Ossila
enabling science

Test & Measurement

Product Catalogue

July 2024

www.ossila.com

Solar Simulator

2 YEAR WARRANTY

Compact and low price, the Ossila Solar Simulator is ideal for characterizing small-area solar cells, providing:

- Excellent AAA spectral distribution over a 15 mm diameter area
- ABA classification over a 25 mm diameter area (IEC 60904-9:2020 International Standard)
- Stable and reliable output, easily achieving Class A temporal stability
- Requires zero maintenance and minimal warm up time.
- Just plug it in, turn it on, and start measuring.

You can buy on its own to be easily integrated into your solar cell testing lab - or as part of our Solar Cell I-V Test Systems (available as a solar cell testing kit) to equip your laboratory with a fully integrated PV characterization system.

Spectral Tunability
Tune with powerful software

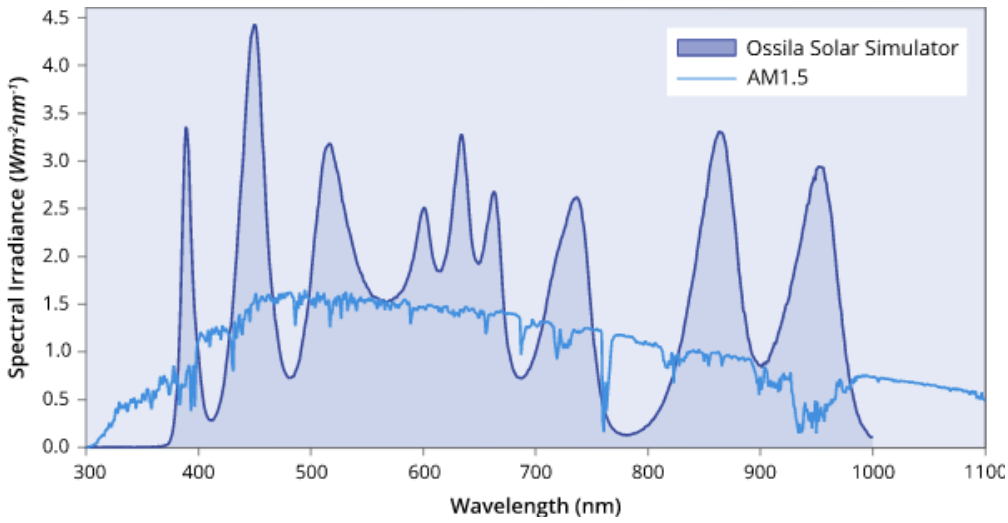
Long Lifetime
10,000 operating hours

Minimal Warm-Up Time
Ready to use and measure

Compact Size
Portable and modular design

Easy-to-Use Software

Our free, downloadable software allows you to control the LED outputs individually as well as change the total irradiance output. You can also control the lamp using a serial command library. This can be useful for specialist measurements or non-conventional spectral output (e.g. indoor PV measurement, low light intensity conditions, etc).



Classification over 15 mm diameter area	AAA
Type	LED-Based, Steady State
Spectral deviation	<70%
Spectral coverage	>80%
Working distance	8.5 cm
Irradiance (at working distance)	1000 W/m^2
Maximum Lamp Time	10000 hours
Dimensions (head only) L x W x H	10.5 cm x 9.0 cm x 8.0 cm
Weight	600 g

Solar Cell I-V Test System

2 YEAR WARRANTY

The Ossila Solar Cell I-V Test System is a low-cost solution for reliable characterization of photovoltaic devices. The PC software (included with all variants of the system) measures the current-voltage curve of a solar cell and then automatically calculates key device properties. In addition, I-V measurements can be performed periodically over time to track the stability of these properties.

The system is available with either manual or automatic pixel switching (if you are using one of Ossila's substrate systems), or without a test board for use with your own substrate and testing system or if you already own one of our test boards. Please refer to the table under the specifications tab if you are not sure which model you should choose.

