

HI 84431

Total Titratable Alkalinity Titrator
with pH and Temperature Measurement Capability



ISO 9001:2000 Certified

 **HANNA**[®]
instruments
With Great Products, Come Great Results™
www.hannainst.com



HI 84431

Total Titratable Alkalinity Titrator
with pH and Temperature Measurement Capability

- User-friendly interface
- Dedicated HELP key
- Simple to operate
- Log on demand up to 100 samples (50 for pH measurement; 50 for titration results)
- GLP feature, to view last calibration data for pH electrode and pump
- PC interface via USB connection



Peristaltic Pump

The HI 84431 features a precision, peristaltic based titrant delivery system. Titrant only makes direct contact with the titrant tubing and not the pump interior virtually eliminating titrant contamination and ensuring a long pump operating life.

Total Titratable Alkalinity Measurement

The HI 84431 is an automatic titrator designed for easy, fast and accurate analysis of Total Titratable Alkalinity in water. Potentiometric endpoint determination, peristaltic titrant delivery and integrated magnetic stirring systems eliminate the error and technique dependent results associated with manual titrations.

The accuracy of the instrument is ensured by performing a peristaltic pump calibration using the provided HANNA standard. The HI 84431 endpoint determination algorithm analyzes the pH vs. volume curve to determine the exact pH endpoint and performs the necessary calculations. The results are displayed in mg/L CaCO₃ or meq/L CaCO₃ units on the graphic display.

An intuitive interface makes the instrument simple to use. A dedicated HELP key guides the user through set-up and calibration sequences, reports instrument status and aids in troubleshooting.

HI 84431 features include: log on demand for up to 100 samples (50 pH measurements, 50 titration results), GLP compliance and PC interface via USB.

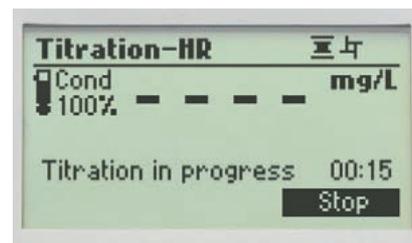
Principle of Operation

The HI 84431 determines the total titratable alkalinity in water by potentiometric titration. As titrant is slowly added to the sample solution the pH and temperature are carefully monitored. The software analyzes the resulting pH curve and determines the volume of titrant required to reach the endpoint.

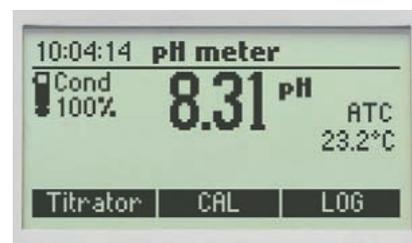
Titration are conducted using the low range reagent (10 to 500 mg/L as CaCO₃) or the high range reagent (400 to 4000 mg/L as CaCO₃).



2 Instruments in One



The HI 84431 is a single parameter titrator designed to measure total acidity in a few easy steps. The HI 84431 displays the results directly on the screen in user selectable units.



The HI 84431 also features a pH meter. The HI 84431 also displays the electrode condition on the LCD.

Measurement Significance

Total Titratable Alkalinity is a measure of primarily three types of alkalinities present in a water sample: hydroxide, carbonate and bicarbonate. Alkalinity in water can be the result of contributions from common chemicals including carbonate, bicarbonate, hydroxide, phosphates, borate and organic acid salts.

The alkalinity of a water sample indicates the ability to resist pH change, mostly due to the bicarbonate/carbonate buffer. A low alkalinity level indicates that the water is susceptible to pH changes. While a high alkalinity level indicates that the water will be able to resist pH changes. Alkalinity can also be used to determine the corrosive capacity of water and water hardness.

There are two accepted methods for the determination of alkalinity by titration (according to The Standard Methods for the Examination of Water and Wastewater). The HI 84431 incorporates these two methods and has a built-in pH meter:

- Strong alkalinity determination by titration of the water sample with strong acid standard to 8.3 pH (known as phenolphthalein alkalinity).
- Total alkalinity determination by titration of the water sample with strong acid standard to 4.5 pH. (known as bromocresol green alkalinity).

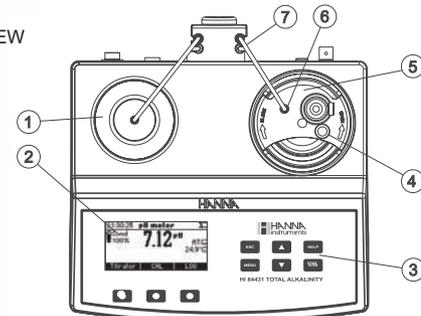
The dispensed titrant volume is used to automatically calculate the water alkalinity, which can be displayed in mg/L CaCO₃ or meq/L.



