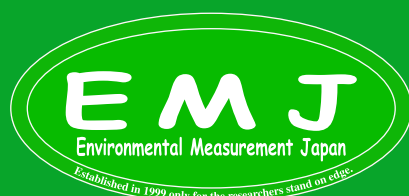


Environmental Measurement Japan, CO., LTD.

Linear Dendrometer

MIJ-02 LM TypeII User Manual



Environmental Measurement Japan, CO., LTD.

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About Dendrometer MIJ-02 LM

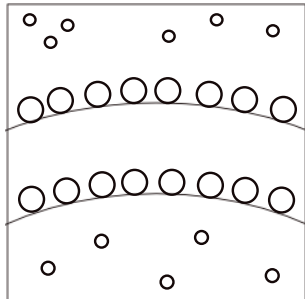
Purpose of using Dendrometer LM

- Measure the growth of sapwood and the bark movement by rainfall.
- Measure sapwood and also the thermal expansion of heart wood.

These purpose will vary by tree you plant to measure:

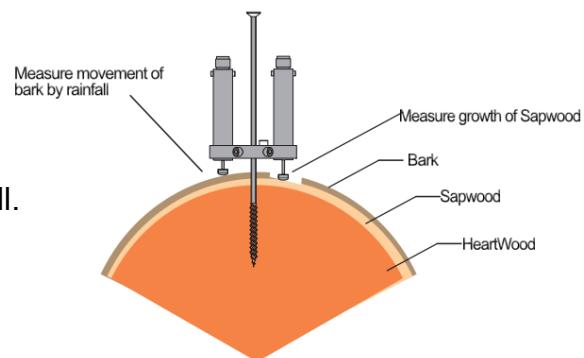
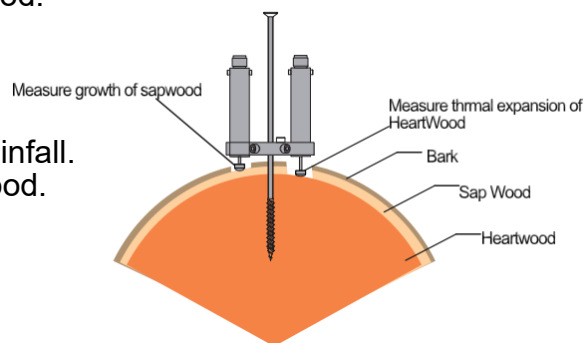
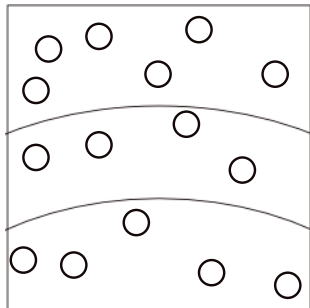
Rings porous wood:

- Measure the growth of sapwood and the bark movement by rainfall.
- Measure sapwood and also the thermal expansion of heart wood.



Diffuse porous wood:

- Measure the growth of sapwood and the bark movement by rainfall.



Preparation

Before install MIJ-02 LM, please prepare follwing equipments.



1.Drill



2.Long Drill Bit



3.Square Bit



4.Long Screw



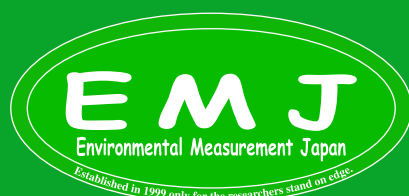
5.LM Sensor



6.MIJ-02 Bracket



7.Cable



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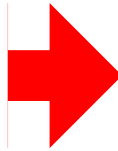
Installation



Please choose smooth surface of tree for installation.



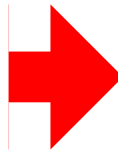
1.
Set the long drill to Drill.



