



Volt Band Dendrometer Manual
(DBV60)

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1. Introduction

The DBV60 is a Dendrometer Increment Sensor designed for long-term monitoring of stem growth.

A stainless steel tape is used to encircle the tree trunk combined with a rotary position sensor and because no invasive fixing parts are required, no damage is caused to the tree. The DBV60 is designed for long-term environmental use, is housed in UV resistant plastic and is watertight. All metal parts are made from stainless steel and anodised aluminium. The stainless steel band has a linear thermal co-efficient of 17.3×10^{-6} per °C; thermal variations caused by daily or seasonal changes in temperature have no measurable impact on the operation of the DBV60.

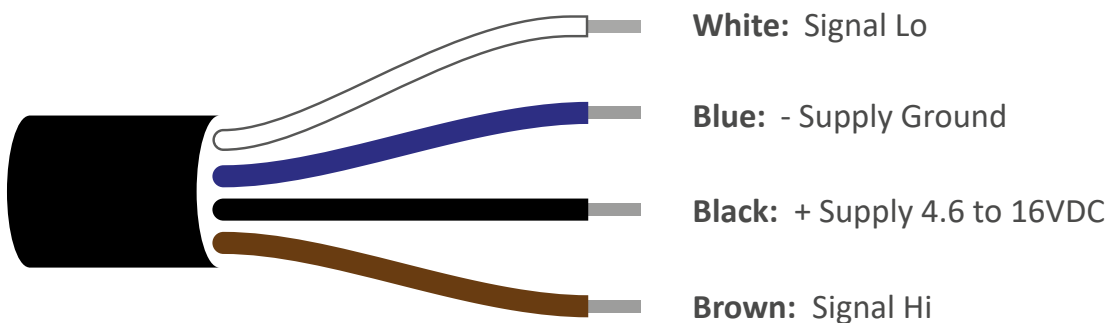


2. DBV60 Specifications

2.1 Electrical and Mechanical Specifications

Increment Sensor Type	Rotary
Measurement Range	60mm Circumference
Linearity	2% of full scale
Resolution	1 μm
Supply Voltage	4.6 to 16VDC
Power Consumption	1 mA Typical, 5mA Maximum
Response Time	>0.5 second
Stabilisation Time	3 seconds
Tape Strength	15 to 20 N in the whole range
Sensor Dimensions Size	Sensor Size: 100x70x100mm Sensor Weight (Including Battery): Approx. 300gms
Operating Range	Temperature: -30 to 60°C Humidity: 0 – 100%
Temperature Sensor Accuracy	± 2 °C

2.2 Wiring Diagram



3. DBV60 Voltage Configuration

3.1 Connecting To A Logger

The DBV60 band dendrometer is used to measure stem circumference changes over 0-60mm. The linear output, in milivolts, can be converted to a raw stem circumference over the 0-60mm scale by using the following script:

Raw mm = [mV] * 0.0254

3.2 Calibration

The DBV60 band dendrometer is used to measure stem circumference changes over 0-60mm. The linear output, in milivolts, can be converted to a raw stem circumference over the 0-60mm scale by using the following script:

Raw mm = [mV] * 0.0254

4. DBV60 Installation

4.1 Installation Process

The DBV60 unit is fixed to the tree trunk with the 12 mm wide stainless steel band (also known as tape). The tape will be cut from the provided spool containing 15 metres of tape.

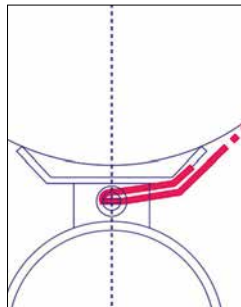
4.1.1 Prepare The Stainless Steel Band

Cut a piece of the provided stainless steel tape 25cm longer than the stem or tree circumference. Be careful to avoid the crumpling of the tape during the entire installation process.



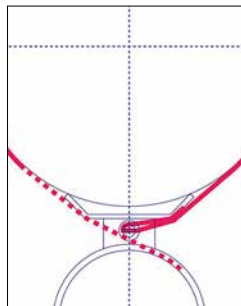
4.1.2 Fold One End & Place

Fold one end of the tape and place on the central pin. Ensure the shorter part is facing the stem/tree trunk.



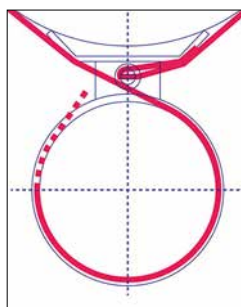
4.1.3 Wrap Band Around Tree

Without crumpling the tape, carefully wrap the tape around the stem/tree and then wrap it around the coil.



