

5 YEAR
WARRANTY



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OM-CP-SMR101A-KIT
Soil Moisture Data Logger

Product Overview

The OM-CP-SMR101A-KIT is a soil moisture data logger encased in a weather-proof enclosure that measures Volumetric Water Content (VWC) over a range of 0 to 100%. The system can be used in for most soil types as well as soil-less media with minimal salinity and textural effects. The system contains the OM-CP-SMR101A-KIT data logger, water resistant enclosure and the OM-CP-SMRPROBE probe.

LED Indicators

- **Status:** Green LED blinks every 10 seconds to indicate the unit is logging, 15 seconds to indicate the delay start mode.
- **Alarm:** Red LED blinks every 10 seconds to indicate low battery and/or memory, 1 second to indicate alarm conditions.

Engineering Units

All OM-CP-SMR101A-KIT's are programmed with the default engineering units of % volumetric water content. If a different engineering unit is desired, for example m^3/m^3 vs. % VWC, the engineering units gain will have to be reprogrammed into the device.

To create a unit:

1. Click Wizard to start the step by step process.

To assign an engineering unit to a device:

1. Open the Device Properties and assign an engineering unit.
2. Or click Apply an Engineering Unit from the device's context menu and proceed through the wizard.

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.

| Unit Description | Unit Label | OM-CP-SMR101A-KIT Offset | OM-CP-SMR101A-KIT Gain |
|------------------|------------|--------------------------|------------------------|
| VWC | % | -40.1 | 0.119 |
| VWC | m^3/m^3 | -0.0004 | 0.00119 |

Quick Start Steps

Product Operation

1. Install the OM-CP Data Logging Software and USB Drivers onto a PC.
 - a. Older versions of the OM-CP-IFC200 will require drivers.
 - b. The new version of the OM-CP-IFC200 will be detected by windows without requiring a manual driver installation. (*This type of OM-CP-IFC200 is the only one that uses Windows built in drivers. All other OM-CP-IFC200 models require driver installation.*)
2. Plug the OM-CP-IFC200 (*sold separately*) into a USB port on the base station computer, then the data logger. To connect the data logger to the OM-CP-IFC200, the stainless steel plug must be unscrewed from the enclosure. Insert the 3.5mm plug of the OM-CP-IFC200 through the hole in the enclosure and completely into the data logger.
3. The older versions of the OM-CP-IFC200 will have a red LED illuminate to signify that it has been connected correctly. (*The LED may also become unlit after flashing red.*)

Newer OM-CP-IFC200s has different working LEDs.

- a. The blue LED signifies that it is on and it is plugged into the computer correctly.
 - b. The amber LED signifies that it is busy. (*Searching for devices when a device is not plugged in, starting, stopping, downloading ect.*)
 - c. The green LED signifies that the device has been successfully found, started, stopped, downloaded ect. (*The LED may also become unlit after flashing green.*)
 - d. The red LED means the device has not been successfully found.
4. Launch the OM-CP Data Logging Software, the OM-CP-SMR101A-KIT icon will automatically appear in the connected devices list as the name of the internal data logger. This shows that the device has been recognized.
 5. Select the logger in the connected devices list, and click the "Real Time Start" method from the device tab and choose a desired reading rate from the drop-down menu and click "Start". (*To set up or choose an Alarm for a Real Time Session, select the alarm rules tab, refer to the Alarm Settings section.*)

Additional Features and Operation

Alarm Settings/Rules

1. Within the Device tab in the Omega software, in the Alarms group, click **Manage Rules**, then select **New**.
2. Enter a name in the Rule name box, and select whether notifications will occur when **All** conditions are met or **Any** condition is met.
3. Select the desired conditions to have met before notifications occur, and select which notifications will occur from the drop down menus.
4. If selecting to receive notifications by email or text message, click **Email settings** and make sure the correct info has been entered. Email and text message notifications will not be received if settings are incorrect.
5. Click **OK**. The **OK** button will be disabled if the Rule name box is empty.

