

Conductive and Inductive Conductivity Meter

Installation Guide



*For use with Blue I Water Technologies HYDROGUARD®
Water Quality Analyzers and Controllers*

V. 2.0

1 Preface

1.1 Intended Use

This manual is for qualified and trained service technicians who will install and service the Conductivity Meter for Blue I Water Technologies' HYDROGUARD® water quality controller and analyzer. It provides instructions on how to install the Conductivity Meter, how set it up with the HYDROGUARD analyzer, general operation and maintenance.

Safety Precautions



Warning: Only properly trained and licensed electricians should attempt to wire or service the electronic components of the analyzer. There is an Electrical Shock Hazard when servicing this system. Always verify that all electrical power source(s) are off before opening the analyzer unit or attempting to service electronic components or wiring.

Caution: Extreme caution should be used when installing, operating, and maintaining a HYDROGUARD® Water Quality Controller and Analyzer. Only properly trained technicians are authorized to install and maintain the analyzer. Only properly trained and licensed electricians should attempt any change to the system's electrical components. Only properly trained and licensed operators should attempt to make any changes to chemical dosing levels.

Always follow local health and safety regulations when performing any service on the HYDROGUARD® unit or changing chemical dosing settings.

2 Conductivity Measurement Options

There are two conductivity measurement options.
Follow the instructions below for the kit that you have purchased:

- Conductive
 - 0 to 2,000 $\mu\text{S}/\text{cm}$
 - 0 to 50°C (32 to 122°F)
 - Temperature Compensation
 - Accuracy: 1.5% (of full-scale)

- Inductive
 - 200 to 5,000 $\mu\text{S}/\text{cm}$
 - 0 to 50°C (32 to 122°F)
 - Temperature Compensation
 - Accuracy: 2% (of full-scale)



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3 Conductive Installation

If the HYDROGUARD® system was ordered with the conductivity function pre-installed some of these steps will have been completed in the factory.

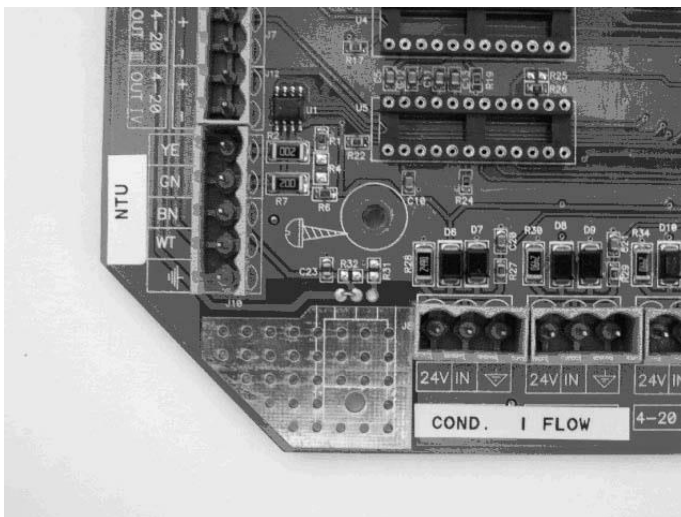
3.1 Supplied Components

- Conductivity 4-20 input Module (electronics card)
- 150mm Flat Cable (ribbon cable)
- Conductivity meter with cable
- ½" Fitting to connect to pipe

Caution: Prior to opening the analyzer or installing any electrical components, turn off all power supplies to the analyzer



- 1) Attach the module to the inside of the control panel door below the control panel module using the 4 supplied screws.
- 2) Attach the ribbon cable from the conductivity module to any open connector on the I/O module.
- 3) Connect the ½" NPT compression fitting to an open ½" port on top of the flow cell.
- 4) Insert the electrode and tighten the compression fitting.
- 5) Route the conductivity meter cable through an open gland on the bottom of the analyzer.
- 6) Connect the wires to the first 4-20mA input on the bottom of the 4-20 module.
- 7) Connect RED wire from the meter to 24V on the electronics card.
- 8) Connect the Clear wire from the meter to IN on the electronics card.



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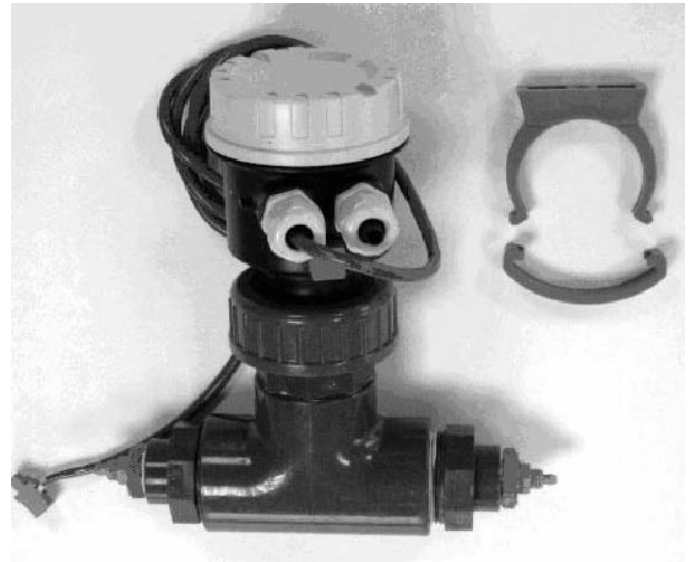
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4 Inductive Installation

If the HYDROGUARD® system was ordered with the conductivity function pre-installed some of these steps will have been completed in the factory.

