HACH SC4500 Controller Instruction Manual

Contents

HACH SC4500 Controller

General information

Section 2 General information

- In no event will the manufacturer be liable for damages resulting from any improper use of product or failure to comply with the instructions in the manual.
- The manufacturer reserves the right to make changes in this manual and the products it describes at any time, without notice or obligation.
- Revised editions are found on the manufacturer’s website.

Safety information

- The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law.
- The user is soley responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.
- Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.
- Make sure that the protection provided by this equipment is not impaired. Do not use or install this equipment in any manner other than that specified in this manual.

Use of hazard information

- **ANGER**
  - Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING**

- Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

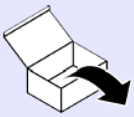
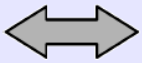
- **CAUTION**
  - Indicates a potentially hazardous situation that may result in minor or moderate injury.
- **NOTICE**
  - Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.

Precautionary labels

- Read all labels and tags attached to the instrument.
- Personal injury or damage to the instrument could occur if not observed.
- A symbol on the instrument is referenced in the manual with a precautionary statement.

	This symbol, if noted on the instrument, references the instruction manual for operation and/or safety information.
	This symbol indicates that a risk of electrical shock and/or electrocution exists.
	This symbol indicates the presence of devices sensitive to Electro-static Discharge (ESD) and indicates that care must be taken to prevent damage with the equipment.
	Electrical equipment marked with this symbol may not be disposed of in European domestic or public disposal systems. Return old or end-of-life equipment to the manufacturer for disposal at no charge to the user.

Icons used in illustrations

				
Manufacturer supplied parts	User supplied parts	Look	Listen	Do one of these options

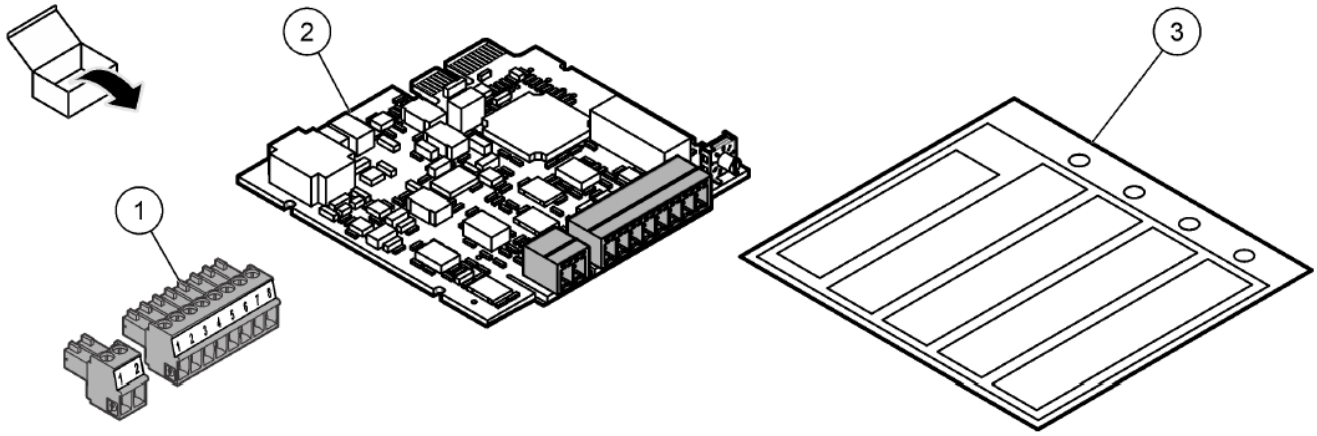
Product overview

- The pH/ORP module lets a digital SC Controller connect to an analog sensor. The module connects to one of the analog sensor connectors in the controller.
- For calibration and operation of the sensor, refer to the sensor user manual and the SC Controller documentation.

Product components

- Make sure that all components have been received. Refer to Figure 1. If any items are missing or damaged, contact the manufacturer or a sales representative immediately.

Figure 1 Product compoments



1 Module connector	**3** Label with wiring information
2 pH/ORP module	

Modbus registers

A list of Modbus registers is available for network communication. Refer to the manufacturer's website for more information.

Installation

Section 3 Installation

- **DANGER**
  - Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.
- **DANGER**
  - Electrocution hazard. Remove power from the instrument before this procedure is started.
- **DANGER**
  - Electrocution hazard. High voltage wiring for the controller is conducted behind the high voltage barrier in the controller enclosure.
  - The barrier must remain in place unless a qualified installation technician is installing wiring for power, alarms, or relays.
- **WARNING**
  - Electrical shock hazard. Externally connected equipment must have an applicable country safety standard assessment.
- **NOTICE**
  - Make sure that the equipment is connected to the instrument in accordance with local, regional and national requirements.

Electrostatic Discharge

Electrostatic discharge (ESD) considerations

- **NOTICE**
  - Potential Instrument Damage.
  - Delicate internal electronic components can be damaged by static electricity, resulting in degraded performance or eventual failure.

