

Hach sc200™ Universal Controller

Controller—Multi-Parameter

Product Overview

One Controller for the Broadest Range of Sensors

The sc200 Universal Controller is the most versatile controller on the market. The new sc200 controller is the only controller that allows the use of digital and analog sensors, either alone or in combination, to provide compatibility with the broadest range of sensors. It replaces the Hach sc100 digital and GLI53 analog controllers with advanced features for easier operator use.

The sc200 controller platform can be configured to operate either 2 Digital Sensor Inputs, or 1 or 2 Analog Sensor Inputs, or a combination of Digital and Analog Sensor Inputs. Customers may choose their communication options from a variety of offerings ranging from MODBUS RTU to Profibus DPV1.



Choose from up to 29 digital or analog sensors for up to 15 different parameters.

Features and Benefits

Maximum Versatility

- Standardized controller eliminates the need for a variety of dedicated controllers
- Multi-channel controller operates either 1 or 2 sensors reducing inventory holding costs and providing an inexpensive option to add a second sensor at a later time
- “Plug and Play” operation with all Hach digital sensors
- True dual sensor controller provides 4-20 mA outputs to transmit primary and secondary measurement values

Ease of Use and Confidence in Results

- New display and guided calibration procedures reduce operator error
- Password protected SD card reader offers a simple solution for data download and transfer
- Visual warning system provides critical alerts

Communication Options

- MODBUS RS232/RS485 or Profibus DPV1



DW
WW
PW
IW

Controller Configuration

2 Channel Digital Controller

Functionality

- Maximum versatility and flexibility:
- Plug and play with all Hach digital sensors
 - Mix and match with Hach digital and GLI analog sensors

2 Channel Controller with
1 Analog and 1 Digital Sensor Input

- Plug and play with any one Hach digital sensor
- Mix and match with any one GLI analog sensor

1 or 2 Channel Analog Controller

- Mix and match up to two GLI analog sensors

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



Be Right™

Controller Comparison



Features	Current sc100™ Controller	GLI53 Controller	NEW! sc200™ Controller	Benefits
Display	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	160 x 240 pixels 48 x 68 mm (1.89 x 2.67 in.) Transreflective	<ul style="list-style-type: none"> Improved user interface—50% bigger Easier to read in daylight and sunlight
Data Management	irDA Port/PDA Service Cable	N/A	SD Card Service Cable	<ul style="list-style-type: none"> Simplifies data transfer Standardized accessories/ max compatibility
Sensor Inputs	2 Max Direct Digital Analog via External Gateway	2 Max Analog Depending on Parameter	2 Max Digital and/or Analog with Sensor Card	<ul style="list-style-type: none"> Simplifies analog sensor connections Works with GLI and Hach's digital sensors
Analog Inputs	N/A	N/A	1 Analog Input Signal Analog 4-20mA Card	<ul style="list-style-type: none"> Enables non-sc analyzer monitoring Accepts mA signals from other analyzers for local display Consolidates analog mA signals to a digital output
4-20 mA Outputs	2 Standard	2 Standard	2 Standard Optional 4 Additional	<ul style="list-style-type: none"> Total of six (6) 4-20 mA outputs enables up to 3 mA outputs per sensor input
Digital Communication	MODBUS 232/485 Profibus DP V1.0	N/A	MODBUS 232/485 Profibus DP V1.0	<ul style="list-style-type: none"> Unprecedented combination of sensor breadth and digital communication options

To complete your measurement system, choose from Hach's portfolio of controller and sensor products...



