

# CA600 Series

## Online Colorimeters



The CA600 is an online sequential sampling analyzer, using colorimetric methods. The analyzer can be configured to most laboratory colorimetric tests in individual processes.

The CA600 Analyzers are easy to start up and use, simply connect the sample, waste and reagent lines and then power up the factory calibrated analyzer. Wall mount hardware is standard but an optional bench-top stand with reagent holder is also available. Accessing information for customizing an analysis routine is easily accomplished with the simple, user friendly menu structure and touch screen interface.

The analyzer has two separated enclosures with two lockable doors. The top enclosure, called the electrical enclosure, includes the main power supply, the controller PCB assembly and the touchscreen interface. The bottom enclosure, called the liquids enclosure, includes all the components involved in the sample and reagent flow, mixing and reaction stages (sampling pump, reagent micro pumps and colorimetric reaction cell). Numerous analysis configurations can be programmed, depending on the accessories and the number of micro-pumps mounted in the liquid enclosure.

The CA600 analyzer typically makes a single measurement per analysis cycle, although a user defined calibration or cleaning sequence can be added to proceed the measurement every "X" number of measurement cycles. A standard sequence would consist of a drain and rinse cycle, sample acquisition, addition of reagents, mixing time, waiting period and measurement. Higher range samples are accommodated using the optional dilution module.

The colorimetric analysis is based on the measurement of color formation in the sample after the addition of reagents. The absorbance of the solution is measured through a quartz reaction cell at a specific wavelength using a long life LED light source and a photometer. The absorbance is related to the sample concentration according to the Beer-Lambert Law.

The CA600 makes two measurements during an analysis cycle. The first measurement is of the raw sample which sets a baseline for the compensation of color, turbidity and optical characteristics of the cell. The second measurement occurs after the color forming reagents have been added to the sample, mixed and adequate time has passed to allow for color formation. The concentration is calculated using the difference between the two absorbance measurements and the stored calibration information in the analyzer.

Some measurements can be achieved with significant sample conditioning by using Ion Selective Electrodes (ISE). The CA600 can achieve the same measurement with less process alteration and less reagent used.

The CA600 analyzer home screen displays the measured parameter, the status, % reagent volumes, time and menu choices. The on screen HELP menu includes information on start up, shut down, start/stop commands, calibration, function list, programming, maintenance and troubleshooting. Outputs include two alarm relays and 4-20 mA channel.

## Specifications

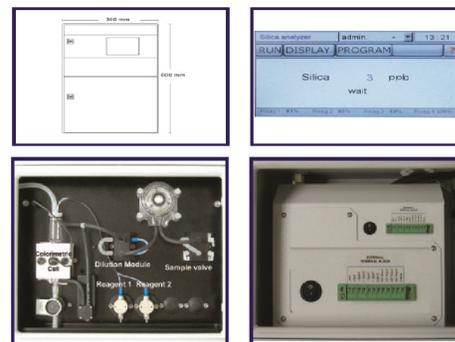
<b>Method</b>	Photometric differential absorbance
<b>Response Time</b>	Dependent on the colorimetric method
<b>Repeatability</b>	± 2% on absorbance value with turbidity < 80 NTU
<b>Drift</b>	± 2% per month on absorbance measurement
<b>Power</b>	110 - 220 VAC, 50/60 Hz, 80VA
<b>Mounting</b>	Wall mounting or with optional bench support
<b>Temperature</b>	41° to 122°F (5° to 50°C)
<b>Cabinet</b>	Cold rolled steel epoxy powder coated
<b>Dimensions</b>	15" L x 24" H x 8.25" D (380 x 600 x 210 mm)
<b>Weight</b>	37.5 lbs (~ 17 kg)
<b>Reagent Consumption</b>	Method dependent ~ 2500 tests per liter of reagent
<b>Analog Output</b>	4-20 mA
<b>Alarms</b>	(2) configurable relays
<b>Sample Pressure</b>	Inlet: Atmospheric Outlet: Atmospheric, Waste tube ~3/8"
<b>Sample Flow (for fast loop reservoir)</b>	100 - 500 ml/min
<b>Connections</b>	1/4" to fast loop reservoir