Refer to the steps in this procedure to prevent ESD damage to the instrument:

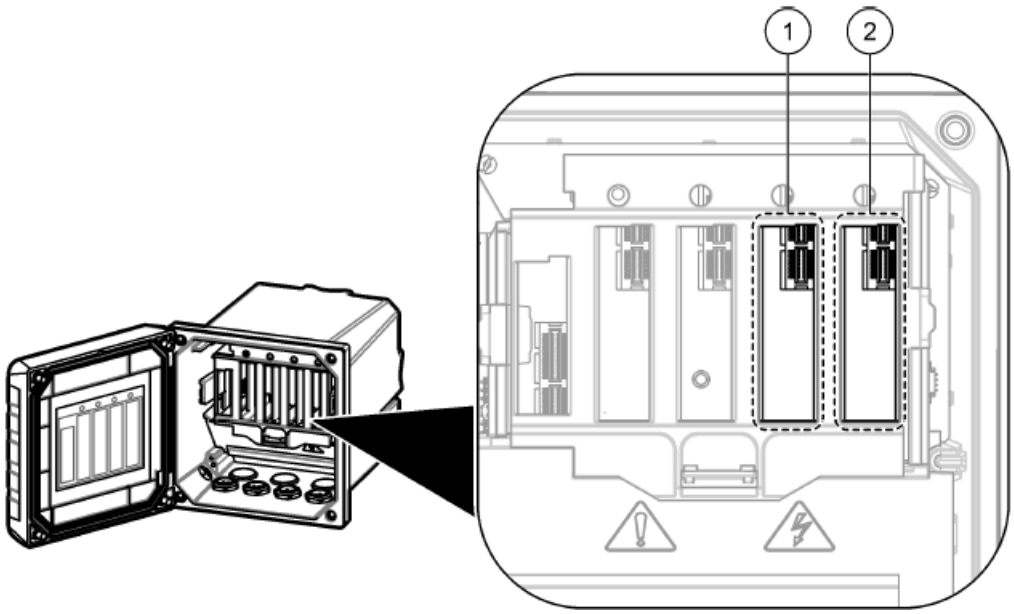
- Touch an earth-grounded metal surface such as the chassis of an instrument, a metal conduit or pipe to discharge static electricity from the body.
- Avoid excessive movement. Transport static-sensitive components in anti-static containers or packages.
- Wear a wrist strap connected by a wire to earth ground.
- Work in a static-safe area with anti-static floor pads and work bench pads.

Install the module
To install the module and connect the sensor, refer to the illustrated steps that follow and the applicable wiring table:

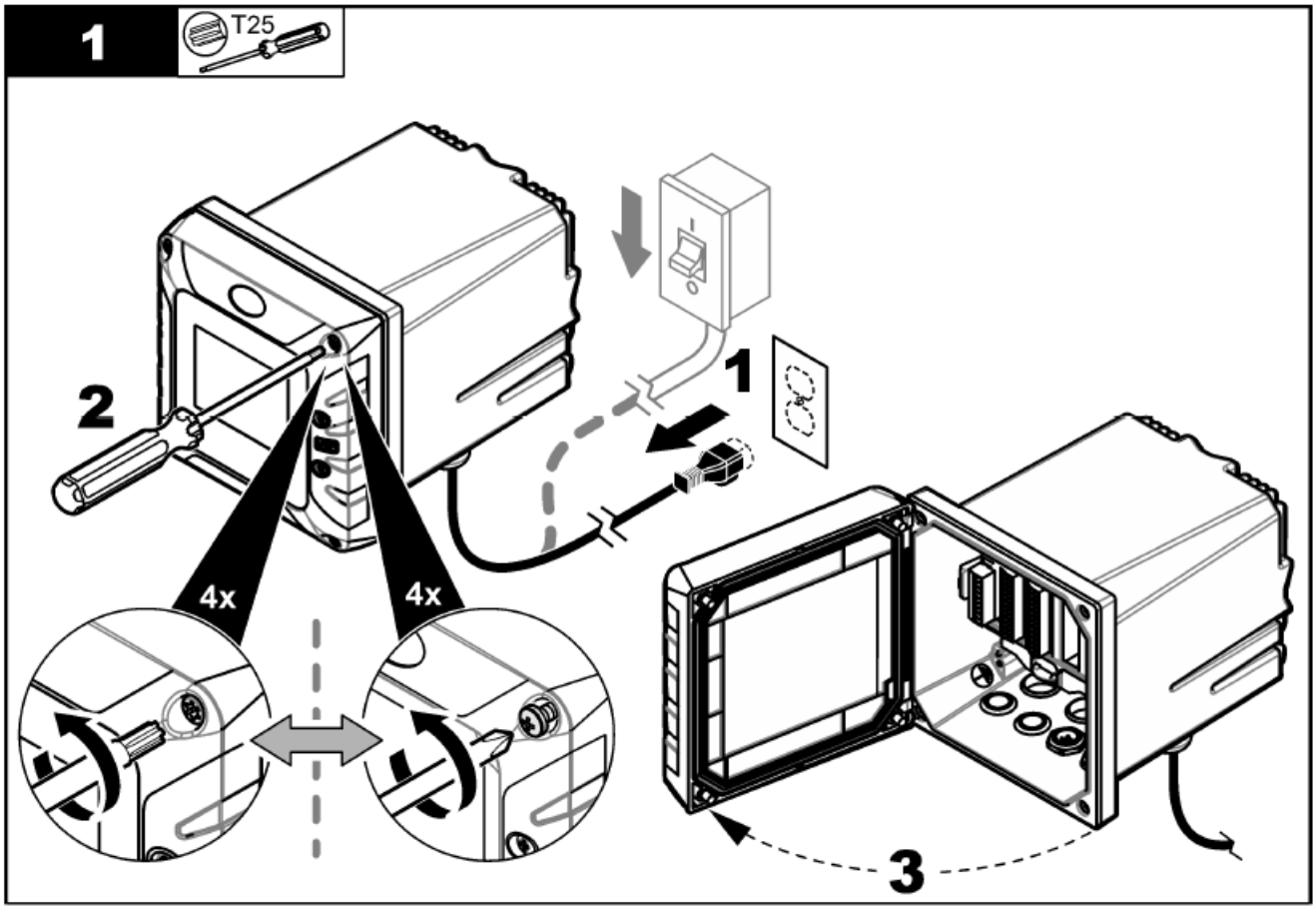
- pH and ORP sensors with attached cables: Table 2
- pH and ORP sensors with removable cables: Table 3 and Table 4

