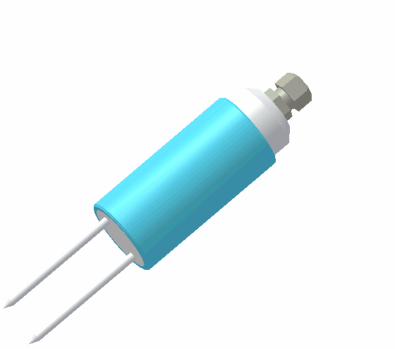
Soil Moisture DT288

Type: elctromagnetic soil moisture	Range: 0 to 100% (recommended 0 to 60%)

Sensor description

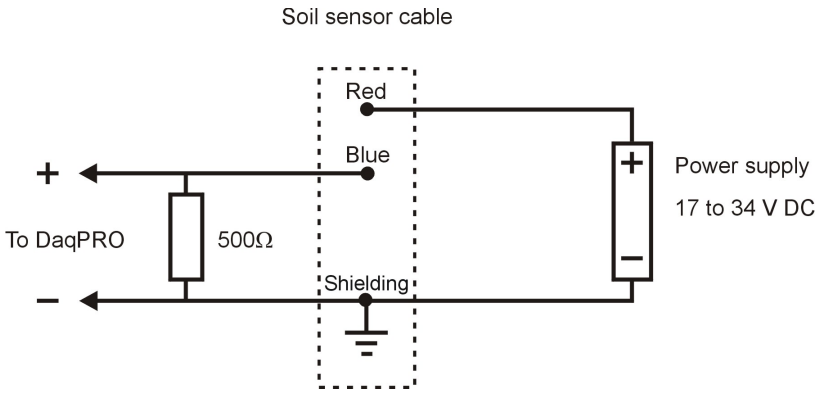


The DT288 soil moisture sensor, like all other electromagnetic (EM) moisture sensors (capacitive or TDR), responds to the relative permittivity (dielectric constant) εr, and bulk conductivity (σb) of the surrounding material. However, unlike the majority of EM sensors, by using specialised high frequency (100MHz) circuitry and a microcontroller to process the raw data, the DT288 can measure these two material properties independently, and so can measure soil moisture with good accuracy even when the conductivity is changing, such as when fertigation levels are changed.

Connection to DaqPRO and to power supply

Power supply voltage min: 17VDC, max: 34VDC

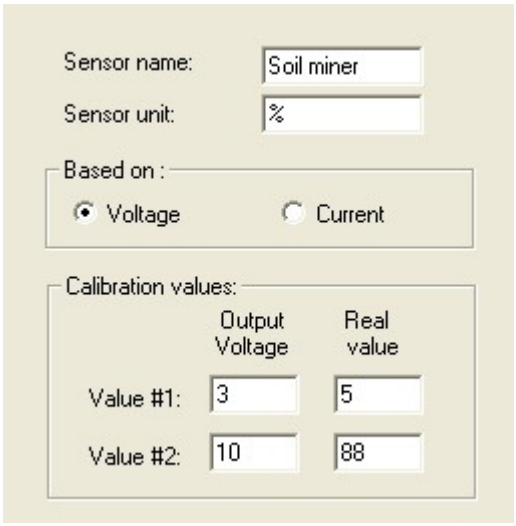
1. Connect the red wire of the Soil sensor cable to the positive terminal of the power supply
2. Connect the sheilding of the Soil sensor cable to the negative terminal of the power supply
3. Connect the blue wire of the Soil sensor cable to the positive terminal of DaqPRO's input
4. Connect the sheilding of the Soil sensor cable to the negative terminal of DaqPRO's input
5. Connect a high precision 500Ω resistor in parallel with DaqPRO's input



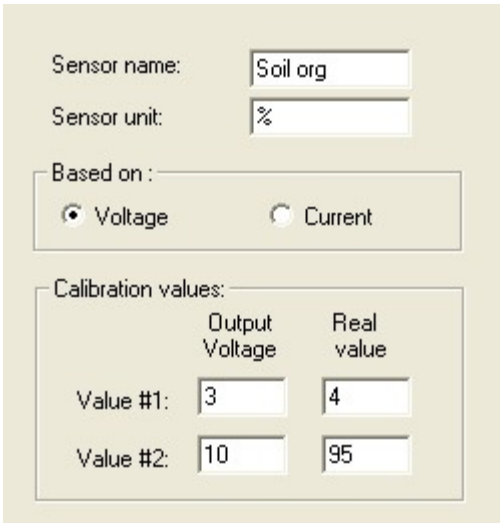
Defining the sensor with DaqLab

Define the sensor acording to the soil type: mineral or organic (see soil characterization iv the **Calibration** section below)

1. Turn on the data logger
2. Connect the data logger to the computer
3. Open DaqLab program
4. Click **Logger** on the menu bar, then click **Define new sensors** to open a dialog
5. Click **Add new Sensor** and type in the parameters as in the figure below:



Mineral soil type



Organic soil type

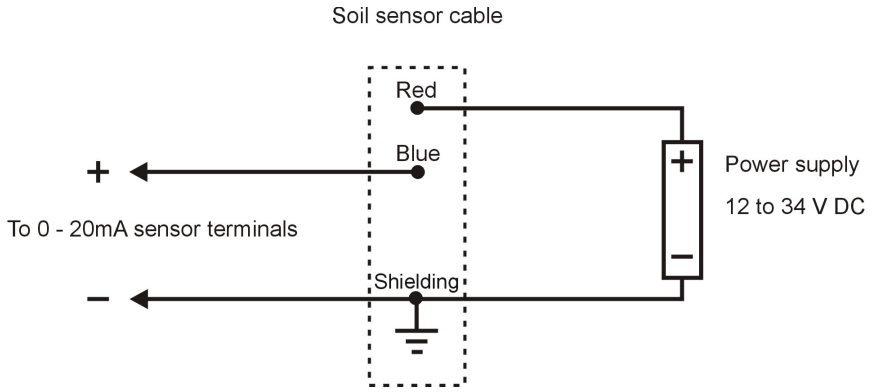
6. Click **OK**

DaqLab will update the defined sensor in your data logger.

Connection to MicroLog and to power supply

Power supply voltage min: 12VDC, max: 34VDC

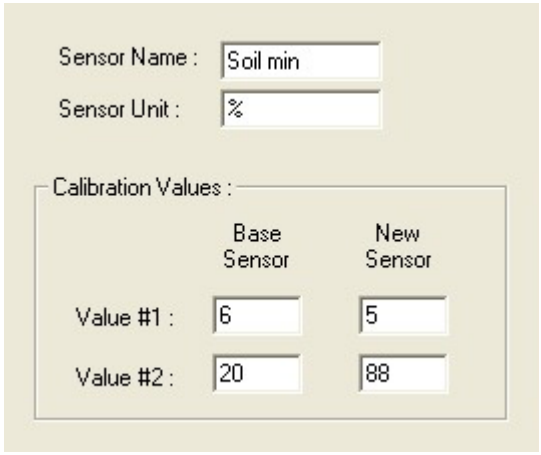
1. Connect the red wire of the Soil sensor cable to the positive terminal of the power supply
2. Connect the sheilding of the Soil sensor cable to the negative terminal of the power supply
3. Connect the blue wire of the Soil sensor cable to the positive terminal of MicroLog's Ext current sensor
4. Connect the sheilding of the Soil sensor cable to the negative terminal of MicroLog's Ext current sensor



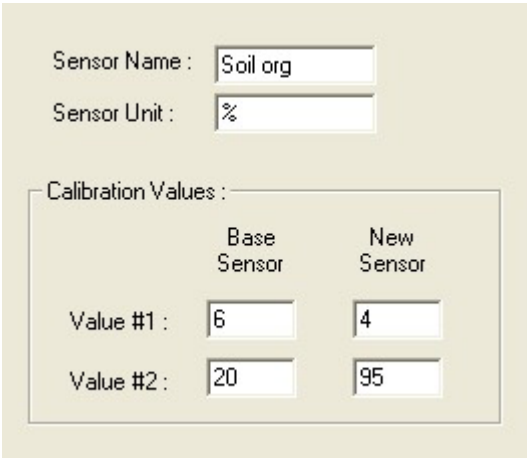
Defining the sensor with MicroLab or MicroLab Plus

Define the sensor acording to the soil type: mineral or organic (see soil characterization iv the **Calibration** section below)

1. Open MicroLab program
2. Click **Logger** on the menu bar, then click **Define new sensors** to open a dialog
3. Click **Add** and select Ext. current 0 - 20mA in the **Based on** drop list
4. Type in the parameters as in the figure below:



Mineral soil type



Organic soil type

5. Click **OK**

Calibration

The calibration is soil specific and for highest accuracy the user should carry out a soil specific 'gravimetric' calibration, i.e. take readings from their soil type over a range of wetness levels, and then oven dry them to find the actual volumetric water content from the change in weight.
However, for most applications a 'generic' relationship may be used.
Based on measurements made on a wide range of mineral and organic soils, this reduces to two 'general purpose' soil types:

Generalised Soil type	optimised for dry bulk density range	Use for dry bulk density range
Mineral	1.25 to 1.5 g/cm^3	> 1.0 g/cm^3
Organic	0.2 to 0.7 g/cm^3	< 1.0 g/cm^3

Use the sensor definition above that best match your soil.

Specification

Recommended range: 0-60% simple volumetric ratio
Signal Outputs: 4-20mA
Power requirements:
- Warm up Time: 1 second
- Supply Voltage 17 to 34VDC for DaqPRO 12 to 34VDC for MicroLog
- Current consumption <4mA

Size:
- rod length: 62mm
- overall length: 185mm

Sealing: IP68
Cable: 1m as standard
Construction: stainless steel (316 grade) rods, plastic body