Solar Simulator Compatible
Can be combined with the Ossila Solar Simulator

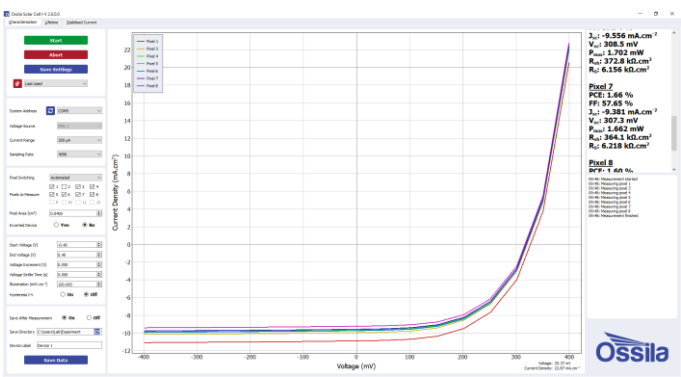
User-Friendly PC Software
With 3 fully customisable measurements

Wide Measurement Range
Capable of delivering voltages between -10 V and +10 V

Measure Device Stability
Characterise performance over long time periods

Calculates Device Properties
The included PC software automatically calculates key properties of solar cells from the measured I-V curves. These properties include: the power conversion efficiency (PCE), fill factor (FF), short-circuit current density (Jsc), open-circuit voltage (Voc), maximum power (Pmax), shunt resistance (Rsh), and series resistance (Rs).

Rapid Characterisation
If you are using one of Ossila's substrate systems, the Solar Cell I-V System can be purchased with a multiplexing test board (just select the 'automated' variant of your choice in the drop-down list), which enables automatic pixel switching. As an added bonus, the temperature and light will also be recorded during the measurement!



Voltage Specifications

Range	Accuracy	Precision	Resolution
±10 V	±10 mV	333 µV	170 µV

Current Specifications

Range	Accuracy	Precision	Resolution
±200 mA	±500 µA	10 µA	1 µA
±20 mA	±10 µA	1 µA	100 nA
±2 mA	±1 µA	100 nA	10 nA
±200 µA	±100 nA	10 nA	1 nA
±20 µA	±10 nA	1 nA	100 pA

Four-Point Probe

2 YEAR WARRANTY

The Ossila Four-Point Probe is an easy-to-use tool for the rapid measurement of sheet resistance, resistivity, and conductivity of materials. Built with a high-specification Ossila Source Measure Unit at its core, the low-cost system has a wide measurement range.

Our four-point probe reduces the risk of damaging your delicate samples, such as polymer films with thicknesses on the order of nanometres. The probe head uses rounded, spring-loaded contacts instead of sharp needles for good electrical contact without piercing the sample.

We have curated a compact and durable design for use in busy labs where shelf space is limited. Choose the Ossila Four Point-Probe to elevate your materials characterization and thin film development programs.

Wide Current Range
Characterization of a wide range of materials

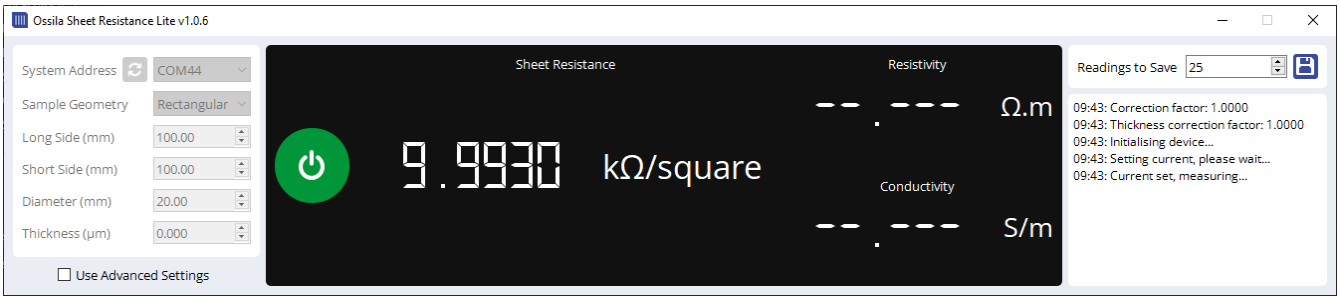
Free Software
Keeping your software up to date