  Notes:
- Make sure that the controller is compatible with the pH/ORP module. Contact technical support.
- To keep the enclosure rating, make sure that all unused electrical access holes are sealed with an access hole cover.
- To maintain the enclosure rating of the instrument, unused cable glands must be plugged.
- Connect the module to one of the two slots on the right side of controller. Refer to Figure 2.
- The controller has two analog module slots. The analog module slots are internally connected to the sensor channel. Make sure that the analog module and the digital sensor are not connected to the same channel.
  - **Note:** Make sure that only two sensors are installed in the controller. Although two analog module ports are available, if a digital sensor and two modules are installed, only two of the three devices will be seen by the controller.
- Turn the rotatory switch of the module to configure the module based on the applicable sensor. Refer to Table 1.

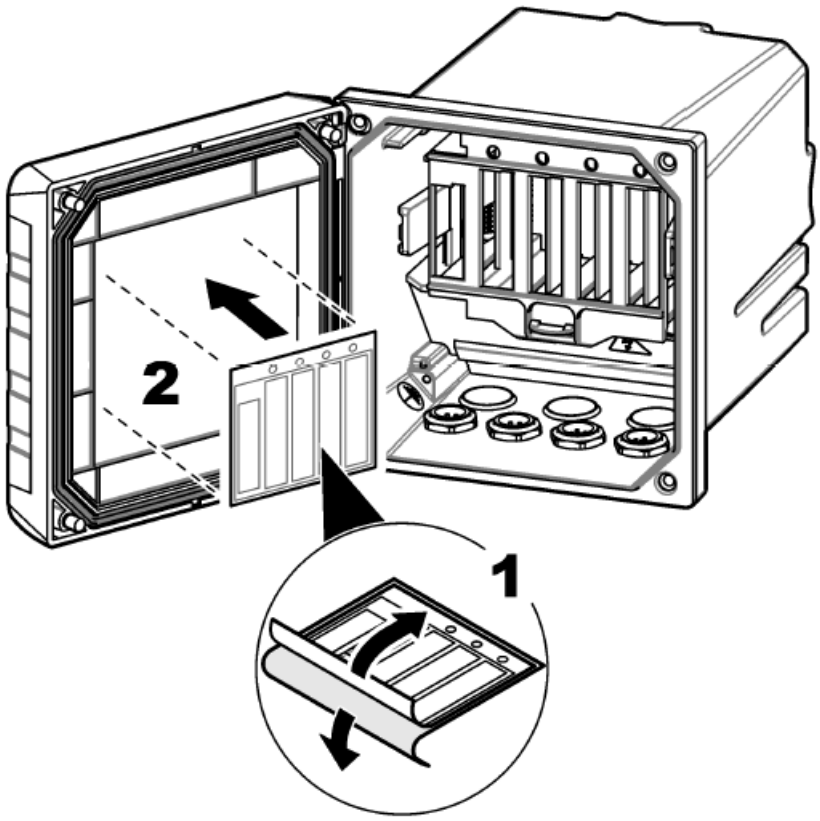
Figure 2 pH/ORP module slots



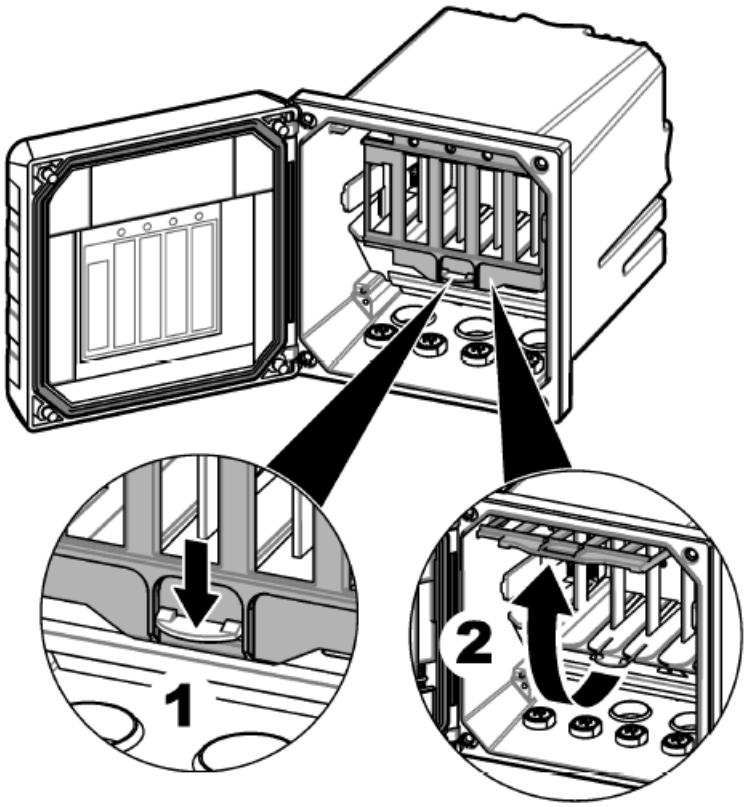
1. Analog module slot—Channel 1
2. Analog module slot—Channel 2

