

# 1720E Low Range Turbidimeter

## Features and Benefits

### USEPA Reporting

The 1720E Low Range Turbidimeter applies the instrument design and meets performance criteria established by the U.S. Environmental Protection Agency (USEPA) in Method 180.1, making it suitable for regulatory reporting.

### Accuracy

Continuously flowing sample flows through the patented\* bubble removal system, which vents entrained air from the sample stream and eliminates the most significant interference in low level turbidity measurement. The 1720E Turbidimeter is not affected by variations in flow and pressure.

### Nephelometric Measurement

Incandescent light directed from the sensor head assembly down into the turbidimeter body is scattered by suspended particles in the sample. The sensor's submerged photocell detects light scattered at 90° from the incident beam. Sample enters the center column of the turbidimeter, rises into the measuring chamber and spills over the weir into the drain port. This configuration results in an optical flat surface free of turbulence.

### Simplicity

A simplified two-module design includes the sensor and the controller interface. The controller accepts two turbidity sensors—adding a second 1720E sensor makes a system with two complete turbidimeters. Connections are simple plug & play.

### Data Collection and Display

The 1720E Turbidimeter uses the sc100 Controller to receive data from up to two sensors. A built-in data logger collects turbidity measurement at user selectable intervals (1-15 minutes), along with calibration and verification points, alarm history, and instrument setup changes for 6 months. Communications using MODBUS®/RS485, MODBUS®/RS232, LonWorks® protocols or the wireless IR port are available. The sc100 Controller is also compatible with AquaTrend® Networks. Local display, recall, graphing, and trending in CSV format make chart recorders redundant.

### Experience

The 1720E Turbidimeter reflects 45 years of Hach leadership in turbidity measurement science. Hach has the largest turbidimeter installation base in the world. And, Hach offers a two-year warranty on the 1720E.

\*U.S. patent 5,831,727

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



*The Model 1720E Low Range Turbidimeter is the newest in a long line of successful Hach turbidimeters—from the unsurpassed world leader in turbidity measurement.*

### Fast Calibration and Verification

Calibration and verification can be performed without loss of sample flow using the ICE-PIC™ Calibration/Verification Module. One-point calibration with prepared StabCal™ Stabilized Formazin Solution eliminates the errors of user-prepared formazin suspension dilution. Features of the ICE-PIC Module include:

- Calibrate or verify the performance of each sensor in less than one minute
- Factory calibrated and provided with a certificate of accuracy.
- Cost effective, one-time investment. No consumables are needed.
- Small, lightweight design can be used for spot verification in the facility.
- Available in 20 and 1.0 NTU.



Be Right™

## Specifications\*

### Range

0.001-100 Nephelometric Turbidity Units (NTU)

### Accuracy

(Defined according to ISO 15839.)

±2% of reading or ±0.015 NTU

(whichever is greater) from 0 to 40 NTU;

±5% of reading from 40 to 100 NTU

### Displayed Resolution

0.0001 NTU up to 9.9999 NTU;

0.001 NTU from 10.000 to 99.999 NTU

### Repeatability

(Defined according to ISO 15839.)

Better than ±1.0% of reading or

±0.002 NTU, whichever is greater

### Response Time

Initial response in 1 minute, 15 seconds for a full-scale step change

### Signal Average Time

User selectable from 6, 30, 60, 90

seconds; default 30 seconds

### Sample Temperature

0 to 50°C (32 to 122°F)

### Sample Flow Required

200 to 750 mL/minute

(3.1 to 11.9 gal/hour)

### Operating Temperature

Single sensor system:

0 to 50°C (32 to 122°F)

Two sensor system:

0 to 40°C (32 to 104°F)

### Operating Humidity

5 to 95% non-condensing

### Storage Temperature

-20 to 60°C (-4 to 140°F)

### Power Requirements

100-230 Vac, 50/60 Hz,

auto selecting; 40 VA

### Sample Inlet Fitting

1/4" NPT female, 1/4" compression

fitting (provided)

### Drain Fitting

1/2" NPT female, 1/2" hose barb (provided)

### Recorder Outputs

Two selectable for 0-20 mA or 4-20 mA;

output span programmable over any

portion of the 0-100 NTU range;

built into the sc100 Controller

### Alarms

Three set-point alarms, each equipped

with an SPDT relay with unpowered

contacts rated 5A resistive load at

230 Vac; built into the sc100 Controller

### Enclosure

NEMA-4X (indoor)/IP66 Controller

### Digital Communication

Network card compatible;

