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User Instructions

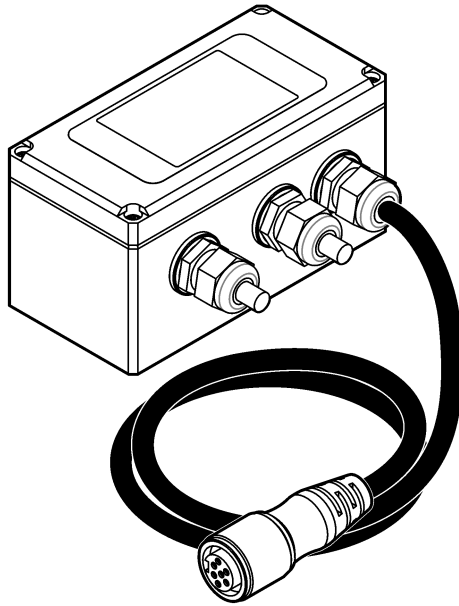


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Specifications

Specifications are subject to change without notice.

Specification	Details
Dimensions (L x W x D)	160 x 80 x 86 mm (6.30 x 3.15 x 3.39 in.)
Enclosure	NEMA 4X, IP66, indoor or outdoor use
Weight	0.59 kg (1.3 lbs)
Pollution degree	2
Installation category	II
Protection class	II
Electrical rating	12–15 VDC, 0.31 A (from the AS950 controller)
Operating temperature	–30 to 50 °C (–22 to 122 °F)
Storage temperature	–30 to 80 °C (–22 to 176 °F)
Storage/operating humidity	100% non-condensing
Cable	Auxiliary cable, 7-pin
Fuse	0.25 A, 250 V, 5 x 20 mm
Relay	5 A maximum resistive load at 240 VAC, 1/8 HP at 120 VAC, 1/4 HP at 240 VAC
Certifications	CE, UL/CSA standards (cETLus)
Warranty	1 year (EU: 2 years)

General information

In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages resulting from any defect or omission in this 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

NOTICE

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 solely 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

▲ DANGER
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 is the safety alert symbol. Obey all safety messages that follow this symbol to avoid potential injury. If on the instrument, refer to the instruction manual for operation or safety information.
	This symbol indicates that a risk of electrical shock and/or electrocution exists.
	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.

Certification

Canadian Radio Interference-Causing Equipment Regulation, IECS-003, Class A:

Supporting test records reside with the manufacturer.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de classe A répond à toutes les exigences de la réglementation canadienne sur les équipements provoquant des interférences.

FCC Part 15, Class "A" Limits

Supporting test records reside with the manufacturer. The device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. The equipment may not cause harmful interference.
2. The equipment must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a

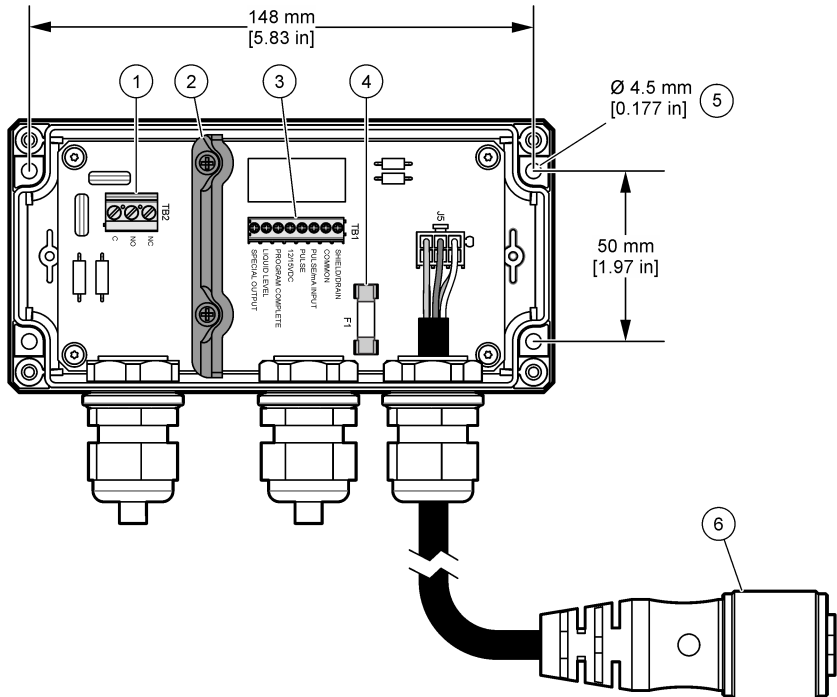
residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their expense. The following techniques can be used to reduce interference problems:

1. Disconnect the equipment from its power source to verify that it is or is not the source of the interference.
2. If the equipment is connected to the same outlet as the device experiencing interference, connect the equipment to a different outlet.
3. Move the equipment away from the device receiving the interference.
4. Reposition the receiving antenna for the device receiving the interference.
5. Try combinations of the above.

