Lovibond® Colour Measurement

Tintometer® Group

TR Series of Spectrophotometers

The best of both worlds with the TR Series of handheld and benchtop spectrophotometers

Colour measurement plays a vital role in quality control across many industries, helping to ensure accuracy, efficiency, cost-effectiveness, consistency in product, brand image and compliance with regulations and industry standards. The Lovibond® TR Series offers accurate and reliable colour management that fits in the palm of your hand. The ergonomic design makes the series convenient for use on the plant floor, production line and warehouse or in a laboratory. The TR Series is perfect for the whole manufacturing process.

How can the TR Series Help you?

Consistency: Colour is often a critical factor in determining the quality of a product. Manufacturers need to ensure that the colours of their products are consistent to meet customers' expectations. By using the TR Series, you can ensure your products meet these standards.

Accuracy: The TR Series can identify any variations in colour, enabling manufacturers to take corrective measures and ensure that the products meet the required standards.

Efficiency: Manufacturing processes often involve the use of colourants or dyes. By measuring the colour of these materials, manufacturers can ensure that they are using the correct amount of colourant and avoid waste. The TR Series can help reduce costs and improve efficiency in the manufacturing process.

Cost-effectiveness: Accurate colour measurement helps in reducing waste, rework, and the need for multiple iterations, leading to cost savings for the manufacturers.

Branding: The colour of a product is often a key part of its branding and marketing. Customers may associate a particular colour with a brand, and manufacturers need to ensure that their products are consistent. By using the TR Series, you can ensure products match the desired brand colour and help maintain a strong brand image.

Compliance: Some industries, such as food and pharmaceuticals, have strict regulations regarding the colour of their products. By using the TR Series, you can ensure that products comply with these regulations and avoid potential legal issues.

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1. **Measurement trigger for convenient and quick measurement**
2. **TFT LCD colour touch screen with on-board camera based locator**
3. **Aperture switch offering convenient adjustment from large (10mm/8mm) to small (5mm/4mm)**
4. **Measurement aperture providing greater flexibility**
5. **Battery pack suitable for 5000 measurements**
6. **Power switch**
7. **DC power port / USB / RS-232 port**
8. **Quick and easy to use calibration board**
9. **White calibration plate**
10. **Black calibration trap**

Automotive: With colour and visual appearance playing such an important role in the finished product throughout the industry, having a comprehensive colour measurement and quality control process is essential. The TR Series enables an exact colour match to be achieved across the manufacturing process, from the lab to the supplier to the paint shop to the assembly line.

Food & Beverage: Controlling the colour of materials enables the food producer to reject any that is substandard before offloading, during processing and prior to shipment. This guarantees that the final colour satisfies the consumers' expectations. So, whether you produce finished food products, drinks, powders, cereals, pastes, granules, or gels our TR Series will have a solution for you.

Pharmaceutical & Cosmetics: In the pharmaceutical and cosmetics industries it's crucial every component is chosen carefully, and the colour is an important part of that decision. With a variety of textures and wet surfaces, such as powders, creams, and liquids it can be a challenge for manufacturers to ensure colour consistency. The TR Series and software provide you with the peace of mind of a colour match through the manufacturing process.

Paint & Coatings: The communication and quality control of the colour of coatings is fundamental in the aesthetic design of so many products. Whether paint, powder coatings or varnishes; factors such as the type of substrate, viewer, light source, and batch variation can make colour control a challenge. The TR Series can provide you with the tools to manage the subjective visual elements of your design and quality processes.

Plastics: From raw material through to the finished product the TR Series can monitor the colour variables during the manufacturing process, while our FREE OnShade software can help share colour data among the supply chain.
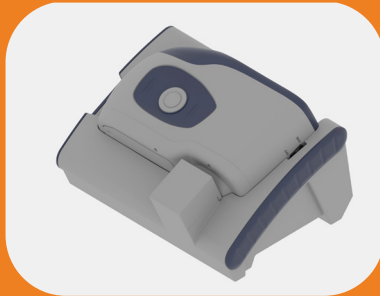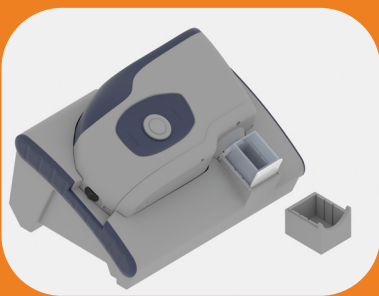
Textiles: Whether you are checking dye baths for consistent strength or correcting for metameric effects of different weaves in your supply chain, the TR Series can help you communicate and control colour from the design and manufacturing process through to retail.

TRA Stand

The TRA portable instrument stand is supplied with both the TRA 500 & TRA 520 converting your handheld device into a benchtop unit. The TR stand provides you with the opportunity to measure problematic samples using our optical cells and white background plate to ensure a consistent measurement within a controlled environment.

- **Perfect solution for colour measurement of liquids, gels and powders**
- **Designed for easy touch screen operation and on-board camera locator viewing**
- **Supports a wide variety of samples with optical glass cell sizes of 10, 20 and 30mm**
- **Designed to ensure no ambient light can influence the reading**
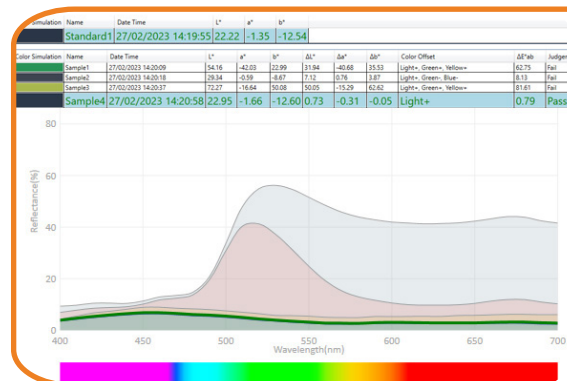- **Light-weight and portable**

Quality Control Software

Colour quality control software is used to ensure that products are produced with consistent and accurate colour throughout the manufacturing process. This software provides manufacturers with a way to measure, monitor, and control the colour of their products, which is essential in many industries.