MODBUS<sup>®</sup>/RS485, MODBUS/RS232,

LonWorks<sup>®</sup> protocol (optional)

### Wireless Communication

IR Port on the sc100 Controller to

download into a handheld Personal

Digital Assistant (PDA), or laptop

computer via MODBUS<sup>®</sup>

### Compliance

Standard Methods 2130B, USEPA 180.1,

Hach Method 8195

### Certifications

Safety:

Listed by ETL to UL 61010A-1: Certified

by ETL to CSA C22.2 No. 1010.1: CE

certified by Hach Company to EN

61010-1

Immunity:

CE certified by Hach Company to

EN61326 (industrial levels)

Emissions:

Class A: EN 61326, CISPR 11, FCC

Part 15, Canadian Interference-Causing

Equipment Regulation ICES-003

### Mounting

Turbidimeter body and head assembly:

wall and floor stand

sc100 Controller:

wall, pole, panel, and floor stand

### Dimensions

Turbidimeter body and cap:

25.4 x 30.5 x 40.6 cm (10 x 12 x 16 in.)

sc100 Controller:

14.4 X 14.4 X 15.0 cm

(5.67 x 5.67 x 5.91 in.)

### Shipping Weight

1720E Turbidimeter and

sc100 Controller:

6.12 kg (13.5 lbs.)

1720E Turbidimeter:

4.54 kg (10 lbs.)

\*Specifications subject to change without notice.

## Engineering Specifications

- The turbidimeter shall be a microprocessor-based, continuous-reading, on-line nephelometric instrument
- The turbidity monitoring system shall include one or two turbidimeter(s) and one interface unit.
- The turbidimeter shall measure turbidity in the range of 0.001-100 NTU
- Accuracy shall be ±2% of reading or ±0.015 NTU (whichever is greater) from 0 to 40 NTU; ±5% of reading from 40 to 100 NTU
- Displayed resolution shall be 0.0001 NTU from 0 to 9.999 NTU and 0.001 NTU from 10.000 to 9.999 NTU.
- Repeatability shall be better than ±1.0% of reading or ±0.002 NTU (whichever is greater).
- The turbidimeter shall meet all design and performance criteria specified by USEPA method 180.1.
- Light shall be directed through the surface of the sample and the detector shall be immersed in the sample, eliminating glass windows and flow cells.
- Optical components shall be mounted in a sealed head assembly that can be removed for calibration/ service without disturbing sample flow.
- The turbidimeter body shall be constructed of corrosion-resistant polystyrene.
- An internal bubble removal system shall be included to vent entrained air from the sample stream.
- Calibration of the turbidimeter shall be either formazin-based (20 or 1 NTU) or instrument comparison-based calibration method.
- User selectable signal averaging, bubble removal, alarm and recorder output hold, and self-test diagnostics shall be provided.
- Connections between the turbidimeter(s) and the controller shall be "plug and play."
- All turbidimeters installed on a network shall have the option for MODBUS/RS232, MODBUS/RS485, LonWorks serial input/output capability for two-way communication to a computer or a have a wireless downloading capability through the IR Port located on the interface unit to download and print realtime turbidity data, calibration history, and current set points in a CSV format.
- The Interface unit shall allow operators to control sensor and interface functions with menu-driven software and shall provide data logging of measurement data from up to two turbidimeters for 15 minutes, 1 hour, 24 hours, 30 days, or 180 days.
- The interface unit shall be able to transfer data to a computer or printer via direct MODBUS communications or directly into a Personal Digital Assistant (PDA) via a wireless IR Port.
- The interface unit shall have a built-in data logger with the capacity to store data on 15-minute intervals for up to 6 months with two sensors per controller.
- The interface unit shall include two analog outputs and 3 unpowered SPDT alarm contacts.

