   4. Scanning wavelength
E. The DR 6000 is equipped with a USB interface, type A (2), USB type B
   1. RFID module optional
F. The sample compartment and cell compatibility of the DR 6000 is as follows.
   1. 13 mm round
   2. 16 mm round
   3. 1-cm & 5 cm rectangular
   4. 1” round
   5. 1” rectangular
   6. 10 cm rectangular optional
G. The DR 6000, depending on the test selection, automatically selects the appropriate wavelength.
H. The DR 6000 can store up to 5000 data points (date, time, results, sample ID, user ID) and 200 user-programs.
I. The DR 6000 is capable of measuring the following parameters.
   1. Alachlor: 0.1 to 0.5 ppb
   2. Alkalinity: 250 to 400 mg/l
   3. Aluminum: 0.002 to 0.800 mg/L
   4. Ammonia, nitrogen: 0.015 to 50.0 mg/L
   5. Arsenic: 0.020 to 0.200 mg/L
   6. Atrazine: 0.5 to 3.0 ppb
   7. Barium: 2 to 100 mg/L
   8. Benzotriazole: 0.2 to 16.0 mg/L
   9. Boron: 0.02 to 14.0 mg/L
   10. Bromine: 0.05 to 4.50 mg/L
   11. Cadmium: 1.3 µg/L to 0.30 mg/L
   12. Carbohydrazide: 5 to 600 µg/L
   13. Chloramine, mono-: 0.04 to 10.0 mg/L
   14. Chloride: 0.1 to 25.0 mg/L

15. Chlorine dioxide: 0.01 to 1000 mg/l
16. Chlorine, free: 0.02 to 10.0 mg/L
17. Chlorine, total: 2 µg/L to 10.0 mg/L
18. Chromium, hexavalent: 0.010 to 1.00 mg/L
19. Chromium, total: 0.01 to 0.70 mg/L
20. Cobalt: 0.01 to 2.00 mg/L
21. Color: 0 to 500 units
22. COD (Chemical Oxygen Demand): 0.7 to 15,000 mg/L
23. Copper: 1 µg/L to 8.00 mg/L
24. Cyanide: 0.002 to 0.240 mg/L
25. Cyanuric Acid: 5 to 50 mg/l
26. DEHA (Diethylhydroxylamine): 3 to 450 µg/L
27. Dissolved oxygen: 6 µg/L to 40 mg/L
28. Erythorbic acid (isoascorbic acid): 13 to 1500 µg/L
29. Fluoride: 0.02 to 2.00 mg/L
30. Formaldehyde: 2 to 500 µg/L
31. Hardness, total (calcium and magnesium as $CaCO_3$): 4 µg/L to 4.00 mg/L
32. Hydrazin: 4 to 600 µg/L
33. Hydroquinone: 9 to 1000 µg/L
34. Iodine: 0.07 to 7.00 mg/L
35. Iron, ferrous: 0.02 to 3.00 mg/L
36. Iron, total: 0.009 to 6.00 mg/L
37. Lead: 3µg/L to 2 mg/l
38. Manganese: 0.006 to 20.0 mg/L
39. Mercury: 0.1 to 2.5 µg/L
40. Methylethylketoxime (MEKO): 15 to 1000 µg/L
41. Molybdenum, molybdate: 0.02 to 40.0 mg/L
42. Nickel: 0.006 to 6 mg/L
43. Nitrate, nitrogen: 0.01 to 35.0 mg/L
44. Nitrite, nitrogen: 0.002 to 250 mg/L
45. Nitrogen Simplfied Total Kjeldahl: 0 to 16 mg/l
46. Nitrogen, total: 0.5 to 150 mg/L
47. Nitrogen, total inorganic: 0.2 to 25.0 mg/L
48. Nitrogen, total Kjeldahl: 1 to 150 mg/L
49. Ozone: 0.01 to 1.50 mg/L
50. PCB (polychlorinated biphenyls): 1 to 50 ppm
51. Phenols: 0.002 to 0.200 mg/L
52. Phosphonates: 0.02 to 125.0 mg/l
53. Phosphorus, acid hydrolyzable: 0.06 to 100 mg/L
54. Phosphorus, reactive (orthophosphate): 19 µg/L to 100 mg/L
55. Phosphorus, total: 0.06 to 100 mg/L
56. Potassium: 0.1 to 7.0 mg/L
57. Quaternary ammonium compounds: 0.2 to 5.0 mg/L
58. Selenium: 0.01 to 1.00 mg/L
59. Silica: 3 µg/L to 100 mg/L
60. Silver: 0.005 to 0.700 mg/L
61. Sulfate: 2 to 900 mg/L
62. Sulfide: 5 to 800 µg/L
63. Surfactants, anionic: 0.002 to 0.275 mg/L
64. Suspended solids: 5 to 750 mg/L

65. Tannin and lignin: 0.10 to 0.90 mg/L
66. TOC (Total Organic Carbon): 0.3 to 700 mg/L
67. Tolyltriazole: 1.0 to 20.0 mg/L
68. Toxicity: 0 to 100% Inhibition
69. TTHM (trihalomethanes, total): 10 to 600 µg/L
70. TPH (Total Petroleum Hydrocarbons): 2 to 200 ppm,threshold
71. Volatile Acids: 27 to 2800 mg/L
72. Zinc: 0.01 to 3.00 mg/L

J. Manufacturer shall provide high quality pre-mixed reagents and standards.

1.3 Instrument includes

A. Universal Cell Adapater
B. Manual
C. Power supply
D. Dust Cover
E. 1 inch square matched glass sample cells

1.4 Accessories

A. USB Barcode Scanner (if specified)
B. USB Keyboard (if specified)
C. Test Filter set (if specified)
D. Sipper units for flow thru application (if specified)
E. Multi-cell holder for 5x1 Inch square cells (if specified)
F. Multi-cell holder for 7x1 cm square cells (if specified)

1.5 Dimensions

A. Length: 460 mm (18.11 in)
B. Width: 500 mm (19.69 in)
C. Height: 215 mm (8.46 in)
D. Weight: 11 kg (24.25 lb)

PART 2 EXECUTION

2.1 Preparation

A. None required.

2.2 Installation

A. None required.

2.3 Manufacturer’s Service and Start-Up

A. Contractor will include the manufacturer’s services to perform start-up on instrument to include basic operational training and certification of performance of the instrument.

B. Contractor will include a manufacturer's Service Agreement that covers all the manufacturer's recommended preventative maintenance, regularly scheduled calibration and any necessary repairs beginning from the time of equipment startup through to end user acceptance / plant turnover and the first 12 months of end-user operation post turnover.
C. Items A and B are to be performed by manufacturer's factory-trained service personnel. Field service and factory repair by personnel not employed by the manufacturer is not allowed.
D. Use of manufacturer's service parts and reagents is required. Third-party parts and reagents are not approved for use.

END OF SECTION