



# TABLE OF CONTENTS

Chapter 1: System Description .....	p. 05
Function and Theory .....	p. 05
Chapter 2: System Installation .....	p. 06
Chapter 3: System Operation .....	p. 07
Chapter 4: System Maintenance .....	p. 09
Chapter 5: System Troubleshooting .....	p. 10
Chapter 6: System Specifications.....	p. 11
Chapter 7: System Schematic .....	p. 12
Chapter 8: Replacement Parts List.....	p. 13
Warranty and Repair .....	p. 16

# DOCUMENTATION CONVENTIONS

This manual 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.



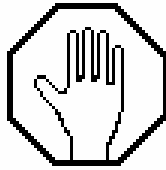
**CAUTION**

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.



**In order to ensure that your 12 VDC Controller has a long service life and operates properly, adhere to the cautions below and read this manual before use.**

- **Controller power input source must not exceed maximum ratings.**
- **Controller must be wired to a negative ground system.**
- **To prevent controller damage, never connect controller power leads directly to an un-fused battery.**
- **Controller may not operate properly with excess wiring not supplied by manufacturer.**
- **Avoid spraying fluid directly at controller.**
- **Never submerge controller.**
- **Avoid pulling on wires to unplug controller wiring.**
- **Avoid using controller with obvious physical damage.**
- **To prevent controller damage, avoid dropping controller.**

# 12 VDC CONTROLLER



Figure 1  
4

# Chapter 1: System Description

## Function and Theory

The 12 VDC Controller is a unique control for operating down well sampling pumps. The control offers variable speed control and cycle timer for controlling the pump on time and off time. This feature is important for pumps that can not be run continually.

The 12 VDC Controller also incorporates a dry well detection feature to prevent running the pump dry should the fluid level in the well drop below the pump level. This feature is enabled at speed settings above 50% to prevent pump seal damage.



*Consult the operation/installation manual of specific 12 VDC submersible pump before attaching to controller. Do not exceed maximum amperage output ratings of the controller.*

## Chapter 2: System Installation

To operate the Geotech 12 VDC controller, make sure the controller power switch is in the off position and plug the power input cord into a 12V lighter receptacle on a negatively grounded system. If the controller is to be wired directly to a 12V battery, make sure to connect the positive alligator clip to the positive battery terminal. Continue by plugging the pump power receptacle into the controller 12V power output jack and finally connect all required plumbing. Check all wiring and plumbing for correctness.