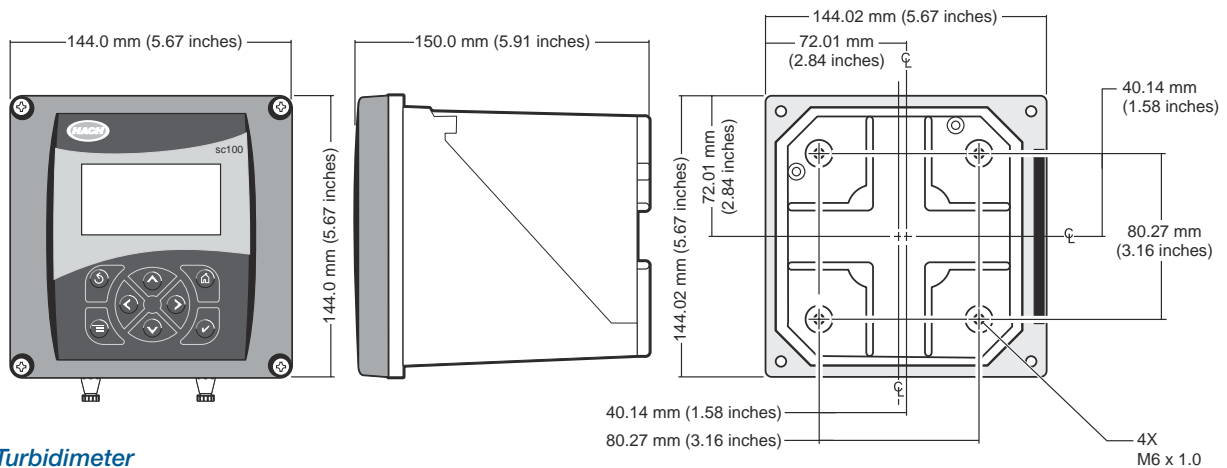
## Engineering Specifications *continued*

20. The interface unit shall be housed in a NEMA-4X (indoor) industrial metal/plastic enclosure.
21. The DC power supply shall be housed in the interface unit.
22. The DC power supply shall automatically accept input in the range of 100 to 230 Vac, 50/60 Hz.
23. All system components shall be ETL listed to UL 61010A-1, certified to CSA C22.2 No. 1010.1, and CE certified by manufacturer to EN 61010-1.
24. All system components shall be CE certified by the manufacturer to EN 61326 (industrial levels) for immunity and emissions, Class A.
25. All system components shall meet FCC Part 15 for North America and Canadian Interference-Causing Equipment Regulation ICES-003, and CISPR 11 Class A levels for rest of the world.
26. The turbidimeter shall be Hach Company Model 1720E Low Range Turbidimeter with sc100 Controller.

