

MULTI-PURPOSE READOUT MPR1



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1. VERSION CONTROL

Version	Date	Author	Approved	Issued
V1.0	Jul 2026	TB	TC	GC
V1.1	Jul 2026	TB	TC	GC
V1.2	Aug 2026	PS	TB	GC

2. INTRODUCTION

This manual is intended for all users of **Geosense® Multi-Purpose Readout MPR1** units and provides a guide for its operation, care and maintenance.



**It is VITAL that all personnel responsible
for the use of the MPR1 Readout
READ and UNDERSTAND
this manual, prior to working with the equipment**



2.1. General Description

The **Geosense® MPR1 Multi-Purpose Readout** is a Multi-Purpose manual readout unit which can be used with various analogue outputs (e.g. Thermistors, strain gauge piezometers, strain gauge load cells).

Particular features of the **Geosense® MPR1** are:

- Reliable long-term performance
- Clear visual display of readings
- Rugged, suitable for demanding environments
- High accuracy
- Powered by 4 x AA 1.5V Alkaline batteries

The MPR1 can be used to read a large variety of analogue sensors, including but not limited to:

- Strain Gauge Piezometers (SGP)
- Strain Gauge Load cells
- Thermistors & Thermocouples
- Linear Potentiometer Joint Meters & Crack Meters
- Pressure Cells & NATM Cells (4-20mA output)

The unit consists of a control box with keypad and LCD screen, along with a fly lead for easy connection to analogue sensors. The fly lead allows for a simple but secure connection to be made temporarily with sensors in the field when time is of the essence and weather conditions are unfavourable.

The screen is backlit to provide adequate visibility in all light conditions, and with a waterproof keypad with large buttons, is ideal for use with gloved hands.

2.2. Theory of Operation

The MPR1 unit is designed to interface with a range of analogue transducers by providing the appropriate sensor excitation (where required) and accurately measuring the corresponding electrical output.

Depending on the selected sensor type, the instrument measures current (4–20 mA), voltage, low-level bridge outputs (mV/V), resistance (PT100 RTDs and thermistors). High-resolution analogue-to-digital conversion and precision signal conditioning ensure accurate and stable measurements over the full operating range. The measured electrical signal is processed by the MPR1 and resulting output value is displayed on the LCD screen.

For resistance-based temperature sensors such as PT100 RTDs and thermistors, the instrument measures the sensor resistance and converts it to temperature using the appropriate standard conversion algorithm or calibration curve. The measured resistance and calculated temperature can both be displayed, depending on the selected measurement mode.

3. CONFORMITY



EU Declaration of Conformity

We

Geosense Ltd
Nova House, Rougham Industrial Estate, Bury St Edmunds, IP30 9ND, United Kingdom

declare under our sole responsibility that the product:

Equipment description: Multi-Purpose Readout
Model Number(s): MPR1

Electromagnetic Compatibility Directive 2014/30/EU and Restriction on the use of certain Hazardous Substances 2011/65/EU

The following harmonised standards have been applied with respect to this product:

EN 61326-1:2021
EN IEC 63000:2018

Authorised Person



Tim Clegg
Director

Date: 14/07/2026
Location: Bury St Edmunds, UK.

DoC-10001-CE



UKCA Declaration of Conformity

Geosense Ltd
Nova House, Rougham Industrial Estate, Bury St Edmunds, IP30 9ND, United Kingdom

This declaration is issued under the sole responsibility of the manufacturer:

Equipment description: Multi-Purpose Readout
Model Number(s): MPR1

The object of the declaration described above is in conformity with the following statutory requirements:

The Electromagnetic Compatibility Regulations 2016	SI 2016 No. 1091
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	SI 2012 No. 3032

References to designated standards/specifications in relation to which conformity is declared:

EN 61010-1:2010 + A1:2019
EN IEC 63000:2018

Signed for and on behalf of Geosense Ltd

A handwritten signature in blue ink, appearing to read "Tim Clegg".

Tim Clegg
Director

Date: 14/07/2026
Location: Bury St Edmunds, UK.

DoC-10001-UKCA

4. VARIANTS

There is only one variant of the MPR1.

5. WIRING CONFIGURATIONS

The MPR1 consists of a top rugged connector which breaks out into four colour coded connectors for reading various analogue instruments.

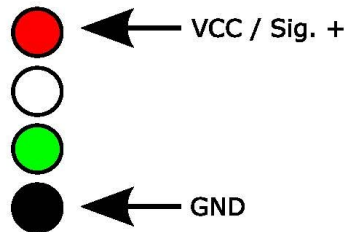
Colour coding for the cores of the fly lead are included in Figure 2.

Connections are made using the fly lead provided with the unit (Figure 1), which breaks out the rugged single connector into four colour coded insulated crocodile clips, for easy field use when reading multiple analogue instruments in harsh conditions.

