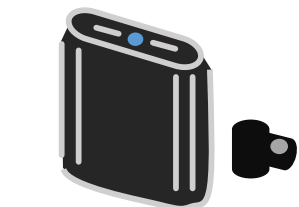


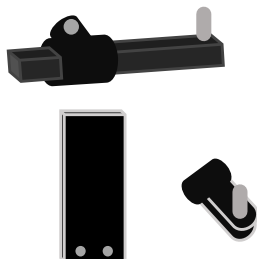
Vector is a non-contact extensometer. This guide explains the basics to achieve extensometry measurement.

*Install* → *Mark* → *Align* → *Measure*

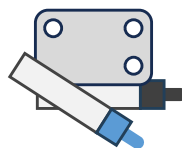
## Parts List



- Vector Extensometer



- UTM Rail
- Basic mount
- Extension Arm



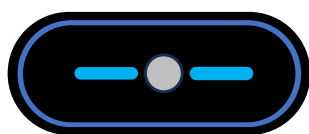
- Marking Kit



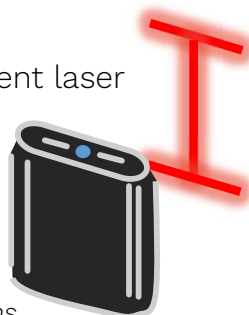
- Cabling and Power Supply

## User Interactions

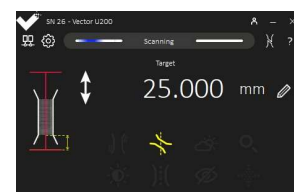
Vector Status Light



Alignment laser

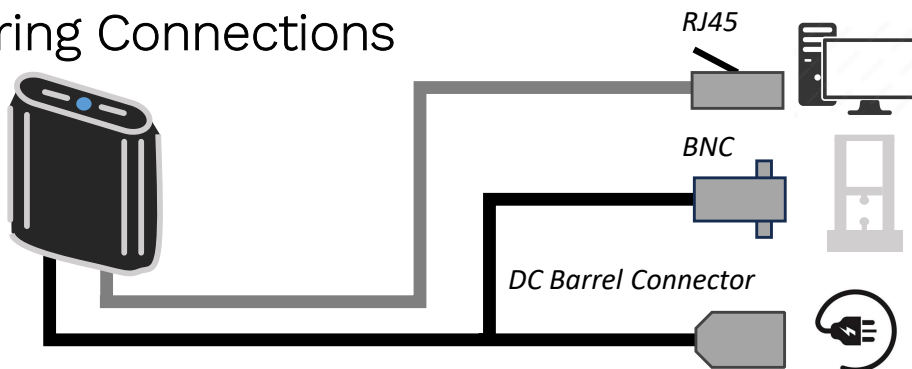


Vector Interface



See laser warning in terms and conditions

## Wiring Connections



Network port on PC running Vector Interface

Strain data into UTM\*

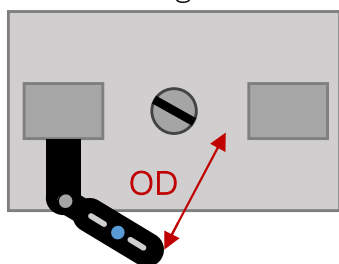
\*B80 cable has 2x BNC connectors with blue identifier on axial channel.

Power (from recommended power supply only)