Linear Translation Stage
Achieve good electrical contact every time

Characterize Large Samples
Characterize samples up to 152.4 mm diameter

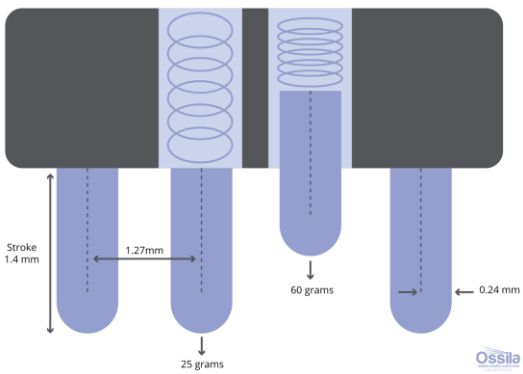
Non-Destructive Soft Contact Probes
Designed to measure delicate samples. Rounded, soft contact probes, with a 0.24 mm radius, spread the downward force applied to the sample. The probes are gold plated and mounted on springs for good electrical contact. When making contact, they retract into the head to ensure that a uniform force of 60 grams is applied.

High Accuracy
Positive and negative polarity measurements can be performed to calculate the average sheet resistance between positive and negative currents. This eliminates any voltage offsets that may have occurred, hence increasing the accuracy of your measurements.



Control your four-point probe with our free, user-friendly Ossila Sheet Resistance Lite software. The software can calculate appropriate geometrical correction factors for the sample geometry and the resistivity and conductivity of the sample to allow for extensive, accurate electrical characterization of materials.

Voltage Range	±100 µV – ±10 V
Current Range	±1 µA – ±200 mA (5 ranges)
Sheet Resistance Range	100 mΩ/square – 10 MΩ/square
Probe Spacing	1.27 mm
Rectangular Sample Size	5 mm – 152.4 mm
Circular Sample Size Diameter	5 mm – 152.4 mm
Maximum Sample Thickness	8 mm
Dimensions L x W x H	240 mm x 145 mm x 150 mm



Contact Angle Goniometer

2 YEAR WARRANTY

The Ossila Contact Angle Goniometer provides a fast, reliable, and easy method to measure contact angles and surface tensions of liquid droplets. Our systems lets you achieve easier ink optimization with intuitive PC software, high quality video, and rapid image capture. Our software helps you characterize high contact angles for water resistant or protective coatings, or low contact angles for highly uniform solution coatings.

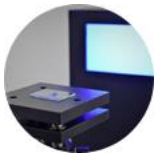
Thanks to the low price and compact size, the Ossila Contact Angle Goniometer is a great choice for any characterization setup.

Easier Ink Optimisation
Continuous feedback speeds up ink formulation

Rapid Image Capture
Study the wetting process in detail

High-Resolution Video
Capture quality videos of your droplets

Free Software
Keeping your software up to date



Light Source for Accurate Edge Detection

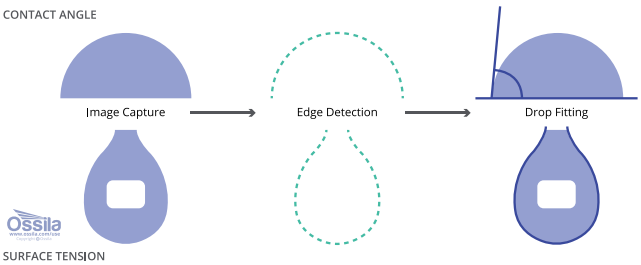
The powerful, mains-powered monochromatic backlight helps the software to accurately detect the edges of the droplet using a Canny edge detection algorithm. The bright, uniform rectangular panel creates a larger change in pixel lightness than would otherwise occur, which ensures that a sharp edge can be found.