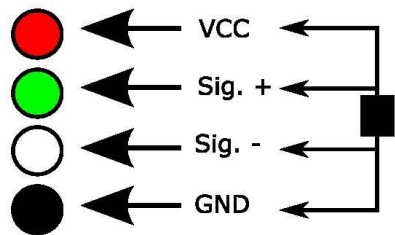


Figure 1: MPR1 with fly lead

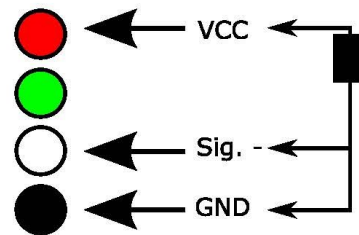
4-20mA (2 wire)



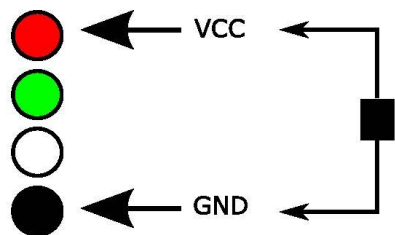
PT100 (4 wire)



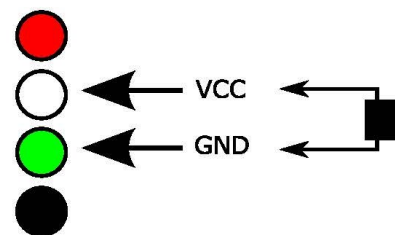
PT100 (3 wire)



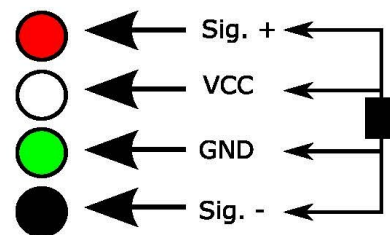
PT100 (2 wire)



NTC 3K/10K (2 wire)



NTC 3K/10K (4 wire)



mV/V (4 wire)

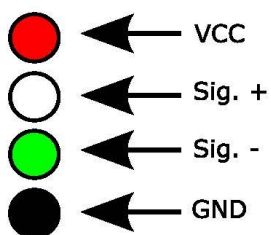


Figure 2: Wiring Diagram for each output

6. MARKINGS

Geosense® MPR1 readout is labelled with the following information:

- Manufacturers name
- Product type
- Model
- Serial number
- CE mark / UKCA mark
- WEEE Symbol



Figure 3: MPR1 front with serial number and CE/UKCA visible

7. DELIVERY

This section should be read by all users of equipment manufactured by **Geosense®**.

7.1. Packaging

Geosense® MPR1's are packed for transportation to site. Packaging is suitably robust to allow normal handling by transportation companies. Inappropriate handling techniques may cause damage to the packaging and the enclosed equipment. The packaging should be carefully inspected upon delivery and any damage **MUST** be reported to both the transportation company and **Geosense®**.

Once the shipment has been checked it is recommended that **Geosense® MPR1's** remain in their original packaging for storage or transportation.

Cable should be handled with care. Do not allow it to be damaged by sharp edges, rocks for example, and do not exert force on the cable as this may damage the interim conductors and render the installation useless.

7.2. Handling

Whilst they are a robust devices, **Geosense® MPR1** series systems are precision measuring instruments. They and their associated equipment should always be handled with care during transportation, storage and installation.

Once the shipment has been inspected (see 7.3), it is recommended that equipment remains in its original packaging for storage or onward transportation.

7.3. Inspection / Functionality Check Readings

It is important to check all the equipment in the shipment as soon as possible after taking delivery and well before installation is to be carried out. Check that all the components detailed on the documents are included in the shipment. Check that the equipment has not been physically damaged.

All **Geosense® MPR1** instruments carry a unique identification serial number which is printed on the unit.

Geosense® MPR1 instruments are supplied with individual calibration sheets that include their serial number and these are shipped with the equipment. Calibration sheets should be kept safe and secure for future reference. See section 8.

7.4. Storage

All Geosense® MPR1 instruments and associated equipment should be stored in an environment that is protected from direct sunlight.

It is also recommended that cables be stored in a dry environment to prevent moisture migrating along inside them in the unlikely event of prolonged submersion of exposed conductors. The cables should also be protected from rodents and traffic.

No other special requirements are needed for medium or long-term storage although temperature limits should be considered when storing or transporting associated components, such as readout equipment.

8. CALIBRATION

All **Geosense® MPR1** readouts are supplied with a calibration sheet like the example below.

