

SpectroSave®

In-Line Spectrometer
for Color Quality Control



LIAD

Weighing and Control Systems Ltd.

Innovation
In Every Dose

A Revolution in Plastics Quality Control

Differential Spectrometry on the Production Line

SpectroSave is a patented differential in-line spectrometer that enables instantaneous and simultaneous comparison of reference parts, digitally setting the Pass/Fail criteria at the production line.

- In-line testing of product color
- Real-time adjustment of additive feeder
- Simultaneous measurement with multiple heads

Versatile Design

SpectroSave is designed for work on the production floor, standing up to all types of dirt and bumps, easily installed on conveyors or robots, and requiring no calibration.

- Resistant to vibrations
- Withstands varying temperatures with no need for re-calibration
- Tolerates dirty environments
- Enables various external communication options

Multiple Testing Modes

SpectroSave is built to fit your needs, allowing QA engineers to choose from internal or external sampling triggers and Differential or Absolute testing modes.

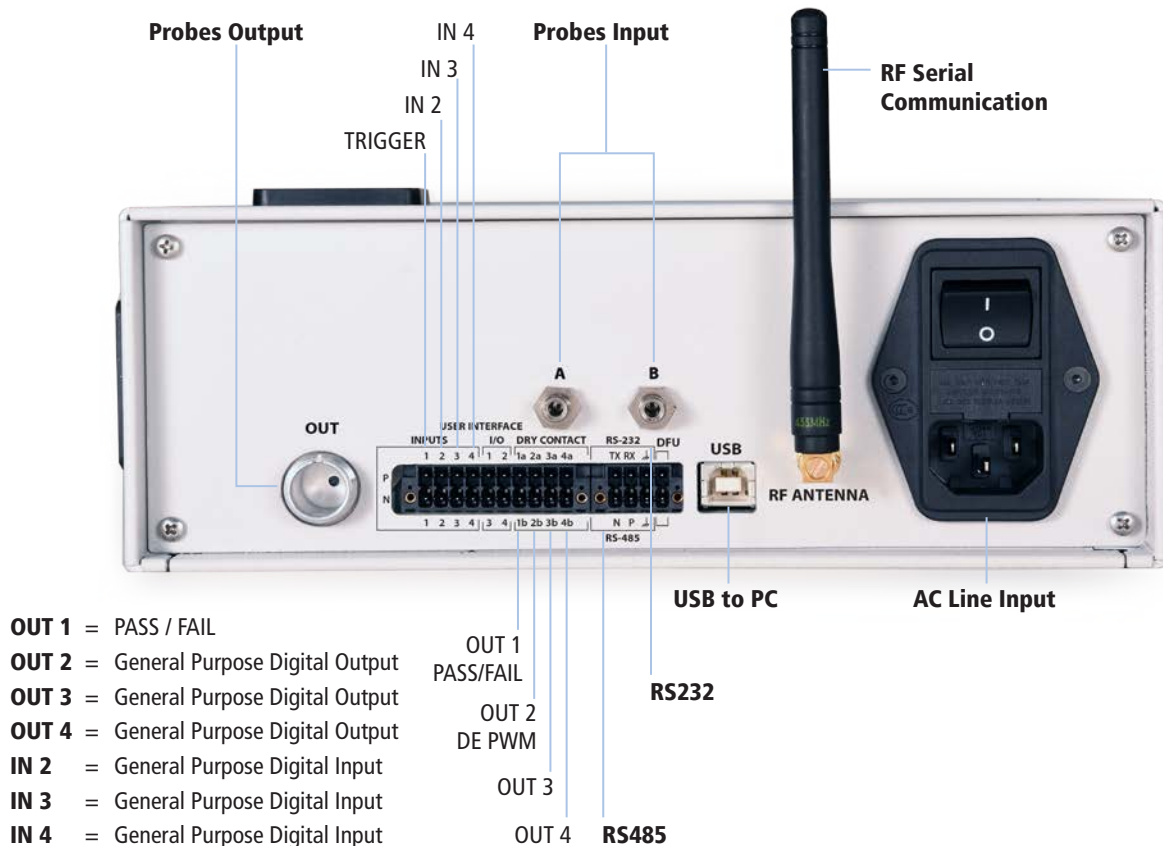
- **Differential mode** - measures ΔE between reference and new product
- **Absolute mode** - when the actual color coordinates $L^*a^*b^*$ is provided

SpectroSave enables digital setting and output of the Pass/Fail criteria for further process control or alarms



