



**TECHNICAL SPECIFICATIONS AND STANDARDS**

**Ambient Characteristics**

Temperature Limits:

Ambient: + 5°C...+50°C

Storage: -20°C...+70°C

Humidity Limits:

Ambient: + 5%...+95% (R.H. non-condensing)

Storage: + 5%...+95% (R.H. non-condensing)

Altitude Limits: <2000 m a.s.l.

Pollution Category: "3" to IEC664

Protection Category: IP65 to EN60529

**Conformity to Standards and Directives**

MSD: EU 89/392, 91/368, 93/44;  
EN 292-1, 292-2 (1992)

LVD: EU 73/23, 93/68 and amendments;  
EN 60204-1 (1993)

EMC: EU 89/336, 93/68 and amendments;  
EN 50081-2 (1994-Generic Emission)  
EN 50082-2 (1995-Generic Immunity)  
EN 61000-4-2 (1996-Electrost. Discharges)  
EN 61000-4-4 (1996-Bursts)  
ENV 50140 (1994-Irradiated Immunity)  
ENV 50141 (1994-Cond. Disturbances)

\* CE mark shows conformity to listed EU Directives and Standards.

\* Year 2000 compliant in accordance with BSI DISC PD2000-1:1998.

**OPERATIVE SPECIFICATIONS**

Application: Measurement, On/Off regulation and Multiparametric Analyses of liquids on process lines with completely automatic cycles.

Main analyzable products in various production sectors:

- Food industry: fruit juices, milk, mayonnaise, preservation liquids, treated primary water;
- In the Chemical and Biochemical industries: base products, synthetic fibres, soaps, culture solutions;
- In the mechanical engineering industry and metal treatment sector for cutting oils and metal treatment products in general;
- In power stations on treated waste water, condensate water, effluent, primary water.

Analysis type: A) Multiparametric analyses by means of "acid/base titration, reductive oxide, complexometric indicators" of a product sample of known volume by means of measurement electrodes with identification of the end point or curve inflection point search.

Main measurements and analyses can be performed in accordance with the personalization of the appliance:

- pH, Total Acidity, Formol number, Lactic Acid, Conductivity, Redox, Alkalinity, Total or Residual Chlorine, Hardness, Turbidity, Selective Ions, Formic Acid, Sodium Chloride, Iron II, Iron III, Acceleration, Fluorides, Zinc, Nitrites, Chlorides.

B) Refractometric measurement (optional) of refraction Index and display in selected "BRIX" or "USER" scale of the relative concentration, with automatic temperature compensation.

pH measurement: 0...14pH ±0.1pH unit

Redox measurement: 0...2000mV ±1mV

Conductivity measur.: 0...20mS ±0.1mS

Fluorides measur.: 100...1000ppm ±1ppm

Concentration measur.: 1.3330...1.5200nD.

The data relative to other measurements and analyses that can be performed are not given since they vary in relation to the personalization of the appliance.

Product temperature: 0°C...+45°C with automatic compensation of temperature measured by means of temperature sensor Pt100 in nylon, Class "B" to IEC751.

Line pressure: 1...6bar (14.5...87psi) at 20°C.

Number of lines: Facility to sample up to 6 lines.

Quantity of product analyzed: 50cc.

Quantity of product sampled: ~800cc.

**GENERAL SPECIFICATIONS (depending on configuration)**

**Supplies**

Electrical: AC 115/230V± 10% 50...60Hz 300VA

Pneumatic: Dehydrated air 6...10bar (87...145psi).  
Connection via "quick coupler" for plastic tube diameter 6x4mm.

Water: Water 1.5...4bar (22...58psi), consumption ~2l/analysis.  
Connection via "hose connector" for reinforced hose with ID of 15mm.

**Interfaces**

Analog: N°6, 12, or 32 independent channels 4...20mA into 470Ω relative to the values of the analyzed samples (optional).

Digital: - RS232 for connection to PC or serial printer.  
- RS422 for connection to PC, serial printer or data acquisition and processing systems.

Inputs: N°6 inputs for acquisition of "External Start" command relative to line to be analyzed.

Outputs: - N°3 relay outputs for signalling of alarms and "Start stand-by" status, with contact rating of 24V/2A-DC/AC.  
- N° 6, 12 or 18 relay outputs (optional) for On/Off control.

All interfaces are optically decoupled from the power side (VDE0160) and completely configurable from the keypad. All connections to be made by industrial multiple pole connectors located on the slide of the appliance.