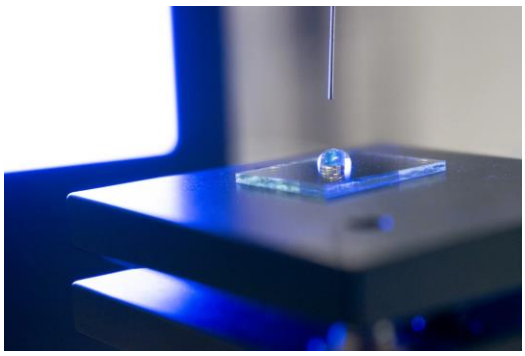
Contact Angle

For droplets with contact angles above 10°, a polynomial curve is fitted to the droplet edge. Where the curve crosses the baseline, its tangent is used to determine the contact angle. If a droplet is below 10°, then a circle fit is used for contact angle measurements instead.

Surface Tension

The software can also perform optical tensiometry measurements on droplets suspended from a needle tip. A series of droplet models are created using the droplet radius and liquid density. The models are compared with the detected edge and the closest match is used to determine the surface tension of the liquid.





Measurement Accuracy	±1°
Measurement Range	5° – 180°
Stage Area	50 mm x 50 mm
Maximum Sample Thickness	20 mm
Maximum Camera Resolution	1920 x 1080
Maximum Frame Rate	30 FPS
Dimensions L x W x H	320 mm x 95 mm x 165 mm

Syringe Volume	25 µL
Needle Diameter	0.47 mm
Needle Length	51 mm
Tip Shape	Blunt

Optical Spectrometer

2 YEAR WARRANTY

The Ossila Optical Spectrometer is an accessible system, bringing affordable UV-Vis-NIR spectroscopy to research scientists worldwide. The fully programmable, modular design fits nicely into most existing UV-Vis-NIR optical spectroscopy labs. A simple command library and trigger modes make it easy to integrate into your workflow.

The compact CCD detector, fibre optic and USB compatibility, and intuitive free software mean you can quickly start measuring the optical properties of your samples. Our versatile and modular design allows you to analyse many different samples, including solutions and thin film samples.

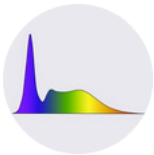
Buy as an independent modular spectrometer or as a part of our complete optical spectroscopy kit to get started straight away.

Powerful Electronics
High-speed 16-bit, 500 kSPS ADC

USB-C Powered
Power with your computer or laptop

Compact Design
Lightweight and portable

Free Software
With free updates



Dynamic Spectral Range

Capable of meauring the entire visible light spectrum, from the UV-A band to near infrared. With a range of 320 nm to 1050 nm and resolution of up to 2.5 nm, our system can be used to study a wide range of materials including photovoltaic, solar cell, OLED, biological, and 2D materials.

Fast Acquisition Speeds

A powerful Arm Cortex M4 processor works with a high-speed 16-bit, 500 kSPS, analog-to-digital converter. Our system can transfer over 100 frames-per-second to the host computer when running in internal trigger mode. Plus, a six port I/O expansion header allows for easy integration with other 5V equipment.

Internal and External Trigger Modes

Use in free-running mode or integrate with other systems using the external trigger input. The rolling integration mode lets you control the integration time dynamically. With an output to synchronise acquisition with an external shutter plus two general purpose outputs, it features six I/O ports in total, including a ground port.