GEOSENSE QUALITY FORM	
FORM No G/QF/182	
ISS.	1
DATE :	Apr-26
SIG.	GC

MPR1 Certificate of Calibration

Model	MPR1
Serial No	680
Calibration Date	08/05/2026

4.20mA				Max %FSO	0.04%
Reference Current		Readout Reading	Error	FSO	
mA		mA	mA	%	
4.003		3.999	0.004	0.03%	
8.019		8.014	0.005	0.03%	
12.021		12.014	0.007	0.04%	
16.009		16.004	0.005	0.03%	
19.990		19.983	0.007	0.04%	
PT100 4 wire				Max %FSO	0.00%
Reference		Readout Reading	Error	FSO	
Resistance Ω	Temp $^{\circ}\text{C}$	Temp $^{\circ}\text{C}$	$^{\circ}\text{C}$	%	
91.02	-22.9	-22.9	0.0	0.00%	
100.09	0.2	0.2	0.0	0.00%	
106.51	16.7	16.7	0.0	0.00%	
115.17	39.0	39.0	0.0	0.00%	
123.95	61.8	61.8	0.0	0.00%	
132.41	84.0	84.0	0.0	0.00%	
PT100 3 wire				Max %FSO	0.09%
Reference		Readout Reading	Error	FSO	
Resistance Ω	Temp $^{\circ}\text{C}$	Temp $^{\circ}\text{C}$	$^{\circ}\text{C}$	%	
91.04	-22.8	-22.8	0.0	0.00%	
100.11	0.3	0.3	0.0	0.00%	
106.54	16.8	16.8	0.0	0.00%	
115.19	39.1	39.1	0.0	0.00%	
123.97	61.9	61.9	0.0	0.00%	
132.43	84.0	84.1	0.1	0.09%	
PT100 2 wire				Max %FSO	0.28%
Reference		Readout Reading	Error	FSO	
Resistance Ω	Temp $^{\circ}\text{C}$	Temp $^{\circ}\text{C}$	$^{\circ}\text{C}$	%	
91.06	-22.8	-22.6	0.2	0.19%	
100.13	0.3	0.4	0.1	0.09%	
106.56	16.8	16.8	0.0	0.00%	
115.21	39.2	39.1	0.1	0.09%	
123.99	61.9	61.8	0.1	0.09%	
132.45	84.1	83.8	0.3	0.28%	
3K NTC 2 wire				Max %FSO	0.10%
Reference		Readout Reading	Error	FSO	
Resistance Ω	Temp $^{\circ}\text{C}$	Temp $^{\circ}\text{C}$	$^{\circ}\text{C}$	%	
29403.1	-20.2	-20.2	0.0	0.00%	
9757.4	0.1	0.1	0.0	0.00%	
3739.3	20.0	20.0	0.0	0.00%	
1580.2	40.3	40.2	0.1	0.10%	
750.4	59.8	59.8	0.0	0.00%	
374.2	80.2	80.2	0.0	0.00%	

3K NTC		4 wire		Max %FSO		0.10%
		Reference		Readout Reading	Error	FSO
		Resistance Ω	Temp $^{\circ}\text{C}$	Temp $^{\circ}\text{C}$	$^{\circ}\text{C}$	%
		29402.8	-20.2	-20.2	0.0	0.00%
		9757.1	0.1	0.0	0.1	0.10%
		3739.2	20.0	20.0	0.0	0.00%
		1580.1	40.3	40.2	0.1	0.10%
		750.3	59.8	59.8	0.0	0.00%
		374.1	80.2	80.2	0.0	0.00%
10K NTC		2 wire		Max %FSO		0.10%
		Reference		Readout Reading	Error	FSO
		Resistance Ω	Temp $^{\circ}\text{C}$	Temp $^{\circ}\text{C}$	$^{\circ}\text{C}$	%
		99327.0	-20.4	-20.3	0.1	0.10%
		32410.1	0.2	0.2	0.0	0.00%
		12106.7	20.7	20.7	0.0	0.00%
		5198.2	40.6	40.6	0.0	0.00%
		2430.6	60.7	60.6	0.1	0.10%
		1209.8	81.2	81.1	0.1	0.10%
10K NTC		4 wire		Max %FSO		0.10%
		Reference		Readout Reading	Error	FSO
		Resistance Ω	Temp $^{\circ}\text{C}$	Temp $^{\circ}\text{C}$	$^{\circ}\text{C}$	%
		99324.0	-20.4	-20.4	0.0	0.00%
		32410.1	0.2	0.2	0.0	0.00%
		12106.5	20.7	20.7	0.0	0.00%
		5198.1	40.6	40.6	0.0	0.00%
		2430.6	60.7	60.6	0.1	0.10%
		1209.8	81.2	81.1	0.1	0.10%
mV/V		Reference Current		Readout Reading		Max %FSO
		mV/V	mV/V	mV/V	%	0.08%
		0.126	0.146	0.020	0.08%	
		6.865	6.879	0.014	0.05%	
		13.446	13.456	0.010	0.04%	
		19.846	19.853	0.007	0.03%	
		26.061	26.063	0.002	0.01%	