4.1.4 Insert Tape

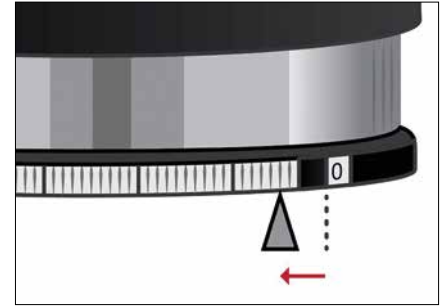
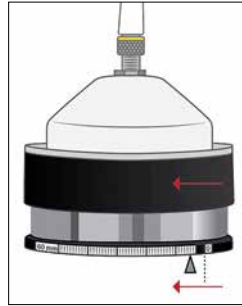
Insert the tape below the binder bar and carefully feed the tape through. Then carefully pull the tape to tension it around the stem/tree circumference. The tape has to remain under tension to accurately detect changes.



4.1.5 Turn The Head

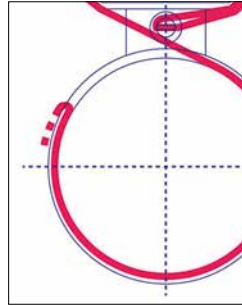
The sensor head naturally snaps to zero.

Turn the head counter clockwise in order to get the sensor triangle position to be at least 5mm away from the mark 0 on the 0-to-60mm scale. This is will be the scale position.



4.1.6 And Fold

With the tape under tension around the tree/stem and the head held at the recommended scale position, fold the tape over the bar to secure everything in place.



4.1.7 Allow For Proper Tension

Double-check the scale position (where the sensor's triangle points to) is greater than 5mm from the 0 mark, as recommended. This scale position will be your offset value in the calculation of absolute circumference, when the first measurement is taken.



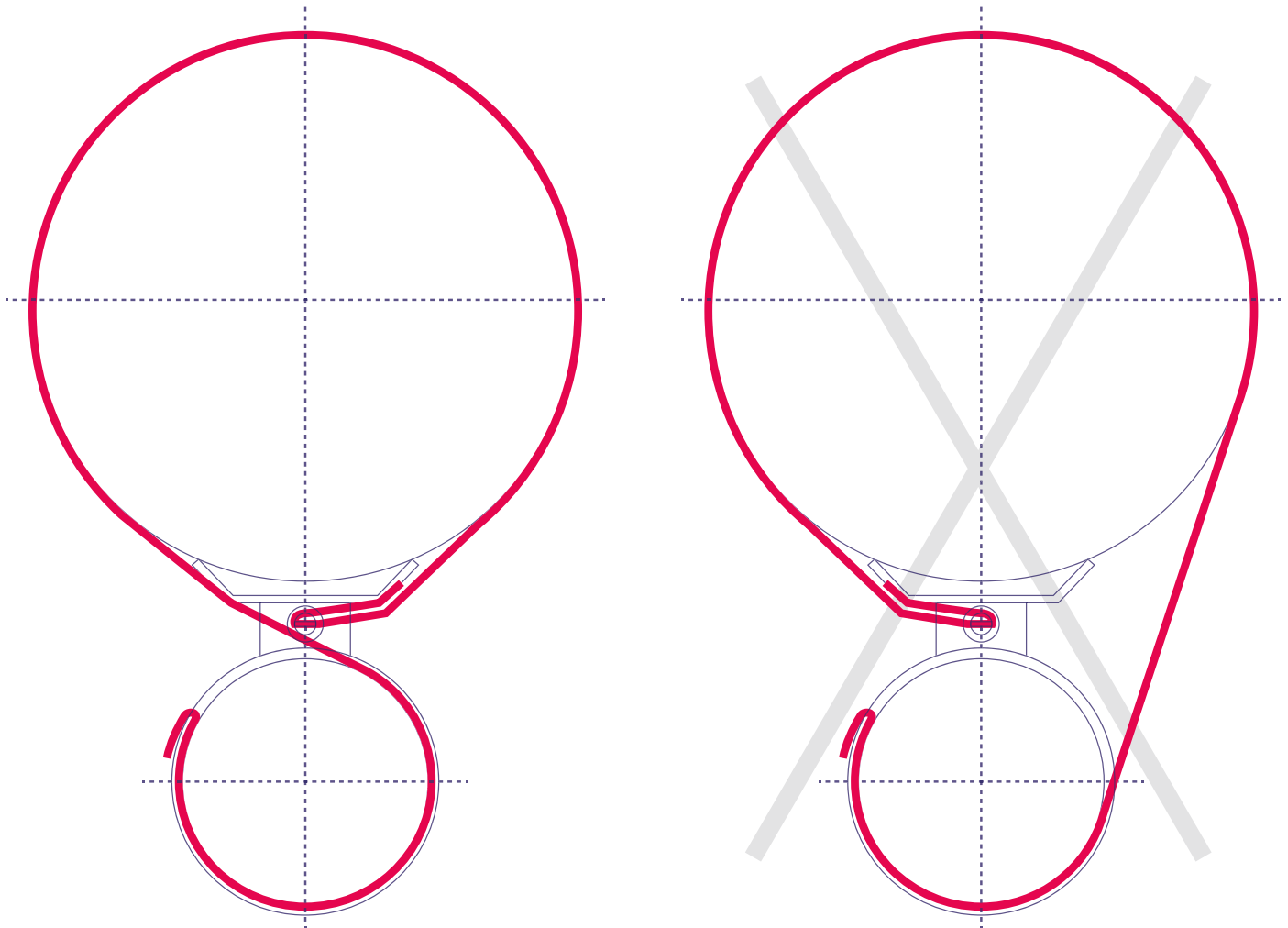
4.1.8 Record The Circumference at Installation