Wavelength Range	320 nm – 1050 nm
Grating Blaze Wavelength	500 nm
Resolution (FWHM)	2.5 nm
Optical Input	SMA 905 fibre or free space
Entrance Slit Width	25 µm
Dark Noise	<50 counts
Signal-to-Noise Ratio	>500:1
Stray Light	<0.2%
Detector Type (Pixels)	CCD (1600)
Analog-to-Digital Converter	16-bit, 500 kSPS
Connection Type	USB-C
Communication Protocol	Serial-over-USB
Data Transfer Speed	Up to 100 FPS (PC dependant)
Dimensions L x W x H	78 mm x 78 mm x 38 mm
Weight	150 g

LED Measurement System

2 YEAR WARRANTY

The Ossila LED Measurement System provides a low cost and complete solution for performing current-voltage-luminance (IVL or JVL) characterisation of LEDs. The device holder has built-in light sensors to allow for illuminance, luminance, and white count measurements. To simplify device testing, the software will also calculate the current and power efficiency of your LED. Lifetime mode, meanwhile, measures the performance of the LED over an extended time under a constant voltage.

The system is compatible with all Ossila substrate systems, so it is easy to both fabricate and test LED devices.

LED Measurement
Performs current-voltage-luminance characterisation

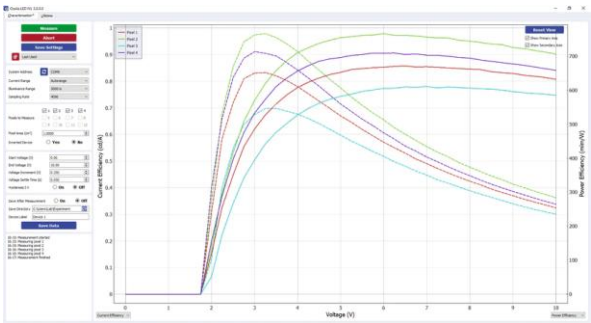
Easy Installation
Simply plug in, switch on, and run the software

Wide Measurement Range
Capable of delivering voltages between -10 V and +10 V

Free Software
Intuitive PC software included

Rapid Characterisation
Our intuitive software (included) makes it easy to take current-voltage-luminance measurements. The system records illuminance, luminance and white count. To speed up the characterisation process, the system will then calculate both the current efficiency and power efficiency of your LED.

Measure Device Stability
By applying a constant voltage and measuring the current, luminance, and efficiency over an extended period of time, the stability of LEDs can be tracked and analysed.



Voltage Specifications

Range	Accuracy	Precision	Resolution
±10 V	±10 mV	333 µV	170 µV

Current Specifications

Range	Accuracy	Precision	Resolution
±200 mA	±500 µA	10 µA	1 µA
±20 mA	±10 µA	1 µA	100 nA
±2 mA	±1 µA	100 nA	10 nA
±200 µA	±100 nA	10 nA	1 nA
±20 µA	±10 nA	1 nA	100 pA

Wavelength Range	400 nm – 1050 nm
Dimensions L x W x H	300 mm x 151 mm x 50 mm

Source Measure Unit

2 YEAR WARRANTY

Designed for scientists and engineers working on the next generation of electronic devices, the Ossila Source Measure Unit is one of our most adaptable and fundamental pieces of equipment.

Measure the I-V characteristics of many devices including photovoltaics, LEDs and OLEDs, transistors, and more. The source measure unit contains four instruments on one board — two SMUs (voltage source, current sense) and two precision voltage sense channels. There is also a general-purpose shutter/trigger which enables it to control (or be controlled by) other instruments.

We have used our SMU to develop the Ossila Four-Point Probe to measure sheet resistance, our Solar Cell IV Test System to measure IV curves and OLED lifetime, and the Ossila Potentiostat for cyclic voltammetry.

Flexible Communication
Connect using USB or Ethernet

Compact and Light
Designed for space-constrained environments

Wide Measurement Range
Capable of measuring between 10 nA and 200 mA

Free Software
Easily controllable with free PC software

Five Independent Channels
Features dual source measure and voltmeter channels. Two SMU channels output voltage while measuring current and/or voltage, and two separate voltage measurement channels measure voltage sourced by external components. The shutter/trigger channel allows external control and programming.