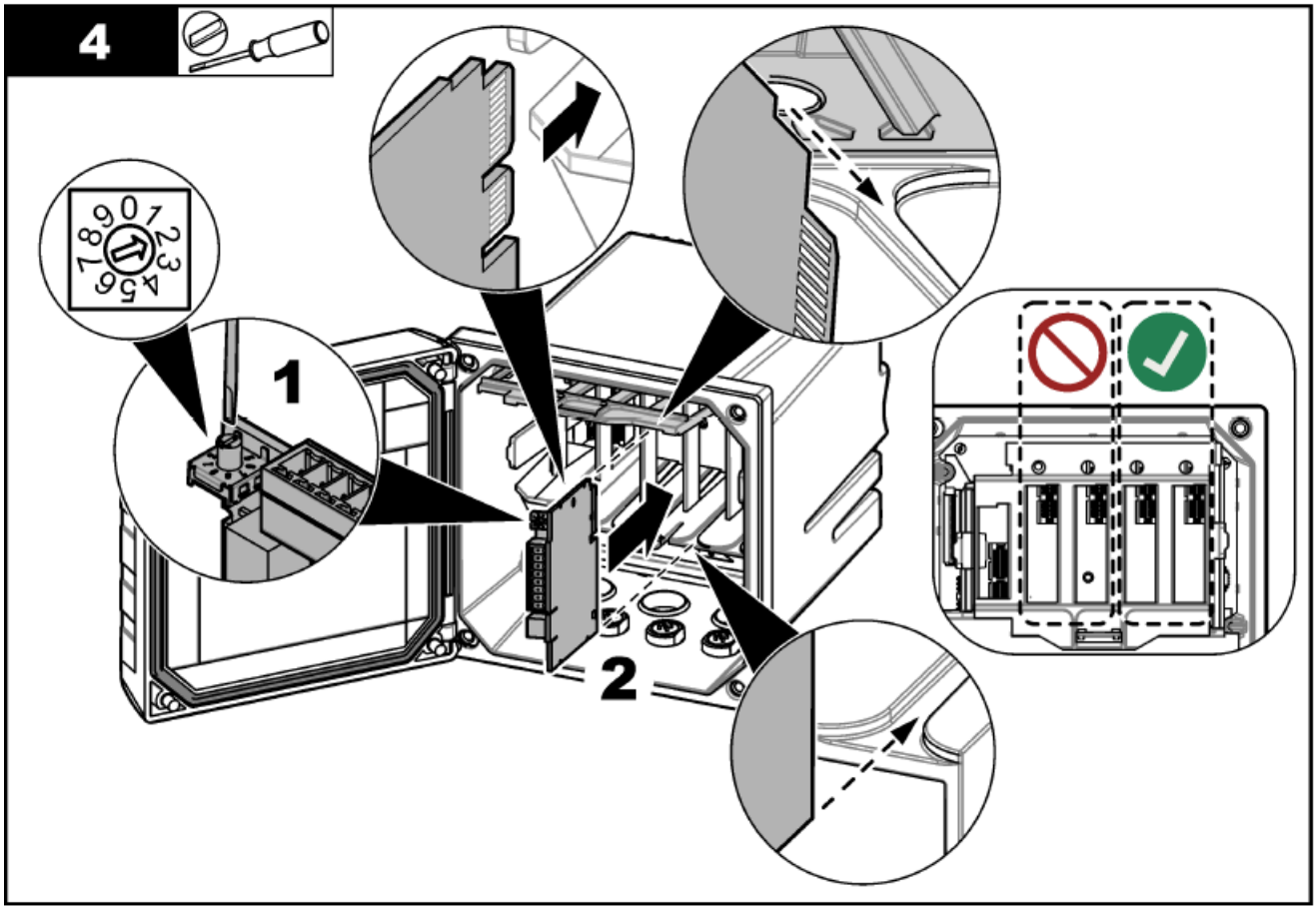


2



3

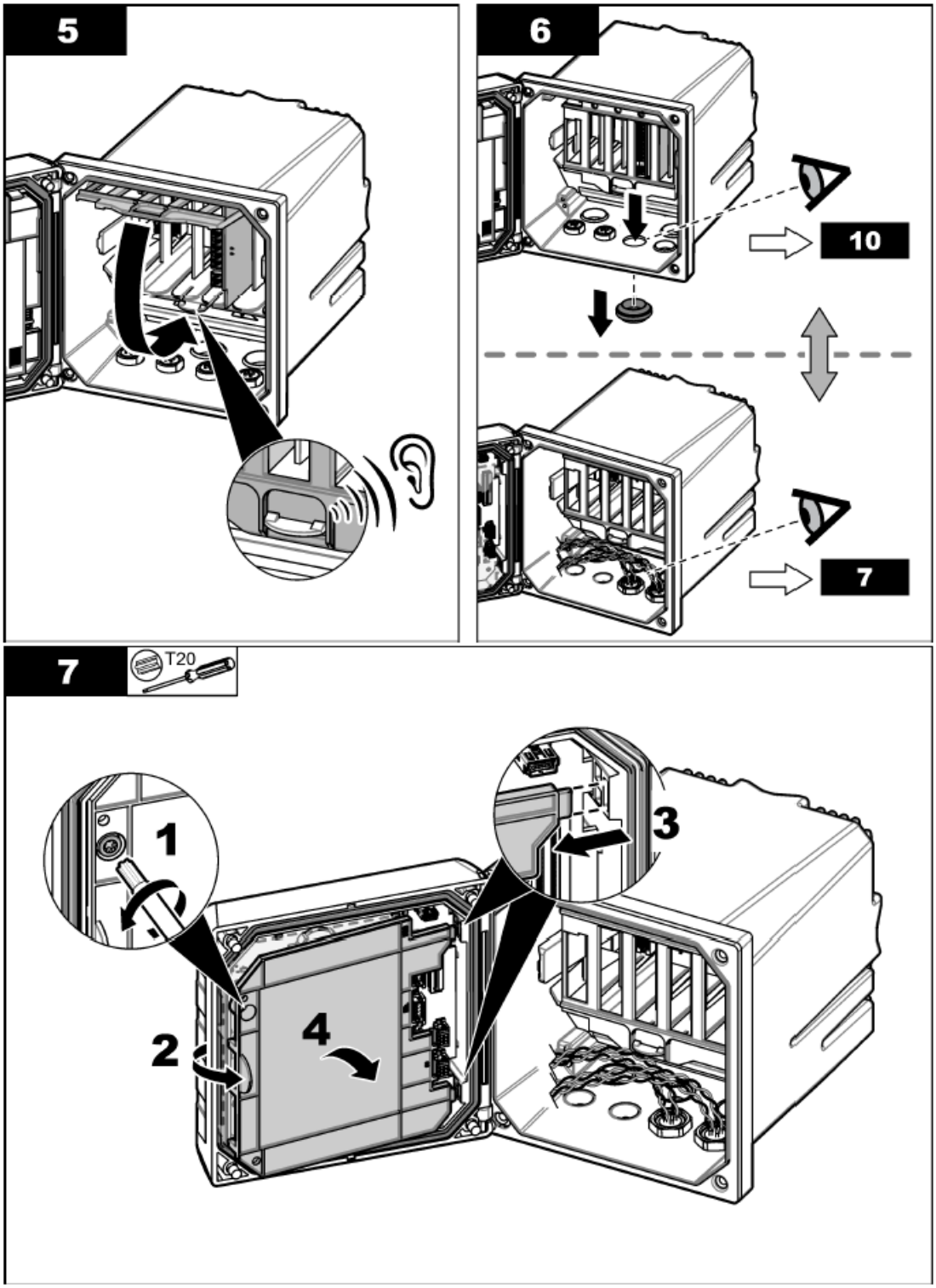




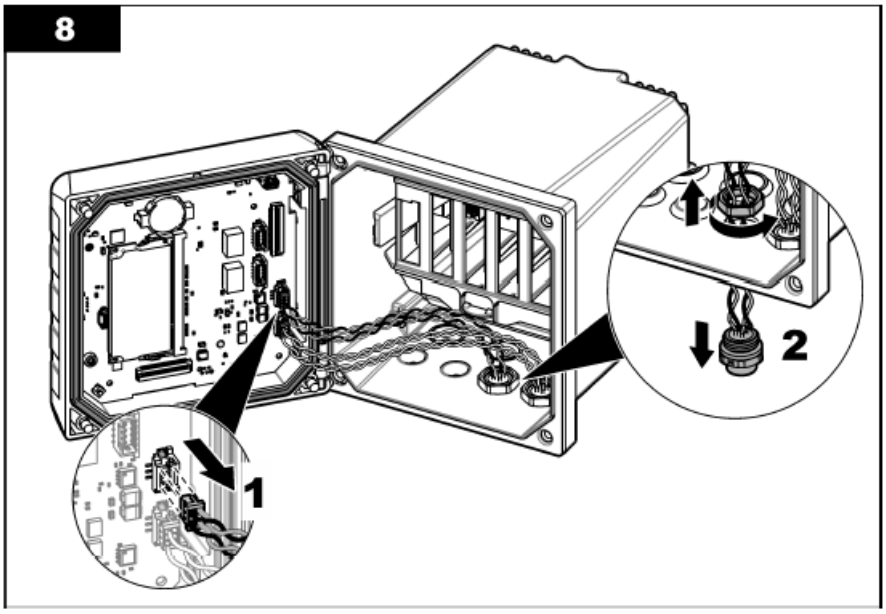
Turn the rotatory switch of the module to configure the module based on the applicable sensor. Refer to Table 1.