Product overview

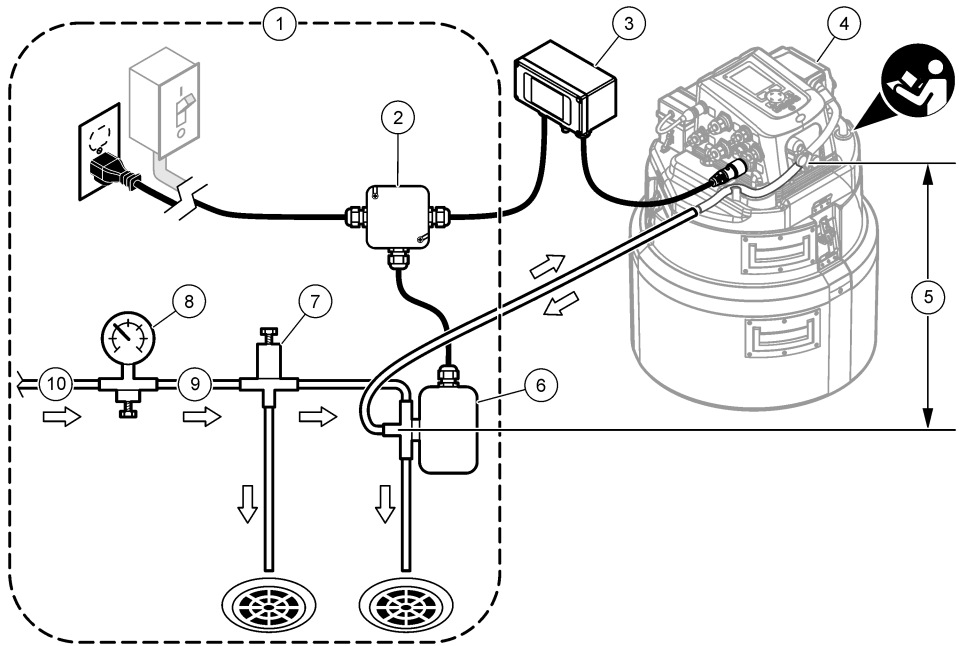
The pressurized sampling relay module has a high-voltage relay for automatic sample collection from a pressurized sample line. The module also has low-voltage connections for optional flow pacing and sampler program control (Figure 1). The module can be used with a portable, refrigerated or an All-Weather Refrigerated Sampler (AWRS) that has the AS950 controller. The user must decrease the sample pressure to less than 69 kPa (10 psi) and supply power to the relay. Refer to Figure 2 and User-supplied equipment on page 7.

Figure 1 Product overview



1 High-voltage block TB2	3 Low-voltage block TB1	5 Mounting holes (4x)
2 High-voltage barrier	4 Fuse	6 Cable to the sampler

Figure 2 System overview

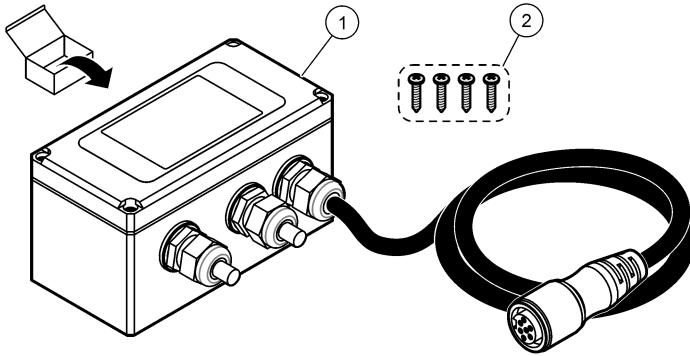


1 User-supplied equipment	6 Motorized ball valve
2 Junction box	7 Pressure relief valve
3 Pressurized sampling relay module	8 Pressure reducer/regulator
4 AS950 controller	9 Reduced-pressure sample line
5 Sample intake is higher than the ball valve	10 High-pressure sample line

Product components

Make sure that all components have been received. Refer to [Figure 3](#). If any items are missing or damaged, contact the manufacturer or a sales representative immediately.

Figure 3 Product components



1 Pressurized relay module with auxiliary cable	2 Mounting screws, 6 x 0.75 inch tapping (4x)
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User-supplied equipment

Refer to [Figure 2](#) on page 6 for an overview of the plumbing, mechanical and electrical parts that must be supplied by the user. Make sure that the equipment agrees with local, regional and national requirements.

- Junction box and cables—Connects to mains power, the ball valve and the relay module.
- Pressure reducer/regulator—Decreases the sample line pressure to less than 69 kPa (10 psi). Use a pressure regulator that has the applicable requirements for the size of the input sample line, the input pressure and the sample type. The manufacturer recommends Watts Series SS-263AP M1, 21 to 345 kPa (3 to 50 psi).
- Pressure relief valve—Makes sure that the pressure in the sample line is not too high. Use a tool-adjustable pressure relief valve with sufficient discharge capacity so that the sample pressure cannot be more than 103 kPa (15 psi).
- Motorized three-way ball valve—Connects the flow from the pressurized sample line to the sampler inlet and then to the drain for automated sample collection. Refer to [Table 1](#) for the ball valve requirements.