Specifications

Spectrometer type	Modified Czerny-Turner with 12 nm resolution
Light source	Stabilized high temperature tungsten halogen filament
Measurement modes:	Differential: Color difference CIE DE2000 Absolute: $L^*a^*b^*$ coordinates
Number of measurement heads	Up to 6 simultaneous (within few sec) distant measurement points
Color measurement accuracy	$\Delta E < 0.1 \ 1\sigma$
Stabilization time on cold start up	< 30 sec
Typical set up procedure time	< 10 sec
Control	LCD display + 4 push buttons on front panel
I/O Highly customizable for versatile control and integration	- External trigger - Serial communication (RF and wired) - Pass/Fail digital output - General Purpose DIOs
Connectivity	- PC based software with USB connection - On-line data monitoring and reports generator
Input power	85 - 265VAC (47 - 63Hz), 0.34/0.17A
Environment temperature range	-15 oC – +45 oC
Dimensions (WxDxH)	190x230x90 mm



Probes

One System - Multiple Probes and Probe Types

SpectroSave is the only Spectrometer with interchangeable and multiple simultaneously used probes, enabling easy and cost-efficient QA for any job within a single instrument setup.

- Simultaneous measurement of multiple channels
- Reference parts
- Multiple points of same part
- Transmission
- Reflection
- Haze



Small Form Factor

SpectroSave probes' small form factor and patented optical design make them insensitive to distance, surface texture and orientation.

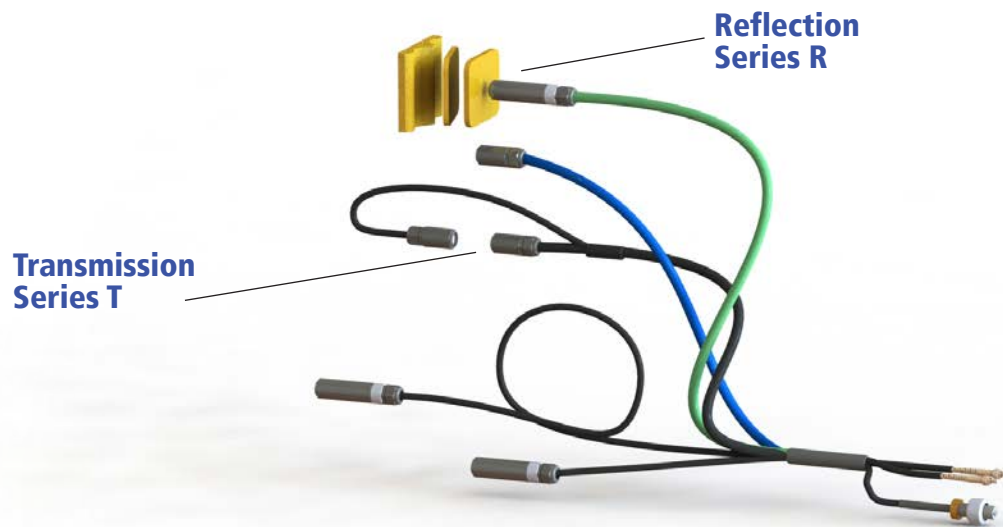
Plug and Play

SpectroSave probes are highly stable, enabling immediate switching between tests with no need for alignment of complex calibrations.

Probe	Function	Measured Area Size	Operational to the Sample
A	Reflection color measurement	0.6 cm ²	0 – 12 mm
B	Reflection color measurement	2.2 cm ²	0 – 20 mm
C	Reflection color measurement	9.6 cm ²	0 – 40 mm
D	Transmission color measurement	0.6 cm ²	Up to 10 cm
E	Transmission color measurement	2.2 cm ²	Up to 10 cm
F	Transmission color measurement	9.6 cm ²	Up to 10 cm
G	Reflection color (integrating sphere) i8° / d8°	0.2 cm ²	Contact

Key Features

- Probe contains reference and part branches
- Reflection series (R)
- Transmission series (T)
- Color variations of less than 0.5 within 0 – 25 mm probe height from the surface
- Sampled area 9 mm for SD series probes
- Sampled area 17 mm for LD series probes
- Sampled area 34 mm for LLD series probes
- 1,3,5 or 10 meter rugged fiber cable for optimal integration in the production line
- Longer lengths and mixed type probes available on request