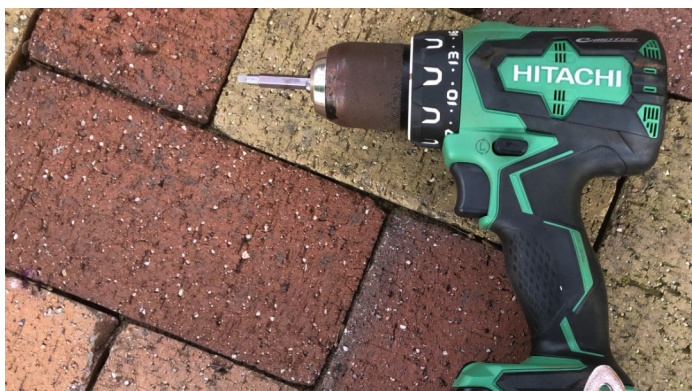
2.
Make the hole in the wood



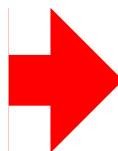
3.
When you drilling you must remove wood chips and drill again. Repeat this step until proper hole depth.



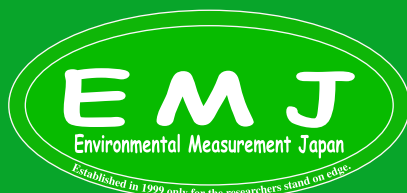
4.
Check the hole and now install the Long screw into this hole.



5.
Set the square bit to Drill.



6.
Set the square bit to long screw.



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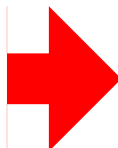
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Installation



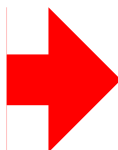
6.
Drill the long screw to the hole made at step 4.



7.
Insert until the screw part is hidden



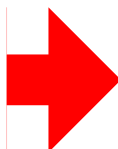
8.
Set the MIJ-02 Bracket to the long screw.



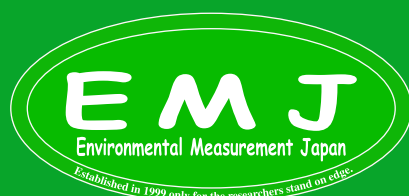
9.
Please tighten bracket screw from both side.



10.
Since this tree is thin; thus, the xylem may destroyed when drill the tree so set Installed bracket diagonally.



11.
Insert the LM to the bracket.



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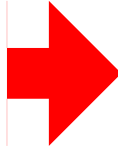
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Installation



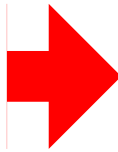
10.
Mark the place where shave the bark.



11.
Remove the LM for shaving bark.



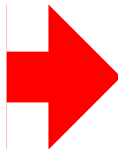
12.
Insert the LM back to the position.



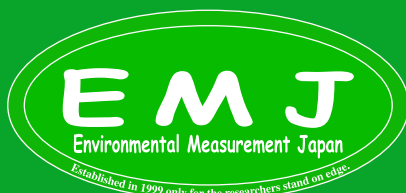
13.
Push the LM and tighten LM by using screw at bottom of bracket. This picture shows the front LM is pushed toward tree.



14.
Push the other LM toward tree and tighten LM by using screw at bottom of bracket.



15.
Make sure that cable is straight down toward ground.



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MIJ-02 LM Dendrometer Wiring

Brown goes to Power port of datalogger

Blue goes to Signal out put + of datalogger

Black goes to Ground of datalogger

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

Regression Equation (Output)

$dL = 11000 \times V_{out} / V_{power}$

(dL: displacement (um), Vout: voltage output, Vpre: power voltage)

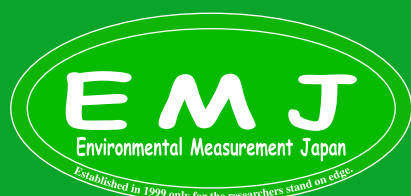
(If you are using MIJ-01 data logger: $dL = 11000 \times X001 / 5000 \text{input to PVS}$)

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

If the datalogger **5V** power and the datalogger output is **1.234V** then $dr = 11000 \times (1.234V / 5V)$.
The result will be 2714.8micro meter

Specification

Range	11000um
Output	Ratiometric (eg: When power 5V then output full scale is also 5V)
Resolution	2.2um/mV
Power	5VDC (<1mA at 5VDC)
Withstand Voltage	<18VDC
Sliding Resistance	Standard (for wood) 0.3N/mm, Medium (for plants without wood)0.1N/mm
Linearity	±1%
Thermal Characteristic	<-0.126um/DEG
Waterproof	IP67



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