Table 1 Module configuration

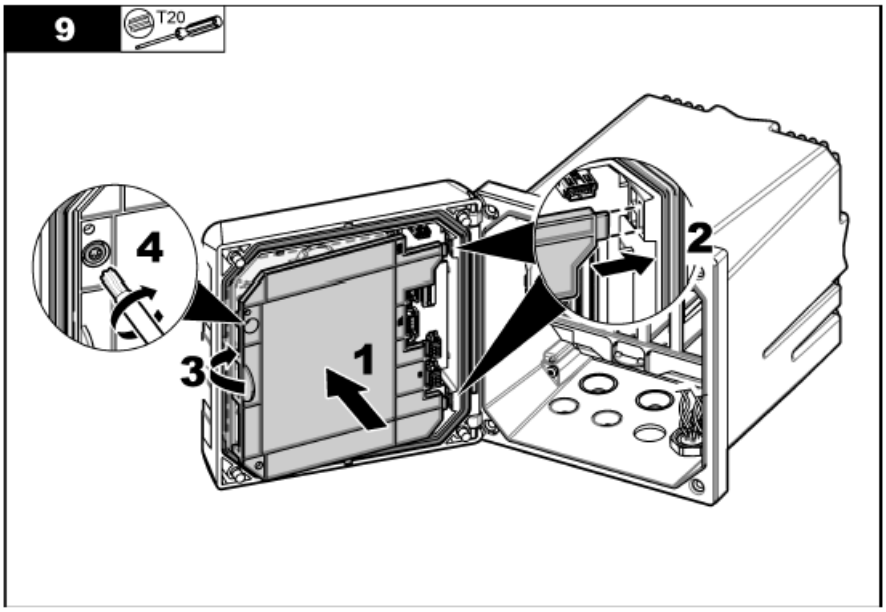
Switch position	Sensor type
2	Combination pH sensor
3	Combination ORP sensor
4	Differential pH sensor
5	Differential ORP sensor


