

VIBRATING WIRE SENSOR READOUT

VWR1

INSTRUCTION
MANUAL



CE



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1.0 INTRODUCTION

This manual is intended for all users of the **Geosense® VWR1** and provides a guide for its installation, operation and maintenance.



It is VITAL that personnel responsible for the installation and use of the VWR1 READ and UNDERSTAND the manual, prior to working with the equipment.



1.1 General Description

The **Geosense® VWR1** is a vibrating wire manual readout unit which can be used with all types of vibrating wire outputs (e.g. piezometers, strain gauges).

Colour coded connections (see below) for the VW and thermistor makes the VWR1 clear and quick to use.

Red	VW+
Black	VW-
Green	Temp+
White	Temp-



Connections can be made directly to the terminals or by using the fly leads with crocodile clips supplied with the unit

The **Geosense® VWR1** readout provides the following data:

- Frequency (Hz)
- Digits ($\text{Hz}^2/1000$)
- Resistance (Ohms)
- Temperature (Celsius)

1.2 Theory of Operation

The VWR-1 works on the “pluck and read” principle in which a swept wave frequency spectrum is transmitted to the electronic plucking coil in the VW sensor. This starts the wire vibrating at its resonant frequency. The plucking coil, in conjunction with a permanent magnet, becomes a sensing coil and transmits a sinusoidal output voltage, having the same frequency as the vibrating wire, back to the readout. The measured frequency is squared to linearize the output, and displayed on the LCD screen. Temperature is measured by the resistance of the thermistor in Ohms. This value is displayed directly and also transformed into degrees Celsius.

2.0 CONFORMITY

Geosense Ltd

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EC Declaration of Conformity



We Geosense Ltd at above address declare that the equipment detailed below, complies with the requirements of the following EU Directives:-

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility Directive 2014/30/EU
- Waste electrical and electronic equipment (WEEE) 2012/19/EU
- Restriction on the use of certain Hazardous Substances (RoHS2) 2011/65/EU

Equipment description:	Vibrating Wire Readout
Make/Brand:	Geosense
Model Numbers:	VWR1

Compliance has been assessed with reference to the following harmonised standard:
EN 61326-1:2006 Electrical equipment for measurement, control and laboratory use.
EMC requirements. General requirements.

A technical file for this equipment is retained at the above address.




A handwritten signature in black ink, appearing to read "Martin Clegg".

Martin Clegg
Director

Rougham, July 2016

3.0 MARKINGS



READOUT UNIT	PRODUCT	VW READOUT
	TYPE	VWR1
	RANGE	Supply: 12V ---
	SERIAL NO	VR0000 Output 15V ---
   www.geosense.co.uk t +44(0)1359 270457		

A **Geosense® VWR1 Vibrating Wire Readout** is labelled with the following information:-

Manufacturers telephone number & website address

Product group: VW Readout

Product type: VWR1

Input supply: 9.6V DC

Serial number: VR0000

CE mark

WEEE mark

4.0 STORAGE/HANDLING

Geosense® VWR1 Vibrating Wire Readouts are precision instruments containing sensitive electronics and whilst they are mounted within a water resistant (IP65) enclosure, the internal circuit board can be affected by excessive moisture.

It is also recommended that the unit is kept within the carry case and stored in a dry environment and out of direct sunlight.

Avoid placing heavy weights on top of the carry case as this could damage the unit.

Sensor connection cables should also be kept from being tangled and also any abrasions.

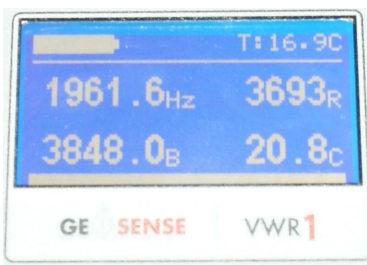
The **Geosense® VWR1 Vibrating Wire Readout** is not shockproof, therefore any sharp impacts may damage the unit, and thus should be avoided.

5.0 OPERATION

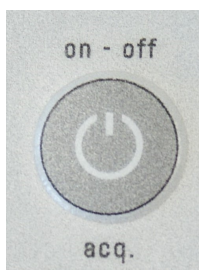
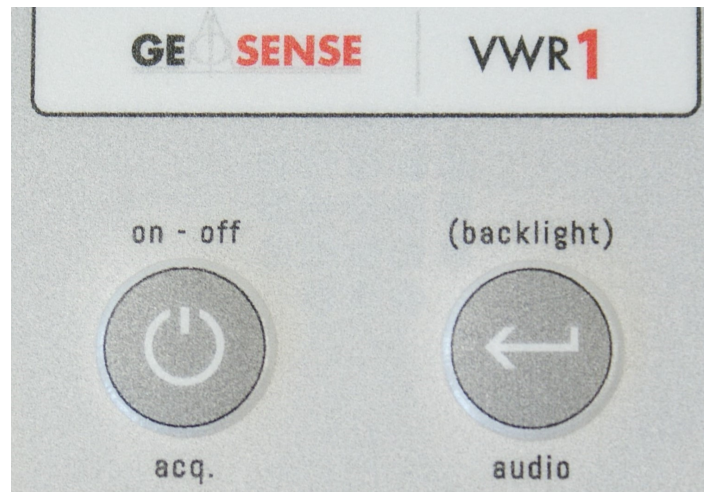
5.1 KEYPAD FUNCTIONS



OFF



ON



Button 1



Button 2

Power On: press button 1 to switch on the readout

Power Off: press and hold button 1 for approximately 4 seconds to turn off the readout

