

GroPoint Lite

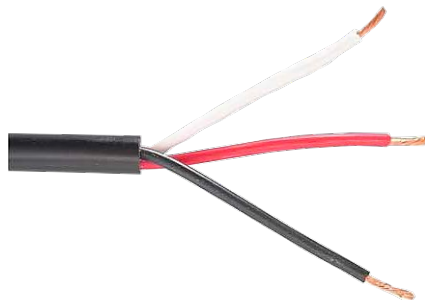
TECHNICAL INFORMATION

The GroPoint Lite soil sensor is robust, reliable and highly accurate, providing cost effective soil moisture and temperature measurements. The sleek light weight design installs quickly with minimal soil disruption. When installed vertically, the sensor averages volumetric moisture content over a soil layer of about 6" (15cm). When installed horizontally, the sensor can be used to measure moisture at a specific soil depth.



Wiring Legend

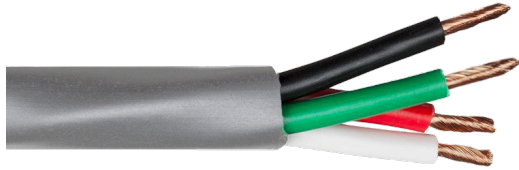
0-5mA and 4-20mA



- Red: DC input voltage
- White: Analog output
- Black: Ground/Common

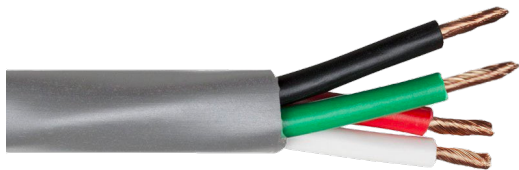
Note that the analog GroPoint Lite also includes a green cable, but it should not be connected in an installation. It is used only for calibration and testing.

SDI-12



- Red: DC input voltage
- White: SDI-12 I/O
- Green: Ground/Common
- Black: no connection

RS-485



- Red: DC input voltage
- Black: RS-485 I/O A
- White: RS-485 I/O B
- Green: Ground/Common

Rugged Connector

Environmental sealing:

- Integral O-Ring gasket
- IP68 seal rating

Materials:

- Connector shell: thermoplastic
- Shell interior: Elastomeric
- Contacts: Copper alloy
- Contact plating: Gold over nickel

Mounting procedure:

Align connector, push on, rotate bayonet ring until tight.



Connector Pinout



SDI-12 Command Set

The GroPoint Lite (SDI-12 and RS-485 version) conforms to/implements all aspects of the SDI-12 V1.3 protocol specification (a = sensor address).

| Command | Meaning | Response |
|---------|-------------------------------|--|
| a! | Acknowledge | Device address (default address is '0') |
| aI! | Send identification | Identification string |
| aAb! | Change address | Change device address to 'b' |
| ?! | Address query | Device address |
| aM! | Start moisture measurement | Measurement time and count (e.g. "a0026") |
| aM1! | Start temperature measurement | Measurement time and count (e.g. "a0023") |
| aC! | Start concurrent measurement | Measurement time and count (e.g. "a00206") |
| aD0! | Send data | Measurement results |
| aD1! | Send data | Additional data (if necessary) |

All other commands received by the sensor will be acknowledged with the device address only.

Sensor Start-up Time / Measurement Time

The time from application of power to the SDI-12 power bus until the sensor is ready to receive a command is approximately 75ms. The reported measurement time in response to the aM! measure command (where a is sensor address) is 3 seconds, measured from the end of aM! command response (a0022<CR><LF>) where n is the number of segments. Actual measurement times are less, and a service request is issued as soon as the measurement is completed. Current is at active level (15-20 mA) only during measurement time, otherwise current is less than 0.1 mA.