THE EQUIPMENT USED IN THE CALIBRATION OF THE PRODUCT DETAILED ABOVE
IS TRACEABLE TO NATIONAL/INTERNATIONAL STANDARDS

THIS IS AN ELECTRONIC CERTIFICATE AND IS VALID WITHOUT A SIGNATURE



Figure 4: Example calibration certificate for MRP1. Please note, calibration data is for example only

9. OPERATION

9.1. Front Panel Overview

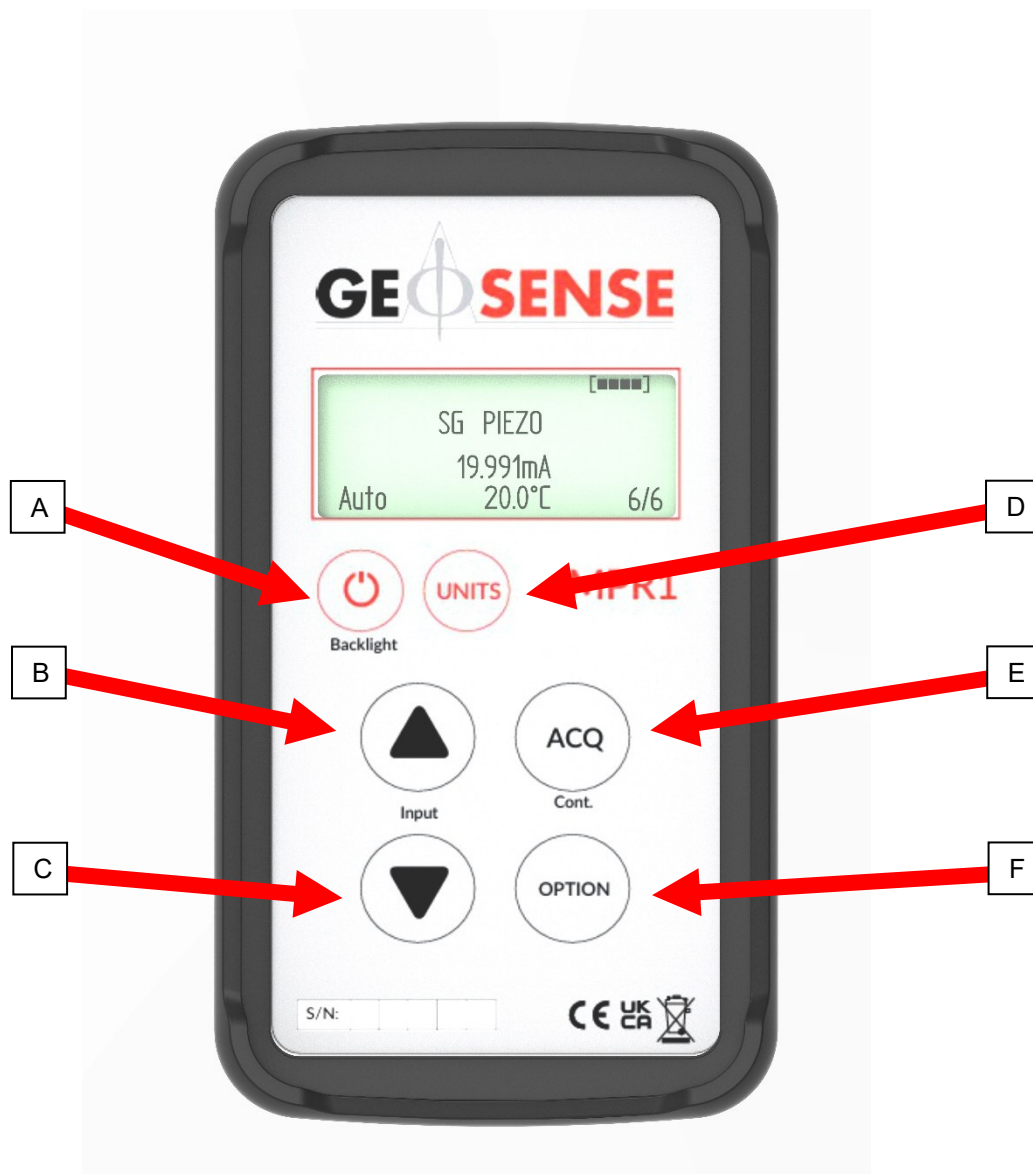


Figure 5: Front panel of VWR1 (powered on)

