

PROCESS TITRATOR mod. AT05
OPERATING SPECIFICATIONS

Application:	<p>Measuring, Adjustment and Multiparametric Analysis of liquids directly on process line with completely automatic operating cycles. The AT05 Process Titrator can be configured, in its various versions, to perform potentiometric titration with determination of the end point using electrochemical electrodes and probes.</p> <p>Main products which can be analyzed in various production sectors include:</p> <p>In the Food Industry: Fruit Juice, Preserving Liquids, Treated Primary Water</p> <p>In the Chemical and Biochemical industries: Basic Products, Soaps, Culture Fluids, Treated Water</p> <p>In the Mechanical and metal treatment industry: Cutting Fluids and Treatment Baths.</p> <p>In Electrical Power Plants: Treated Waste Water, Condensate Water, Drains, Primary Water.</p>
Type of analysis:	<p>The Multiparametric Analyzer, with the help of reagents, can: perform acid/base, redox, precipitation and complexometric volumetric titrations. The end point is detected by electrodes or conductivity and colorimetric probes.</p> <p>Main measurements and analysis which can be performed based on Machine customization: pH, conductivity, Redox, ISEE.</p>
Measurement limits	<p>pH Measurement: 0...14 pH \pm0.1 pH</p> <p>Redox Measurement: 0...+2500 mV</p> <p>Conductivity Measurement: 0...100 mS</p>
Analysis time:	Cycles with variable values based on the methods implemented
Methods:	<p>Acid/base, redox, precipitation titrations with the possibility to determine the end point:</p> <ul style="list-style-type: none"> end point inflection point with constant dosing inflection point with variable dosing (auto studio)
Product temperature:	0...100 °C (32...212 °F)
Line pressure:	Max. 6 bar (87 psi) at 20 °C (68 °F)
Number of Lines:	6 lines + manual bowl
Quantity of product analyzed:	1...80 cc
Quantity of product sampled	~500 cc

GENERAL SPECIFICATIONS

Power supplies	<p>Electrical: AC 100...240V 47...63Hz 1,4A Connection using cable ending in a "2P+T" CEI EN 60309-2 plug.</p> <p>Pneumatic: Dehydrated air 6...10 bar (87... 145 psi). Connection using "Quick-fit Attachment" for plastic tube (diameter 6x4 mm).</p> <p>Analysis water: Demineralized water 1.5...4 bar (21.8...58 psi), envisaged consumption ~0.5 l/analysis. Connection by means of "Quick-Fit Connector" for fabric-finished tube (external diameter 17-19 mm, internal diameter 12-13 mm).</p> <p>Washing water: Water 1.5...4 bar (21.8...58 psi), envisaged consumption ~2 l/analysis. Connection by means of "Quick-Fit Connector" for fabric-finished tube (external diameter 17-19 mm, internal diameter 12-13 mm).</p>
Interfaces	<p>Analog outputs: 2 completely separate channels 4...20mA which can be configured (maximum load 470Ω), which can be configured in the "Max. and Min. Full Scale" values relative to the values of the analyzed samples which can be expanded using the optional Adam 624 multi-channel module</p> <p>Analog inputs: N° 1 Pt1000</p>

	<p>N° 1 high impedance pH N° 2 mV/4 -20 mA</p> <p>Digital: RS485 for connection to Supervisor, PLC, PC Ethernet for connection to Supervisor and remote support</p> <p>Inputs: N°# 6 inputs for acquisition of the "External Start" command relative to the line being analyzed. N° 1 input for acquisition of the "Block Titration" command.</p> <p>Outputs: 3 relay outputs for alarm signals and the "Wait Start" condition, with contacts (NO) of a maximum capacity of 24V/1A DC/AC. Until 18 optional outputs (ON-OFF) for the controlling of the dosing pumps in the baths.</p>
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CONSTRUCTION FEATURES