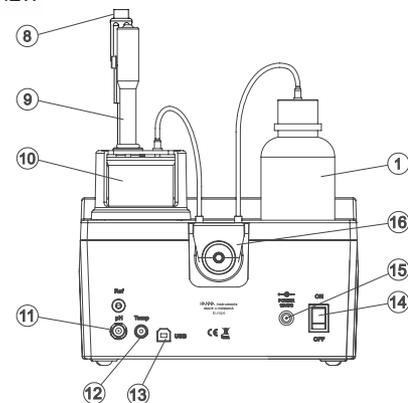
HI 84431

Total Titratable Alkalinity Titrator
with pH and Temperature Measurement Capability

TOP VIEW



REAR VIEW



- | | |
|---|------------------------------|
| 1. Titrant bottle | 8. Temperature probe |
| 2. Graphic LCD | 9. pH Electrode |
| 3. Keypad | 10. Beaker |
| 4. Dedicated guide tube for temperature probe | 11. BNC electrode connector |
| 5. Electrode holder | 12. Temperature probe socket |
| 6. Dedicated guide tube for titrant tip | 13. USB connector |
| 7. Peristaltic pump tube | 14. Power switch |
| | 15. Power adapter connector |
| | 16. Peristaltic pump |

SPECIFICATIONS

HI 84431

Range	Titratable Alkalinity (Low Range)	mg/L : 10.0 - 500.0 mg/L as CaCO ₃ meq/L : 0.2 - 10.0 meq/L
	Titratable Alkalinity (High Range)	mg/L : 400 - 4000 mg/L as CaCO ₃ meq/L : 8 - 80 meq/L
	pH	-2.0 to 16.0 pH / -2.00 to 16.00 pH
	Temperature	-20.0 to 120.0 °C (-4.0 to 248.0 °F)
Resolution	Titratable Alkalinity (Low Range)	0.1 mg/L; 0.1 meq/L
	Titratable Alkalinity (High Range)	1 mg/L; 1 meq/L
	pH	0.1 pH / 0.01 pH
	Temperature	0.1 °C
Accuracy	Titratable Alkalinity (Low Range)	5% of reading
	Titratable Alkalinity (High Range)	5% of reading
	pH	± 0.01 pH
	Temperature	±0.4 °C without probe error
Titration Method		Acid-base titration (total alkalinity)/(strong alkalinity)
Titration Principle		End point titration: 4.5 pH / 8.3 pH
Pump Volume		0.5 mL/min
Stirring Speed		600 rpm
pH Temperature Compensation		manual or automatic from: -20 to 120 °C (-4 to 248 °F)
Logging	Titration	Up to 50 samples
	pH	Up to 50 samples
pH Calibration		1, 2 or 3 point calibration; 3 available buffers (4.01; 8.30; 10.01)
pH Electrode		HI 1131B (included)
Temperature Probe		HI 7662-M (included)
Environment		0 to 50 °C (32 to 122 °F); max 95% RH non-condensing
Power Supply		12 Vdc power adapter
Dimensions/Weight		208 x 214 x 163 mm (8.2 x 8.4 x 6.4") (with beaker)/2200 g (77 oz.)

ORDERING INFORMATION

HI 84431-01 (115V) and **HI 84431-02** (230V) are supplied with HI 1131B pH electrode, HI 7071 filling solution (30 mL), HI 7662-M temperature probe, HI 84431-50 titrant low range (100 mL), HI 84431-51 titrant high range (100 mL), HI 84431-55M pump calibration solution (230 mL), HI 7061 cleaning solution, HI 7004M pH 4.01 buffer solution (230 mL), HI 70083M pH 8.30 buffer solution (230 mL), HI 7010M pH 10.01 buffer solution (230 mL), 100 mL beakers (2), tube set with dispensing tip, Stir bars (medium 2 pcs.), 12 Vdc power adapter, Instruction manual and quick reference guide.

ACCESSORIES

- HI 84431-50** Titrant solution for low range (100 mL)
- HI 84431-51** Titrant solution for high range (100 mL)
- HI 84431-55M** Pump calibration solution (230 mL)
- HI 84431-70** Reagents kit for low and high range (about 150 titrations)
- HI 84431-71** Reagents kit for low range (about 150 titrations)
- HI 84431-72** Reagents kit for high range (about 150 titrations)
- HI 70483M** Tube set with cap for titrant bottle and tip
- HI 731319** Stir bar, 25 x 7 mm (10 pcs)
- HI 731342** Pipette for automatic dosage 2000 µL
- HI 731352** Tip for 2000 µL graduated pipette (4pcs.)
- HI 731341** Pipette for automatic dosage 1000 µL
- HI 731351** Tip for 1000 µL graduated pipette (25pcs.)



With Great Products, Come Great Results™

www.hannainst.com