Table 1: Button functions of the MPR1

Button	Function	Description
A	Power and Backlight	Hold to power on and off, press once for backlight on
B	Up Arrow	Up Arrow to switch between sensor output signals
C	Down Arrow	Down Arrow to switch between sensor output signals
D	Temperature Units	Press to switch between temperature in Celsius or Fahrenheit
E	Acquire Reading	Hold for continuous readings, press once for single reading
F	Option	Press to select between 2, 3, and 4 wire PT100 reading modes, and 2 and 4 NTC Thermistor wire reading modes

9.2. Taking a Reading Using the MPR1

Using the information provided in Table 1, the typical process of reading an analogue sensor, in this case a Geosense SGP-3400, is as follows:

- 1) Connect the flylead to the unit, making sure to align the two red dots on the connector and the port. (note, for removal, the sleeve on the connector must be pulled back to release the connector from the port)



Figure 6: Connector and port showing alignment dots in red

- 2) Connect the flylead to the analogue sensor using the colour coding in Figure 2.



Figure 7: MPR1 connected to fly lead

- 3) Power on the unit by holding the power button.
- 4) Once on, use the up or down arrow buttons to select the sensor output signal.
- 5) Press the “ACQ” button to take a single reading. Holding the button down will set the unit to take continuous readings.
- 6) If you need the backlight on, short press the power button
- 7) The readings from the sensor will be shown on the screen.
- 8) Once the readings are complete, disconnect the fly lead from the sensor, turn off the unit, and store in a safe place. Always replace the protective cap over the port on the MPR1 after disconnecting the fly lead and store all components in a dry and clean condition.