Execution:	Structure specially engineered in INOX AISI 304 stainless steel, textured paint coating in RAL 9002, with access to the various sections which make up the machine through 3 front doors, 1 rear door and one large side door, closure with special lock.
Notes:	Modular structure which can be fully personalized based on the type of measurement/s and analysis to be carried out. The most essential parts are listed below: Base unit with microprocessor controller, Pumps and Dispenser Panel, Analysis Bowl, Tanks Section and Sampling System, all installed, assembled and interconnected in a compact structure.
Electrical cabinet:	System power supplies and users management Electronic section: Differentiated circuits and overcurrent protection using 5x20 mm fuses. "Yellow-Red Main Power Switch", "Main Activation Controls" and "Illuminated Indicators" concerning the main operating functions, located on the side of the panel. Terminal boards for connection of the power section. Terminal boards for connecting Inputs and Outputs. Plastic cable glands for hook-up cables.
PC Panel+MR04 Multiparametric Receiver	System management, data processing, operator interface, interfacing with analysis systems, interfacing with additional elements and with the process line. Electronic section: Panel Pc (OS windows) "CPU" with PENTIUM® INTEL® microprocessor, (or other, depending on evolutions in technology), 4 Giga Ram memory, Video board, modem, 3-button mouse. 10" monitor with Analog Resistive Touchscreen, 2048x2048 resolution. N° 2 USB V 2.0 Ethernet: IEEE 802.1p and 802.1q supported 10/100/1000 IEEE 802.3 compliant Software: Real-time interface complete with functions useful for better management of the titrator and its interface with the outside world. Self-diagnostics program with display of error messages in the event of system failures. Periodical automatic calibration. Complete customization of titration parameters, such as: Normality, equivalent weight, initial quantity settings, Inflexion constants, etc. Three available operating mode options: Timed, semi-automatic, remote Operational Software created in the Microsoft® Windows® environment with "Numerical and/or Graphic Panels" and "Button" and/or "Toolbar" controls. Possibility to choose one of several menu and messages display languages. Display in real time, complete modification and management of all functions, variables and work parameters operating in the Analysis Unit. Possibility to create, edit, import recipes containing operating parameters. Creation and storage of up to a maximum of 999 combinations of work parameters, each relative to a specific product. Storage of data in a Microsoft® Access format database, with the option to export data into Excel for graphic analysis and statistical and qualitative analysis. Tele-assistance and remote control of all functions. Possibility to save, view and print all the operations carried out in a database. Possibility to manage four security levels for the operations permitted to users. Possibility to export and import recipes in text format ASCII (Excel). Possibility, by pressing a single icon, to save all the files containing the software configurations, the

	operations carried out by users and the history for the last 5 days in a single compressed file.
Pumps and Dispenser Panel	<p>Function: Dosing of reagents and calibration solutions, transfer of titration reagents from the tanks to the analysis bowl, analysis product pick-up from the sampling system.</p> <p>Pumps section: Possibility to install from 1 to 7 Peristaltic Pumps with personalized technical characteristics (no. revs, pipe material) depending on type of use, for transferring the excess products/reagents.</p> <p>Dispenser section: Enbloc appliance with main mechanical components made from anodized aluminum. Equipment management using relative motor and encoder; communication with base unit via RS485 interface. 3 10-ml syringes in PES or Glass for dosing the titration reagents and product being analyzed. Movement of the syringes via "Helical Screw" and stepper motor. Completely automatic syringe filling, emptying and washing cycles with end of stroke controlled by optic sensors.</p>
Analysis bowl:	<p>Features: Membrane drain system with self-determination of the known volume for titration. Manual washing with demi water at the end of every analysis cycle. Electromechanical stirrer for the dilution-mixing of the titration reagents. Electrical connections of the measuring electrodes and stirrer using special connectors. Possibility to house up to 4 different individual or combined measuring electrodes, such as: Combined platinum Redox measuring electrode, selective F- ions measuring electrode pH measuring electrode Conductivity probe ISE electrode</p>
Tanks section:	Possibility to house 5-l and 10-l plastic tanks for recovering reagents and calibration solutions. Minimum level floater probe with alarm signaling if execution of the analysis is not possible.
Sampling system:	Sampling by means of a by-pass circuit with drain, of a sufficient quantity of product to guarantee self-cleaning and execution of the measurements.
Dimensions and weight:	300 (b) x 1765 (h) x 670 (840 with manual vessel) (p) 155 kg
Materials in contact with the product	<p>Product circuit: PPH, Teflon, PSU, Silicone, PEEK TM, Glass, PMMA, FFKM (Kalrez®)</p> <p>Reactive circuits: PVC, Neoprene, Glass, PVDF, PPH, EPDM, PEEK TM, Teflon, PMMA, FFKM (Kalrez®)</p>

TECHNICAL-NORMATIVE SPECIFICATIONS

Environmental features	<p>Temperature limits: Environment: 5...45 °C (41 °F...113 °F) Storage: -20...+70 °C (-4 °F...+158 °F)</p> <p>Humidity limits: Environment: 5%...95% (R.H. without condensate) storage: 5%...95% (R.H without condensate)</p> <p>Degree of Protection: IP65 in accordance with EN60529</p>
Conformity to Directives:	MSD: 2006/42/EC LVD: 2014/35/EU EMC: 2014/30/EU