

## Installation of the SMR101A

The SMR101A comes fully assembled out of the box. The full system includes (1) SMR101A data recorder, (1) soil moisture probe, and (1) weatherproof enclosure.

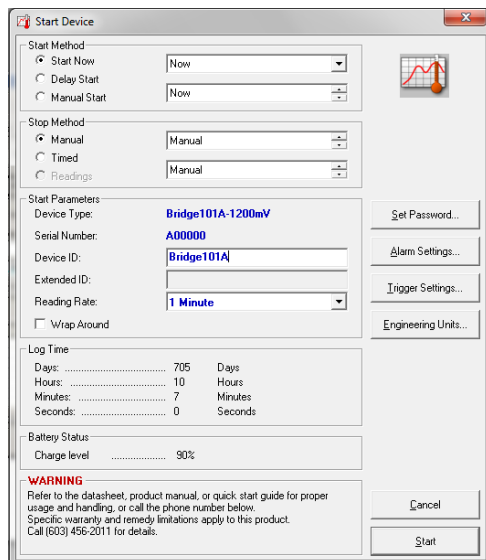
## PC and Interface Cable Setup

A PC running Windows with MadgeTech Software v2.06.3 (or higher) installed and an IFC200 Interface Cable from MadgeTech is required in order to setup the system. To install the software and cable, consult the "Data Logger and Software Operating Manual" that comes with the interface cable or refer to the MadgeTech web site (operating manual): <http://www.madgetech.com>

Once the software is installed and the hardware IFC200 Interface Cable is connected to the PC, communications with the SMR101A can now be established. To accomplish this, the stainless steel plug must be unscrewed from the enclosure. Insert the 3.5mm plug of the IFC through the hole in the enclosure and completely into the data logger. Within the software, click the **Communication Menu**; choose the **Auto Configure Port** option. The software will identify the device as a Bridge101A.

## Launch the SMR101A

The SMR101A comes programmed to record the volumetric water content saturation (in VWC), but can be changed when the device is started. To start the device, select from the menu bar "Device | Start Device", and the following screen should appear:



Modify any changes to the start method/parameters as desired and click the start button. Wait for a dialog box to appear that indicates that the device has been started successfully, unplug the interface cable, and replace the stainless steel watertight plug. The device is now running and may be installed at the monitoring site.

## Probe Insertion

When placing the probe in the soil, the user must place it in a spot which is completely surrounded by soil. Air between the soil and probe can affect the readings. Do not place the probe near any large metal objects as that can distort the readings.

**Orientation:** Place the probe so the flat side is facing left or right (not up or down), horizontally perpendicular to the surface of the soil.

**EC-5:** Insert the probe into the soil so that the prongs and black over-molding are buried completely. Do not force the probe into the soil. Use water or a shovel to loosen the soil.

## Probe Removal

When removing the EC-5 probe, pull it out using the black over molding. If there is difficulty, loosen the soil. Do not pull the probe out using the cable.

## Wire Configuration

The SMR101A comes pre-wired out of the package. If for any reason the wires need to be taken out, MadgeTech has provided a detailed wiring diagram of the SMR101A.

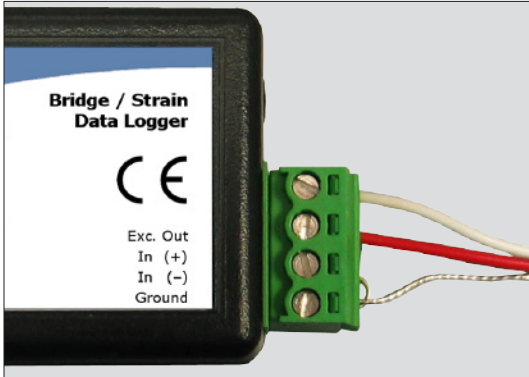
## Removing the sensor cable:

1. Use an 11mm wrench to loosen the dome nut on the cable fitting.
2. Remove the 4 screws from the enclosure using a 3/32" hex key.
3. Once the lid is removed, the screws of the green terminal block can be accessed with a small flat-head screwdriver. Loosen the screws enough such that the wire leads are free to be pulled out. At this point the cable can be carefully pulled free of the enclosure.

## Inserting the sensor cable:

Re-insertion of the sensor cable into the enclosure must be done carefully to ensure the device remains watertight.

1. Verify that the dome nut on the fitting is loose.
2. Feed the stripped wire leads carefully through the fitting. Push the cable through so that the cable's outer jacketing is just visible through the backside of the fitting.
3. Use an 11mm wrench to tighten the dome nut down to compress the seal around the cable.
4. The electrical connections can now be made.



The white wire is screwed into the **Exc. Out**.

The red wire is screwed into **In (+)**.

The unsheathed wire is screwed into **Ground**, with a jumper from **Ground** to **In (-)**.

### Engineering Units Standard Engineering Units

All SMR101A's are programmed by the factory with the default engineering units of % volumetric water content.

If a different engineering unit is desired, for example m3/m3 vs. % VWC, the engineering units gain will have to be reprogrammed into the device. To do this, click the **"Start Device"** button, than **"Engineering Units"**. Follow the wizard's prompts to accomplish the following:

1. Enable use of portable units; click on the **"Portable Units"** tab, check the box marked **"Use portable units on this device"**.
2. Enter an appropriate description and label (m3/m3 or %)
3. Enter the **Offset** and **Gain** values (see below)
4. Enable Engineering Units; check the box marked **"Enable engineering units on this device"**.

Click the **"Finish"** button to save the units to the device.

The Engineering Units are based on a linear conversion of the measured data;  $y = m \cdot x + b$ , where  $m$ =gain,  $b$ =offset,  $x$ =measured value and  $y$ =value in engineering units.

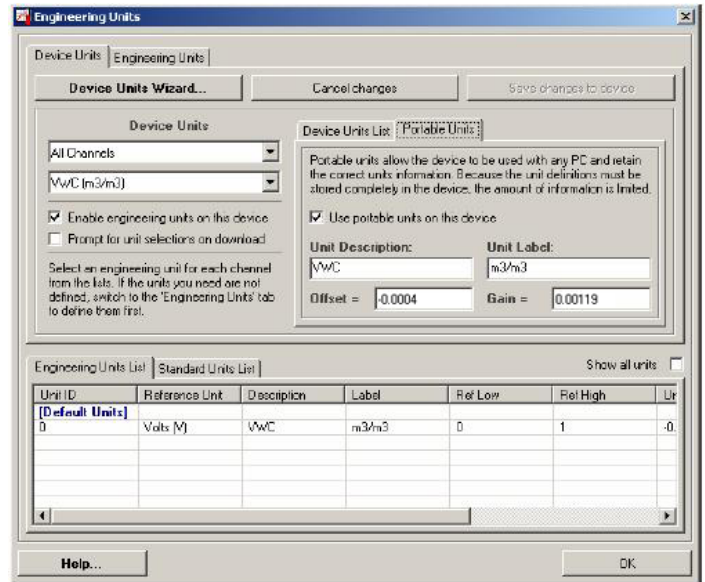
### Engineering Units Quick Reference for SMR101A

Unit Description	Unit Label	SMR101A-5 Offset	SMR101A-5 Gain
VWC	%	-0.0004	0.119
VWC	m3/m3	-0.0004	0.00119

1. The SMR101A-5 units are applicable for virtually all soil types.

### Engineering Units Examples:

#### m3/m3 for SMR101A-5



#### % for SMR101A-5

