

# 4-20mA Display

## Installation and Operation Manual





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## DOCUMENTATION CONVENTIONS

This uses the following conventions to present information:



**WARNING**

An exclamation point icon indicates a **WARNING** of a situation or condition that could lead to personal injury or death. You should not proceed until you read and thoroughly understand the **WARNING** message.



**CAUTION**

A raised hand icon indicates **CAUTION** information that relates to a situation or condition that could lead to equipment malfunction or damage. You should not proceed until you read and thoroughly understand the **CAUTION** message.



**NOTE**

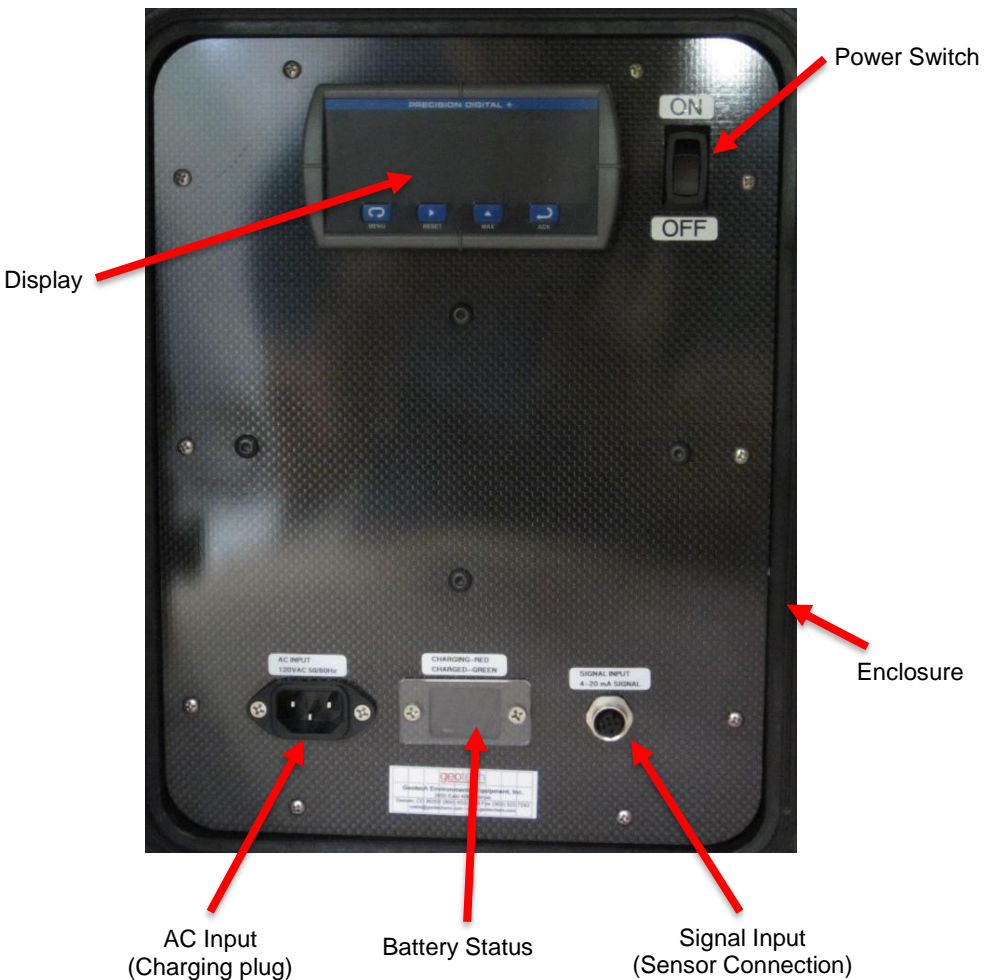
A note icon indicates **NOTE** information. Notes provide additional or supplementary information about an activity or concept.

# Section 1: System Description

## Function and Theory

The Geotech 4-20mA Display is a display for 4-20mA sensors. Specifically designed for harsh environments, the LED screen displays clear pressure or water level read outs while the sensor is attached. The display can be easily reprogrammed through the interface to accommodate a variety of sensors.