Diverse Programming Languages
The user-friendly design works with almost any programming language. Common languages that can be used to interface to it include Python, LabVIEW™, MATLAB, Java, VB, Wolfram, C/C++, and Perl.

Voltage Source Specifications

Range	Accuracy	Precision	Resolution
±10 V	±10 mV	333 µV	170 µV

Voltage Measure Specifications

Range	Accuracy	Precision	Resolution
±10 V	±10 mV	50 µV	10 µV

Current Specifications

Range	Accuracy	Precision	Resolution
±200 mA	±500 µA	10 µA	1 µA
±20 mA	±10 µA	1 µA	100 nA
±2 mA	±1 µA	100 nA	10 nA
±200 µA	±100 nA	10 nA	1 nA
±20 µA	±10 nA	1 nA	100 pA

Channel Connectors	BNC
Dimensions L x W x H	185 mm x 125 mm x 55 mm

Potentiostat

2 YEAR WARRANTY

The Ossila Potentiostat is a powerful electrochemical measurement device for performing linear sweep voltammetry, cyclic voltammetry, open circuit potential, and controlled potential electrolysis. Designed for both experienced chemists and newcomers to the field, the easy-to-use PC software makes it straightforward for anyone to take accurate and precise measurements across a wide potential and current range.

Purchase with or without an electrochemical cell, non-aqueous Ag/Ag+ working electrode, platinum disc reference electrode, and platinum wire counter electrode. No research or teaching lab should be without an Ossila Potentiostat.

Versatile
Can be used in multiple experiments

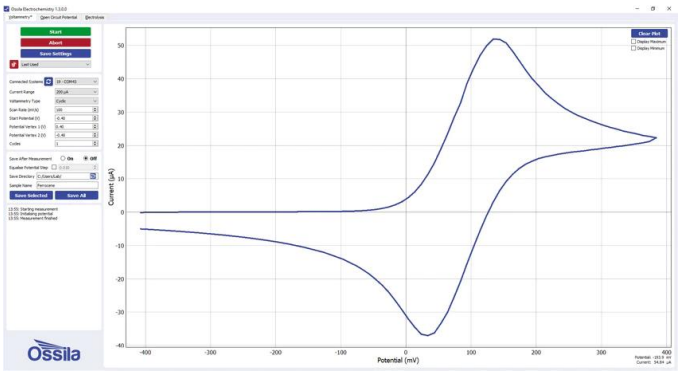
Powerful Electronics
Capable of outputting potentials of up to 7.5 V

Compact and Light
Designed for space-constrained environments

Free Software
Intuitive PC software included

Accurate and Precise
With an applied potential accuracy and resolution of ±10 mV and 333 µV respectively, and a current measurement accuracy and resolution at the 20 µA range of ±20 nA and 5 nA, the Ossila Potentiostat is both accurate and precise.

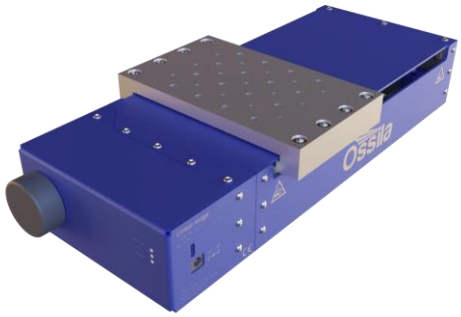
Wide Potential and Current Range
To allow for a wide range of material characterisation, the Ossila Potentiostat is capable of outputting potentials of up to 7.5 V and can measure currents over five ranges from ±20 nA to ±200 mA.