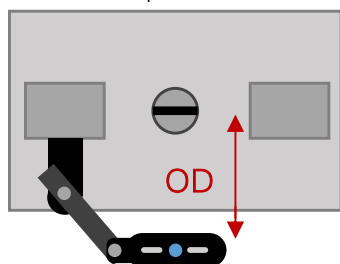
## Setup Options

Operating Distance (OD) = ~ 300 mm \*

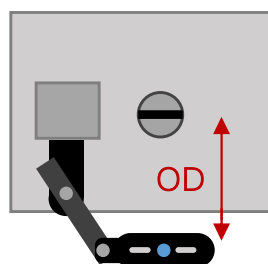
Dual Column UTM – Angled



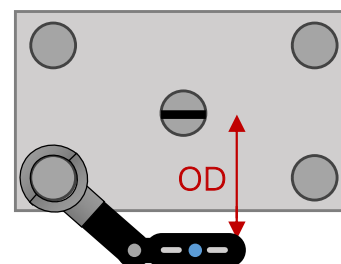
Dual Column UTM – Square-On



Single Column UTM



Round Column or other UTM\*\*



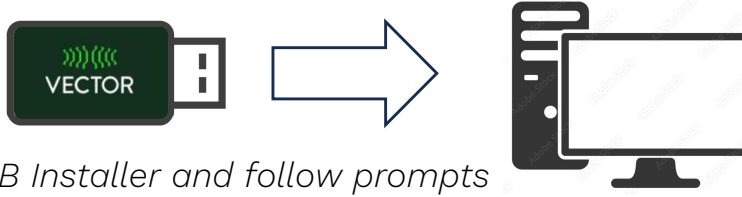
\*See tolerances in table on page 5

\*\*Contact your supplier for more information

# Installing

## Vector Interface

1. Install Vector Interface (For control, feedback and configuration of Vector)



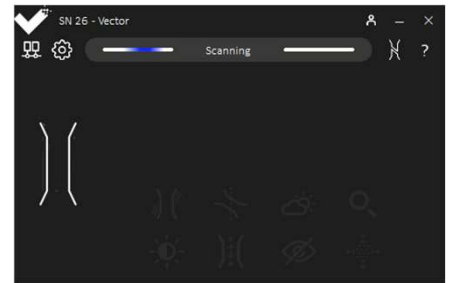
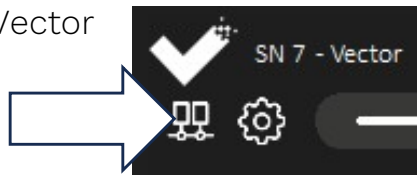
2. Power on Vector



3. a. Open Vector Interface from Desktop



- b. Connect to Vector

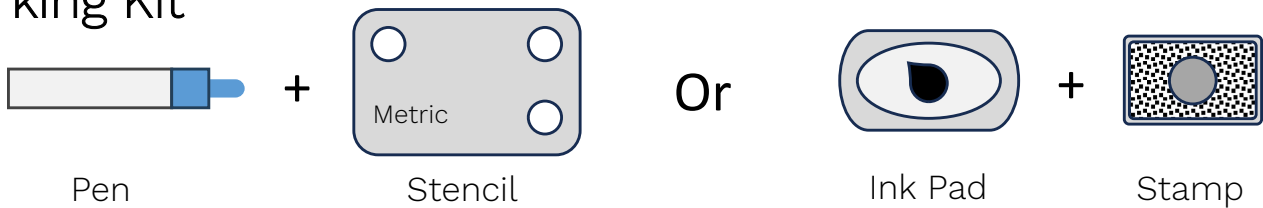


Connected to Vector

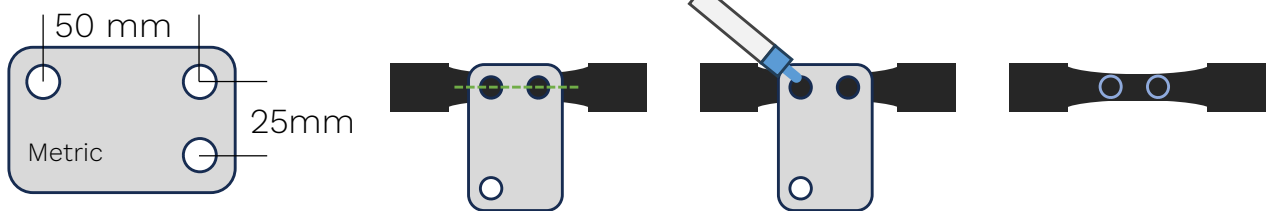
# Marking

Vector measures strain or extension via markings applied to the specimen.