## System Components



## Section 2: System Installation

### Wiring the transducer

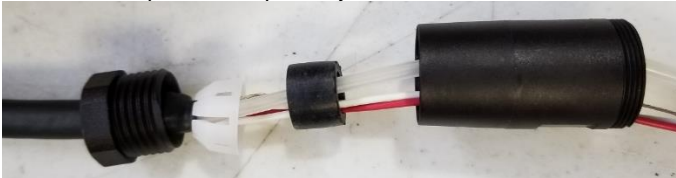
1. Open the connector.



2. Remove all internal components of the connector.



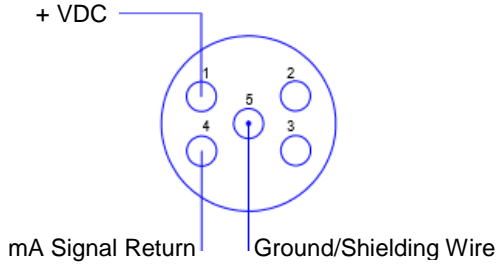
3. Slide the components separately over the cable.



4. Ensure 1/8" of the cable is past the rubber part of the strain relief.



- Wire cable to the connector using the following diagram



**Figure 1-1**

- Completely re-assemble the connector.
- Plug the 4-20mA transducer into the “4-20mA signal input” on the control panel

The transducer is now be ready to use with the 4-20mA Display.

The 4-20mA display comes pre-set from Geotech to operate with a 0-30 PSI transducer and display PSI. If a different range is used (i.e. 0-50PSI) or you would like the display to show water level, use the following steps to change the display.

### Setting Display Units

- Switch the ON/OFF switch to the ON position.
  - If the transducer is plugged into the unit then the screen will display a 0 value.
    - EX 0.00; 0.01 etc.
  - If the transducer is not plugged into the unit, then the screen will display a negative value that corresponds with the PSI/FT setting of the unit.
    - EX: If the unit is scaled to display PSI for a 0-5PSI transducer then the display will read a negative value of approximately -3.7 when the transducer is not plugged in.
- Press the MENU key to enter Programming mode.
- Press ACK key to access the Setup menu.



4. Press the ACK key to access the Input menu



5. Select 4-20mA and press the ACK key to confirm the selection input.
- This is the default option. If 4-20mA is not the default, press the MAX key to scroll through the choices.



6. Press the ACK key to access the Decimal Point menu.



7. Select the decimal place by pressing the MAX key.
- PSI decimal placement: ddd.d
  - FEET decimal placement: ddd.d
8. Press the ACK key to confirm input selection
9. Press the ACK key to enter the Program menu.





10. Press the ACK key to enter the Scale menu.



11. Press the ACK to access the Input 1 menu.

- This input represents 0% of the process variable.
- The default value of 4.00mA should be sufficient for most applications.



12. Press the ACK key to accept.

13. Press the ACK key to access Display 1.

- This is the value that will be displayed on the meter when the input is 4mA
- The display will read "0" at this input.



14. Press the ACK key to enter Input 2.

- The default input value of 20.00 for input 2 should be sufficient.



15. Press the ACK to accept this value.

16. Press the ACK key to enter Display 2.



17. At this point it will be determined if the meter will display PSI or Feet.  
If the meter is to display in PSI then set the display number to the max PSI rating on the sensor using step #18.

Ex. For a 0-30psi sensor, set the display to 30.

If the meter is to display in Feet then determine the max depth by using the following calculation:

$$FtMax = 2.31 \times (\text{Pressure rating})$$

EX: If a 0-15PSI sensor is being used, then the equation will be:

$$FtMax = 2.31 \times 15$$

$$FtMax = 34.65ft$$

Set the display number to the calculated FtMax using step #18.

18. Enter the desired number in the Display 2 screen by pressing the RESET key to select the digit (the selected digit is brighter than the others are). Press the MAX key to increment the digits. Once the number is set, press the ACK key to accept the input.
19. Press the MENU key to return to run mode.

## **Section 3: System Operation**

System will display reading while powered ON.

The battery depletes after approximately 8 hours.

Recharge the system by turning the ON/OFF switch to the OFF position, unplug the transducer, and plug in the power cable (provided with the unit) until the charging light turns green.

### **Quick Start Guide**

- 1) Plug in the wired transducer. Ensure wiring matches Figure 1-1
- 2) Turn the unit on with the ON/OFF switch.
- 3) Ensure to set the desired display units using steps 1-19 from the installation section.
- 4) The unit is now ready for use.

## **Section 4: System Maintenance**

Clean faceplate and case with mild soaps as needed.