Table 1 Ball valve requirements

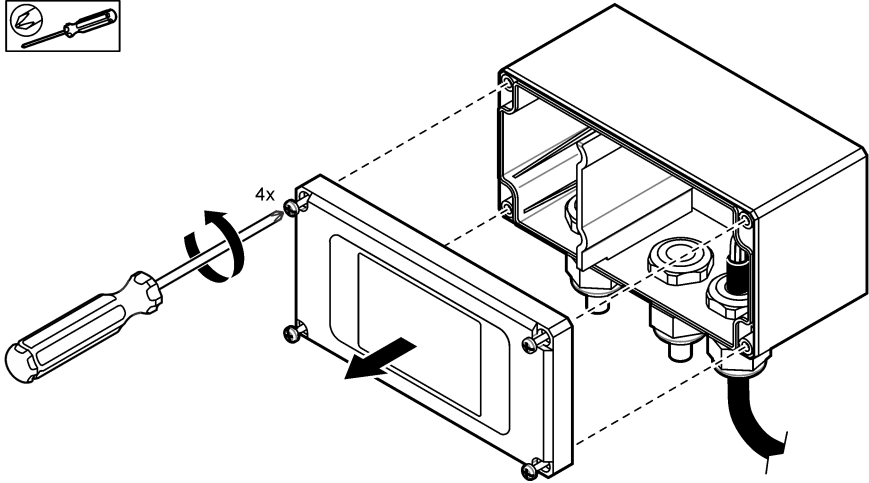
Specification	Details
Valve type	Three-way diverter ball valve
Materials of construction	Compatible with process fluid
Actuator	Electric
Actuator maximum current	1/8 HP at 120 VAC; 1/4 HP at 240 VAC, 5 A maximum resistive
Actuation time	15 seconds maximum
Duty cycle	25% minimum
Port size	9 mm minimum
Certification	NRTL or CE

Installation

This instrument is rated for an altitude of 2000 m (6562 ft) maximum. Although the use of this equipment above the 2000 m altitude does not show any substantial safety concern, the manufacturer recommends that users with concerns contact technical support.

Remove the cover

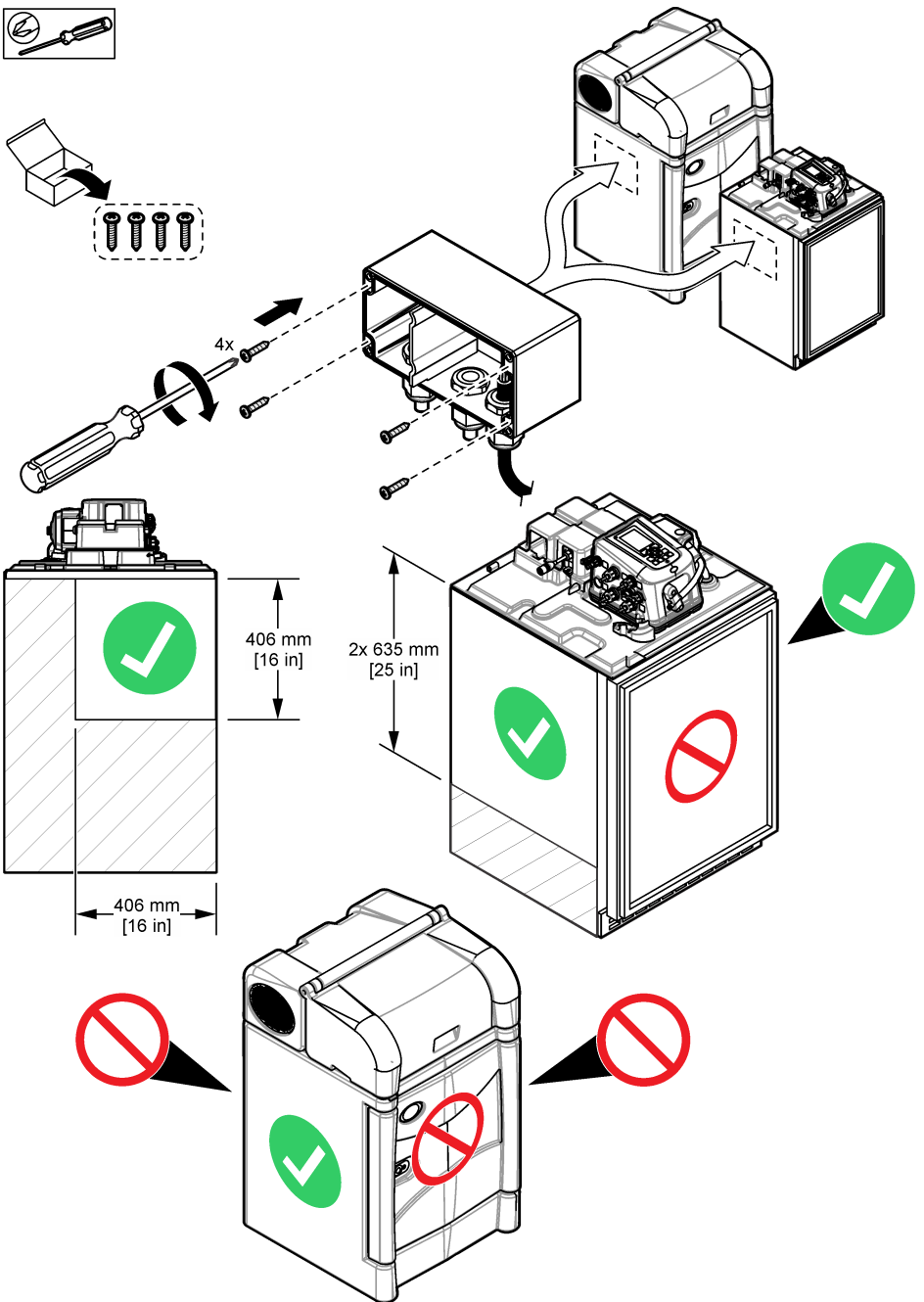
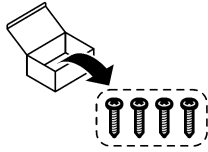
Remove the cover as shown in the illustrated steps that follow.