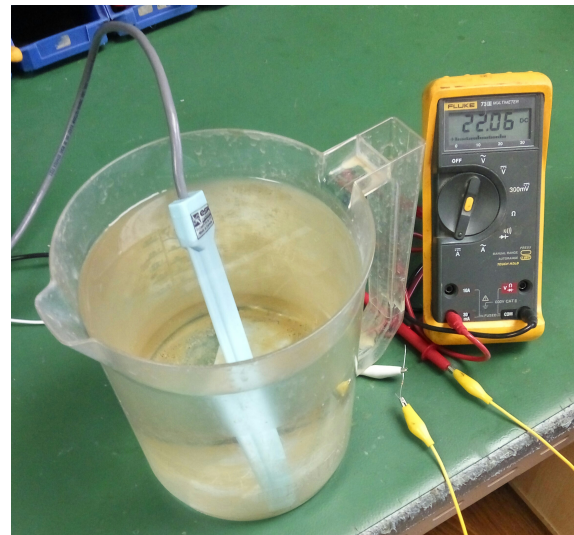
Testing the GroPoint Lite (4-20mA)

If desired, you can test the GroPoint Lite sensor before deploying it. The following test is for functional testing only, NOT determining calibration values. It is only to confirm that the sensor output increases with moisture increases, as it lacks the precision and controlled environment used for calibration.

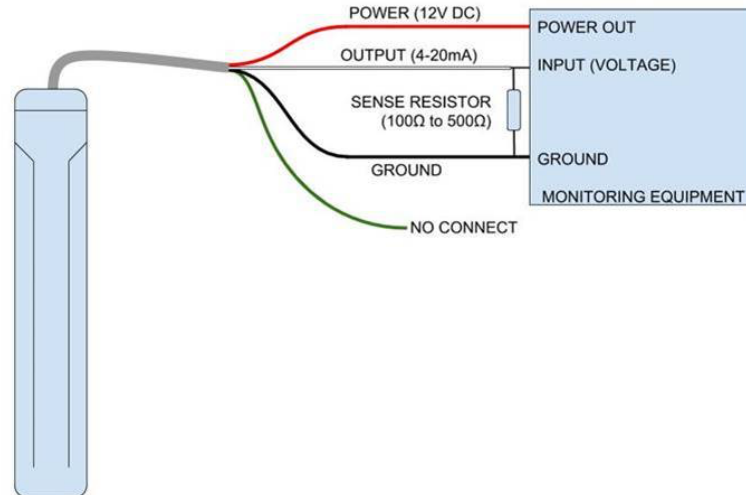
Materials Required

To perform this test, you will need the following:

- A 12V power supply.
- A digital multimeter set to 0-30mA.
- A 100 ohm to 500 ohm sense resistor.
- A plastic or glass container (NOT metal) at least 15cm (6”) in diameter. It should be deep enough to completely cover the sensor with water when the sensor is held vertically (about 23 cm, or 9” deep), although acceptable results will still be obtained if sensor is covered with water when positioned diagonally in the container (about 17 cm, or 7” deep). The readings you obtain may differ from stated if you use a different container.
- Water to fill the container.



Connection Diagram



Testing Instructions

1. Take a reading on the multimeter before submerging the sensor in water. The initial reading (in air) should be approx. 0.15 mA.
2. Slowly dip the sensor into the water, tip of the sensor first. After the first 3 cm of the sensor being submerged, the current readings will start to increase.
3. When about half the sensor is submerged, take another reading. The current should be measuring around 14 to 15 mA.
4. Take a final reading when the sensor is fully submerged. At this point, the current should read about 22 mA.

If you obtain readings that are significantly different than these, contact us.

Note: the probe is calibrated for operation in soil, not water columns, so any values obtained are approximate. Absolute value is not important, what is important is a gradual, consistent increase as the probe is lowered into the water.

The sensing element does not start until about 3 cm from the tip of sensor (see image below), so readings won't change immediately, but will start to increase as the sensor is lowered deeper into the water, and steadily increase until it is fully immersed in water.