Do not store in direct sunlight.

Charge battery before long-term storage

## Section 5: System Troubleshooting

**Problem:** Display not receiving a signal from the transducer.

Solution: Verify wiring according to Figure 1-1

**Problem:** No display

Solution: Power unit OFF and ON. If the screen remains blank, contact Geotech.

Solution: Charge unit.

**Problem:** Water in the enclosure.

Solution: Open the faceplate by removing all 10 silver screws with a Philips screwdriver. Remove water from the enclosure. Wipe case and components with a dry cloth. Ensure case and components are completely dry before reassembling.

**Problem:** Screen suddenly turns off

Solution: The components may be too hot. Let it cool down before resuming.

Check the power.

**Problem:** Display is reading a negative number while the transducer is plugged into the unit.

Solution: Check wiring. Ensure wiring matches Figure 1-1.

## Section 6: System Specifications

### LED Panel Meter

<b>Display Digit Height</b>	.56", 4 digits, red LED (14.2mm)
<b>Display Category</b>	LED, Single Line
<b>Transmitter Power</b>	None
<b>Operating Temperature Range</b>	32°F - 149°F (0°C - 65°C)
<b>Power</b>	85-265 VAC, 90-265 VDC
<b>Output Options</b>	4-20 mA
<b>Input</b>	Current (4-20 mA), Voltage (0-10 V) Thermocouple, RTD
<b>Accuracy</b>	+/- 1%
<b>Display Intensity</b>	8 user-selectable intensity levels
<b>Special Features</b>	Sunlight readable display

### Enclosure

<b>Enclosure</b>	6 x 13.4 x 11.6 in. (18 x 48 x 35 cm)
<b>Enclosure Material</b>	Structural resin

### Battery Performance @ 70°F

<b>12V 9AH Battery Life</b>	50,000 cycles
<b>Internal Battery Life (2x 9V, alkaline)</b>	30,000 cycles

## Section 7: Parts and Accessories

<b>Description</b>	<b>Part Number</b>
CORD, POWER, 6' 7" (B)	12070014
CONNECTOR, SERVICE, PT2X 7A23102, 8A6V121, SEA	12106022

<b>REVISION HISTORY</b>		
<b>Project #</b>	<b>Description</b>	<b>Date</b>
1725	Release – StellaR	4/3/2019
1837	Updated battery specification from 7.5aH to 9aH. Added additional troubleshooting notes. – StellaR	11/14/2019

## The Warranty

For a period of one (1) year from date of first sale, product is warranted to be free from defects in materials and workmanship. Geotech agrees to repair or replace, at Geotech's option, the portion proving defective, or at our option to refund the purchase price thereof. Geotech will have no warranty obligation if the product is subjected to abnormal operating conditions, accident, abuse, misuse, unauthorized modification, alteration, repair, or replacement of wear parts. User assumes all other risk, if any, including the risk of injury, loss, or damage, direct or consequential, arising out of the use, misuse, or inability to use this product. User agrees to use, maintain and install product in accordance with recommendations and instructions. User is responsible for transportation charges connected to the repair or replacement of product under this warranty.

## Equipment Return Policy

A Return Material Authorization number (RMA #) is required prior to return of any equipment to our facilities, please call our 800 number for appropriate location. An RMA # will be issued upon receipt of your request to return equipment, which should include reasons for the return. Your return shipment to us must have this RMA # clearly marked on the outside of the package. Proof of date of purchase is required for processing of all warranty requests.

This policy applies to both equipment sales and repair orders.

FOR A RETURN MATERIAL AUTHORIZATION, PLEASE CALL OUR  
SERVICE DEPARTMENT AT 1-800-833-7958.

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

## Equipment Decontamination

Prior to return, all equipment must be thoroughly cleaned and decontaminated. Please make note on RMA form, the use of equipment, contaminants equipment was exposed to, and decontamination solutions/methods used. Geotech reserves the right to refuse any equipment not properly decontaminated. Geotech may also choose to decontaminate the equipment for a fee, which will be applied to the repair order invoice.

**Geotech Environmental Equipment, Inc.**  
2650 East 40th Avenue Denver, Colorado 80205  
(303) 320-4764 • **(800) 833-7958** • FAX (303) 322-7242  
email: [sales@geotechenv.com](mailto:sales@geotechenv.com) website: [www.geotechenv.com](http://www.geotechenv.com)