Mounting

Attach the module to a flat surface. The mounting surface must hold a minimum of 4 times the weight of the equipment. Make sure that the module is sufficiently near the sampler to easily connect or disconnect the cable to the sampler. Do not install the module in direct sunlight. Refer to the [Specifications](#) on page 3 and to the mounting dimensions in [Figure 1](#) on page 5. Refer to [Figure 4](#) to attach the module to the sampler.

Figure 4 Mounting locations on the sampler



Electrical installation

⚠ DANGER



Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

⚠ DANGER



Electrocution hazard. Always remove power to the instrument before making electrical connections.

⚠ WARNING



Electrical shock hazard. Externally connected equipment must have an applicable country safety standard assessment.

⚠ CAUTION



Fire hazard. Always limit current to the relays with an external fuse or breaker. Obey the relay ratings in the Specifications section.

NOTICE

Make sure that the equipment is connected to the module in accordance with local, regional and national requirements.

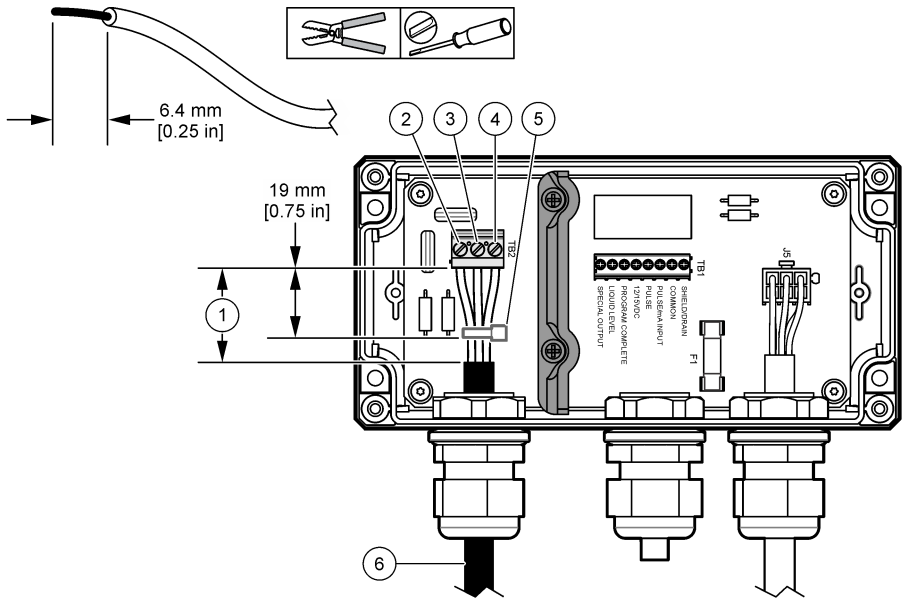
Wiring for pressurized sampling

The high-voltage relay connects to the user-supplied equipment for pressurized sampling as shown in [Figure 2](#) on page 6.

Wiring requirements:

- Only use 4.3 to 11.4 mm (0.17 to 0.45 inch) diameter cable.
 - Use cable with a minimum insulation rating of 300 VAC and a minimum wire size of 0.823 mm² (18 AWG).
 - Make sure that the cable jacket is correct for wet outdoor locations.
 - Do not install the wiring in conduit.
 - Review the relay specifications in [Specifications](#) on page 3.
1. Prepare the wires as shown in [Figure 5](#).
 2. Install the wires to the TB2 block as shown in [Figure 5](#) and [Table 2](#). Tighten to 0.40 Nm (3.5 inch-pound).
 3. If more than 25.4 mm (1 inch) of the cable jacket is removed, install a plastic wire tie around the wires. Install the wire tie at a maximum distance of 19 mm (0.75 inch) from the terminal. Refer to [Figure 5](#).
 4. Tighten the cable strain relief sufficiently to keep the environmental rating of the enclosure.
 5. Install the cover. Make sure that the screws are tight to keep the environmental rating of the enclosure.