9.2.1. Example Readings for Each Mode

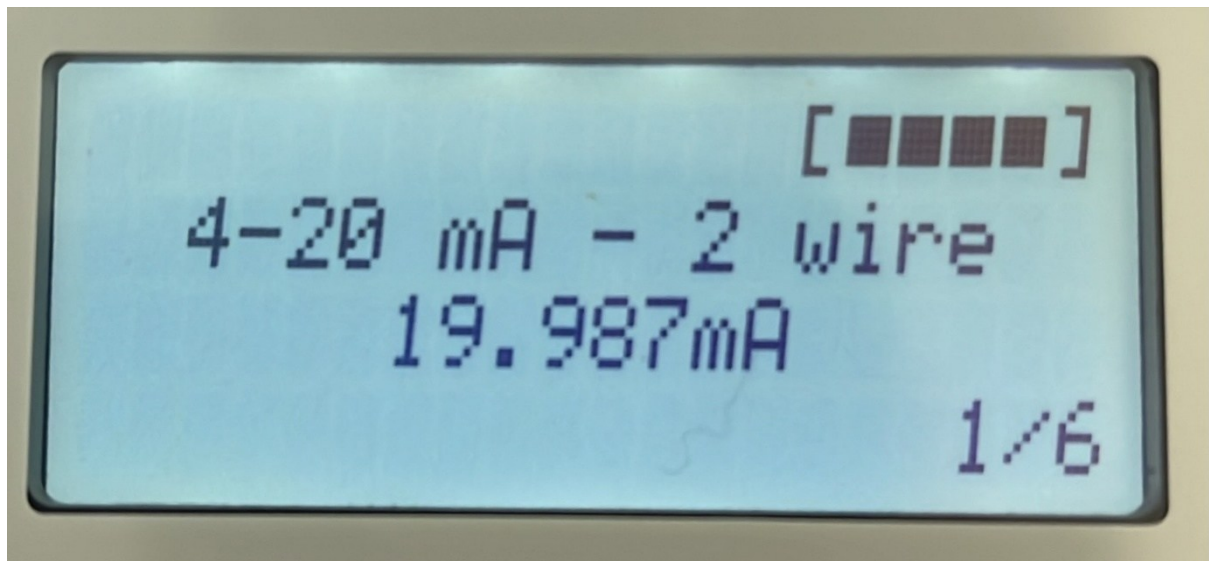


Figure 8: Example of 4-20mA reading

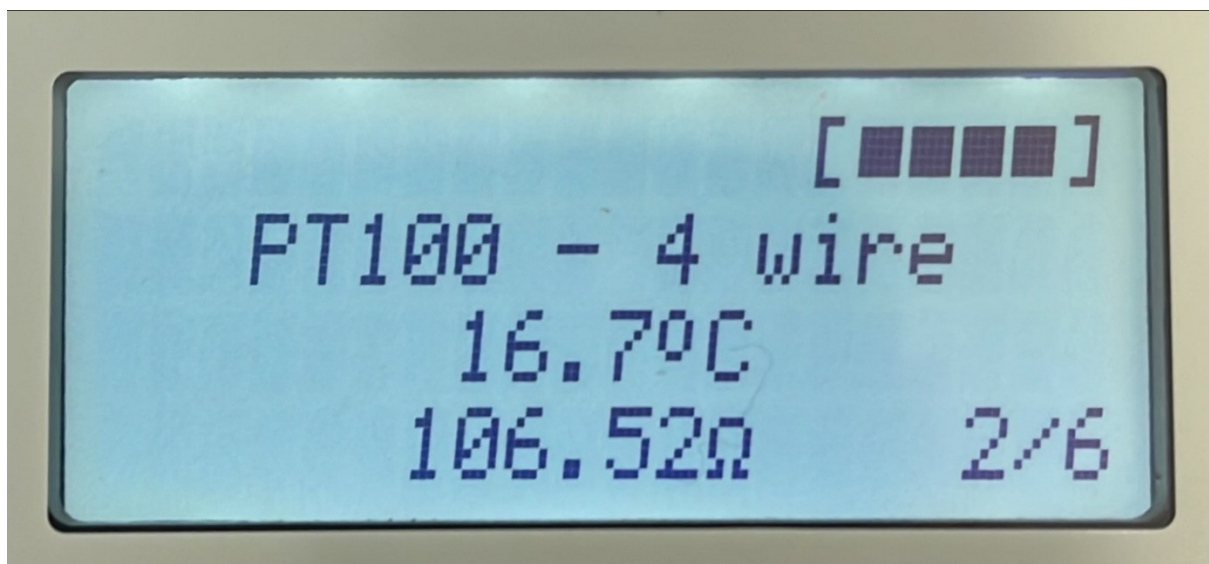


Figure 9: Example of PT100 reading

NOTE: You can change between the 2, 3, and 4 wire option by pressing the option button.

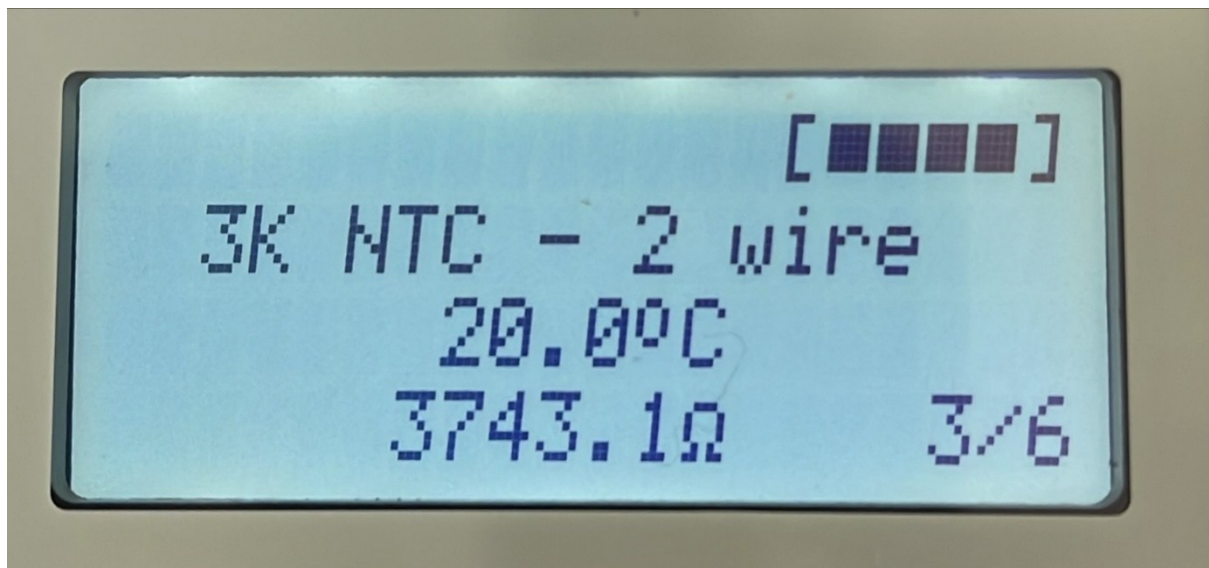


Figure 10: Example of 3K NTC reading

NOTE: You can change between the 2 and 4 wire option by pressing the option button.

