Analizer for chemical parameters such as Al, NH₄⁺, Cr⁶⁺, PO₄³⁻, Fe, Mn, SiO₂ and other on request.

**ColorTec**

It consists of two sections, hydraulic/analytical and electronics. These two sections are separated from each other so as to ensure efficiency and durability of all the parts.

**User Interface (HMI)**

The user interface consists of an industrial PC with touch screen.

**Software & Functions**

The control software, simple and intuitive, allows the immediate understanding of all the commands and functions.

It is possible to perform measurements at programmed intervals, at a specific time or at an external event.

The software archives and makes available in graphical form all the measurements.

The instrument is designed for connection to an existing LAN.

**Phases of the measuring cycle**

The analyzer automatically reproduces the colorimetric determination, as well as carried out in the laboratory, according to the following steps:

**Emptying of the reading cell**

The cell is emptied by use of an air pump.

**Zero measurement**

The fresh sample is inputted and the instrument performs a first reading of the sample as received (or, if required by the methodology, with the addition of reagents) to acquire the photometric Zero.

**Emptying of the reading cell**

The cell is emptied again.

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**GENERAL PRINCIPLES OF THE LAMBERT-BEER LAW**

The Lambert-Beer law is an empirical relation that correlates the amount of light absorbed by a medium to the chemical nature (molar extinction coefficient ε), to the concentration (c) and to the thickness of the crossed medium.

When a light beam (monochromatic) of intensity I₀ passes through a layer with the thickness l of the medium, a part of it is absorbed by the medium itself and another part of it is transmitted with residual intensity I₁.
Colouring reagent(s) and sample dosing
Depending on the specific methodology, one or more colorimetric reagents are dosed.

Absorbance measurement and calculation of the concentration
Reading of light intensity value of the coloured liquid after proper mixing of the reagents.

Emptying, rinsing of the hydraulic circuit and of the measuring cell
The reading cell is emptied and flushed with clean water together with the entire hydraulic circuit. At the end the reading cell will be left full of clean water until the next measurement.

Calibration
The instrument is supplied with factory calibration, performed using certified standard solutions; however, the user has the possibility to change this calibration by acting directly on the coefficient $K$ (1,000 by default).

The coefficient “$k$” can be automatically determined by the instrument after making a measurement of known value, set in the “STANDARD” box.

Alternatively, the calibration can be changed by using an ABS/PPM correlation table (up to a maximum of 50 points).

**System composition**

1. Touch screen controller
2. Peristaltic pump for dosing reagents / sample / cleaning water
3. Sample/Cleaning water solenoid valves
4. Measuring cell
5. Sample inflow cell
6. Cleaning water tank
7. Reagent bottles
**Measuring cell**

The measuring cell consists of a thermostated aluminum coil inside of which is contained a test tube into which flows the liquid to be analysed.

A projector with LED sends a light beam that passes through the medium, while a photodiode, located on the opposite side of the projector relative to liquid to be analysed, receives the signal given by the emitted light beam, according to the Lambert-Beer law.

**Filtering system (OPTIONAL)**

In particular applications, it is necessary to perform a pretreatment of the sample to remove suspended particles present into the liquid to be analysed.

Chemitec can provide a filtration system at 100 μm, complete with self-cleaning system (with compressed air) disposed on perforated panel to be installed comfortably on the wall.
### Hardware features, software features and functions

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photometric range</td>
<td>2.5 Optical density</td>
</tr>
<tr>
<td>Precision</td>
<td>± 3 % of the full scale</td>
</tr>
<tr>
<td>Repeatability</td>
<td>90 % of the measure</td>
</tr>
<tr>
<td>Frequency of the analysis</td>
<td>Hourly or by step (20 minutes minimum)</td>
</tr>
<tr>
<td>Turbidity of the sample</td>
<td>Max 10 FTU/NTU. For higher turb, it’s recommended to use the filtration syst. (optional)</td>
</tr>
<tr>
<td>Liquid pressure</td>
<td>0.1±0.3 Atm. stable</td>
</tr>
<tr>
<td>H₂O or air pressure for filter washing</td>
<td>0.1±0.5 Atm. stable</td>
</tr>
<tr>
<td>Measuring sensor</td>
<td>Standard Silicon sensor with 17-bit digital converter</td>
</tr>
<tr>
<td>Wave length</td>
<td>445 + 800 nm with led</td>
</tr>
<tr>
<td>Light source</td>
<td>Led</td>
</tr>
<tr>
<td>Reading cell</td>
<td>made of PIREX® Ø 16 mm</td>
</tr>
<tr>
<td>Mixer</td>
<td>Reaction Coil in thermostated Aluminum</td>
</tr>
<tr>
<td>Dosage of reagents</td>
<td>Peristaltic pumps with variable speed</td>
</tr>
<tr>
<td>Hydraulic system cleaning</td>
<td>Automatic washing with distilled H₂O</td>
</tr>
<tr>
<td>Visualization</td>
<td>LCD 8.4 colour display</td>
</tr>
<tr>
<td>Data insertion</td>
<td>Resistive TOUCH SCREEN</td>
</tr>
<tr>
<td>Computer CPU</td>
<td>Atom with 4GB flash disk</td>
</tr>
<tr>
<td>Access to the system</td>
<td>through password</td>
</tr>
<tr>
<td>Archive</td>
<td>Circular, with date and value storage</td>
</tr>
<tr>
<td>Visualization of measures</td>
<td>Via SW it is possible to view the daily, weekly and / or monthly chart of all the archived measures</td>
</tr>
<tr>
<td>Data download</td>
<td>Possible via USB mass storage device</td>
</tr>
<tr>
<td>Set-Points</td>
<td>Two (2) ON-OFF programmable as min. or max. via SW</td>
</tr>
<tr>
<td>Output relay contacts</td>
<td>Max 2A 220V resistive load</td>
</tr>
<tr>
<td>Current output</td>
<td>0/4 + 20 mA programmable via software</td>
</tr>
<tr>
<td>Load</td>
<td>maximum 500 ohm</td>
</tr>
<tr>
<td>Serial interface</td>
<td>Two (2) ON-OFF programmable as min. or max. via SW</td>
</tr>
<tr>
<td>Calibration</td>
<td>Manual with activation from menu</td>
</tr>
<tr>
<td>Calibration curve</td>
<td>Creation of the calibration curve using a table from 2 to 50 points in which it is possible to enter arbitrary values</td>
</tr>
<tr>
<td>Dimensions (L x H x P)</td>
<td>1000 x 400 x 200 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>45 Kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>220 Vac 50 Hz (110Vac on request)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>100 W max</td>
</tr>
</tbody>
</table>