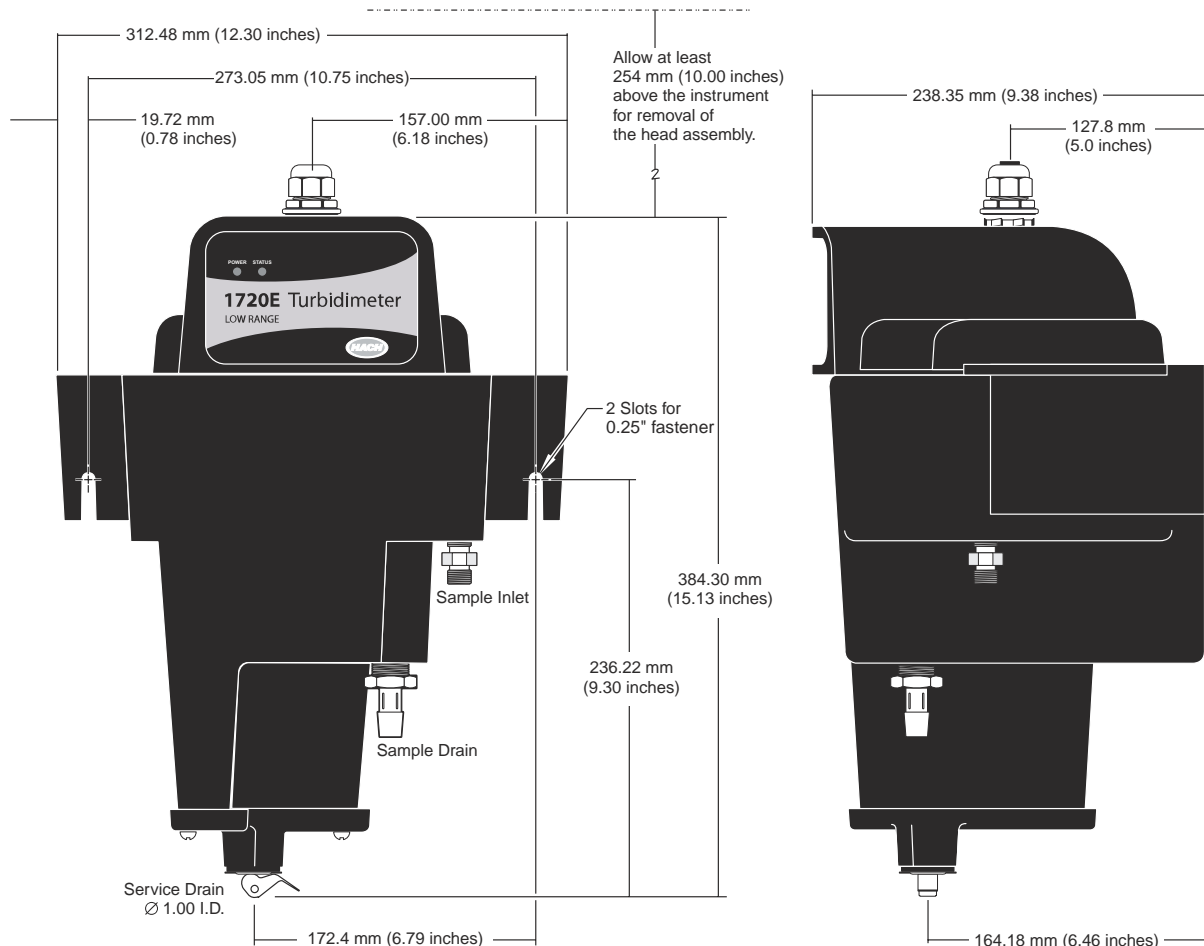
## Dimensions

The sc100 controller unit can be installed on a pole, wall, panel or a floor stand. The 1720E turbidimeter can be installed on a wall or a floor stand. No tools are needed to connect the controller unit to the turbidimeter. The distance between the two units can be a maximum of 9.62 m (31.6 ft) with the use of an extension cable.

### sc100 Controller



### 1720E Turbidimeter



## Ordering Information

### 1720E Turbidimeter

- 60101-00 1720E Turbidimeter with sc100 Controller  
 60101-01 1720E Turbidimeter, sensor only

### 1720E with DigitalDirect Communications

- 60101-02 1720E/sc100 with MODBUS/RS485 output  
 60101-03 1720E/sc100 with MODBUS/RS232 output  
 60101-04 1720E/sc100 with LonWorks output

### Cables

- 57960-00 Extension Cable, 7.7 m (25 ft.)  
 46306-00 Power Cord w/ strain relief, 125 Vac  
 46308-00 Power Cord w/ strain relief, 230 Vac, European-style plug

*Note: Power cables must be ordered separately.*

### Accessories

- 57432-00 Floor Stand

### Calibration Supplies

*ICE-PIC Calibration/Verification Module / 1720E:*

- 52250-00 20 NTU Module  
 52215-00 1 NTU Module

*StabiCal Comparative Calibration Standards*

- 26601-53 20.0 NTU, 1 L each  
 (Calibration Cylinder, P/N 44153-00, must be ordered separately.)

*StabiCal Verification Standards*

- 26979-53 0.3 NTU, 1 L each  
 26980-53 0.5 NTU, 1 L each  
 27233-53 0.1 NTU, 1 L each  
 26598-53 1.0 NTU, 1 L each  
 27463-53 40.0 NTU, 1 L each

*Formazin Calibration Standards*

- 44156-00 Formazin Calibration Kit for user-prepared calibration (includes 500 mL of 4000 NTU Formazin, TenSette® Pipet, and calibration cylinder)  
 2461-49 Formazin Primary Standard, 4000 NTU, 500 mL (replacement for P/N 44156-00)  
 44153-00 Calibration Cylinder, 1 L

Lit. No. 2457

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*Keep it pure.*

*Make it simple.*

*Be right.*

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*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 Europe  
 Dr. Bruno Lange GmbH & Co. KG  
 Willstätterstraße 11  
 D-40549 Düsseldorf  
 GERMANY  
 Tel: +49 (0) 211 5288-0  
 Fax: +49 (0) 211 5288-143  
 E-mail: kundenservice@drlange.de  
**www.drlange.com**



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