Hach sc200™ Universal Controller

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

Product Overview

One Controller for the Broadest Range of Sensors

The sc200 Universal Controller is the most versatile controller on the market. The sc200 controller 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 including MODBUS RTU, Profibus DPV1, and HART.

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, and sc200 and digital sensor configuration file duplication and backup*
- *Visual warning system provides critical alerts*

Communication Options

- *MODBUS RS232/RS485, Profibus DPV1, or HART*

Controller Configuration	Functionality
2 Channel Digital Controller	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***

DW WW PW IW

HACH®
Be Right™

Controller Comparison

Features	Previous Models sc100™ Controller	Previous Models GLI53 Controller	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	• 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	• 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	• 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	• 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 3 Additional	• Total of five (5) 4-20 mA outputs allows multiple mA outputs per sensor input
Digital Communication	MODBUS RS232/RS485 Profibus DP V1.0	HART	MODBUS RS232/RS485 Profibus DP V1.0 HART 7.2	• Unprecedented combination of sensor breadth and digital communication options

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

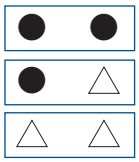
Choose from Hach's Broad Range of Digital and Analog Sensors

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	●

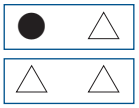
● = Digital △ = Analog

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

1. The controller shall be a microprocessor based instrument.
2. The enclosure shall be 1/2 DIN format, NEMA4X rated for wall, pole and panel mounting.
3. The controller shall be available in either 100–240 Vac 50/60 Hz or 24 Vdc power supply versions.
4. The controller shall offer two analog 0/4-20 mA output signals with independent PID control functions and optional additional 4-20 mA outputs.
5. The controller shall accept either Digital Sensors or Sensor Modules for analog pH, Conductivity, DO, Paddle Wheel Flow, and Ultra Sonic Flow sensors.
6. The controller shall have single channel and dual channel options.
7. The controller shall have options for MODBUS RS232, MODBUS RS485, Profibus DPV1, and HART 7.2 communication.
8. The display contrast shall be adjustable.
9. The Menu shall be available in at least 19 different languages.
10. The controller shall have 2 Data logs, 128 kb each. The logged data shall be downloadable on a SD card in XML format.
11. 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 ±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 0/4-20 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 3 additional 4-20 mA isolated current outputs, max 500Ω @ 18-24 Vdc loop-powered or max 350Ω @ 15 Vdc (self-powered)

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, or HART 7.2 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
cETLus safety mark for:
- General Locations per ANSI/UL 61010-1 & CAN/CSA C22.2. No. 61010-1
- Hazardous Location Class I, Division 2, Groups A,B,C & D (Zone 2, Group IIC) per FM 3600 / FM 3611 & CSA C22.2 No. 213 M1987 with approved options and appropriately rated Class I, Division 2 or Zone 2 sensors

OR
cULus safety mark (for Indoor Use Only)
- General Locations per UL 61010-1 & CAN/CSA C22.2. No. 61010-1

Warranty
2 years

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
±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
±0.5°C (0.9°F)

Temperature Drift
±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
H_3PO_4: 0-40%; HCl: 0-18%; HCl: 22-36%; NaOH: 0-16%; $CaCl_2$: 0-22%; HNO_3: 0-28%; HNO_3: 36-96%; H_2SO_4: 0-30%; H_2SO_4: 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., m^3

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., m^3

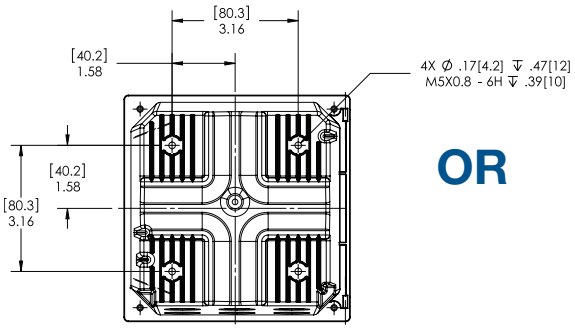
Sensor-to-Controller Distance (max)
GLI impeller Sensors: 610m (2000 ft.)
Non-GLI Sensors: 91m (300 ft.)

**Specifications subject to change without notice.*

Dimensions

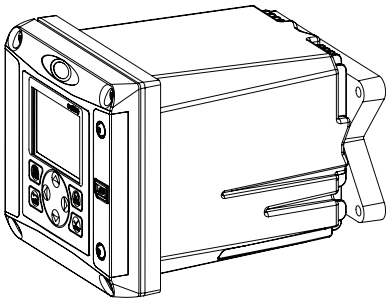
The sc200 controller unit can be installed on a surface, panel, or horizontal or vertical pipe. Pipe Mount hardware is included.
NOTE: Dimensions are in inches [millimeters].