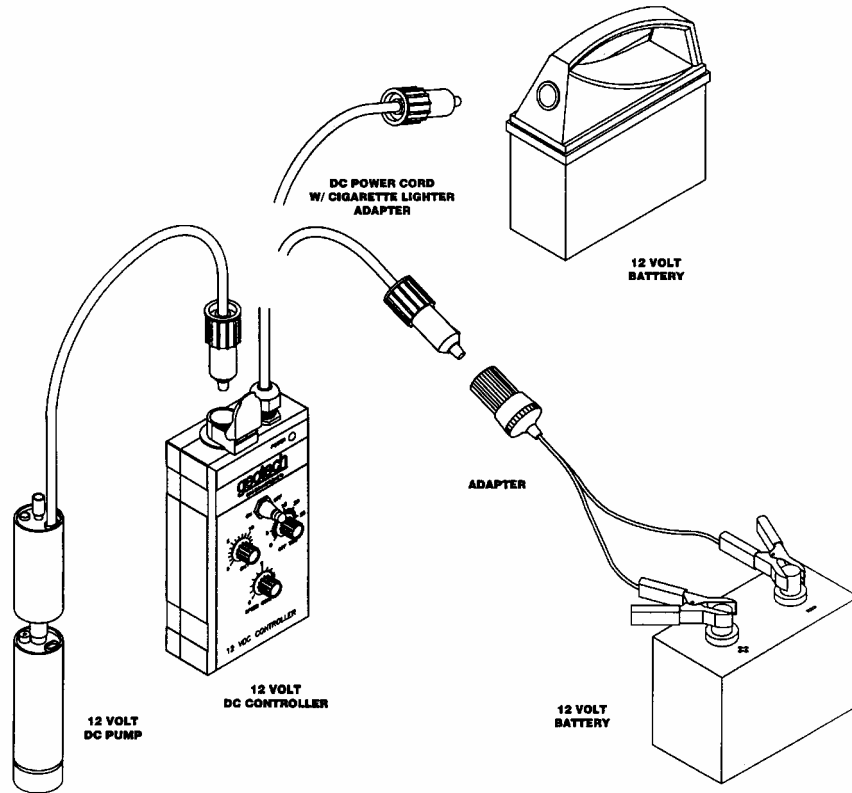


Figure 2 – Installation Diagram

## Chapter 3: System Operation

Adjust the controller on and off timer knobs to the desired cycle times. These adjustments are read only during the start of an on or off cycle. For this reason, if either timer adjustment knob is changed while the controller is in that mode of operating, the new timer value will not be valid until the start of the next timer cycle. Adjust the speed controller knob to somewhere near the middle of the scale. Turn the controller power switch on. The pump unit should begin pumping fluid. Slowly adjust the speed control knob to get the desired flow rate out of the pump.

The controller dry well function detects if the pump is pumping fluid. If the pump is started in a dry condition or if the pump goes dry during a pump cycle, the pump is stopped for 60 seconds after which time the pump run cycle is automatically restarted. The dry well function has been designed to protect the pump seals at high pump speeds and works in the speed control setting range from 5 to 10.

By setting the controller off cycle time to zero, continuous pumping is possible. Some pumps are not designed to run continuously and to prevent damage to the pump, never exceed the recommended cycle rates for the pump.

Turning the controller power switch to the off position for a minimum of three (3) seconds and then back on will reset the controller timers or any faults. Failure to cycle power off for the minimum recommended time might result in improper controller reset.

### LED STATUS CODES:

GREEN	Pump running.
FLICKER GREEN	Pump off time.
FLICKER RED	Dry well condition.
RED	Drive fault.
FLASH RED	Low input supply voltage.

For convenience, these LED codes are printed on a label on the back of the 12 VDC Controller. See figure 3.



**Figure 3**  
**8**

## **Chapter 4: System Maintenance**

Unit must be returned to Geotech for any service.

In order to provide long service life, keep the 12 VDC Controller clean. Clean controller by wiping off with a mild detergent. Apply cleaning solution to a soft cloth and wipe off the controller. Avoid soaking or directly spraying liquids on the 12 VDC Controller.

## Chapter 5: System Troubleshooting

The Geotech 12 VDC controller has been designed and manufactured to provide a long service life and trouble free operation in the field. The dry well detection system incorporated in this controller has been optimized to work with a Geosquirt sampling pump with 60' Motor Lead. Other pump configurations may be used with the 12 VDC Controller, provided the substitute pump power level and current draw closely matches that of the Geosquirt two stage pump with 60' Motor Lead. If you seem to be having trouble with the dry well feature, please try the following to determine if the 12 VDC controller is the problem or if there is a problem with your pump.

To check your Geotech two stage pump for proper operation, submerge the pump into water and plug the pump directly into a 12 VDC power supply capable of outputting at least 15 Amps, bypassing the 12 VDC Controller completely. If no power supply is available, a fully charged 12V car battery may be substituted. Make certain that the pump has standard length (60') 16 AWG power cord attached to it. To verify that both stages of the pump are working, it is necessary that the current draw of the pump be measured. Connect an Amp meter in series with the pump and note the current draw. If both stages of the pump are properly operating, the current draw should be in the range of 6-8 Amps. A current draw around half this value, 3-4 Amps, will indicate that one stage of the pump unit has failed and hence the pump unit should be replaced. Attempting to run a failed pump with the 12 VDC Controller can result in the dry well function inadvertently tripping.

Also, Geotech does not recommend changing the stock 60' #16 AWG motor pump wiring to a different length or gauge of wire. Doing so may result in inadvertent dry well tripping.

Other sources of low pump output or inadvertent dry well shut downs may be the 12V lighter receptacles. Make certain these connections are fully plugged in. Once fully plugged in, rotating the connection can help if there is a dead spot in the connector.

