

LAB SPECTROPHOTOMETER mod. LC01
OPERATIVE SPECIFICATIONS

Application:	Measurement of colours and concentrations on turbid products
Type of measurement:	The Laboratory Spectrophotometer unit functions in the NUV - VIS – NIR range, by taking a reflectance measurement
Calibration:	White target for initial calibration. "Reference Tile" B.C.R. 400 for checking calibration (provided only on the customer's request).
Spectrum data:	Discrete spectrum calculated starting from 10 wavelengths; default :420– 470 – 520– 568– 589– 620– 670– 880 nm, or other customized configurations
Spectrum resolution:	2 nm
Spectrum definition:	5 nm
Reflectance measurement for each wavelength	Measurement limits: 0.25%R...150.00%R; configurable scale range Accuracy: 0.5% better on scale range Accuracy maximum: 0.03%R
Absorbance measurement for each wavelength	Measurement limits: 0...100 Abs [Abs = S * (1 – R/100)2/ (2R/100); where "Abs" is the absorbance unit, "R" is the reflectance and "S" is the scattering] Accuracy: Reading 1.25% better
Visualization:	Up to 8 variables can be displayed, these may be the absorbance of each wavelength or the result of customizable functions which transform these into concentration units
Color measure	Illuminating: C Observer: Standard CIE 1931 2° Colour scale: Tristimol components (X,Y,Z) Hunter (L,a,b)
Visualization:	It is possible to alternately display (X,Y,Z) or (L,a,b) and a variable result of customized functions which transform these and the reflectances into specific indices for application (e.g. a/b). Up to 5 different customized functions can be set.
Repeatability:	It is possible to check the repeatability of the measurements, using the grey target, by repeating the measurement 20 times after thermal stabilization of the instrument and target (DX,DY,DZ must be < 0.07).
Caratteristiche of the product	Measurement limits: Minimum turbidity value 200 FTU Minimum volume sample 100 ml Measurement time 10 s Wavelength range 380...900 nm
Product temperature:	5...40 °C (operating under DEW POINT)
LC01 Tomato application	Absorbance display: Three default transformation functions are introduced: Lycopene Other carotenoids Chlorophyll
Lycopene measurement limits:	0...80 mg/100 g (When the product is diluted with distilled water, the upper limit increases by the dilution ratio).
Accuracy:	Reading 5% better
Accuracy maximum:	0.5 mg/100 g
Repeatability:	±0.25 mg/100 g better

Notes:	The "Other carotenoids" and "Chlorophyll" variables must be considered as indices always expressed in mg/100 g.
Colour display:	Coordinates introduced: L,a,b Variables introduced: a / b = a/b TPS = $-81.582 + 1.069 * a + 15.39 * b - 0.591 * b^2$ TJS = $25.963 + 0.989 * a - 1.787 * b$ TSS = $-153.1 + 1.187 * a + 22.332 * b - 0.864 * b^2$ TCS = $-80.888 + 8.355 * a - 0.144 * a^2 - 1.194 * b$ Among the variables set, display of a/b

GENERAL SPECIFICATIONS

Supplies	Electric: DC +5V 4A, +12V 2A, -12V 0.5A by means power supplier: AC 100...240V ±10% 47...63Hz 50VA. Connection via cable with SP7748 (CEE-7) 10A/250V plug for EC versions or con P620 15A/125V plug for US versions.
Interfaces	Serial: RS232 for connection to a PC via 9-pin male D-connector Parallel: CENTRONICS for Printer connection – via 25-pin female D-connector Usb: A type for external connection Ethernet: RJ-45 for external connection PS/2: MiniDIN 6P F for external connection keyboard and mouse

CONSTRUCTION FEATURES

Execution:	One-piece enclosure in INOX 304 AISI stain-less steel
Measuring section:	Measuring tank made of "PVC". Light sources with 8 electronically compensated LEDs. Illumination area diameter 10 mm. Measurement area diameter 10 mm. Analysis test tubes made of "PVC" and "optic glass". Optic glass window with diameter 40 mm. Illumination/detection geometry 45°/0°.
Electronic section:	External temperature sensor "Pt100", for automatic adjustment of thermostat. Internal temperature sensor "Pt1000", for constant luminosity compensation of LEDs. Light detector: photodiode with large sensitive surface. "CPU" central unit with microprocessor.
Materials in contact with the product:	PVC and optic glass
Processing system	Execution: One-piece enclosure in INOX 304 AISI stainless steel
Electronic section:	Industrial monoboard microprocessor CPU. Graphic displays on 800x600 10.4" touch screen and touch pen. 512 MB Flash Memory. External power supplier housed in black ABS bookstand enclosure. A choice of 3 languages (Italian, English and Spanish) for menus and messages display.
Dimensions and weight:	503 (w) x 319 (h) x 275 (d), 11.7 kg

TECHNICAL NORMATIVE SPECIFICATIONS

Environmental features	Temperature limits: Ambient: 5...40 °C (41...104 °F) Storage: -20...+70 °C (-4...+158 °F) Humidity limits: Ambient: 5%...95% (R.H. non-condensing) Stoccaggio: 5%...95% (R.H. non-condensing) Altitude limits: <2000 m b.s.l. Protection degree: IP50 to EN60529
Conformity to Directives:	EMC: 2014/30/EU WEEE: 2012/19/EU CE marking of conformity to EU Directives