Make sure you physically measure and accurately record the stem/tree circumference at the place and time of installation. This reference point will factor into the calculations so the changes detected will provide absolute measurements.

4. DBV60 Installation

4.2 Installation Diagram For Guiding The Stainless Steel Band

The DBV60 SDI sensor must be installed correctly. Please refer to the diagrams below showing the difference between a correct installation (left) and an incorrect installation (right). Please note the details of leading and folding the tape.



4.3 Maintenance

DBV60 unit does not need any special maintenance. Avoid shifting the sensor during operation.

Warranty & Service Terms

What is Covered

All products manufactured by ICT International are warranted to be free from defects in materials and craftsmanship for a period of one (1) years from the date of shipment from our factory. To be considered for warranty coverage an item must be evaluated either at our factory or by an authorized distributor.

What is Not Covered

The customer is responsible for all costs associated with the removal, re-installation, and shipping of suspected warranty items to our factory. The warranty does not cover equipment that has been damaged due to the following conditions:

1. Improper use or abuse.
2. Operation of the instrument outside of its specified operating range.
3. Natural occurrences such as lightning, fire etc.
4. Unauthorized modification.
5. Improper or unauthorized repair.

Who is Covered

This warranty covers the original purchaser of the product or other party who may own it during the warranty period.

What We Will Do

At no charge we will:

1. Either repair or replace (at our discretion) the item under warranty.
2. Ship the item back to the customer by the carrier of our choice. Different or expedited shipping methods will be at the customer's expense.

How To Return An Item

1. Please do not send any products back to ICT International until you have filled out an online RMA (Return Merchandise Authorization) and have been advised to return the item by our service team. The form can be found at <http://www.ictinternational.com/support/rma-form/>.

We will use your RMA number for tracking of the service item.

2. Send all RMA sensors and meters back in the following condition: Clean the instruments exterior. Do not modify the sensors or wires, including splicing, cutting wire leads etc.

3. Please write the RMA number on the outside of the shipping container.

4. Return the item with freight pre-paid and fully insured to our factory address shown below. We are not responsible for any costs associated with the transportation of products across international borders.

5. Upon receipt, ICT International will determine the cause of failure. If the product is found to be defective in terms of operation to the published specifications due to a failure of product materials or craftsmanship, ICT International will repair or replace the items free of charge.

Repairs / Replacement

If it is determined that your product is not covered under warranty, you will be informed and given an estimated repair/replacement cost. The available remedy of defects under this warranty is for the repair or replacement of the original product, and ICT International is not responsible for any direct, indirect, incidental, or consequential damages, including but not limited to loss of income, loss of revenue, loss of profit, loss of wages, loss of time, loss of sales, accrument of debts or expenses, injury to personal property, or injury to any person or any other type of damage or loss.

ICT INTERNATIONAL, PTY LTD
211 MANN ST.
ARMIDALE NSW 2350
AUSTRALIA

WWW.ICTINTERNATIONAL.COM.AU



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