## Chapter 6: System Specifications

Power	150W
Vin	8 -18VDC
Volt Range	0 to Vin – 1 VDC
Volt resolution	50mVDC
Iout continuous	14A
Iout fault	15A
Iin standby	50mA
Iin typical	12A@ 12.5Vin
On timer range	30 sec to 30 minutes
Off timer range	30 sec to 30 minutes
Dry well off time	60 sec
Dry well detection	50-100%
Power off min time (reset time)	3 sec
Time resolution	7 sec
Accuracy	± 15 sec
Efficiency	>94%
Storage temp	-20°C to 85°C
Operational temp	-20°C to 50°C

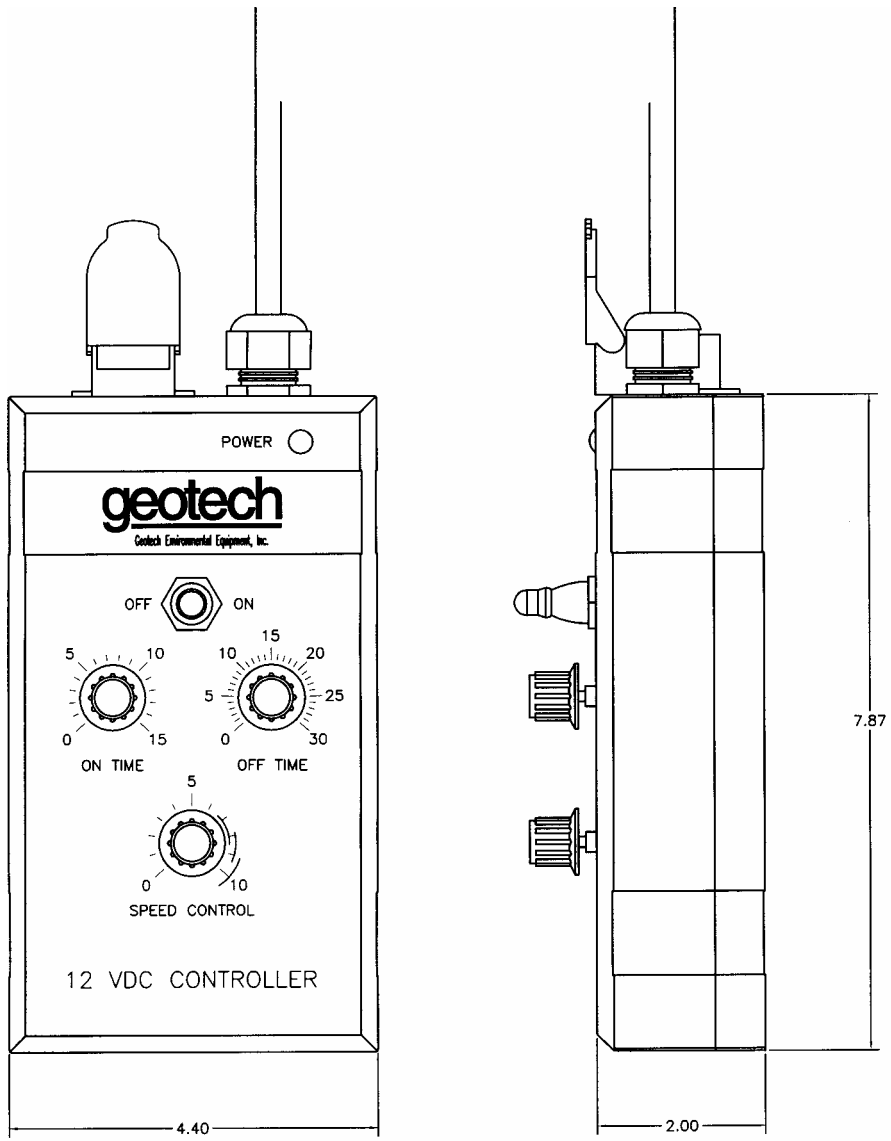
### FEATURES

Over current and motor fault protection.  
Variable speed control.  
Variable on time.  
Variable off time.  
Dry well short cycle mode.  
Software watchdog.  
Hardware watchdog.  
Advanced PWM motor drive.



1. For use with negative (-) ground systems only.
2. Switching power on off on without observing minimum reset off time may result in improper control reset.
3. A maximum 25-amp fuse must exist in line between the control and main power source.

# Chapter 7: System Schematic



## Chapter 8: Replacement Parts List

12 VDC Controller	PN	81201004
Purge Pump	Pigtail	81201000
	60'	81201001
	Reel	81201002
Knobs	30'	81201005
		11150146
Switches		11201015
Power Cord		51350006

## Notes

## Notes



## 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 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 OR 1-800-275-5325.

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

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

Date: \_\_\_\_\_

## 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 equipment for a fee, which will be applied to the repair order invoice.