Figure 5 High-voltage relay



1 Length of the removed cable jacket	4 TB2, NC (normally closed)
2 TB2, C (common)	5 Cable tie
3 TB2, NO (normally open)	6 High-voltage cable to junction box

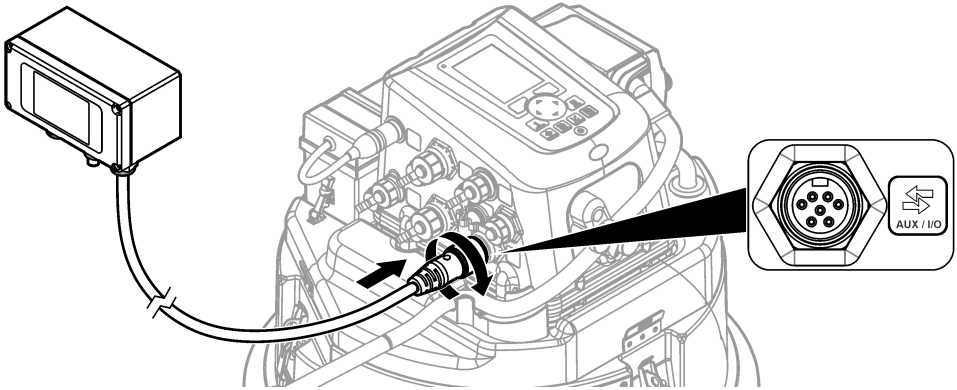
Table 2 TB2 terminal block description

C	NO	NC
Connects to VAC mains phase	When enabled, the ball valve connects the pressurized sample line to the sampler.	When enabled, the ball valve connects the sampler to the drain line.

Connect to the sampler

Connect the cable from the module to the AUX I/O port on the sampler. Refer to [Figure 6](#).

Figure 6 Connect to the sampler



Optional connections

Wiring for flow pacing

⚠ CAUTION



Electric shock hazard. Install low voltage wiring only on the right side of the high-voltage barrier. Do not mix high and low voltage wiring.

The sampler can connect to a flow device to collect samples at specified flow-volume intervals. When the auxiliary port on the sampler is in use for pressurized sampling, connect the flow device to the low-voltage connections in the module. The electrical signal from the flow device can be a pulse signal, contact closure or 4–20 mA current. Do not connect more than one signal type.

Cables that connect to the TB1 terminal block and are longer than 3 meters (10 ft) must have a shield. Connect the cable shield conductor to protective earth ground. To prevent an earth ground loop current, connect the shield only at one end of the cable. For more information, refer to the shield/drain signal description in [Table 3](#) on page 16.

Only use a 1.31 to 0.13 mm² (16 to 26 AWG) wire.

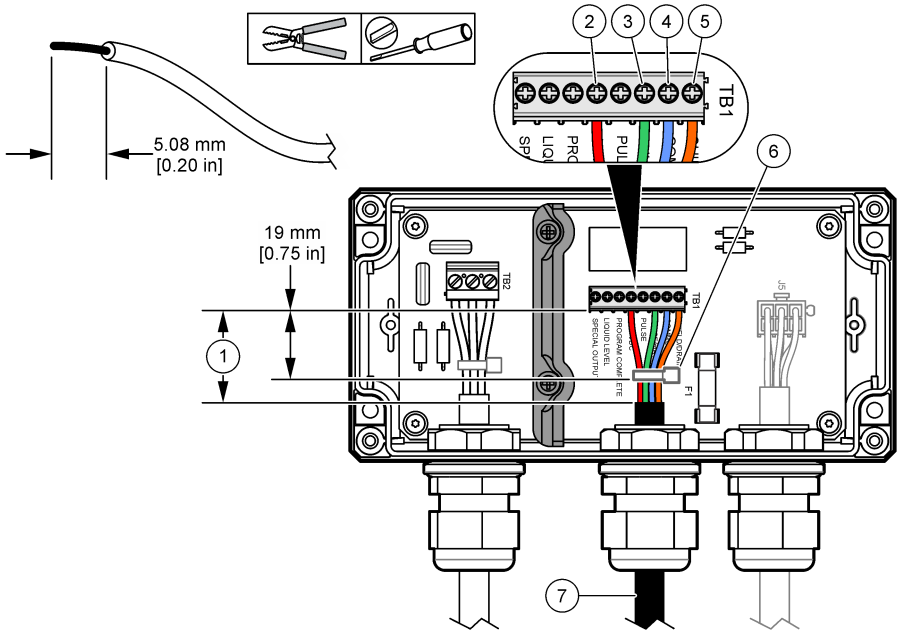
1. Prepare the wires as shown in [Figure 7](#).
2. Connect one of the signal types that follow from the device to the low-voltage block (TB1):

Option	Description
Pulse	Connect between the pulse/mA input and common terminals.
Contact closure	Connect between the pulse/mA input and 12/15 VDC terminals.
4–20 mA	Make a current loop between the 4–20 mA transmitter and the module as follows: <ul style="list-style-type: none">• Self-powered 4–20 mA transmitters: Connect between pulse/mA input (+) and common (–) terminals as shown in Figure 8.• Externally-powered 4–20 mA transmitters: Connect between pulse/mA input (+) and common (–) terminals as shown in Figure 9.• Sampler controller-powered: Connect between 12/15 VDC (+) and pulse/mA input (–) terminals as shown in Figure 10.