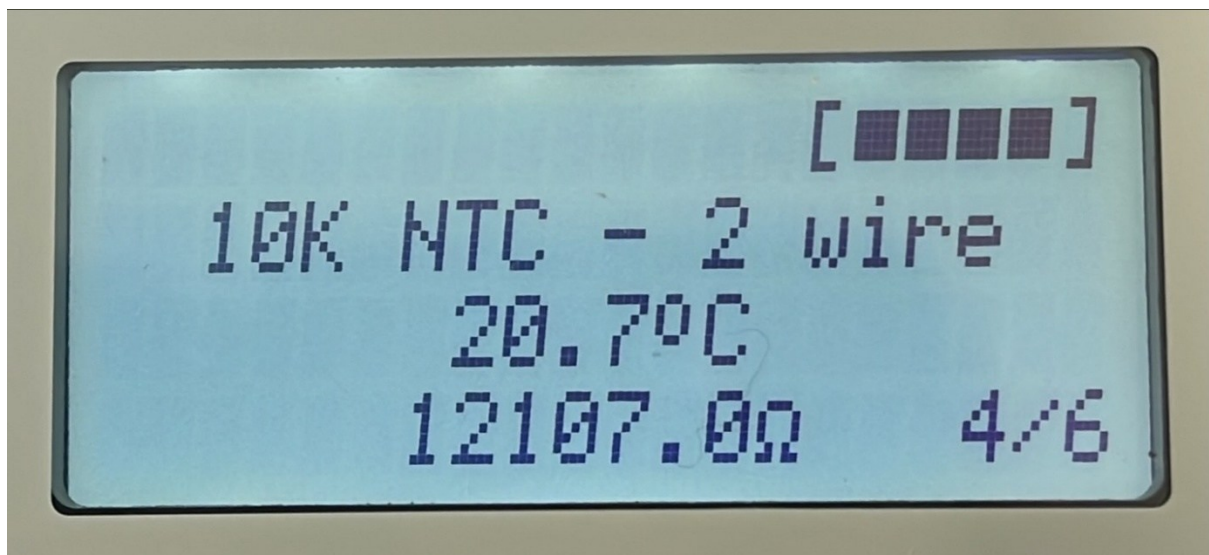


Figure 11: Example of 10K NTC reading

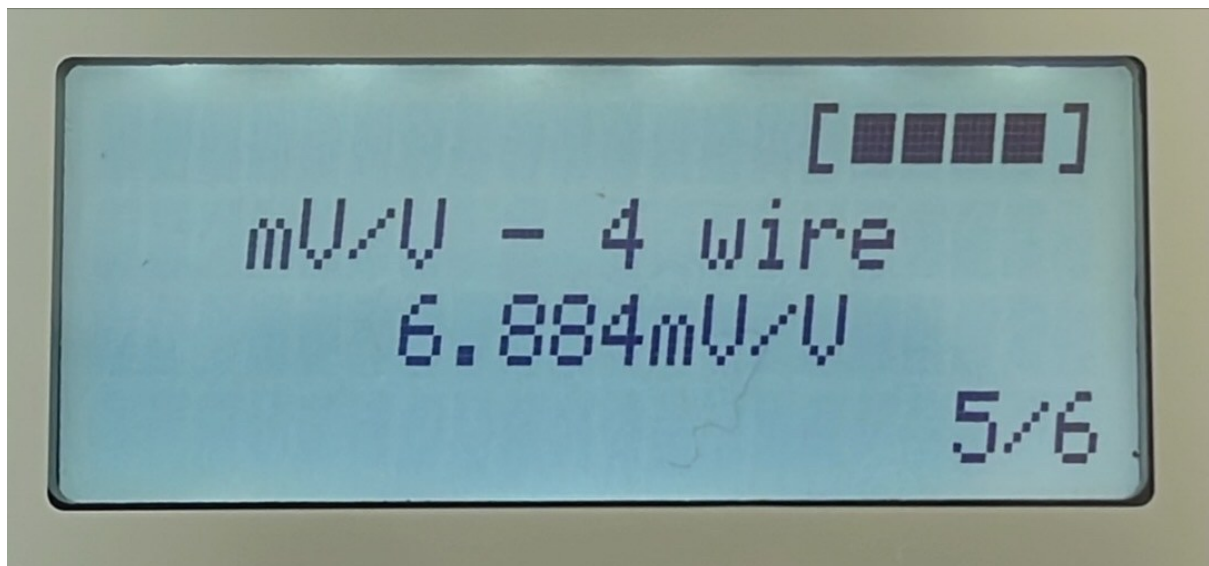


Figure 12: Example of mV/V reading

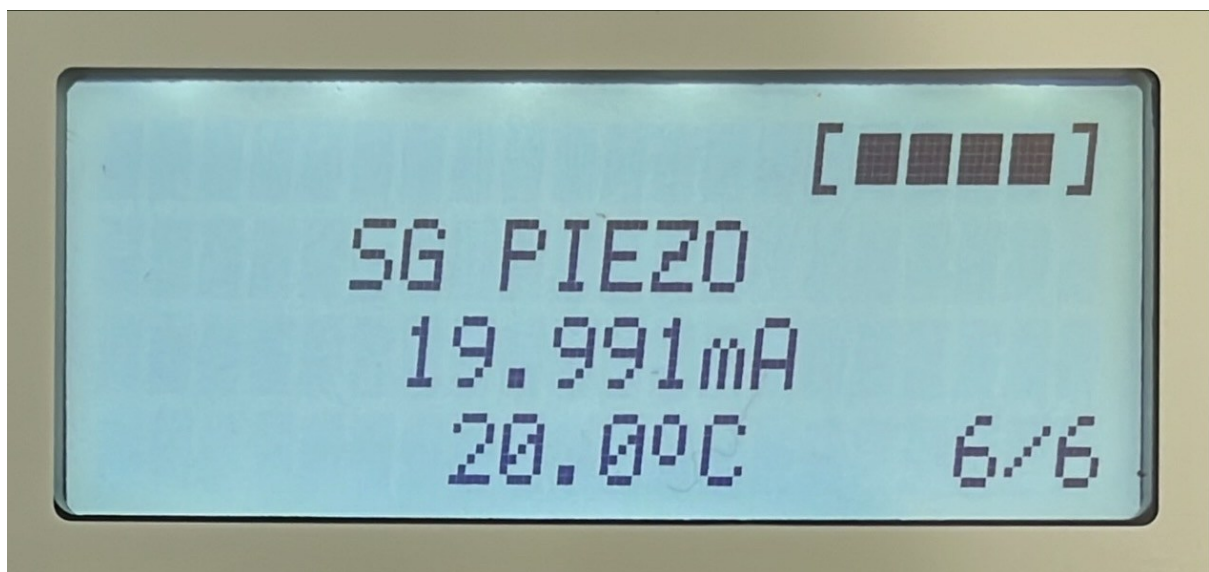


Figure 13: Example of SGP reading

10. MAINTENANCE

Geosense® MPR1 Multi-Purpose Readout is a maintenance free device for most applications, but the following should be considered during the service life:

- It is important never to store the unit and its accessories in a damp or dirty environment as this will reduce its service life.
- Keep the cable connection cap on when the fly lead is not connected to the top of the unit and keep both the readout and the fly lead clean and dry.
- Avoid any large impacts or significant vibration which can damage internal components.
- Keep cables away from physical damage.
- Do not submerge the unit.
- If storing the unit for an extended period, it is good practice to remove the batteries prior to storage in case they were to leak.
- The unit is powered by four standard disposable AA form factor 1.5v batteries. These can be replaced by removing the protective rubberised cover and then removing the backplate on the reverse of the unit held in place with two crosshead screws.
- For the most accurate set up, we would recommend annual calibration check. This can only be carried out at **Geosense®** Head Office in the UK.

10.1. Battery Replacement

The unit is powered by four standard nominal 1.5V AA batteries. Replacement of these is by removal of the back cover using a crosshead screwdriver. Batteries should be replaced whenever the readout battery level indicator reaches 1 bar remaining.



Figure 14: Rear battery compartment of MPR1

11. TROUBLESHOOTING

Table 2: Troubleshooting symptoms, causes and remedy

Symptom	Possible cause	Possible remedy
Readout does not turn on	Flat batteries	Replace batteries
Reading not as expected	Loose connection or low power	Check wiring/connections then check battery level
Buttons not functioning	Damage to unit	Return to Geosense for repair
Reading shows as dashes	Loose connection or short	Check connection to the readout and to the cable cores. Check cores are touching

