The Thermal Dissipation Probe (TDP) transpiration sensor measures sap velocity which is converted to volumetric flow rate. TDP is a simple and affordable device originally proposed by Granier. The basic TDP probe has two thermocouple needles inserted in the sapwood, the upper one containing an electric heater. The probe needles measure the temperature difference (dT) between the heated needle and the sapwood ambient temperature below. The dT variable and the maximum dTm at zero flow provide a direct conversion to sap velocity.

For uniform trees in a closed canopy, only one sensor per tree is needed. For irregular canopies or with mixed species, sap flow varies around the circumference of large trees. Thus multiple probes are recommended in a single tree to make flow calculations accurately. Normally, install two probe sets per tree for trees 3” to 6” (75 to 150 mm) in diameter, and four probe sets per tree for trees 6” to 18” in diameter (>150 mm). Calibration is recommended for new species.

**Features**

- Dual needle, patented Granier design with Dynamax upgrades
- Easily inserted & removed for reuse
- Constant heat, thermal dissipation method; not heat pulse
- Continuous measurement method
- No waiting periods & no heat pulses
- Stainless steel needles are Teflon coated for durability and longevity
- Compatible with most data loggers
- Differentially wired T-type thermocouples
- Electronics and connectors are sealed and weatherproofed
- Wires directly to data logger, one differential channel each
### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>TDP-10</th>
<th>TDP-30</th>
<th>TDP-50</th>
<th>TDP-80</th>
<th>TDP-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>10 mm</td>
<td>30 mm</td>
<td>50 mm</td>
<td>80 mm</td>
<td>100 mm</td>
</tr>
<tr>
<td>Diameter</td>
<td>1.2 mm</td>
<td>1.2 mm</td>
<td>1.65 mm</td>
<td>1.65 mm</td>
<td>1.65 mm</td>
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<tr>
<td>T-Type T/C's</td>
<td>1 each</td>
<td>1 each</td>
<td>1 each</td>
<td>2 each</td>
<td>3 each</td>
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<tr>
<td>Probe Spacing</td>
<td>40 mm</td>
<td>40 mm</td>
<td>40 mm</td>
<td>40 mm</td>
<td>40 mm</td>
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<tr>
<td>Power</td>
<td>.08 - .12 W</td>
<td>.15 - .20 W</td>
<td>.25 - .30 W</td>
<td>.45 W</td>
<td>.50 - .60 W</td>
</tr>
<tr>
<td>Cable</td>
<td>10 ft/5 Cond</td>
<td>10 ft/5 Cond</td>
<td>10 ft/5 Cond</td>
<td>10 ft/6 Cond</td>
<td>10 ft/7 Cond</td>
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<tr>
<td>Heater Resistance</td>
<td>26 Ohms</td>
<td>52 Ohms</td>
<td>77 Ohms</td>
<td>122 Ohms</td>
<td>144 Ohms</td>
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<tr>
<td>Operating Volts @~7° C</td>
<td>2.0 V</td>
<td>3.0 V</td>
<td>5.0 V</td>
<td>7.0 V</td>
<td>8.5 - 9 V</td>
</tr>
<tr>
<td>Signal Out</td>
<td>40 µV/°C</td>
<td>40 µV/°C</td>
<td>40 µV/°C</td>
<td>40 µV/°C</td>
<td>40 µV/°C</td>
</tr>
</tbody>
</table>

### Ordering Information

**TDP-30**
Sap Velocity Thermal Dissipation Probe 30 mm, 10 ft cable with connector

**TDP-50**
Sap Velocity Thermal Dissipation Probe 50 mm, 10 ft cable with connector

**TDP-80**
Sap Velocity Dual T/C Thermal Dissipation Probe 80 mm, 10 ft cable with connector

**TDP-100**
Sap Velocity Profile Probe. 100 mm, 10 ft cable with connector

**FLDL-TDP**
TDP Sap Velocity System, fully assembled, DL2e based

**FLGS-TDP XM1000**
TDP Sap Velocity System, fully assembled, CR1000 based

**FL32-GS8**
Flow32 expansion kit for TDP probes with 8 TDP-30 sensors

**FL32-GS16**
Flow32 expansion kit / same as above with 16 TDP-30 sensors and cables

**TDPJ1**
Installation kit. Drilling jig, drill bits (4), removal prybar

**TDPJ2**
Drilling jig, drill bits (4), battery power drill, 120 Vac charger, removal pry bar

**EXTP-25**
Extension cable, 5 Wire/25 ft (7.6 m)

**EXTP-50**
Extension cable, 5 Wire/50 ft (15 m)

**EXTP-75**
Extension cable, 5 Wire/75 ft (22.8 m)

**EXTP-100**
Extension cable, 5 Wire/100 ft (30.5 m)

**EXTP-25D**
Dual T/C extension cable for TDP-80, 6 wire 25 ft

**EXTP-50D**
Dual T/C extension cable for TDP-80, 6 wire 50 ft

**EXTP-75D**
Dual T/C extension cable for TDP-80, 6 wire 75 ft

**EXTP-100D**
Dual T/C extension cable for TDP-80, 6 wire 100 ft

**EXTP-25T**
Extension cable, 7 Wire/25 ft (7.6 m)

**EXTP-50T**
Extension cable, 7 Wire/50 ft (15 m)

**EXTP-75T**
Extension cable, 7 Wire/75 ft (22.8 m)

**EXTP-100T**
Extension cable, 7 Wire/100 ft (30.5 m)

**AVRD**
Dual adjustable voltage regulator for 6-12 V battery