3. Tighten to 0.23 to 0.25 Nm (2 to 2.2 in-lbs).

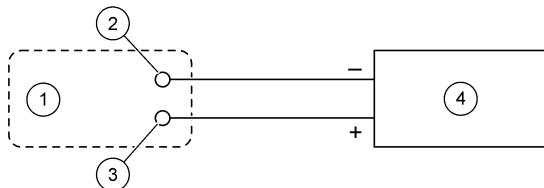
4. If more than 25.4 mm (1 inch) of the cable jacket is removed, install a plastic wire tie around the wires. Install the wire tie at a maximum distance of 19 mm (0.75 inch) from the terminal. Refer to [Figure 7](#).
5. Tighten the cable strain relief sufficiently to keep the environmental rating of the enclosure.
6. Install the cover. Make sure that the screws are tight to keep the environmental rating of the enclosure.
7. Refer to the user documentation for the sampler controller to set up flow pacing.

Figure 7 Wiring for flow pacing



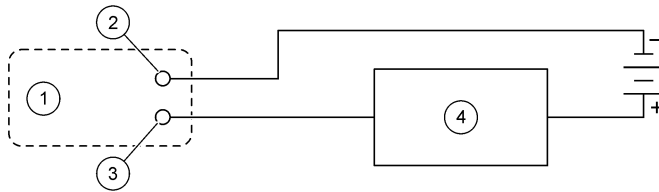
1 Length of the removed cable jacket	5 Shield/drain terminal
2 12/15 VDC terminal	6 Cable tie
3 Pulse/mA input terminal	7 Cable to the external device
4 Common terminal	

Figure 8 Self-powered 4–20 mA transmitter



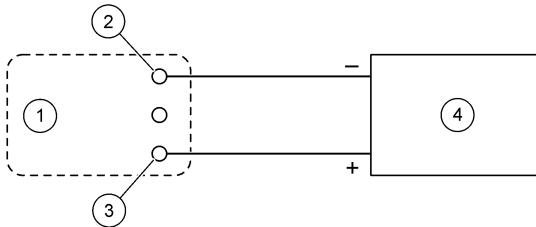
1 Low-voltage block (TB1)	3 Pulse/mA input terminal (+)
2 Common terminal (-)	4 4–20 mA transmitter

Figure 9 Externally-powered 4–20 mA transmitter



1 Low-voltage block (TB1)	3 Pulse/mA input terminal (+)
2 Common terminal (-)	4 4–20 mA transmitter

Figure 10 Sampler controller-powered loop



1 Low-voltage block (TB1)	3 12/15 VDC terminal (+)
2 Pulse/mA input terminal (-)	4 4–20 mA transmitter

Wiring for sampler program control

⚠ CAUTION	
	Electric shock hazard. Install low voltage wiring only on the right side of the high-voltage barrier. Do not mix high and low voltage wiring.

The sampler can connect to a device to start, stop or continue sample collection when an electrical signal is received from the device. The device can be another sampler or measurement device such as a pH probe. When the auxiliary port is in use for pressurized sampling, connect the device to the low-voltage connections in the module. Use a simple switch to supply the electrical signal.

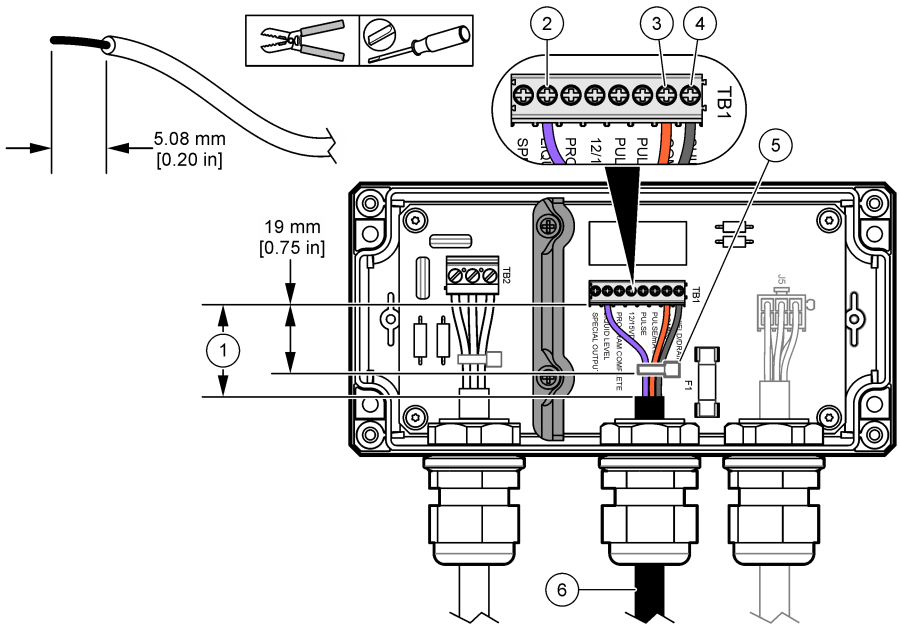
Cables that connect to the TB1 terminal block and are longer than 3 meters (10 ft) must have a shield. Connect the cable shield conductor to protective earth ground. To prevent an earth ground loop current, connect the shield only at one end of the cable. For more information, refer to the shield/drain signal description in [Table 3](#) on page 16.