4.1 Supplied Components

- Conductivity 4-20 input Module (electronics card)
- 150mm Flat Cable (ribbon cable)
- Conductivity meter with cable
- Conductivity flow cell
- Mounting Bracket



Caution: Prior to opening the analyzer or installing any electrical components, turn off all power supplies to the analyzer

- 1) Attach the module to the inside of the control panel door below the control panel module using the 4 supplied screws.
- 2) Attach the ribbon cable from the conductivity module to any open connector on the I/O module.
- 3) Mount the conductivity flow cell and meter on a solid wall or surface using appropriate hardware (not supplied). Make sure that the distance is less than 15m (45 feet) from the HYDROGUARD® analyzer.
- 4) Connect a water supply of no greater than 2 bar (30 psi) to the inlet fitting using 6mm tubing. It may be a new separate water supply or a line tapped from the main analyzer water supply before the pre-filter. Larger tubing may be used if the fitting is replaced to accept the new tubing.
- 5) Connect a 6mm water outline line to the outlet fitting and connect to:
 - a. The water system at least 5 psi (0.3 bar) lower than the inlet water supply or
 - b. The pre-filter of the HYDROGUARD® analyzer.
- 6) Route the conductivity meter cable through an open gland on the bottom of the analyzer
- 7) Connect the wires to the first 4-20mA input on the bottom of the 4-20 module
- 8) Connect 24V from the meter to 24V on the module
- 9) Connect mS from the meter to IN on the module
- 10) Connect GND from the meter to ground (symbol) on the module



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5 First Time Set-up and General Operation

The software set-up and operation of the conductivity is the same for both inductive and conductive conductivity meters.

5.1 Viewing on Main Display

1. Enter the technician menu by pressing UP and Down together
2. Press Menu until "**View conductivity**" appears on the display
3. Press OK and use arrows to select password and press OK again
4. Press UP to select ON and press OK

5.2 Setting 4-20mA output

If ordered from the factory as part of an analyzer, output channel 3 is pre-set with the correct settings for the conductivity meter shipped with the analyzer.

1. Enter the technician menu by pressing UP and Down together
2. Press Menu until "**4-20mA Settings**" appears on the display
3. Press OK and use arrows to select password and press OK again
4. Select the channel (1 to 2 built-in or 1 to 4 NTU/4-20mA card)
 - a. Press OK
 - b. Use UP or DOWN Arrow to cycle through choices
 - c. Press OK
5. Select the COND for the output
 - a. Press OK
 - b. Use UP or DOWN Arrow to cycle through choices until COND appears
 - c. Press OK
6. Set the Min value
 - a. 0 for both meter
7. Set the Max value
 - a. 2,000 for conductive meters
 - b. 5,000 for inductive meter



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6 Routine Maintenance

6.1 Conductivity Calibration

Conductivity meters are calibrated in the factory; additional calibration after initial set-up is not required. Any future calibration must be performed when process is stable, including conductivity and temperature within normal operating range.

NOTE: If conductive (0 to 2000) conductivity meter is added to an existing analyzer, it must be calibrated within this range before using.

- 1) Test a sample of water with an accurate external conductivity meter. Or use buffer solution (not supplied)
- 2) Press Menu until "Conduc. Calibrated to" appears in the LCD display.

The top line will display "Conduc. Calibrated to" and a number. The number displayed is the last value someone entered for the calibration. The bottom line will display "Sensor value was" and a number. This number is the sensor reading without any calibration at the time of the last calibration. If there is a large discrepancy between these two numbers, the sensor was calibrated improperly or there is a problem with the analyzer.

- 3) Press OK.
- 4) Enter the password. Press the up arrow or down arrow until the password is reached.
- 5) Press OK.
- 6) Press OK again.

The display will now show "Calibrate Conduc.to" on the top line and "Sensor Reading is" on the bottom line. The "Sensor Reading" is the current reading of the sensor with no calibration. The "Calibrate Cl to" value is the new value which you want to set.

- 7) Press the up arrow or down arrow until the value is the same as the value given by manual reading or value of solution used
- 8) Press OK to save the new calibration or Esc to abort without saving.
- 9) Press Esc to return to the main display.

6.2 Cleaning the Conductivity Meter

Routine cleaning of the conductivity meter will ensure long-term reliability. The frequency of cleaning will depend on the water source being tested and should be conducted whenever there is significant visible dirt, the measurement accuracy is affected, or before the meter is calibrated.

- 1) Shut off the flow of water to the conductivity meter flow cell
- 2) Wash the meter under a jet of water to remove the debris.
- 3) Use a soft cloth to remove any additional debris and oil.
- 4) Replace the meter and restore flow.



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