Acq.: press button 1 to read the sensor data

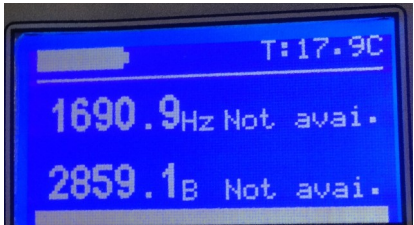
(Backlight): press and hold button 2 for approximately 4 seconds to turn the backlight off/on

Audio: press button 2 to turn audible 'ping' off/on (bell icon will disappear/appear)

6.0 MAINTENANCE

Geosense® VWR1 Vibrating Wire Readouts are maintenance free devices, for most applications. However users should be aware that the unit contains a rechargeable NiCad battery. Therefore, if not used for long periods of time, the batteries may discharge.

7.0 TROUBLESHOOTING

PROBLEM	REMEDY
Readout does not turn on	Plug into charge, if the readout still does not turn on please return to Geosense® for inspection.
Reading not as expected	Check wiring/connections then check battery level
Buttons not functioning	Send to Geosense® for inspection
Readout states 'not available' 	Check connection to sensor

If, after all of the above checks have been carried out and the Readout still does not operate correctly, please contact **Geosense®** for advice, or return unit for inspection.

8.0 SPECIFICATION

ITEM	SPECIFICATION
Types of Inputs	Vibrating Wire, NTC
Internal Power Supply	9.6Vdc 800mAh Ni-Mh battery pack
External Power Supply	Only battery charger for Ni-Mh chemistry, es. Batt.CH. For MP12 and VWR1
Operating Power Consumption	80mA
User Interface	2 Button Keypad, 128 x 64 backlight LCD Display, VW audio feedback
V.W. Range	400-4800 Hz
NTC range	1-39000 Ohm
Operating Temperature	-20 to +70°C
IP Rating	IP40
Dimensions L x B x H	120 x 85 x 35mm
Weight	360g



9.0 SPARE PARTS

The following spares are available for the **Geosense® VWR1 Vibrating Wire Readout**:

Item	Part Number
MP12/VWR1 Charger with 4 plug set	Q22-151
VWR1 Crocodile Connector Cable Set	G200-114

For spares please contact **Geosense® Ltd.**

10.0 RETURN OF GOODS

10.1 Returns procedure

If goods are to be returned for either service/repair or warranty, the customer should contact **Geosense®** for a **Returns Authorisation Number**, request a **Returned Equipment Report Form QF034** and, prior to shipment. Numbers must be clearly marked on the outside of the shipment.

Complete the **Returned Equipment Report Form QF034**, including as much detail as possible, and enclose it with the returned goods and a copy of the form should be faxed or emailed in advance to the factory.

10.2 Chargeable Service or Repairs (Inspection & Estimate)

It is the policy of **Geosense®** that an estimate is provided to the customer prior to any repair being carried out. A set charge for inspecting the equipment and providing an estimate is also chargeable.

10.3 Warranty Claim (See Limited Warranty Conditions)

This covers defects which arise as a result of a failure in design or manufacturing. It is a condition of the warranty that the **Geosense® VWR1 Vibrating Wire Readout** must be installed and used in accordance with the manufacturer's instructions and has not been subject to misuse.

In order to make a warranty claim, contact **Geosense®** and request a **Returned Equipment Report Form QF034**. Tick the warranty claim box and return the form with the goods as above. You will then be contacted and informed whether your warranty claim is valid.

10.4 Packaging and Carriage

All used goods shipped to the factory **must** be sealed inside a clean plastic bag and packed in a suitable carton. If the original packaging is not available, **Geosense®** should be contacted for advice. **Geosense®** will not be responsible for damage resulting from inadequate returns packaging or contamination under any circumstances.

10.5 Transport & Storage

All goods should be adequately packaged to prevent damage in transit or intermediate storage.



11.0 LIMITED WARRANTY

The manufacturer, Geosense Ltd, warrants the **Geosense® VWR1 Vibrating Wire Readout** manufactured by it, under normal use and service, to be free from defects in material and workmanship under the following terms and conditions:-

Sufficient site data has been provided to **Geosense** by the purchaser as regards the nature of the installation to allow **Geosense** to confirm the applicability of the **VWR1 Vibrating Wire Readout** and other component parts.

The **Geosense® VWR1 Vibrating Wire Readout** shall be used in accordance with the manufacturer's recommendations.

The equipment is warranted for 1 year from the date of shipment from the manufacturer to the purchaser.

The warranty is limited to replacement of part or parts which, are determined to be defective upon inspection at the factory. Shipment of defective part or parts to the factory shall be at the expense of the Purchaser. Return shipment of repaired/ replaced part or parts covered by this warranty shall be at the expense of the Manufacturer.

Unauthorised alteration and/or repair by anyone which, causes failure of the unit or associated components will void this **LIMITED WARRANTY** in its entirety.

The Purchaser warrants through the purchase of the Geosense® VWR1 Vibrating Wire Readout equipment that he is familiar with the equipment and its proper use. In no event shall the manufacturer be liable for any injury, loss or damage, direct or consequential, special, incidental, indirect or punitive, arising out of the use of or inability to use the equipment sold to the Purchaser by the Manufacturer.

The Purchaser assumes all risks and liability whatsoever in connection with the **Geosense® VWR1 Vibrating Wire Readout** equipment from the time of delivery to Purchaser.



Geosense Ltd

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