

SediMeter™ SM3 manual



1. Apply insulating **grease** to the under-water connector or blind plug prior to plugging it in to the SediMeter. If plugging it in under water, connect the power last.



2. Install the **driver** for the USB to RS485 cable. See lindorm.com/downloads
 3. Connect the cable to the computer. The SediMeter battery will start **charging**.
 4. Install the SediMeter **software** from the CD or as downloaded from lindorm.com
 5. Use the software to **set up** the SediMeter for deployment (other side).
 6. When **disconnecting** the cable from the instrument, grab the black rubber **ONLY. DO NOT GRAB THE PLASTIC.**



FIELD DEPLOYMENT

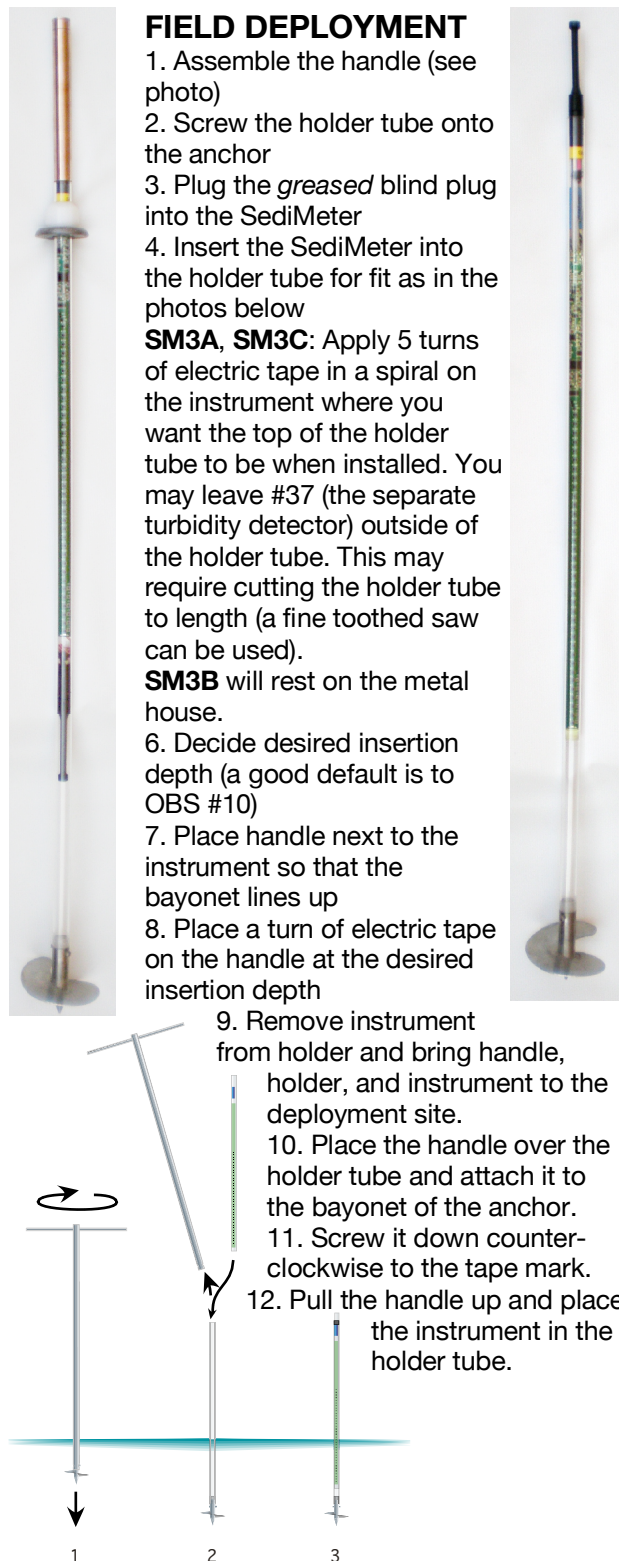
1. Assemble the handle (see photo)
2. Screw the holder tube onto the anchor
3. Plug the *greased* blind plug into the SediMeter
4. Insert the SediMeter into the holder tube for fit as in the photos below

SM3A, SM3C: Apply 5 turns of electric tape in a spiral on the instrument where you want the top of the holder tube to be when installed. You may leave #37 (the separate turbidity detector) outside of the holder tube. This may require cutting the holder tube to length (a fine toothed saw can be used).

