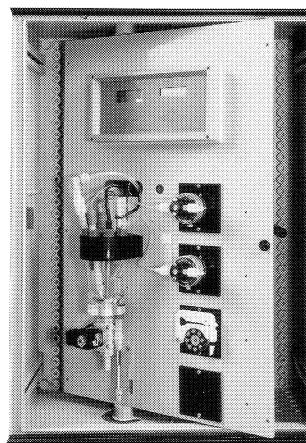


Free and total alkalinity analyser

Model 8810



Applications

- Free and total alkalinity monitoring in boiler feedwater
- Total alkalinity monitoring in cooling water
- Control of lime decarbonatation process efficiency (2 p-m analysis)

Methodology

- **Measurement principle:** Free and total alkalinity are key chemical parameters of water alkalinity; water alkalinity is due to bicarbonate ions (HCO_3^-), carbonates (CO_3^{2-}) and hydroxyls ions (OH^-) presence. They are determined by potentiometric titration with a standard acid solution.
- **Unit:** $1\text{d}^\circ\text{F} = 10 \text{ mg/l of CaCO}_3$
- **Electrodes:** pH and reference (Pt100 for temperature compensation)
- **Titration end-points:** pH = 8.2 for free alkalinity; pH = 4.3 for total alkalinity
- **Measurement range:** 0–50 d°F (0 - 500 mg/l CaCO_3)
- **Detection limit:** 0.1 d°F
- **Titration reagent:** Nitric acid 0.1 N
- **Calibration solution:** calcium carbonate (CaCO_3)
- **Analysis frequency:** Programmable - 1 analysis every 5 min. max

Advantages

- Automatic calculation of p-m, 2p-m, etc.
- Standard laboratory method
- No sample filtration (if any suspended particles < 1% and < 1 mm)
- Easy to setup
- Automatic reactor cleaning after each cycle: electrode life is extended, reactor manual cleaning is occasional
- Automatic calibration (optional): allows drift adjustments
- 2 analog outputs 0/4–20 mA for free and total alkalinity concentrations
- If only one parameter is measured (free or total), the second analog output is assigned to pH sample measurement (before titration)
- Monthly maintenance only



Operating principle

The drain valve and the rinse valve open, allowing rinse water to clean the reactor for a programmed time (see figure).

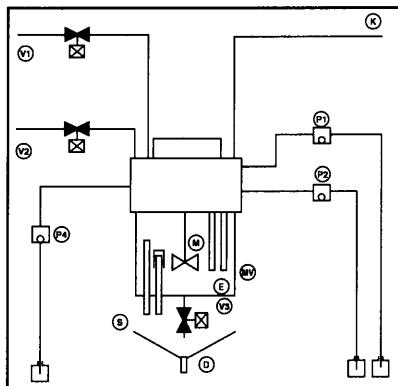
After the rinse valve closes, the sample valve opens while the drain valve stays open a few seconds in order to flush any remaining rinse water droplets with fresh sample solution.

The drain valve closes and the sample volume is accurately adjusted with the siphon.

The titration pumps are used for the titration.

The action times of the titration pumps are directly proportional to the concentrations of FREE

ALKALINITY and TOTAL ALKALINITY at the equivalent points.



V1 : Rinse valve	P4 : Volumetric pump (automatic calibration)	S : Siphon/overflow tube
V2 : Sample valve	D : Drain	P1 : Titration pump (free alkalinity)
V3 : Drain valve	M : Stirrer	P2 : Titration pump (total alkalinity)
MV : Reactor	E : Electrodes/Pt100	K : Electrode cable

Specifications

SAMPLE

Number of sample streams: 1, up to 6 with optional sequencer model 8811
Sampling mode: cyclic, programmable
Sample temperature: 0–50°C (32–122°F)
Sample pressure: 0.5–6 bar (7.2–87psi)
Sample flowrate: 50–300 l/h
Flush water pressure: 1–6 bar (14.5–87 psi)
Air instrument: 5–7 bar (72.5–101.5 psi)

INSTALLATION

Mounting: 19" panel-or wall-mount unit or free-standing cabinet
Sample tubing: 12/14 mm
Flush water: tubing 6/8 mm
Air instrument: tubing 4/6 mm

ANALYSIS

Analysis cycle: ≈ 5 min.
Cycle time: programmable 999 min. max.

Units: ppm, ppb, mg/l-programmable

Accuracy: ± 2%

Reproducibility: < 3%

Calibration: manual, process or automatically programmable

OUTPUTS

Analog outputs:

Two 0–4/20 mA signal galvanically isolated

Alarms:

3 relays: system alarm, low limit/high limit

Control:

1 sample level detector

1 reagent level detector

1 calibration solution level detector

RS232 output

Remote start/stop

E.M.C.: This instrument conforms to European Directive 89/336/CEE concerning electromagnetic compatibility.

System configuration

FREE/TOTAL ALKALINITY ANALYZER BASIC INSTRUMENTS

P/N 368810,xxxxx:

8810 FREE/TOTAL ALKALINITY ANALYZER 19" panel-mount unit includes:

- Titration vessel /sprinkler
- Measuring pH electrode/Reference electrode/Pt100
- One reagent pump for free alkalinity titration

P/N 368810,7xxxx : Additional reagent pump for total alkalinity titration

OPTIONS

- P/N 368810,60000: Automatic calibration
- P/N 368810,56000: Chemical cleaning
- P/N 368810,76000: Automatic heating device/controller
- P/N 368810,65000: Manual sample entry system
- P/N 368810,40000: Fiberglass enclosure, wall-mount
- P/N 368810,45000: Steel cabinet, floor-mount
- * Reagent pumps are either peristaltic or micropiston (24V/50HZ or 24V/60HZ)
- * The product can be configured with different frequency/voltage:
- 220V/50HZ - 240V/50HZ - 110V/50HZ - 110V/60HZ

Distributor

Monitoring and Treatment
PML
Systems for Industry.

Process Technology

pmlprocess.com

Tel: (905) 206-9514 Fax: (905) 282-9903

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