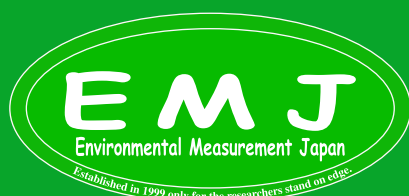


Environmental Measurement Japan, CO., LTD.

Nondestructive Dendrometer

MIJ-02 LMS User Manual



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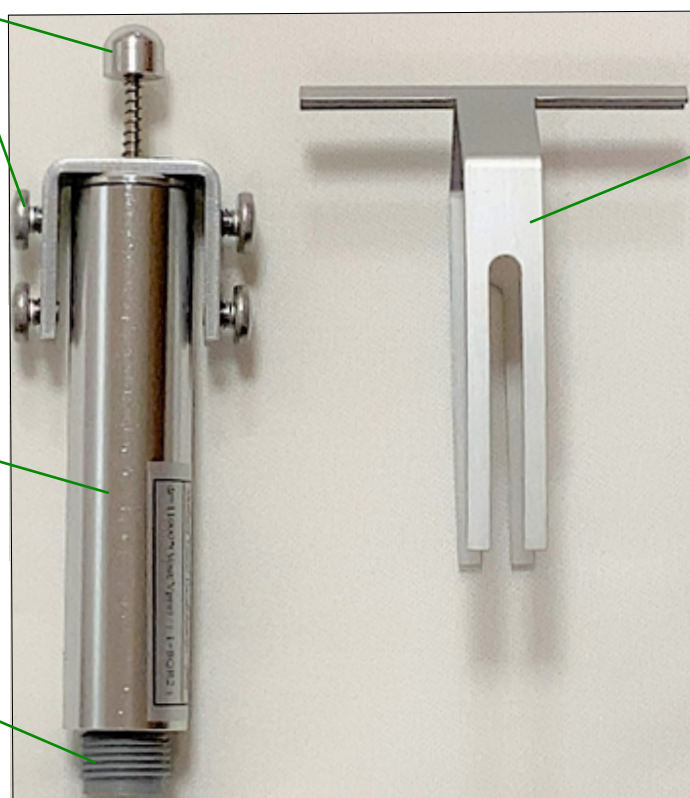
LMS Parts

Contact Head

Hammer Head Fixing Screw





LMS Body

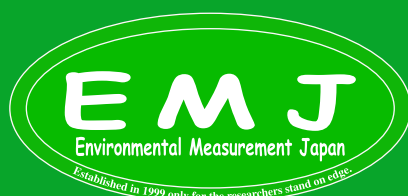
Cable Connector



Hammer Head

Unpack

	MIJ-02 LMS
	Cable tie
	Ept sealer
	Cable sold separately



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Setting LMS to Stem

This manual explain how to install the MIJ-02 LMS.

Branches and trunks are relatively easy to install, but soft samples such as herbaceous stems require some ingenuity, so this manual will mainly explain the installation for stems first.



Attach the hammer head to the stem. Cut the Ept Sealer to an appropriate length (1.5 rolls) and fix the hammer head and stem.



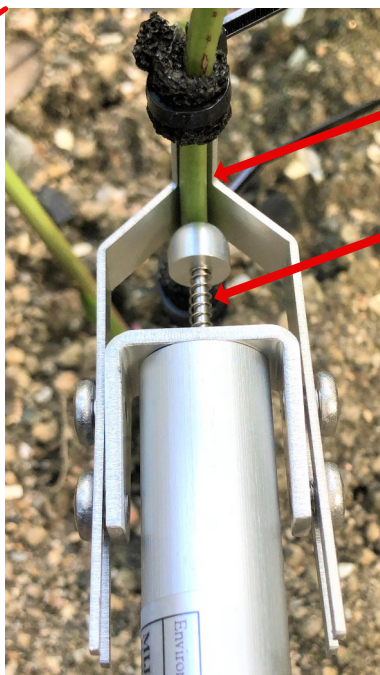
Be sure to wrap the Ept Sealer both upper and bottom side of hammer head. Fix as picture shown. Make sure the stem is along the groove of the hammer head.