## Measurements Table

Parameter	Range A	Range B	Range C
Aluminum	0 - 150 ppb	0 - 500 ppb	0 - 20 ppm
Ammonia-Low	0 - 1,000 ppb	0 - 2,000 ppb	0 - 80 ppm
Ammonia-High	0 - 15 ppm	0 - 25 ppm	0 - 1,000 ppm
Chloride	5 - 500 ppb / 0 - 50 ppm	0 - 100 ppm	0 - 5,000 ppm
Chlorine (Free)	0 - 2 ppm	0 - 5 ppm	0 - 200 ppm
Chlorine (Total)	0 - 2 ppm	0 - 5 ppm	0 - 200 ppm
Chromium VI	0 - 300 ppb	0 - 1 ppm	0 - 40 ppm
Chromium VI w/ CRK	0 - 600 ppb	0 - 2 ppm	0 - 80 ppm
Chromium (Total)	0 - 2 ppm	0 - 4 ppm	0 - 150 ppm
Copper	0 - 1 ppm	0 - 3 ppm	0 - 150 ppm
Cyanide	0 - 100 ppb	0 - 200 ppb	0 - 15 ppm
Formaldehyde	0 - 100 ppb	0 - 2 ppm	0 - 50 ppm
Hardness	0 - 500 ppb	0 - 1 ppm	0 - 50 ppm
Hydrazine	0 - 250 ppb	0 - 500 ppb	0 - 20 ppm
Iron Ferrozine	0 - 250 ppb	0 - 500 ppb	0 - 10 ppm
Iron O-Phenanthroline	0 - 3 ppm	0 - 7 ppm	0 - 200 ppm
Manganese LMG	0 - 100 ppb		0 - 4 ppm
Manganese PAN	0 - 200 ppb	0 - 1,000 ppb	0 - 50 ppm
Monochloramine	0 - 2.5 ppm	0 - 5 ppm	0 - 200 ppm
Nickel	0 - 3 ppm	0 - 6 ppm	0 - 200 ppm
Nitrite as NO <sub>2</sub>	0 - 1.6 ppm	0 - 3.2 ppm	0 - 120 ppm
Nitrite as N-NO <sub>2</sub>	0 - 500 ppb	0 - 1,000 ppb	0 - 40 ppm
Nitrite as NO <sub>3</sub>	0 - 1.3 ppm	0 - 2 ppm	0 - 25 ppm
Nitrite as N-NO <sub>3</sub>	0 - 400 ppb	0 - 650 ppb	0 - 80 ppm
Permanganate	0 - 2.5 ppm	0 - 5 ppm	0 - 200 ppm
Phenol	0 - 1 ppm	0 - 5 ppm	0 - 250 ppm
PO <sub>4</sub> (Blue)	0 - 12.5 ppm	0 - 30 ppm	0 - 1,200 ppm
P-PO <sub>4</sub> (Blue)	0 - 4 ppm	0 - 10 ppm	0 - 400 ppm
PO <sub>4</sub> (Yellow)	0 - 30 ppm	0 - 50 ppm	0 - 2,000 ppm
P-PO <sub>4</sub> (Yellow)	0 - 10 ppm	0 - 16 ppm	0 - 640 ppm
Phosphate & TP (Blue), as P	0 - 5 ppm	0 - 10 ppm	0 - 300 ppm
Phosphate & TP (Yellow), as P	0 - 8 ppm	0 - 16 ppm	0 - 400 ppm
Silica	0 - 1 ppm	0 - 5 ppm	0 - 150 ppm
Sulfate	0 - 50 ppm	0 - 150 ppm	0 - 5,000 ppm
TP (Blue) as P	0 - 5 ppm	0 - 10 ppm	0 - 300 ppm
TP (Yellow) as P	0 - 10 ppm	0 - 20 ppm	0 - 400 ppm
Zinc	0 - 1 ppm	0 - 2.5 ppm	0 - 125 ppm

### Features

- Easy installation
- User friendly menu structure touchscreen interface
- Easy process configuration
- Epoxy powder coated, rugged cold rolled steel cabinet
- Two separate compartments (Electronics & Hydraulics)
- Loss of sample & low reagent alarms
- Low maintenance
- Adjustable cycle time to minimize reagent usage





# TELEDYNE ANALYTICAL INSTRUMENTS

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