5
6
10
7
7
T20
1
2
3
4

8



9 T20



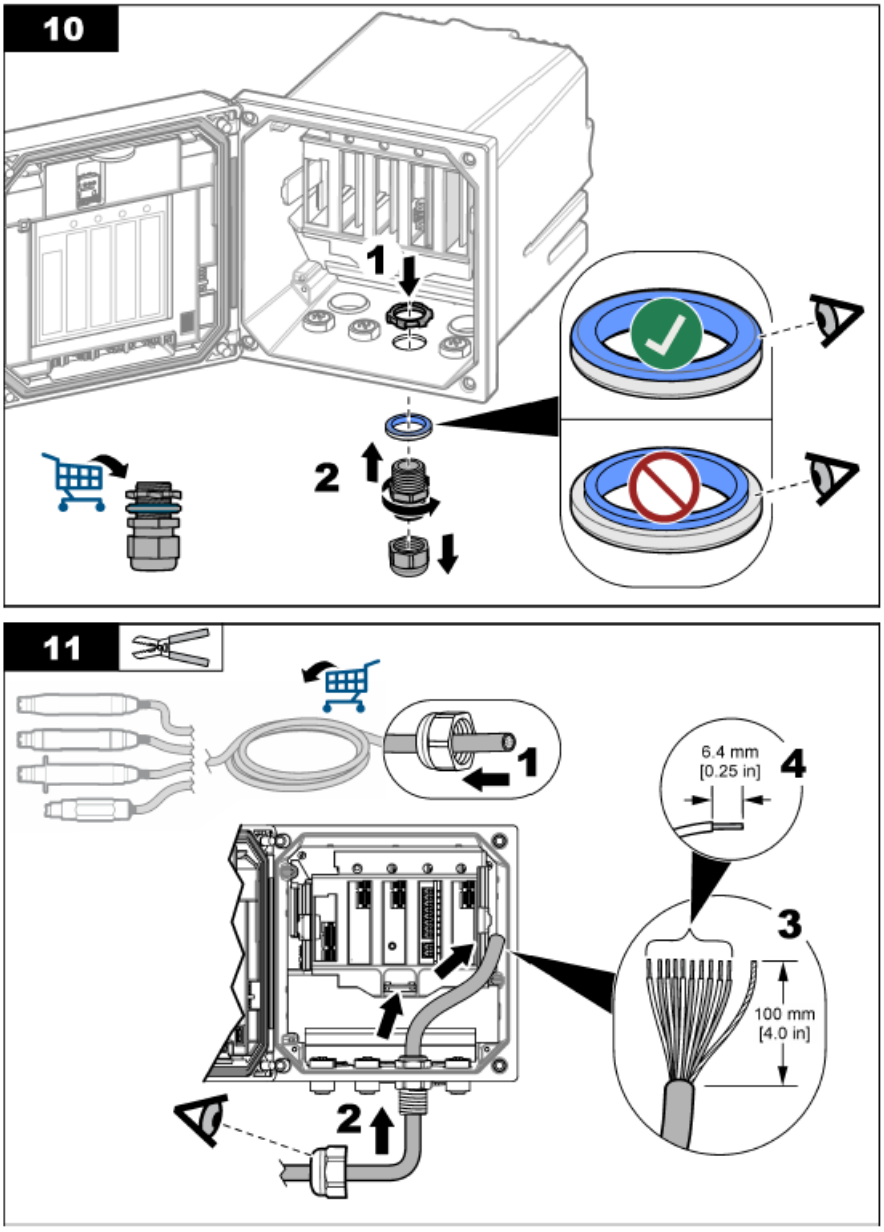


Table 2 pH and ORP sensor wiring – sensors with fixed cables

Terminal		Description	Sensor with an attached cable			
			Differential sensor	**Combination sensor**	**8350**	**8350.3/4/5**
8-pin (J5)	1	Reference	Green	Metal braid	Black (coax shield)	Black (coax shield)
	2	Ground solution	Clear	Blue (or yellow for 6-plug sensors)1	Jumper 1–2 on J5	Jumper 1–2 on J5
	3	–V supply	White	—	—	—
	4	—	—	—	—	—
	5	—	—	—	—	—
	6	Temp	Yellow	Red (or green for 6-plug sensors)	Red	Red
	7	Temp/Circuit low	Black	White	White	White
	8	—	—	—	—	
2-pin (J4)	1	Active	Red	Clear	Transparent (coax core)	Transparent (coax core)
	2	—	—	—	—	—
Sensor shield wires – Connect all sensor ground/shield wires to the controller enclosure grounding screws.			Clear with a black band		—	Blue

Table 3 pH and ORP sensor wiring – sensors with removable cables

Terminal		Description	Cable type (connector)		
			Top68 (with temp)	SMEK	VP-Plug
8-pin (J5)	1	Reference	Black shield	Black	Red
	2	Ground solution	Jumper 1–2 on J5	Jumper 1–2 on J5	Jumper 1–2 on J52
	3	–V supply	—	—	—
	4	—	—	—	—
	5	—	—	—	—
	6	Temp	(Red)	Green	Green
	7	Temp/–Circuit low	(White)	White	White
	8	—	—	—	—
2-pin (J4)	1	Active	Black signal	Transparent	Black/transparent
	2	—	—	—	—

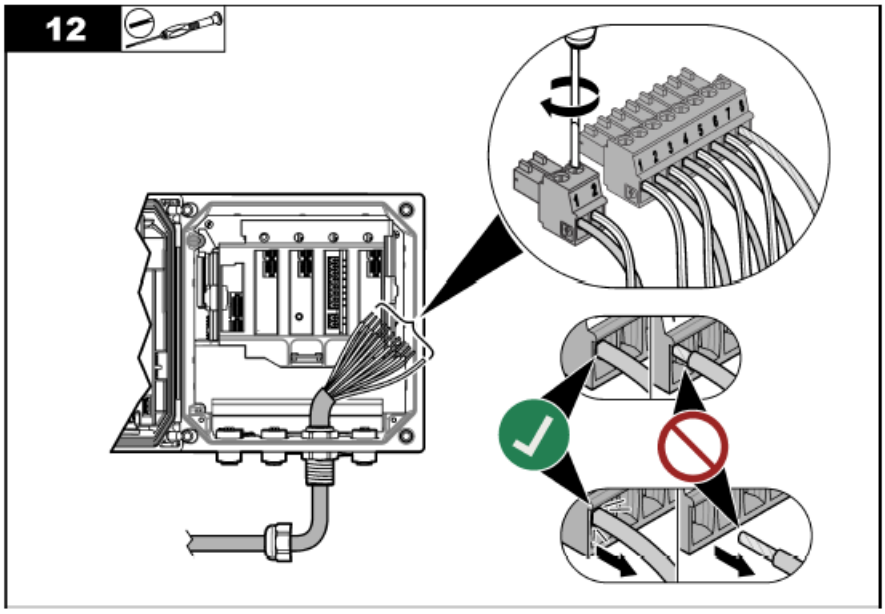
1. If the combination sensor does not have a blue wire (or yellow wire for 6-plug sensors) for solution ground, install a jumper wire between pins 1 and 2 on the 8-pin (J5) connector.
2. If an electrode with a ground solution is used, connect the wire to pin 2 on J5 and do not make a jumper. For the VP-Plug, use the blue wire.

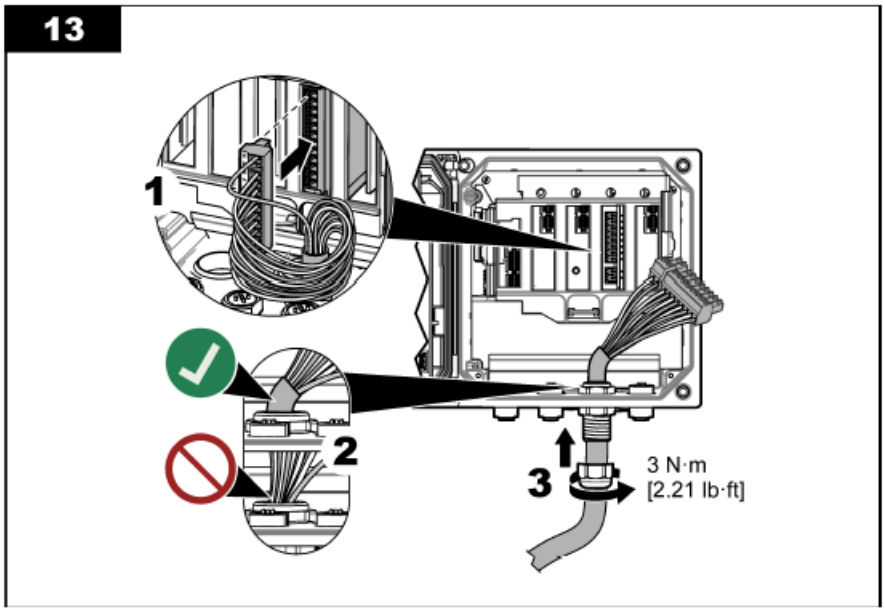
Table 3 pH and ORP sensor wiring – sensors with removable cables (continued)

