

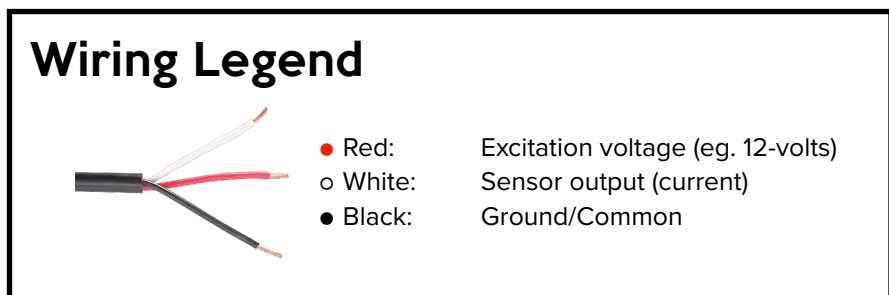
# Using GroPoint™ Analog (4-20mA) Sensors with Non-GroPoint Data Loggers

The high-current version of a GroPoint soil sensor is a 4-20mA sensor with 3-wire 4-20mA output that is compatible with most 3rd-party data loggers. You'll need to know the following information:

**Sensor output:** 4 to 20 mA  
**Power requirements:** 12 to 18 VDC, 15 - 30 mA

Each sensor must be powered and read independently. Powering more than one GroPoint sensor at the same time may cause interference between sensors resulting in inaccurate readings.

Output is equivalent to 0-50% (i.e. 4mA=0%, 20mA=50%) Volumetric Moisture content in soil. Sensor is linear between 5% and 50%, may be non-linear outside of this range.



Note that in unusual circumstances (for example if the sensor is immersed completely in water) the output current can exceed 20mA. If this could be harmful to connected equipment, appropriate protective measures should be taken.

To convert the current output to a voltage output, for example 0 to 2.5 volt, connect a 500-ohm resistor between the sensor output (white wire) and the analog ground (black wire).

To interrogate a GroPoint sensor follow this sequence:

1. Apply power of 12 to 18 VDC.
2. Wait 10ms.
3. Sample the signal output.
4. Remove power.



It is NOT recommended that power be applied continuously to the GroPoint sensor. This can cause electrolytic corrosion to the sensing element, and reduce the lifetime of the sensor.

There may be noise on the signal output so it should be low-pass filtered. This may extend the wait time (step 2) to 50-100ms.

If additional technical data is required, contact GroPoint at [support@gropoint.com](mailto:support@gropoint.com).

GroPoint offers engineering consulting services to clients at a rate of US\$150/hour. This service is available to clients who require assistance with customizing third party systems or for programming assistance with third party data loggers.