## Marking Kit



## Apply



## Check

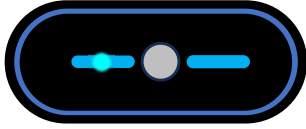


- ✓ Clear
- ✓ Vivid
- ✓ Aligned

# Aligning

Vector is automatic. It will begin measuring once correctly aligned.

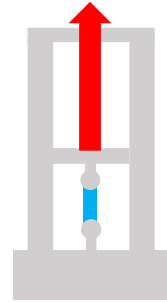
## 1. Grip Specimen



Status: Scanning

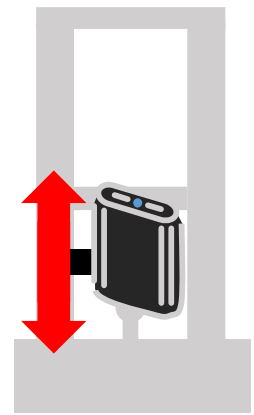
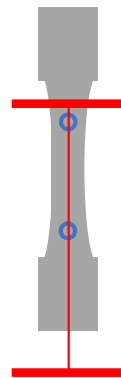
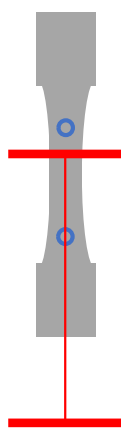
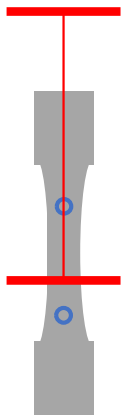
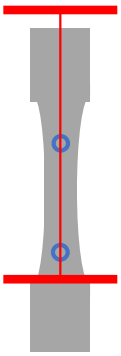


Preload

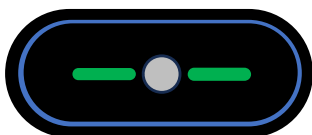
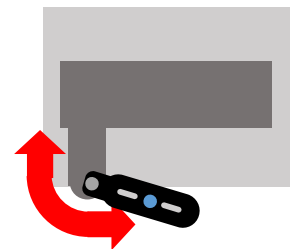
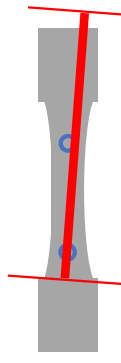
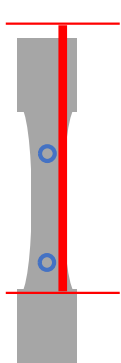
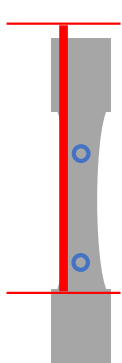
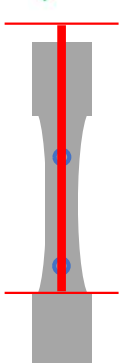


## 2. Set height and heading of Vector

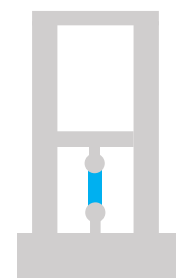
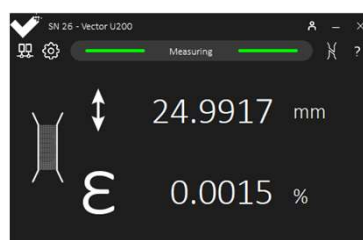
a. Set height



b. Set heading



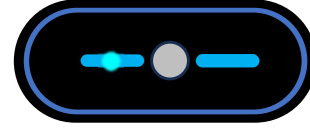
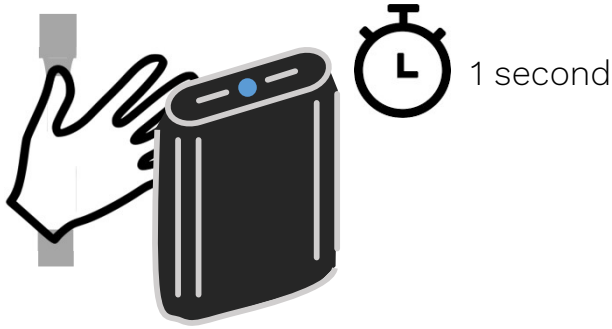
Status Measuring