Potential Range	±7.5 V
Potential Compliance	±10 V
Applied Potential Accuracy	±10 mV offset
Applied Potential Resolution	333 µV
Maximum Current	±200 mA
Current Ranges	±20 µA to ±200 mA (5 ranges)
Current Measurement Accuracy	±20 nA offset (at 20 µA range)
Current Measurement Resolution	5 nA (at 20 µA range)
Communication	USB-B
Dimensions L x W x H	175 mm x 125 mm x 55 mm
Weight	600 g

Linear Stage

2 YEAR WARRANTY



With a 50 mm to 200 mm travel distance and a precision ball screws, Ossila stages offer accurate positioning control. Calibrated according to ISO 230-2:2014 standard with our traceable calibration system.

Plus, our free motion control software detects and controls your Ossila linear stages. You can easily home your stage, move to absolute positions, move by relative distances, and set the movement speed. For even greater flexibility, control your stage directly with a serial command library.

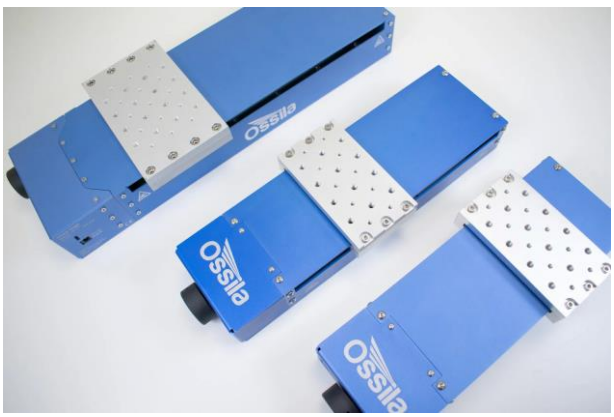
Available in one, two, or three axis configurations.

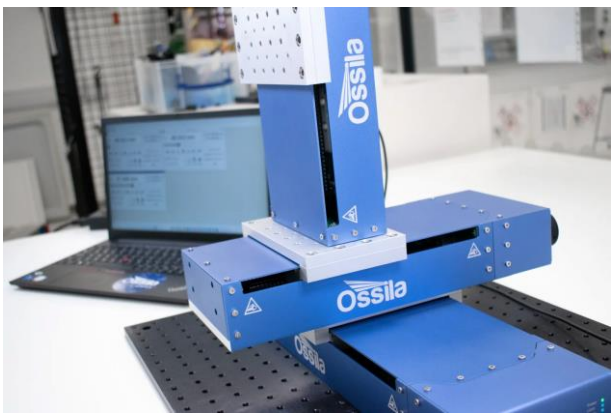
Achieve Precision
Precise and accurate motion control

Modular Design
Combine two or three stages for multi-axis motion

Move High Loads
Move 30 kg horizontal and 10 kg vertical loads

Free Software
Intuitive and flexible software at no extra cost





Specification	Standard	High Precision	Compact
Drive	C7 ball screw	C5 ball screw	C7 ball screw
Travel Range Options	100, 200 mm	100, 200 mm	50, 100 mm
Maximum Speed	15 mm/s	15 mm/s	15 mm/s
Maximum Horizontal Load	30 kg	30 kg	15 kg
Maximum Vertical Load	10 kg	10 kg	3 kg
Motion Specification	**Standard**	**High Precision**	**Compact**
Maximum Reversal Error	<40 µm	<20 µm	<40 µm
Mean Reversal Error	<20 µm	<10 µm	<20 µm
Bi-directional Repeatability	<40 µm	<20 µm	<40 µm
Forward Repeatability	<10 µm	<5 µm	<10 µm
Backward Repeatability	<10 µm	<5 µm	<10 µm
Mean Bi-directional Positioning Error	<20 µm	<20 µm	<20 µm
Bi-directional Positioning Error	<40 µm	<20 µm	<40 µm
Forward Positioning Error	<30 µm	<15 µm	<30 µm
Backward Positioning Error	<30 µm	<15 µm	<30 µm
Bi-directional Systematic Positioning Error	<40 µm	<20 µm	<40 µm
Forward Systematic Positioning Error	<30 µm	<15 µm	<30 µm
Backward Systematic Positioning Error	<30 µm	<15 µm	<30 µm