SM3B will rest on the metal house.

6. Decide desired insertion depth (a good default is to OBS #10)
7. Place handle next to the instrument so that the bayonet lines up
8. Place a turn of electric tape on the handle at the desired insertion depth

9. Remove instrument from holder and bring handle, holder, and instrument to the deployment site.
10. Place the handle over the holder tube and attach it to the bayonet of the anchor.
11. Screw it down counter-clockwise to the tape mark.
12. Pull the handle up and place the instrument in the holder tube.



SM3B CLEANER

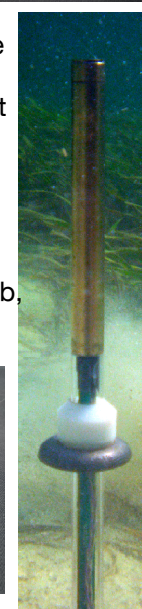
1. The cleaner has a wiper between a plastic screw and a lead nut. Its hanging in a braided fishing line from a reel on the top of SM3B.



2. Using the software, drive the shuttle up so it is within 1 cm from the metal house.
3. When deploying, set a delay before the first cleaning so that the instrument can be installed before the cleaning occurs.



4. Set Interval and Start in the Cleaning tab, as explained in the software manual.



COPPER TAPE

By placing copper tape on the reverse side of the holder tube of SM3A and SM3C, and all around where there are no sensors, biofouling can be significantly reduced. The recommended type is 1 inch wide, conducting.

Specifications

Memory capacity	16,384 measurements
Burst samples	1 to 20, interval 1 to 16 s
Turbidity resolution	1 FBU
Level resolution	10 µm
Recommended depth	1 to 50 m
Temperature range	0°C ... 50°C
May overheat if left in direct sunshine. Do not bend.	



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USING THE SOFTWARE

1. Connect the modem cable to the SediMeter and the computer.
2. Start SediMeter.exe ver 4.
3. Select the COM port of the modem cable in the Serial Port selector.
4. The Baud Rate after reset shall be 9600.
5. Click Open Connection. If successful the other tabs will become unlocked.

DEPLOYMENT

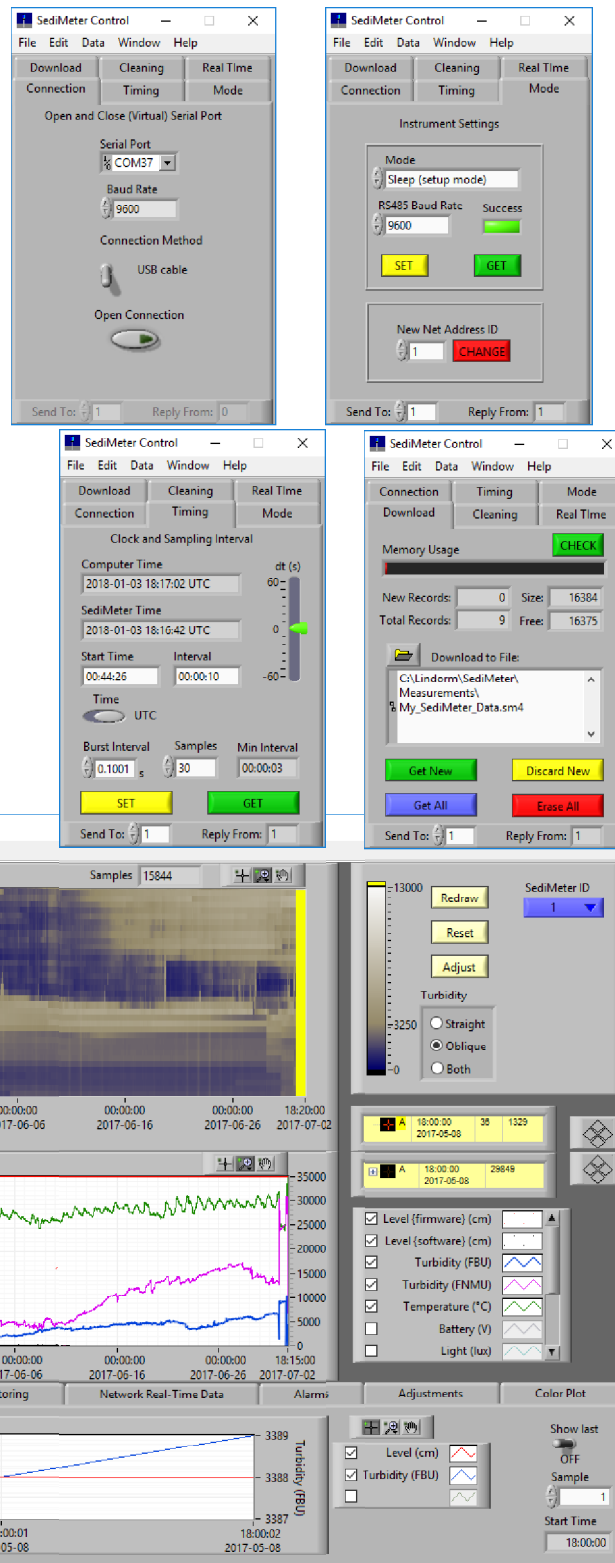
1. Go to the Timing tab and set Interval and Start time. Optionally set burst samples to more than one.
2. Optionally go to the Cleaning tab and set that.
3. Go to the Mode tab and set it to Logger mode.
4. Disconnect the instrument from the cable, plug in the blind plug, and deploy.