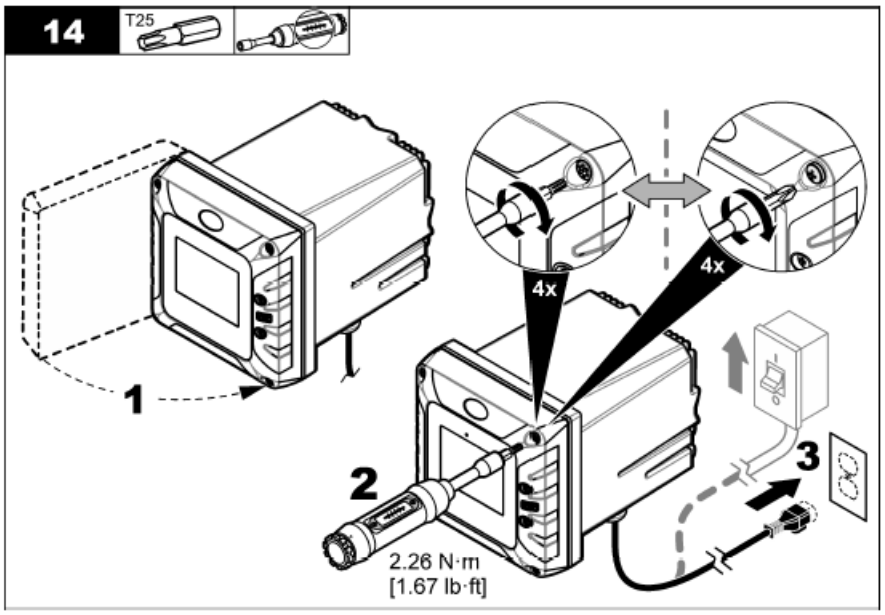
Terminal	Description	Cable type (connector)		
		Top68 (with temp)	SMEK	VP-Plug
Sensor shield wires—Connect all sensor ground/shield wires to the controller enclosure grounding screws.		—	Green/yellow	(Green/yellow)
Notes:		—	The yellow and brown wire are not used.	The gray wire is not used.

Table 4 pH and ORP sensor wiring – sensors with removable cables (continued)

Terminal		Description	Cable type (connector)			
			S7 double shielded	**S7 single shielded**	**AS9**	**MP4**
8-pin (J5)	1	Reference	Inner stranded wire (silver)	Inner stranded wire (silver)	Outer stranded wire (copper)	Outer stranded wire (copper)
	2	Ground solution	Jumper 1–2 on J5	Jumper 1–2 on J5	Jumper 1–2 on J5	Jumper 1–2 on J5
	3	–V supply	—	—	—	—
	4	—	—	—	—	—
	5	—	—	—	—	—
	6	Temp	—	—	—	Brown
	7	Temp/–Circuit low	—	—	—	White
	8	—	—	—	—	—
2-pin (J4)	1	Active	Transparent	Transparent	Transparent (core)	Transparent (core)
	2	—	—	—	—	—
Sensor shield wires—Connect all sensor ground/shield wires to the controller enclosure grounding screws.			Outer stranded wire (copper)	—	—	—
Notes:			—	—	—	—







Section 4 Configuration

- Refer to the controller documentation for instructions.
- Refer to the expanded user manual on the manufacturer’s website for more information.

- DOC023.97.90760
- 07/2022, Edition 2

CONTACT

- HACH COMPANY World Headquarters
- P.O. Box 389, Loveland, CO 80539-0389 U.S.A.
- **Tel.** (970) 669-3050
- (800) 227-4224 (U.S.A. only)
- **Fax** (970) 669-2932
- orders@hach.com.
- www.hach.com.
- HACH LANGE GMBH
- Willstätterstraße 11
- D-40549 Düsseldorf, Germany
- **Tel.** +49 (0) 2 11 52 88-320
- **Fax** +49 (0) 2 11 52 88-210
- info-de@hach.com.
- www.de.hach.com.
- HACH LANGE Sàrl
- 6, route de Compois
- 1222 Vésenaz
- SWITZERLAND
- **Tel.** +41 22 594 6400
- **Fax** +41 22 594 6499

- © Hach Company/Hach Lange GmbH, 2022. All rights reserved. Printed in Germany

Documents / Resources

	HACH SC4500 Controller [pdf] Instruction Manual SC4500 Controller, SC4500, Controller

References

- Geräte und Reagenzien für die Wasserqualitätsanalyse | Hach
- Hach | Hach

- User Manual

Manuals+,