Only use a 1.31 to 0.13 mm² (16 to 26 AWG) wire.

1. Prepare the wires as shown in [Figure 11](#).
2. Connect the dry contact switch to the liquid level terminal and to the common terminal. Refer to [Figure 11](#).
3. Tighten to 0.23 to 0.25 Nm (2 to 2.2 in-lbs).
4. If more than 25.4 mm (1 inch) of the cable jacket is removed, install a plastic wire tie around the wires. Install the wire tie at a maximum distance of 19 mm (0.75 inch) from the terminal. Refer to [Figure 11](#).
5. Tighten the cable strain relief sufficiently to keep the environmental rating of the enclosure.

6. Install the cover. Make sure that the screws are tight to keep the environmental rating of the enclosure.
7. Refer to the user documentation to set up sampler program control.

Figure 11 Wiring for sampler program control



1 Length of the removed cable jacket	4 Shield/drain terminal
2 Liquid level terminal	5 Cable tie
3 Common terminal	6 Cable to the external device

TB1 terminal block description

Refer to [Table 3](#) for descriptions of the low-voltage TB1 terminals.

Table 3 TB1 terminal block description

Pin/signal	Description	Rating
Special output	Not used. Do not connect to this pin.	—
Liquid level	<p>Sends a signal to the sampler controller to start or continue a sampling program.</p> <p>Liquid level input—Start or continue the sampling program. A simple float level switch can supply input.</p> <p>Auxiliary control input—Start a sampler after the sampling program on another sampler ends. As an alternative, start a sampler when a trigger condition occurs. For example, when a high or low pH condition occurs, the sampling program starts.</p>	<p>Termination (pulled high): internal +5 V supply through an 11 kΩ resistance with a series 1 kΩ resistor and 7.5 V zener diode terminated to common for protection.</p> <p>Trigger: High to low voltage with a low pulse of 50 milliseconds minimum.</p> <p>Absolute maximum input: 0 to 15 VDC with respect to common. Signal to make the input active: external logic signal with 5 to 15 VDC power source. The drive signal must be typically high. The external driver must be able to sink 0.5 mA at 1 VDC maximum at the logic low level.</p> <p>A logic high signal from a driver with a power source of more than 7.5 V will source current into this input at the rate of: $I = (V - 7.5)/1000$ where I is the source current and V is the power supply voltage of the driving logic.</p> <p>Dry contact (switch) closure: 50 millisecond minimum between liquid level and common. Contact resistance: 2 kΩ maximum. Contact current: 0.5 mA DC maximum</p>
Program complete	Not used. Do not connect to this pin.	—
12/15 VDC	Sampler controller power supply positive output. This output must be used with common.	This output has a 250 mA fuse for protection.
Pulse, Pulse/mA input	<p>These two pins are connected as one input.</p> <p>This input is a sample collection trigger from the flow meter (pulse or 4–20 mA) or a simple floating (dry) contact closure.</p>	<p>Pulse input—Reacts to a positive pulse with respect to common. Termination (pulled low): common through a series 1 kΩ resistor and 10 kΩ resistor. A 7.5 zener diode is in parallel with the 10 kΩ resistor as a protection device.</p> <p>Analog input—Reacts to the analog signal that enters pulse/mA input and returns on common. Input burden: 100 Ω plus 0.4 V; Input current (internal limit): 40 to 50 mA maximum¹</p> <p>Absolute maximum input: 0 to 15 VDC with respect to common.</p> <p>Signal to make the input active: 5 to 15 V positive-going pulse² with respect to common, 50 millisecond minimum.</p> <p>Dry contact (switch) closure of a minimum 50 ms duration between 12/15 VDC and pulse/mA input. Contact resistance should be less than 5 kΩ. The contact current will be less than 8 mA DC.</p>


¹ Long-term operation in this state voids the warranty.

² Source impedance of the driving signal must be less than 5 k Ω .

Table 3 TB1 terminal block description (continued)

Pin/signal	Description	Rating
Common	AS950 power supply negative return. When the AS950 sampler is powered by an AC/DC converter, this pin connects to earth ground. ³	—
Shield/drain	The shield is a connection to earth ground when AC power is supplied to a sampler to control RF emissions and susceptibility to RF emissions.	The shield is not a safety ground. Do not use the shield as a current carrying conductor. Connect cables that are more than 3 m (10 ft) to the shield pin. Only connect the shield wire to earth ground at one end of the cable to prevent ground loop currents.

Plumb the sampler


⚠ DANGER	
	Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

⚠ DANGER	
	Potential Electrical shock and fire hazards. The drain line must be connected to a drain system that is at ambient pressure.

Plumbing guidelines:

- Install the plumbing as near to the sample source as possible.
 - Make the intake tube as short as possible.
 - Keep the intake tube at a maximum vertical slope so that the tube fully drains between samples.
 - Make sure that the intake tube is not pinched.
 - Make sure that the drain lines are at zero pressure.
1. Refer to the installation documentation for the applicable sampler to connect the tubing to the sampler.
 2. Connect the tubing from the sampler to the ball valve. Make sure that the inlet tubing is above the ball valve so that the sample drains fully. Refer to [Figure 2](#) on page 6.