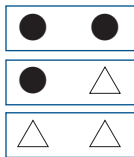
Choose from Hach's Broad Range of Digital and Analog Sensors

Parameter	Sensor	Digital or Analog
Ammonia	AMTAX™ sc, NH4D sc	●
Chlorine	CLF10 sc, CLT10 sc, 9184 sc	●
Chlorine Dioxide	9185 sc	●
Conductivity	3400, 3700	△
Dissolved Oxygen	LDO™, 5740 sc	●
Dissolved Oxygen	5500	△
Flow	U53, F53 Sensors	△
Nitrate	NITRATAX™ sc, NO3D sc	●
Oil in Water	FP360 sc	●
Organics	UVAS sc	●
Ozone	9187 sc	●
pH/ORP	pHD	●
pH/ORP	pHD, pH Combination, LCP	△
Phosphate	PHOSPHAX™ sc	●
Sludge Level	SONATAX™ sc	●
Suspended Solids	SOLITAX™ sc, TSS sc	●
Turbidity	1720E, FT660 sc, SS7 sc, ULTRATURB sc, SOLITAX sc	●

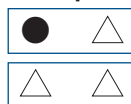
● = Digital △ = Analog

The diagrams below demonstrate the versatility and flexibility for the base controller units. Connect any of the appropriate sensors listed above to meet your measurement needs. Operation of analog sensors require the controller to be equipped with the appropriate sensor card.

2 Channel Digital Controller Configurations



2 Channel Controller with 1 Analog and 1 Digital Sensor Input Configurations



2 Channel Analog Controller Configurations



Engineering Specifications

- The controller shall be a microprocessor based instrument.
- The enclosure shall be 1/2 DIN format, NEMA4X rated for wall, pole and panel mounting.
- The controller shall offer both 100–240 Vac 50/60 Hz and 24 Vdc power options.
- The controller shall offer two analog 0/4-20 mA output signals with independent PID control functions and optional four additional 4-20 mA outputs.
- The controller shall accept either Digital Sensors or Sensor Modules for pH, Conductivity, DO, Paddle Wheel Flow, and Ultra Sonic Flow sensors.
- The controller shall have single channel and dual channel options.
- The controller shall have options for MODBUS RS232, MODBUS RS485 and Profibus DPV1 communication.
- The display contrast shall be adjustable.
- The Menu shall be available in at least 19 different languages.
- The controller shall have 2 Data logs, 128 kb each. The logged data shall be downloadable on a SD card in XML format.
- The controller shall be Hach Company sc200 Universal Controller.

Specifications*

sc200 General Specifications

Display

Graphic dot matrix LCD with LED backlighting
Transreflective

Display Size

48 x 68 mm (1.89 x 2.67 in.)

Display Resolution

240 x 160 pixels

Height x Width x Depth

144 x 144 x 181 mm (5.7 x 5.7 x 7.1 in.)

Weight

1.70 kg (3.75 lb)

Power Requirements

100 – 240 Vac $\pm 10\%$, 50/60 Hz
24 Vdc -15% + 20%

Operating Temperature

-20 to 60°C (-4 to 140°F), 0 to 95% RH non-condensing

Storage Temperature

-20 to 70°C (-4 to 158°F), 0 to 95% RH non-condensing

Analog Output Signal

Two 0/4 to 20 mA isolated current outputs, max 500Ω

Operational Mode

Primary or secondary measurement or calculated value
(dual channel only)

Functional Mode

Linear, Logarithmic, Bi-linear, PID

Optional 4 additional 4/20 mA isolated current outputs,
max 500Ω @ 18-24 Vdc (customer-supplied power source)

Security Levels

Two password protected levels

Enclosure Materials

Polycarbonate, Aluminum (powder coated), Stainless Steel

Mounting Configurations

Wall, pole and panel mounting

Enclosure Rating

NEMA4X / IP66

Conduit Openings

1/2" NPT Conduit

Relays

Four electromechanical SPDT (Form C) contacts, 1200W,
5 A, 250 Vac

Operational Mode

Primary or secondary measurement, calculated value
(dual channel only) or timer

Functional Mode

Alarm, Timer, Feeder Control, PWM or FM Control,
System Alarm

Digital Communication

MODBUS RS232/RS485, Profibus DPV1 optional

Memory Backup

Flash memory

Electrical Certifications

EMC: CE compliant for conducted and radiated emissions
CISPR 11 (Class A limits), EMC Immunity EN 61326-1
(Industrial limits)