Finally, cable tie need to wrap from the top of the Ept Sealer. At this time, cable tie is lightly tighten so as not to hinder the growth of the stem.



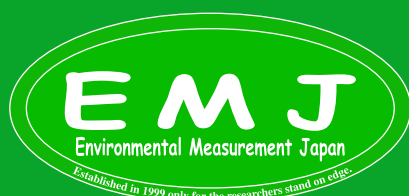
Insert LMS body into the hammer head.



Make sure the contact head contact to the stem.

The screw is not shrink at this stage

This is view from above, you can see that the contact head is in contact with the stem. You can also see that the spring is not shrinking.



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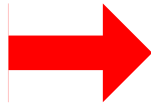
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Setting LMS to Stem

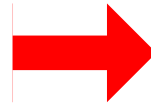


Push the LMS body toward the stem by 1 to 2 mm.
This process is important to apply initial tension.



This photo shows extremely shortened spring for the sake of explanation.
Normally, spring should shrink by only about 1 to 2 mm.
Tighten the hammer head fixing screws with the spring shrunk as the picture shown.

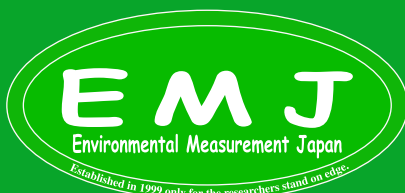
* Be sure to tighten all 4 fixing screws.



Insert the splint into the ground and secure the cable to the splint after installed the sensor.



Please use 2 cable tie to secure cable to the splint.



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Setting LMS to branch or trunk



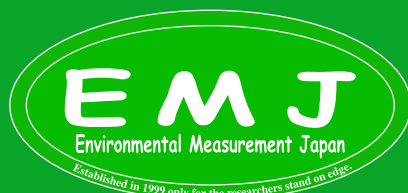
Unlike setting to stem, it can install without a splint.
Installation method is same as stem installation so please see <installation for stem>.
Be sure to fix the top and bottom of the hammer head to the branch or trunk with the Ept Sealer and cable tie.



Note :

The above picture is a bad mounting example where the hammer head does not correspond to the diameter of the trunk.
Be sure to use a appropriate dendrometer.

Samples that cannot be measured by LMS then you may be handled by LMM or MIJ-02 Rotary Type3.



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Installation for higher place



If the branch or trunk you want to measure is in a high position, crawl the cable around the trunk to fix it, but if the cable is stretched too much, sensor will be pulled when the branch shakes due to the wind. It is important to loosen the cable near the sensor a little as shown in the figure. When fixing the cable to the trunk, fix it in two places with cable tie.




Cable Tie



There is a limit to the length of the insulator, so if one is not enough, use a combination of two insulators.

MIJ-02 LMS/LMM Dendrometer Wiring

Sensor Wiring

PWR	Brown		Power
SIG(+)	Blue		Signal (+)
GND	Black		Ground

- Brown goes to Power port of datalogger
- Blue goes to Signal out put + of datalogger
- Black goes to Ground of datalogger

NOTE:

Datalogger should be used as single-end. If your datalogger is differential only, connect signal ground and power ground.

Regression Equation (Output)

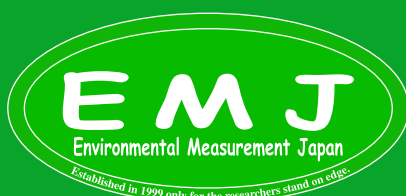
$$dr = 11000 * (V_{out} / V_{pre}) / (1 + \text{SQR}2)$$

dr: Radius displacement, Vout: Output mV, Vpre: Power Voltage mV, SQR: Square root (or 1.41421)

For instance, if the datalogger power is 5V then Vpre will be 5000mV and the Vout will be the output that datalogger shows.

If the datalogger **5000mV** power and the datalogger output is **1234mV** then $dr = 11000 * (1234\text{mV} / 5000\text{mV}) / (1 + \text{SQR}2)$.

So the result will be 1124.506 micro meter.



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