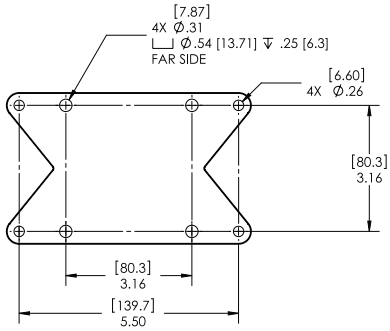
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

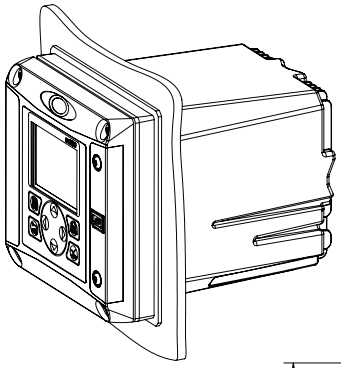
OR

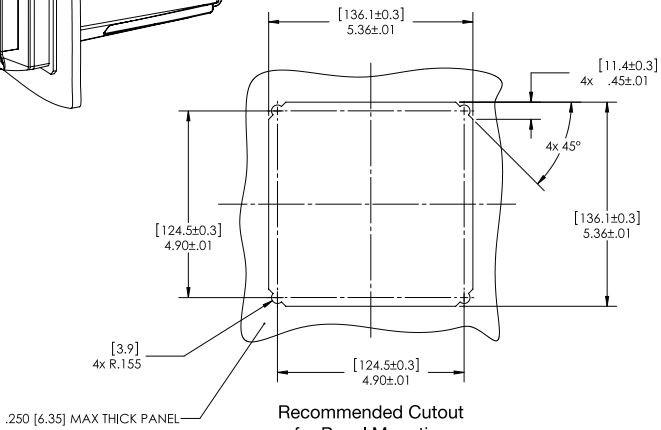




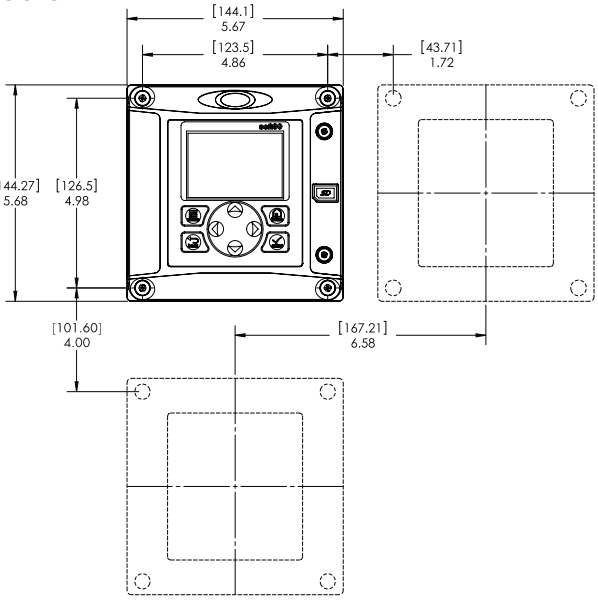
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



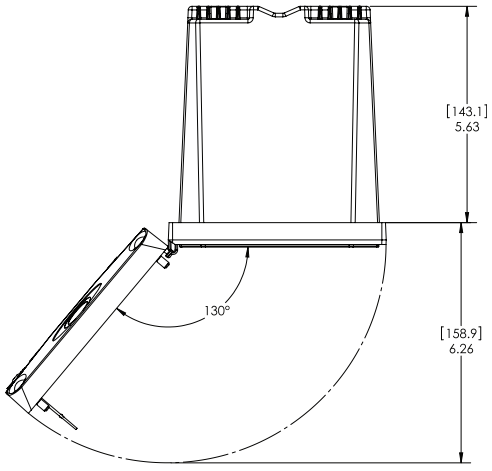


Recommended Cutout
for Panel Mounting

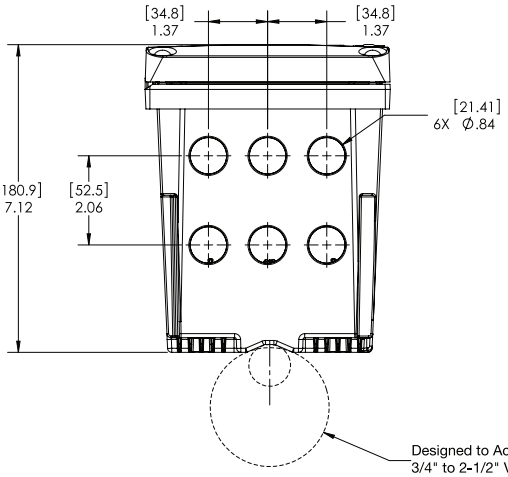


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views



Door Opening Details



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 & analog pH/DO
LXV404.99.00522	sc200 controller, 2 channel, digital & analog Conductivity
LXV404.99.00532	sc200 controller, 2 channel, digital & analog 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, Profibus DPV1, and HART) 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
9218200	SD card reader (USB) for connection to PC
9218100	4 GB SD card

Sensor and Communication Modules

9012900	pH and DO module
9013000	Conductivity module
9012700	Flow module
9012800	4-20 mA input module
9013200	MODBUS network module
9173900	Profibus network module
9328100	HART network module
9334600	4-20 mA output module

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

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