Please refer to the Help file in the Omega software for more information regarding alarm settings

Probe Insertion

1. 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.
2. **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.
3. **OM-CP-SMRPROBE:** 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 OM-CP-SMRPROBE 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 OM-CP-SMR101A-KIT comes pre-wired out of the package. If for any reason the wires need to be taken out, Omega has provided a detailed wiring diagram of the OM-CP-SMR101A-KIT.

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. The electrical connections can now be made.

Troubleshooting Tips

Why are my devices not appearing?

If your OM-CP-SMR101A-KIT isn't showing up in the Connected devices panel, or you receive an error message while using the OM-CP-SMR101A-KIT, try the following:

- Check that your OM-CP-IFC200 is properly connected. For more information, see Troubleshooting Interface Cable problems (*below*).
- Ensure that the battery is not discharged.
- Ensure that no other OM-CP Software is running in the background
- Ensure that you are using Omega data logger software.
- Ensure that the Connected Devices panel is large enough to display devices. This can be verified by positioning the cursor on the edge of the Connected Devices panel until the resize cursor appears, then dragging the edge of the panel to resize it.

Troubleshooting Interface Cable problems

Check that the software recognizes your OM-CP-IFC200.

If your device is not appearing in the Connected Devices list, it may be that the OM-CP-IFC200 is not properly connected.

1. In the software, click the File Button, then click Options.
2. In the Options window, click Communications.
3. The Detected Interfaces box will list all of the available communication interfaces. If your OM-CP-IFC200 is listed there, then the software has correctly recognized and is ready to use it.

Check that Windows recognizes your OM-CP-IFC200.

If the software does not recognize your OM-CP-IFC200, there may be a problem with Windows or the USB drivers.

1. In Windows, click Start, right-click Computer and choose Properties or you can press Windows+Break as a keyboard shortcut.
2. Click Device Manager in the left hand column.
3. Double click Universal Serial Bus Controllers.
4. Look for an entry for Datalogger Interface.
5. If the entry is present, and there are no warning messages or icons, then windows has correctly recognized your OM-CP-IFC200.
6. If the entry is not present, or has an exclamation point icon next to it, you may need to install the USB drivers. These are available on your software flash drive.

Ensure that the USB end of the OM-CP-IFC200 is securely connected to the computer

1. Locate the USB-A plug of your OM-CP-IFC200.
2. If the interface cable is connected to your PC, unplug it.
3. Wait ten seconds, then reinsert it.
4. The older versions of the OM-CP-IFC200 will have a red LED illuminate to signify that it has been connected correctly. (*The LED may also become unlit after flashing red.*)
5. Newer OM-CP-IFC200s has different working LEDs.
 - a. The blue LED signifies that it is on and it is plugged into the computer correctly.
 - b. The amber LED signifies that it is busy. (*Searching for devices when a device is not plugged in, starting, stopping, downloading ect.*)
 - c. The green LED signifies that the device has been successfully found, started, stopped, downloaded ect. (*The LED may also become unlit after flashing green.*)
 - d. The red LED means the device has not been successfully found.

Product Maintenance

Battery Replacement

Materials: OM-CP-BAT105, #2 Phillips Head Screw Driver and 3/32" HEX Driver

1. Remove the data logger from the OM-CP-WATERBOX101A using the allen key.
2. Puncture the center of the back label with the screw driver and unscrew the enclosure.
3. Remove the battery by pulling it perpendicular to the circuit board.
4. Insert the new battery into the terminals and then screw the enclosure back together.

Note: Be sure not to over tighten the screw or strip the threads.

Recalibration

The OM-CP-SMR101A-KIT system is based on strain measurement in mVs. The device is calibrated at 0 volts and 900-1000mV.

Recalibration is recommended annually for any Omega data logger; a reminder is automatically displayed in the software when the device is due.