12. SPARE PARTS

Geosense® MPR1 has the following spare parts available

- Replacement quick connector 1 to 4 flylead

Contact **Geosense®** for more details and Service / Calibration options.

13. RETURN OF GOODS

13.1. Returns Procedure

If goods are to be returned for either service/repair or warranty, please fill in the information via the website <https://www.geosense.co.uk/returns/> where a **Returns Authorisation Number** together with a **Returns Form** will be automatically generated and sent to you via email.

The **Returns Form** should be sent together with the returned goods.

13.1.1. *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 fee for inspecting the equipment and providing an estimate is also chargeable.

A valid purchase order (credit customer) or advance payment for the inspection fee(s) is required before inspection can take place. In the event of a warrantable claim being accepted, the value will be credited back to the customer's account (credit customer) or refunded (pre-payment customer).

13.1.1. *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 **MPR1** must be handled and used in accordance with the manufacturer's instructions and has not been subjected to misuse.

In order to make a warranty claim tick the warranty claim box under **REASON FOR RETURN** on the website and return the goods as above. You will then be contacted and informed whether your warranty claim is valid.

13.2. 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.

13.3. Transport & Storage

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

14. LIMITED WARRANTY

The manufacturer, (**Geosense Ltd**), warrants the **MPR1** 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 select the correct type and range of **MPR1** and other component parts.

The **MPR1** equipment shall be installed in accordance with the manufacturer's recommendations.

The equipment is warranted for **2 years** 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 **MPR1** 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 **MPR1** equipment from the time of delivery to Purchaser



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