Safety: General Purpose UL/CSA 61010-1 with cETLus
safety mark

sc200 for Hach Analog pH/ORP Sensors

Measuring Range

-2.0 to 14.0 pH or -2.00 to 14.00 pH
- 2,100 to 2,100 mV

Repeatability

$\pm 0.1\%$ of range

Response Time

0.5 s

Temperature Range

PT100/PT1000: -20 to 200°C (-4 to 392°F)
NTC300: -20 to 110°C (-4 to 230°F)
Manual: -25 to 400°C (-13 to 752°F)

Temperature Accuracy

$\pm 0.5^\circ\text{C}$ (0.9°F)

Temperature Drift

$\pm 0.03\%$ of reading /°C

Temperature Compensation

Automatic from -20 to 110°C (-4 to 230°F) or manual

Temperature Sensors

PT100/PT1000/NTC300

Temperature Compensation Curves

Nernst, for Pure Water: Ammonia, Morpholine,
User Defined (linear)

Sensor-to-Controller Distance (maximum)

pHD or LCP sensor: 914 m (3000 ft.)
pH Combination electrode w/ preamplifier: 300 m (958 ft.)
pH Combination electrode w/o preamplifier: 30 m (100 ft.),
depending on environment this distance is shorter

Calibration Methods

2-point buffer (pH only)
1-point buffer (pH only)
2-point sample (pH only)
1-point sample (pH or ORP)

Specifications *continued*

sc200 for Hach Analog Contacting Conductivity Sensors

Measuring Range

Conductivity

μS/cm: 0-2,000, 0-20.00, 0-200.0 or 0-2,000
mS/cm: 0-2,000, 0-20.00 or 0-200.0

Resistivity

0-19.99 MΩ•cm or 0-999.9 kΩ•cm

TDS

0-9999 ppm or 0-9999 ppb

Repeatability, Precision (0-20 μS/cm, K=1)

±0.02 mS/cm

Repeatability (20-200,000 μS/cm, K=1)

±0.1% of reading

Response Time

0.5 s

Temperature Range

-20 to 200°C (-4 to 392°F)

Temperature Accuracy

±0.5°C (0.9°F)

Temperature Drift

> 20 μS/cm: ±0.02% of reading / °C
< 20 μS/cm: ±0.004 μS/cm

Temperature Compensation

Automatic from -20 to 200°C (-4 to 392°F) or manual

Temperature Sensor

PT100/PT1000

Temperature Compensation Curves

Linear, Ammonia, Natural water, User Defined, none

Sensor-to-Controller Distance (max)

91m (300 ft.)

Calibration Methods

Zero
GLI DRY-CAL
1-point sample

sc200 for Hach Analog Inductive Conductivity Sensors

Measuring Range

Conductivity

μS/cm: 0-200.0 or 0-2,000
mS/cm: 0-2,000, 0-20.00, 0-200.0 or 0-2,000
S/cm: 0-2,000

% Concentration

0-99.99% or 0-200.0%

TDS

0-9999 ppm repeatability

Repeatability > 500 μS/cm

±0.5% of reading

Repeatability < 500 μS/cm

±2.5 μS/cm

Response Time

1 s

Temperature Range

-20 to 200°C (-4 to 392°F)

Temperature Accuracy

±0.5°C (0.9°F)

Temperature Drift

> 500 μS/cm: ±0.02% of reading / °C
< 500 μS/cm: ±0.1 μS/cm

Temperature Compensation

Automatic from -20 to 200°C (-4 to 392°F) or manual

Temperature Sensors

PT1000

Temperature Compensation Curves

Linear, Natural water, User Defined, none**

Concentration Curves

H₃PO₄: 0-40%; HCl: 0-18%; HCl: 22-36%; NaOH: 0-16%;
CaCl₂: 0-22%; HNO₃: 0-28%; HNO₃: 36-96%; H₂SO₄: 0-30%;
H₂SO₄: 40-80%

Sensor-to-Controller Distance

Full-scale value	Maximum length
200 to 2,000 μS/cm	61m (200 ft.)
2,000-2,000,000 μS/cm	91m (300 ft.)

Calibration Methods

1-point Cond (or Concentration or TDS)
Zero

**Available curves depend on the selected type of measurement (Conductivity, Concentration or TDS).

Continued on next page.