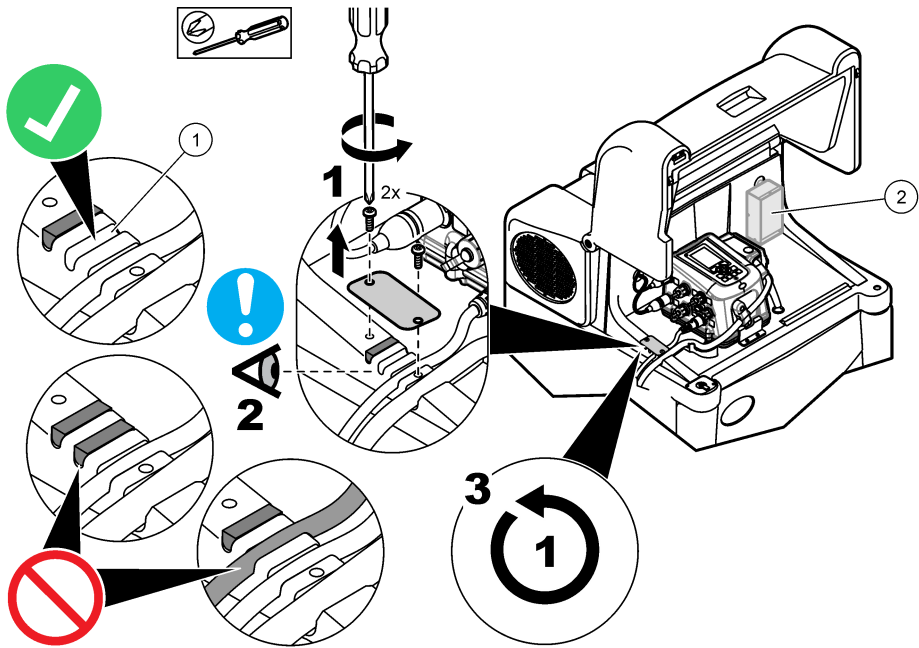
Pressurized sample precautions for an AWRS

⚠ DANGER	
	Electrical shock hazard. If a pressurized sample line is plumbed to an All-Weather Refrigerated Sampler (AWRS) that has a compartment heater, a sample leak can cause sufficient water to collect under the cover to touch the heater. Make sure there are no blockages in the center cable slot of the AWRS so that leaks can drain.

For an AWRS with a compartment heater, make sure that a sample leak under the cover can drain. Remove the foam plug or cable from the center cable slot. Refer to [Figure 12](#).

³ All mains powered equipment that connects to the module terminals must be NRTL listed.

Figure 12 AWRS compartment drain



1 Center cable slot

2 Compartment heater

Operation

Configure the sampler

Configure the sampler controller for pressurized sampling. When pressurized sampling is selected, the liquid detector is disabled.

1. Go to Hardware Setup.
2. Select AUX and I/O Port.
3. Configure the options as follows:

Option	Setting
Mode	Pressurized
Valve Cycle Time	10 seconds (default). This is the time that is necessary for the ball valve to move from one position to the other. The use of a value less than that specified by the valve manufacturer can cause incorrect rinse, purge or sample function.
Flow Reading	AUX-Pulse or AUX-mA

Maintenance

▲ DANGER



Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

▲ WARNING



Biological hazard. Obey safety handling protocols and wear all of the personal protective equipment required when handling an instrument that may have come in contact with biological hazardous materials. Wash and decontaminate the instrument with a disinfectant soap solution and rinse with hot water before maintenance or shipping.

Clean the instrument

Clean the exterior of the instrument with a moist cloth and a mild soap solution and then wipe the instrument dry as necessary.

Replace the fuse

▲ DANGER



Electrocution hazard. Always remove power to the instrument before making electrical connections.

▲ WARNING



Fire hazard. Use the same type and current rating to replace fuses.

1. Remove the cover.
2. Remove the fuse from the fuse holder. Refer to [Figure 1](#) on page 5.
3. Install a new fuse of the same type and current rating. Refer to [Specifications](#) on page 3 for the fuse rating.
4. Install the cover.

Pump maintenance

It is important to keep the sampler pump and tubing in good condition to prevent leaks from the pressurized sample.

- Do not operate the pressurized sampling relay during tubing or pump maintenance.
- For an AWRS that has a compartment heater, obey the precautions in [Pressurized sample precautions for an AWRS](#) on page 17.

1. Close the valve in the high-pressure sample line to stop the flow of the pressurized sample.
2. Disconnect the auxiliary cable from the relay module to the sampler.
3. Complete the pump maintenance instructions in the sampler documentation.
4. Connect the auxiliary cable from the relay module to the sampler.

Replacement parts

▲ WARNING



Personal injury hazard. Use of non-approved parts may cause personal injury, damage to the instrument or equipment malfunction. The replacement parts in this section are approved by the manufacturer.

Note: Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.

Description	Item no.
Fuse, 0.25 A, 250 V, 5 x 20mm	6681000
Mounting screws, 6 x 0.75 inch tapping	4481800



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