DOWNLOADING DATA

Connect as above, go to the Mode tab and set the unit to Sleep mode. It will fail if the command by chance is sent during an ongoing measurement. If so, try again.

1. Open the **Download** tab.
2. Click the **CHECK** button. The number of measurements in memory is shown.
3. Click the folder button. In the dialog that opens, select a file name and location for the file you are about to create.
4. To download only the new records, click **Get New**. To download all records, click **Get All**. To discard the new records without downloading them, click **Discard**.
5. After all the requested data has been downloaded and saved to a file you get a confirmation. Click OK. The data remains in memory until you close the application.
6. To clear the SediMeter's memory, click **Erase**. It will take about a minute.

7. Select menu **Data -> Analyze Logged...** to open the SediMeter Data window. Refer to the software manual for further details.



RESET AND RECOVERY

Approach a strong magnet to the side of the printed circuit board where the text RESET CPU appears on the reverse side. If connected, the yellow listening LED turns off briefly during the reset. If you know the battery to be charged, and it still will not respond to commands, or the yellow listening LED does not come on, try to reset it.

BATTERY

The battery takes a few hours for a full charge in SM3A and SM3C, and up to 8 hours or more in SM3B. When the voltage drops below half, the cleanings are first shut off. When it approaches empty, the measurements are also shut off. As the battery keeps discharging, the power is cut to the electronics. If left for a substantial time without charging, the backup primary battery protects the rechargeable battery from being over-discharged for many years. However, charging it again from such a deep discharge may require keeping the CPU reset until the voltage has risen sufficiently.

If the battery does not charge after many hours, try keeping the CPU in a reset condition by leaving a strong magnet adjacent to the reset switch. This prevents the instrument from starting up while the battery is still too discharged to power the initiation sequence.

CLEANING

Clean the sensor with non-abrading sponges, water and mild detergent only.

DESCRIPTION

The sensor consists of an array of 36 optical backscatter (OBS) detectors, 1 cm apart. The turbidity is measured at each of these 36 levels, and also in between by measuring oblique backscatter (emitted at one level and measured at the adjacent level). Using the straight backscatter the instrument estimated the bottom level. There is also a 37th OBS, 11 cm above #36. This is used for measuring turbidity, and, in SM3B, for controlling the ascent of the cleaning shuttle.

The instrument can take up to 20 measurements of level and #37 turbidity per measurement, with an interval of 1 to 16 s. These burst samples can be used to get a better average over a period with varying measurement values, e.g. over a wave cycle. Finally the instrument measures the temperature.