SSV-	PR-	X	-	XX	-	XX	-	XX	-	X
------	-----	---	---	----	---	----	---	----	---	---

R - Reflection Series
T - Transmission Series

SD - 9 mm beam
LD - 17 mm beam
LLD - 34 mm beam

In-line part branch cable length

m 1 - 01
m 2 - 02
m 5 - 05
m 10 - 10

Reference branch cable length

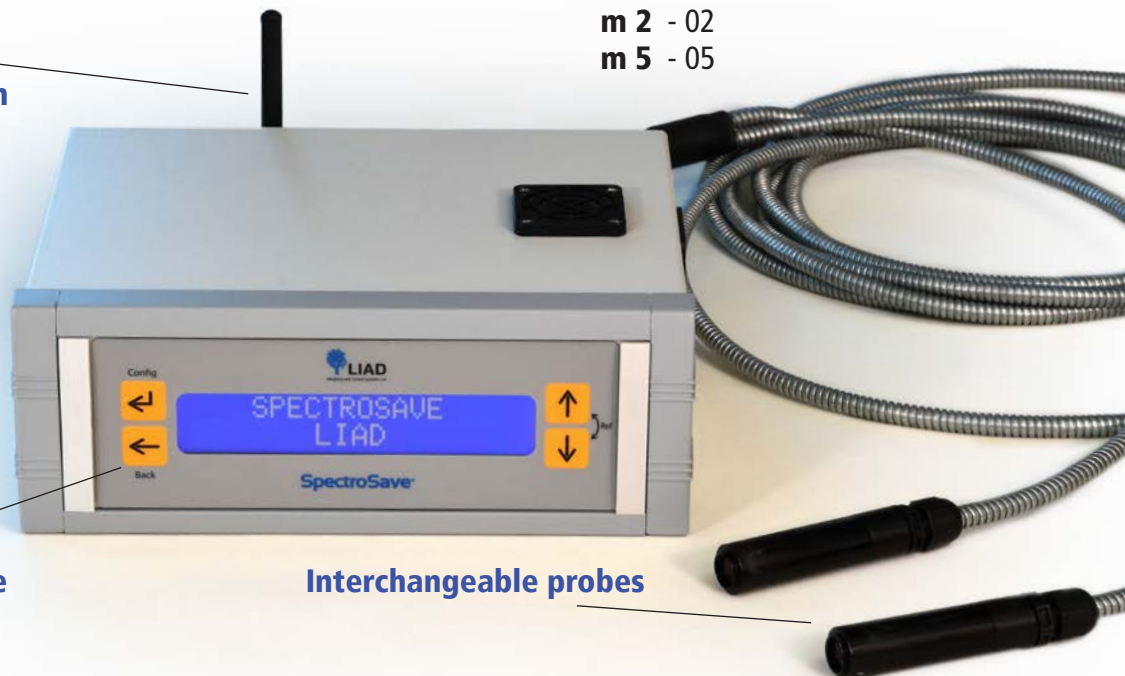
m 1 - 01
m 2 - 02
m 5 - 05

Number of branches up to 6

Rf Serial Communication

Control Module

Interchangeable probes



Real-Time QA Integration

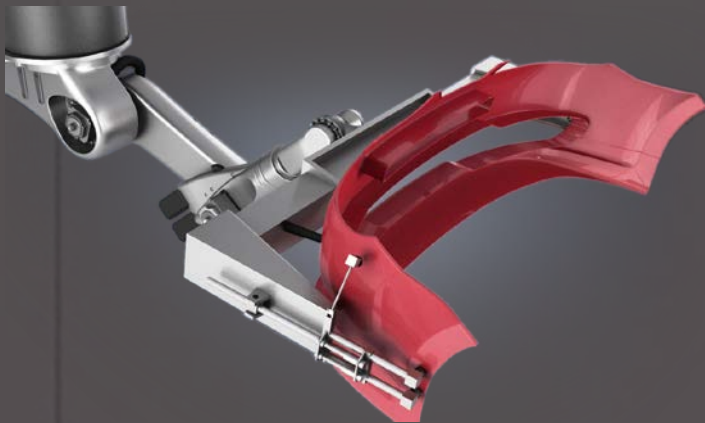
Standalone or Integrated

Integrate Spectrosave with LIAD's gravimetric or volumetric feeders to reduce costs and improve efficiency.

- Reduce product rejects by objectively controlling color additive dosing
- Reduce masterbatch usage by lowering the set point to non-distinguishable levels

Control Multiple Dispensers

A single SpectroSave can simultaneously control multiple additive feeders, enabling automatic in-line creation of new color batches.



Connection to Post-Processing Robot

SpectroSave can be connected to the post-processing robot, enabling in-line analysis of plastic parts, real-time decision making and immediate set point adjustments.

- Faster decision making
- Increased profit margin
- Higher quality products



Turn your volumetric or gravimetric feeders into "Smart Feeders"

Objectively alter the masterbatch dosing set point, and compare ΔE of products in real-time.



See the SpectroSave
in action



Weighing and Control Systems Ltd.

Tel: +972-4-9028800 • Fax: +972-4-9028818 • e-mail: prod@liad.co.il
POB 10, Sky St., Misgav Industrial Park 2017400 Israel

www.liad.co.il