# Measuring

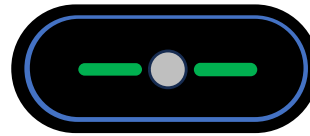
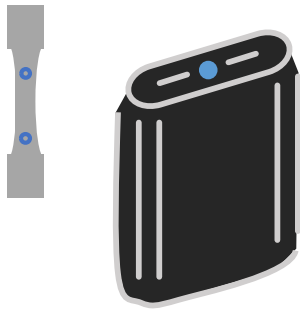
## 1. Reset Vector

a. Place hand between specimen and Vector and wait 1 second



Status: Scanning

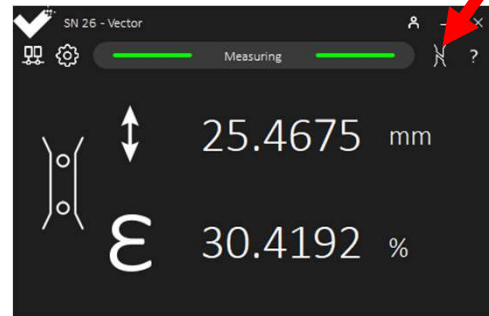
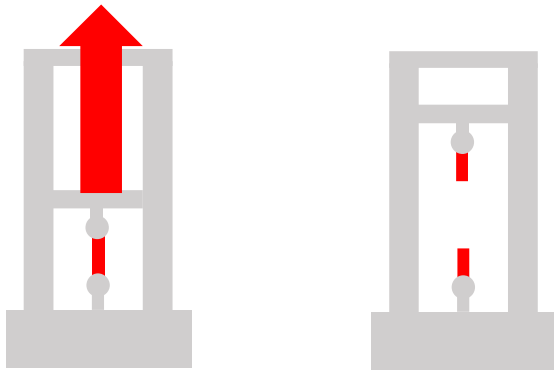
b. Remove hand



Status: Measuring

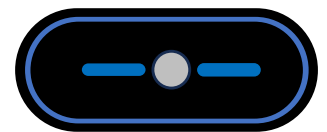
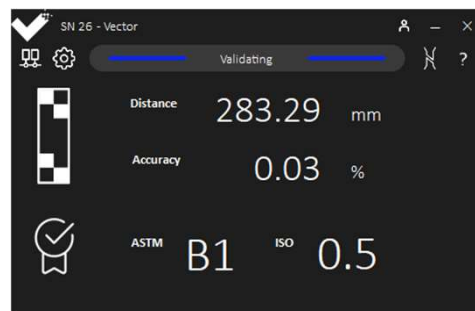
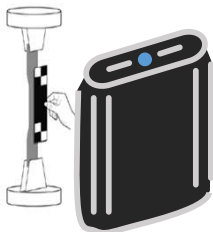
## 2. Start Test!

Tip: Check test history tab to review recent tests.



# Validation Block

Use the "Validation Block" to verify the measurement and position of Vector.



Status: Validating

# Vector Product Variants

Vector	Axial Gauge Lengths	Transverse Gauge Lengths	Operating Distance	Minimum Specimen Width
U200	25 – 180 mm	None	250 – 350 mm	$W \geq 5 \text{ mm}$ $\varnothing \geq 6 \text{ mm}$
U70	10 – 50 mm	None	280 – 320 mm	$W \geq 2 \text{ mm}$ $\varnothing \geq 2.5 \text{ mm}$
B80	7.5 – 70 mm	6.0* – 26 mm	285 – 315 mm	$W \geq 1.5 \text{ mm}$ $\varnothing \geq 2 \text{ mm}$ (axial) $W \geq 10 \text{ mm}$ $\varnothing \geq 12.5 \text{ mm}$ (transverse)

\* Minimum transverse gauge length for speckles is 7.5mm.