OM-CP-SMR101A-KIT General Specifications

| Description | OM-CP-SMR101A-KIT |
|-------------------------------------|---|
| Reading Rate | 4Hz to once every 24 hours |
| Memory | 1,000,000 readings; software configurable memory wrap 330,000 readings in multiple start/stop |
| Wrap Around | Yes |
| Start Modes | <ul style="list-style-type: none">• Immediate start• Delay start up to 24 months• Multiple pushbutton start/stop |
| Stop Modes | <ul style="list-style-type: none">• Manual through software• Timed (specific date and time) |
| Multiple Start/Stop Mode | Start and stop the device multiple times without having to download data or communicate with a PC. |
| Multiple Start/Stop Mode Activation | <ul style="list-style-type: none">• To start the device: Press and hold the pushbutton for 5 seconds, the green LED will flash during this time, signaling that the device is logging.• To stop the device: Press and hold the pushbutton for 5 seconds, the red LED will flash during this time, signaling that the device has stopped logging. |
| Real Time Recording | The device may be used with a PC to monitor and record data in real time. |
| LED Functionality | <ul style="list-style-type: none">• Green LED blinks: 10 second rate to indicate logging 15 second rate to indicate delay start.• Red LED blinks: 10 second rate to indicate low battery and/or full memory, 1 second rate to indicate an alarm condition. |
| Password Protection | An optional password may be programmed into the device to restrict access to configuration options. Data may be read out without the password. |
| Engineering Units | Native measurement units can be scales to display measurement units of another type. This is useful when monitoring voltage outputs from various types of sensors such as strain gauges and load cells. |
| Battery Type | 3.6V lithium battery included; user replaceable |
| Battery Life | 10 months typical at a 1 minute reading rate with a 350Ω load |
| Time Accuracy | ±1 minute/month (at 20°C/68°F, stand alone data logging) |

OM-CP-SMR101A

| Description | OM-CP-SMR101A-KIT (Continued) |
|-----------------------|---|
| Computer Interface | USB (interface cable required); 115,200 baud |
| Software | XP SP3/Vista/Windows 7/Windows 8 |
| Operating Environment | <ul style="list-style-type: none">• Data Logger: -40°C to +80°C (-40°F to +176°F) 0%RH to 90%RH non-condensing• Probe: 0°C to +60°C (32°F to +140°F), 0%RH to 100%RH |
| Dimensions | <ul style="list-style-type: none">• Data Logger: 1.4" x 2.5" x 0.6" (36mm x 64mm x 16mm)• Probe: 2.1" x 0.6" x 0.06" (55mm x 15mm x 1.5mm)• Cable Length: 16' (5m, tinned, wire leads)• OM-CP-WATERBOX101A: 2.9" x 5.8" x 1.5" (74mm x 148mm x 39mm) |
| Weight | 7 oz (196 g) |
| Materials | Data Logger: ABS Plastic Waterbox: Black Anodized Aluminum |

Data Logger

| | |
|-------------------|--------------|
| Measurement Range | ±1200mV |
| Accuracy | ±0.01% FSR |
| Input Range | 0 to 2.5V DC |

Probe

| | |
|------------------------|--|
| Measurement Range | 0 to 100% VWC saturation |
| Measurement Type | VWC (Volumetric Water Content) |
| Measurement Accuracy | ±3% typical, all soils ±1% with soil specific calibration |
| Measurement Time | 10ms |
| Measurement Resolution | 0.002m ³ /m ³ |
| Life Expectancy | 3-5 years |
| Power Requirements | Powered from the data logger's internal battery. No external power required. |

Battery Warning

WARNING: FIRE, EXPLOSION, AND SEVERE BURN HAZARD. DO NOT RECHARGE, DISASSEMBLE, HEAT ABOVE 212°F, INCINERATE OR EXPOSE CONTENTS TO WATER. DISCARD USED BATTERY PROMPTLY, KEEP OUT OF REACH OF CHILDREN.

*Specifications subject to change.
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If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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