Specifications *continued*

Linearity 3700 Inductive Conductivity Sensors

1.5 mS/cm – 2 S/cm

1% or reading

< 1.5 mS/cm

±15 µS/cm

Linearity 3700 Inductive Conductivity Sensors with Multiple Point Calibration

1.5 mS/cm – 2 S/cm

0.5% or reading

< 1.5 mS/cm

±5 µS/cm

sc200 for Hach Analog Dissolved Oxygen Sensors

Measuring Range

0 to 40 ppm
200% saturation

Repeatability

±0.05% of range

Response Time

0.5 s

Temperature Range

0 to 50°C (32 to 122°F)

Temperature Accuracy

±0.5°C (0.9°F)

Temperature Drift

±0.02% of reading / °C

Temperature Compensation

Automatic from 0 to 40 ppm or manual

Temperature Sensor

NTC30K / Manual

Sensor-to-Controller Distance (max)

305 m (1000 ft.)

Calibration Methods

Sample
Air
Saturation

sc200 for Hach UltraSonic Flow Sensor

Flow Rate

0-9999, 0-999.9, 0-99.99 with selectable flow rate units and multiplier

Volume

0-9,999,999 with selectable volume units

Depth

0-1200.0 inches, 0-100.0 feet, 0-30,000 mm, or 0-30.00 meters

Input Filter

999 sec

Totalizers

8-digit resettable LCD software totalizer

Totalized Flow

Gal., ft.³, acre-ft., lit., m³

Repeatability

±0.1% of span

Sensor-to-Controller Distance (max)

100 m (328 ft.)

Calibration Methods

Cal Depth 1 point
Cal Depth 2 point

sc200 for Hach Paddle Wheel Flow Sensor

Flow Rate

Function of Structure Type: 0-9999, 0-999.9, 0-99.99 with selectable flow rate units and multiplier

Volume

0-9,999,999 with selectable volume units

Input Filter

999 sec

Totalizers

8-digit resettable LCD software totalizer

Totalized Flow

Gal., ft.³, acre-ft., lit., m³

Sensor-to-Controller Distance (max)

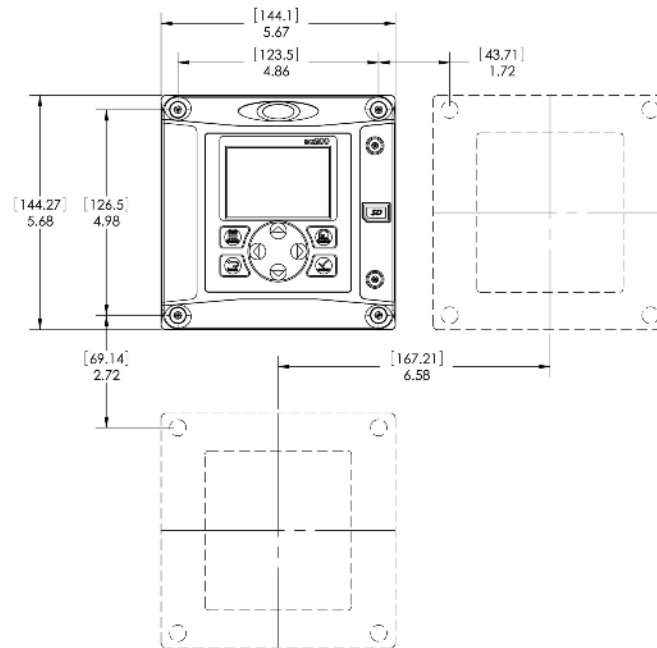
GLI impeller Sensors: 610m (2000 ft.)
Non-GLI Sensors: 91m (300 ft.)