## Health and Safety



We recommend you always keep this manual on hand and in good condition. Users MUST familiarise themselves with the health and safety guidelines below prior to attempting to install or commission Vector.



1. Hold unit securely and under control when repositioning, ensuring it doesn't come into contact with external hardware e.g. the test frame or grips.
2. Avoid trapping or pinching fingers in sliding or locking areas when handling Vector or its mountings.
3. Check the full range of motion of Vector and its mountings to prevent potential clashes and damage.
4. Check Vector is mounted so that access to emergency stop buttons and limit switches on the test frame are not obstructed and normal operation of the machine is not hindered.
5. Route cables appropriately to ensure there is no trip hazard or risk of catching onto mechanical elements of the machine.
6. Cables should have sufficient slack to drop freely from Extensometer to the Mounting Stub, and onto all other connections.
7. The optional extension arm contains an N42 neodymium magnet. Please limit proximity to medical devices e.g. pace makers, to no less than 50mm.
8. Risk of electrical shock - Unit should be kept away from sources of moisture at all times.



Both the person responsible for the product and any person using the equipment are required to anticipate and avoid potential hazards during operation. As per IEC TR 60825-14:2022, products containing laser class 1, class 2, and class 3R do not require a laser safety officer, protective clothing or eye-wear, or special warning signs within the working area, when operated in line with the user guide.



# Health and Safety

Before using Vector, the person responsible for the product should ensure that a suitable evaluation is completed for all future users of the system, considering the current installation of Vector and the universal test frame (UTM) with regards to the laser alignment system. The following safety notes should be considered.

1. Only trained persons should be assigned to operate the equipment.
2. Take precautions to ensure that persons do not look directly into the beam.
3. The beam path to be located above/below eye levels wherever practicable.
4. Install the equipment in such a way as to prevent the beam from being unintentionally directed at mirror-like surfaces.

The lasers in Vector are classified as Class 3R up to a distance of 20 mm from the front face of the Vector unit. Beyond this point, they are classified as Class 2 and are considered safe due to the human blink reflex providing protection.

It is important to note that local/national regulations may have more stringent requirements for the safe use of lasers than those outlined in IEC 60825-1:2014 and IEC TR 60825-14:2022.

# Operating Environment

1. 10-40°C (50-100°F), for use and storage
2. 20-80% relative humidity non-condensing environment
3. Calibrated and validated at 21°C/70°F - optimal measurement performance achieved at this temperature.

# Battery Information



Vector contains a 50mAh Lithium cell battery.



1. Do not attempt to replace the battery yourself, opening the unit will void the warranty and may damage the battery or on-board components, which could cause overheating, fire, and injury.
2. The lithium battery in your device should only be replaced when under the service of Imetrum or an authorised service provider.
3. Under WEEE regulations the battery must be recycled or disposed of separately from household waste and in line with local laws and guidelines.

# Vector Terms, Conditions and Warranty



For full terms and conditions, including warranty information, contact your usual representative.

Please note the warranty is void if the extensometer label is removed or any access to the extensometer is attempted.

## Compliance

Vector complies with the following directives:

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- ROHS Directive 2011/65/EU
- WEEE Directive 2012/19/EU
- IEC 60825-1:2014 / IEC TR 60825-14:2022



## Country of Origin

Designed and Manufactured in the United Kingdom.



## Legal Statements

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Vector and its inherent technologies are protected by patents restricting the use of certain algorithms, techniques and technologies in similar applications. For further information, please contact Imetrum Limited.

Imetrum disclaims any responsibility for printing errors in this User Guide.

Moreover, it reserves the right to make any changes deemed useful to its products without changing their essential characteristics.

