

**LABORATORY REFRACTOMETER, model LR03**
**OPERATING SPECIFICATIONS**

<b>Application:</b>	This equipment is designed to measure the sugar content of grape must on delivery to the winery. It is essentially made up of: Refractometer Unit complete with display section, analysis bowl, end-of-cycle manual cleaning system with drain, measurement actuation sensor. The instrument is based on a microprocessor controller for Equipment management, external interfacing and for management of the multi-dimensional data tickets printer unit.
<b>Type of measurement:</b>	<i>For instruments marketed in France, Spain, Portugal or other European Union Member State, or in any State included in the agreement concerning the European economic market or any State which has accepted an agreement of acknowledgement, when the applicable prescriptions provide guarantees which are equivalent to those recognized by the type analysis in France, Spain and Portugal, the Strength by Mass measurement in the sugar of natural grape must is subjected to relative decrees of type analysis approval.</i> Refractometric measurement of the Refractive Index and display of the Strength by Mass in must sugar expressed in the predefined scale of the relative concentration, with temperature compensation already applied. After a brief manual cycle, in which the measurement bowl is first filled with product to prime the bowl walls and then with the product being analyzed, the system waits for the position sensor to check that prism brushing has been completed and then displays the result of the measurement. The measurement expressed in the predefined scale is displayed in white on a blue background and the unit of measures is indicated to the top left of the display. The measurement expressed in the alternative scale is displayed in orange on a blue background and the unit of measures is indicated to the top left of the display. The IRE1 remote display will show a fixed value depending on how the repeater is set, but the value is not legalized. The PC will always acquire a string with the value, again, not legalized. Within the equipment's tolerance limits, the measurement is not affected by the color of the must or its emulsion nor by the presence of suspended solids.
<b>Measurement scales/limits:</b>	0...30° % mass (Brix) alternative 0...18.3° % vol. conventionally calculated based on 16.83 g/l per 1 % in alcohol volume
<b>Accuracy:</b>	±0.1° % mass or ±0.1% vol. ; the maximum tolerated error is applied to indications which are not rounded up
<b>Measurement scales/limits:</b>	<i>For instruments marketed in countries where type analysis is not envisaged:</i> 1.3403...1.3902 nD Automatic conversion of the indication into the measurement scales listed below, with limits corresponding to: 35 degrees Brix                    30.2 degrees Babo 22 degrees ALCOHOL / % vol. on base of 17 and/or 17.5 g/l per 1 % volume of alcohol 153 degrees Oechsle    32 kg/q
<b>Notes:</b>	The comparison in the various measurement scales refers to the nD/Bx ICUMSA conversion tables (1974)
<b>Accuracy:</b>	0.3% of the range. Maximum accuracy >±0.1% mass or equivalent for corresponding scales.
<b>Product temperature:</b>	5... 40°C (41 ... 104°F) with automatic compensation of the temperature measured by the internal PT1000 Temperature Probe in AISI 316 stainless steel
<b>Quantity of sample analyzed:</b>	~400 cc/measurement cycle
<b>Positioning:</b>	The instrument must be protected from direct sunlight

**GENERAL SPECIFICATIONS**

<b>Power supplies</b>	<b>Electric:</b> + /GND/PE 24VDC ±10% 10W (with external power supply 100...240 Vac 50/60 Hz, 24VA)
<b>Interfaces</b>	<i>For instruments marketed in France, Spain, Portugal or other European Union Member State, or in any State included in the agreement concerning the European economic market or any State which has accepted an agreement of acknowledgement, when the applicable prescriptions provide</i>

*guarantees which are equivalent to those recognized, the serial connections are not legalized. Only those indications shown on the display are of legal relevance,*

**Digital:**  
 RS485 for connection to PC (with special RS485/232 converter).  
 RS485 for connection to the Oenology Remote Indicator.  
 RS485 for connection to external printer (with special RS485/232 converter).

## CONSTRUCTION FEATURES

<p><b>Base unit:</b></p>	<p><b>Function:</b>        System management, data processing, operator interface, interfacing with additional elements outside the Equipment</p> <p><b>Execution:</b>        Structure in AISI 304 stainless steel (IP55)</p> <p><b>Electronic section:</b>        Central "CPU" unit with microprocessor with management software on Flash; communication, interfaceability with analysis unit via serial RS485 protocol.        Processing and indication of measurements, software menu display, diagnostics menus, error messages and operating status indicator icons on graphic backlit LCD 320x240 pix display with "LCD Saving" function and touch screen.        Multi-level programming software complete with password protection for certain functions and check menu.        5 language options (Italian, English, Spanish, French German) for menu and message display.</p> <p><b>Electronic section:</b>        Start switch on the back of the equipment</p>
<p><b>UR30 Refractometer Unit</b></p>	<p><b>Measurement section:</b>        "Optical glass" measurement prism.        Electronically compensated LED light source.        CCD sensitive element.        Molecular Sieve Cartridge for dehumidifying the Optical Section.</p> <p><b>Electronic section:</b>        Central "CPU" unit with microprocessor</p>
<p><b>Analysis basin</b></p>	<p><b>Execution:</b>        Plastic bowl</p> <p><b>Features:</b>        Priming with flushing must before carrying out the measurement.        Manual washing using water at the end of each measuring cycle.        Manually operated drainage system.</p>
<p><b>Printer unit</b></p>	<p><i>For instruments marketed in France, Spain, Portugal or other European Union Member State, or in any State included in the agreement concerning the European economic market or any State which has accepted an agreement of acknowledgement, when the applicable prescriptions provide guarantees which are equivalent to those recognized by the analysis type in France, Spain and Portugal, the printer is not legalized. Only the indications provide on the Receiver's display are of legal relevance and are considered the valid values in the event of discrepancies with the indications given by the printer.</i></p> <p><b>Execution:</b>        One-direction table printer (RS232 interface) with impact printing system with printer ribbon</p> <p><b>Features:</b>        Prints data tickets of variable size (min. 70x75, max 120x220).        Option to print multiple tickets (1 original + 2 copies) and/or with cardboard support (1 original + 2 copies) and/or with cardboard support.        Fully personalized choice as to the type of data to be printed ("Brix, Date, Time, etc.)        Fully personalized choice of printing position on the ticket by means of "Row-Column" matrix set-up.</p>
<p><b>Parts in contact with the product:</b></p>	<p>Pt1000, Analysis Bowl in plastic.        Optical glass measurement prism.        Drain unit in INOX AISI 304/316.</p>
<p><b>Dimensions and weight</b></p>	<p>335 (w) x 165 (h) x 180 (d) 7.5 kg</p>

## TECHNICAL-NORMATIVE SPECIFICATIONS

<b>Environmental features</b>	<b>Temperature limits:</b> Environment: 5...45 °C (41...113 °F) Storage: -20...+70 °C (-4...158 °F) <b>Humidity limits:</b> Environment: 5%...95% (R.H without condensate) Storage: 5%...95% (R.H without condensate) <b>Altitude limits:</b> <2000 m a.s.l. <b>Degree of Protection:</b> IP55 in accordance with EN60529
<b>Conformity to Directives:</b>	EMC: 2014/30/EU The equipment complies with the international OIML R 124 recommendations for instruments which measure the refractive index of must upon delivery before fermentation. The Refractometer Unit is type "II"