The OnShade software makes a substantial expansion of the instruments functionality to support various colour systems, illuminants, more complicated data management, colour detection and report generation.

At Lovibond® we understand how important quality control is so we ensure that our OnShade software is included with the purchase of every TR Series instrument.

TR Series Specifications

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Spectral Device	Concave Grating	**Display Data**	Spectrogram/Values, Samples Chromaticity Values, Colour Difference Values/Graph, Pass/Fail Result, Colour Offset
Detector	256 Image Element Double Array CMOS Image Sensor	**Measurement Mode**	Single Measurement, Average Measurement
Wavelength Range	400-700nm	**Size (L x W x H)**	184 x 77 x 105mm
Wavelength Resolution	10nm	**Weight**	Approx. 600g
Half Bandwidth	10nm	**Power Source**	Li-ion battery. 5000 measurements within 8 hours
Reflectance Range	0-200%	**LED Light source Life Span**	3 million measurements
Colour Space	CIE Lab, XYZ, Yxy, LCh, CIE LUV, Hunter LAB	**Display**	3.5-inch TFT colour LCD, Capacitive Touch Screen
Colour Difference Formula	ΔE*ab, ΔE*uv, ΔE*94, ΔE*cmc (2:1), ΔE*cmc (1:1), ΔE*00v, ΔE (Hunter)	**Working Environment**	Altitude: less than 2000 m
Observer Angle	2° / 10°	**Storage Environment**	Temperature: 0~40℃; Humidity: 0~85% (No Condensation)
Interface	USB, Bluetooth 4.0		

	TR 520 / TRA 520 Specification	**TR 515 Specification**	**TR 500 / TRA 500 Specification**
Optical Geometry	Reflect: di:8°, de:8° (diffused illumination, 8-degree viewing angle)	45°/0° (45° ring-shaped illumination, vertical viewing);	Reflect: di:8°, de:8° (diffused illumination, 8-degree viewing angle)
Light Source	Combined LED Light, UV Light	Combined LED Light, UV Light	Combined LED Light
Measuring Aperture	Dual Aperture: 10mm / 8mm & 5mm / 4mm	MAV: Φ8mm / Φ10mm; SAV: Φ4mm / Φ5mm	Customized Aperture: 8mm / 4mm / 1×3mm
Other Colorimetric Index	WI (ASTM E313, CIE/ISO, AATCC, Hunter) YI (ASTM D1925, ASTM E313) TI (ASTM E313, CIE/ISO) Metamerism Index MI, Staining Fastness, Colour Fastness, Colour Strength, Opacity	WI (ASTM E313, CIE/ISO, AATCC, Hunter) YI (ASTM D1925, ASTM E313) MI (Metamerism Index) Staining Fastness, Colour Fastness, Colour Strength, Opacity	WI (ASTM E313, CIE/ISO, AATCC, Hunter) YI (ASTM D1925, ASTM E313) TI (ASTM E313, CIE/ISO) Metamerism Index MI, Staining Fastness, Colour Fastness, Colour Strength, Opacity
Illuninant	D65, A, C, D50, D55, D75, F1, F2 (CWF), F3, F4, F5, F6, F7 (DLF), F8, F9, F10 (TPL5), F11 (TL84), F12 (TL83/U30)	D65, A, C, D50, D55, D75, F1, F2 (CWF), F3, F4, F5, F6, F7 (DLF), F8, F9, F10 (TPL5), F11 (TL84), F12 (TL83/U30)	D65, A, C, D50, D55, D75, F2 (CWF), F7 (DLF), F11 (TL84)
Measuring Time	2.6 Seconds	1.5 Seconds	2.6 Seconds
Repeatability	MAV/SCI: ΔE*≤0.03	Spectral reflectance: MAV, Standard deviation within 0.08% (400 nm to 700 nm: within 0.18%) Chromaticity value: within ΔE*ab 0.05 (When a white calibration plate is measured 30 times at 5 second intervals after white calibration)	MAV/SCI: ΔE*≤0.05
Inter-instrument Agreement	MAV/SCI: ΔE*≤0.15	Within ΔE*ab 0.15 (Average for 12 BCRA Series II colour tiles)	MAV/SCI: ΔE*≤0.2
Data Memory	Standard 2,000 Pcs, Sample 20,000 Pcs	Standard 1,000 Pcs, Sample 30,000 Pcs	Standard 2,000 Pcs, Sample 20,000 Pcs
Language	English, French, German, Spanish, Portuguese, Chinese	English, Chinese	English, French, German, Spanish, Portuguese, Chinese
Accessories Provided	Power Adapter, USB Cable, Built-in Li-ion battery, User Manual, PC Software, White and Black Calibration Board, Protective Case *TRA Instrument supplied with TR Series stand	Power Adapter, USB Cable, Built-in Li-ion battery, User Manual, PC Software, White and Black Calibration Board, Protective Case	Power Adapter, USB Cable, Built-in Li-ion battery, User Manual, PC Software, White and Black Calibration Board, Protective Case *TRA Instrument supplied with TR Series stand

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