**CONSTRUCTION FEATURES (depending on configuration)**

Modular structure completely personalizable in relation to the type(s) of measurement and analysis to be performed, basically composed of the following parts:

Base unit with microprocessor controller, Pumps and Dispenser panel, Analysis bowl, Tanks section, Sampling system, Refractometric unit (optional), all installed, assembled and interconnected in a single compact structure.

**Execution:** Specifically designed structure in 304 AISI stainless steel with access to the various sections of the appliance by means of 3 front doors and a large rear door, with lock closures.



**BASE UNIT**

**Function:** System administration, data processing, operator interface, interface with ancillary elements and with process plant.

**Execution:** Panel in anodized aluminium supporting the electronic section, secured to the structure by means of ball-bearing runners that allow it to be removed from its housing with resulting unimpeded accessibility; compartment protected by dedicated door with window in penetration resistant glass.

*Electronic section:*

- Microprocessor CPU.
- Measurement and analysis readings and menus presented on FIP alphanumeric display with 2 lines x 40 characters.
- Polyester keypad with dome keys for access to program menus, personalization, management of cycles and manual activation of main operating functions.
- Ribbon printer with paper reel and winder, removable on pull-out runners.
- Memory card for storage of operating data and parameters.

*Software:*

- Self-diagnostic program with display of error messages in the event of system faults.
- Automatic periodic self-calibration.
- Complete personalization of titration parameters, viz.: End point, reactive normality, equivalent weight, initial additions, inflection constants, etc.
- Operating mode selectable from: Timer controlled, Semiautomatic, Remote and Manual.

**PUMPS AND DISPENSER PANEL**

**Function:** Dosage of reagents and calibration solutions, transfer of titration solutions from tanks to analysis bowl, drawing of analysis product from sampling system.

**Execution:** Panel in 304 AISI stainless steel with hinges for support of the transfer peristaltic pumps and dosing dispenser.

*Pumps section:*

- Facility to install from 1 to 6 peristaltic pumps (expandable up to 8) with technical specifications (rpm, pipeline material) personalizable in relation to type of application.

*Dispenser section:*

- One-piece unit with main components made of black painted/anodized aluminium.
- Microprocessor CPU.
- Facility to install from 1 to 3 with capacity of 5ml or 10ml in glass or in PES (polyethersulphone) for dosage of reagents and analysis product (if relevant).
- Fully automatic syringe filling, emptying, and washing cycles with limit position controlled by means of optical sensor.

**ANALYSIS BOWL**

**Execution:** Cylindrical bowl (IP55) in clear Plexiglas or PES with screw cover supporting the measurement electrodes and accessories for connection of injection capillary tubes.

*Features:*

- Drain system controlled by pneumatic pistons with auto-preparation of volumes for titration.
- Automatic washing with water or detergent at end of each analysis cycle.

- Electromechanical agitator for dilution of titration reagents.
- Electrical connection of measurement electrodes, Pt100 sensor and agitator by means of connectors.
- Facility to house up to 3 different single or combined measurement electrodes.

**TANKS SECTION**

*Features:*

- Facility to accommodate up to 8 plastic 5l tanks or 6 10l tanks for storage of reagents and calibrating solutions.
- Minimum level controlled by float with alarm generated in the event that the requested analysis cannot be performed.

**SAMPLING SYSTEM**

**Function:** Sampling, by means of by-pass circuit with drain, of a sufficient quantity of product for self-cleaning of internal parts and execution of measurements.

**Execution:** Panel in 304 AISI stainless steel located externally to the appliance and protected by dedicated case, complete with system made entirely in PVC (PVDF or other materials on request).

*Features:*

- Facility to install from 1 to 6 fully independent sampling lines.
- Sampling on single line via automatic scanning or timer control.
- Filtration system on each line for elimination of suspended solids.
- Connection to production lines by means of hose connector for reinforced hose with ID of 20mm.
- Timer controlled drainage system with monitoring of product level in sampling system by means of float level sensor.
- Interlock of lines by means of pneumatic membrane valves.

**DIGITAL REFRACTOMETER “UR-18” (Optional)**

**Execution:** One-piece case (IP54) in 304 AISI stainless steel.

*Measur. section:*

- Synthetic sapphire prism.
- LED light source .
- CCD sensor element.
- “Pt1000” temperature sensor incorporated in appliance.

*Electronic section:*

- Microprocessor CPU.
- Measurement readings and program menus presented on backlit 1x8 character alphanumeric LCD.
- Keypad in scratchproof polyester with dome keys.

**Dimensions and weight:**  
900 (w) x 1650 (h) x 590 (d), ~190kg