**Specifications subject to change without notice.*

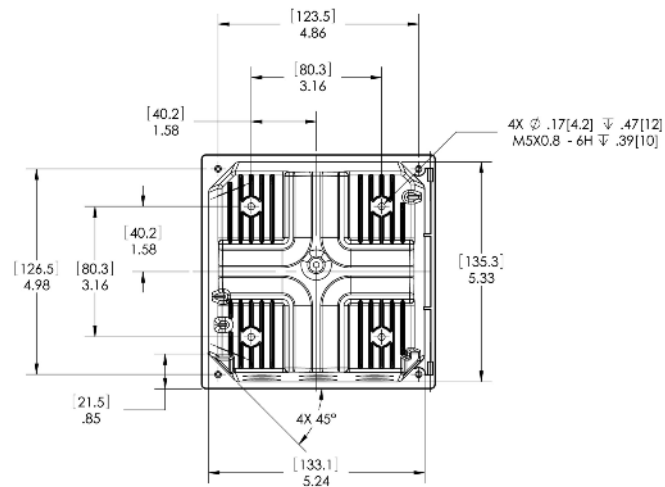
Dimensions

The sc200 controller unit can be installed on a surface, panel, or pipe (horizontally or vertically). No tools are needed to connect the controller unit to any Hach digital sensor. NOTE: Dimensions are in inches [millimeters].

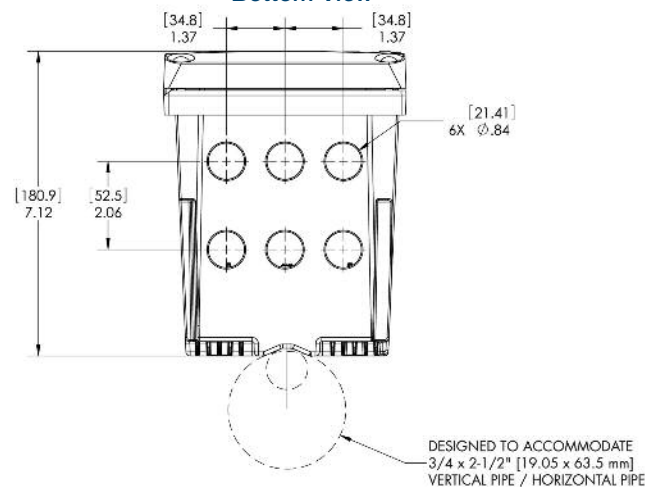
Minimum Spacing Dimensions for Group Mounting



Mounting Dimensions



Bottom View



Ordering Information

sc200 for Hach Digital Sensors

LXV404.99.00552	sc200 controller, 2 channel, digital
LXV404.99.00502	sc200 controller, 1 channel, digital
LXV404.99.00542	sc200 controller, 2 channel, digital & mA input
LXV404.99.00512	sc200 controller, 2 channel, digital & pH/DO
LXV404.99.00522	sc200 controller, 2 channel, digital & Conductivity
LXV404.99.00532	sc200 controller, 2 channel, digital & Flow

sc200 for Hach Analog Sensors

LXV404.99.00102	sc200 controller, 1 channel, pH/DO
LXV404.99.00112	sc200 controller, 2 channel, pH/DO
LXV404.99.00202	sc200 controller, 1 channel, Conductivity
LXV404.99.00222	sc200 controller, 2 channel, Conductivity
LXV404.99.00212	sc200 controller, 2 channel, pH/DO & Conductivity
LXV404.99.00302	sc200 controller, 1 channel, Flow
LXV404.99.00332	sc200 controller, 2 channel, Flow
LXV404.99.00312	sc200 controller, 2 channel, Flow & pH/DO
LXV404.99.00322	sc200 controller, 2 channel, Flow & Conductivity

Note: Other Sensor combinations are available. Please contact Hach Technical Support or your Hach representative.

Note: Communication options (MODBUS and Profibus DPV1) are available. Please contact Hach Technical Support or your Hach representative.

Power Cords

9202900	sc200 power cord with strain relief, 125 Vac
9203000	sc200 power cord with strain relief, 230 Vac, European-style plug

Accessories

9220600	sc200 Weather and Sun Shield with UV Protection Screen
8809200	sc200 UV Protection Screen
1000G3088-001	Weather Protection Cover
9218200	SD card reader (USB) for connection to PC
9218100	4 GB SD card

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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.

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