

Models 260 and 270 Titration Controllers

Powerhouse titration controllers. These instruments not only perform coulometric Karl Fischer titrations on samples with mere micrograms of moisture content, they can perform up to 4 titrations simultaneously, thanks to separate interconnectable Titration Modules.

Denver Model 270 Multi-Mode Meter and Titration Controller

- Multiple measurement modes: pH, ISE, mV, Conductivity, and temperature °C
- Controls up to 4 coulometric KF titrations at once
- Direct concentration readout in any units - plus 8 indirect known-addition type ISE methods
- Multi-line LCD shows all data
- Time/date stamp on printout meets GLP requirements

Multiple modes make this the most powerful instrument in the Denver line. The 270 controller can keep busy measuring 3 channels of electrode inputs while you wait for titrations to complete. Both models let you view titration progress from all titrators at the touch of a key or, with Model 270, follow titrations while measuring samples in other modes. Whatever measurement you require, you get research-grade accuracy and reproducibility. And results can be fully documented, via computer or printer.

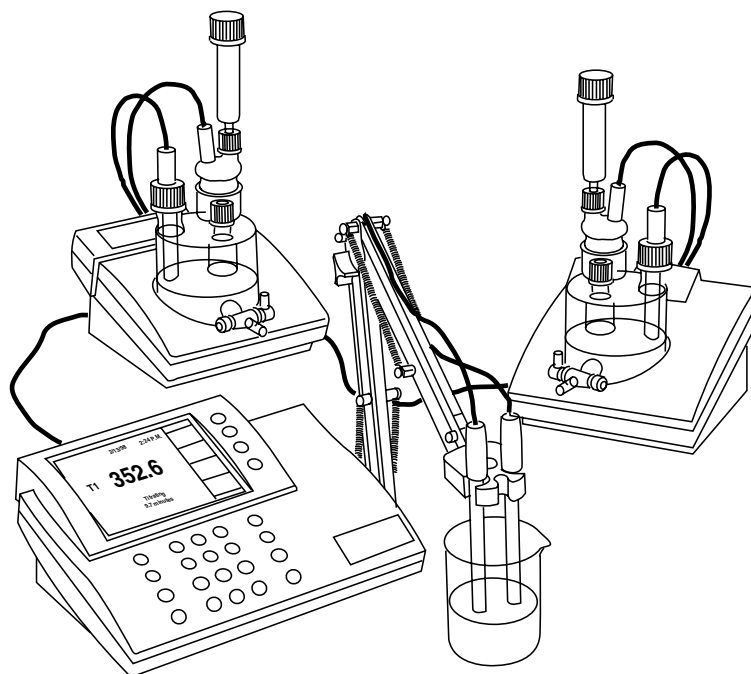
Even better, you can use Model 270 in up to four modes at the same time: perform conductivity, salinity, TDS or resistivity measurements on one channel; test on a second channel for pH; concentration on a third; and have the instrument automatically perform and record data for KF titrations in the fourth channel! You get research-grade precision in each mode, while you save time, money and bench space. It's like having a labful of precision electrochemical meters in a single, compact instrument.

Rapid, multiple titrations. Just connect one or more Denver 275KF Coulometric KF Titration Modules (ordered separately -- see facing page) to either Model 260 or 270 to determine water content in petrochemicals, pesticides, detergents, foods, pharmaceuticals, chemicals, solvents and more. The system determines moisture content based on the amount of current required to generate the proper amount of iodine to react precisely with water in a sample. Maximum titration rate is 3,500 µg/minute.

Microprocessor control for superb simplicity in operation. Both models are programmed to prompt you at every step. Use the sealed keypad to enter parameters, including sample identification, interface requirements for optional printer and balance, endpoint persistence interval, endpoint slope control, extraction/sample introduction time, solvent blank, and stirrer speed.

Built-in software automatically dries the reaction cell before and between titrations, and prompts you to enter sample weights manually or transfer weights automatically from a balance.

During titration, the system compensates for drift -- moisture leakage into the cell -- and continuously monitors the KF titration. Advanced microprocessor control measures titration current and checks for the endpoint every 0.002 seconds. If electrode response indicates exhaustion of the KF reagent, the system displays a warning message.



When the titration is complete, the system calculates the result and displays total weight of water in the sample in µg, mg, %, ppm or mg/L (w:v) moisture. Up to 10 customized procedures can be stored and easily recalled.

Model 270 MultiMode Controller offers incredible versatility -- with four precise measurement modes. The 270 is not just a KF titration controller -- it's a complete laboratory for electrochemical analyses. Because, in addition to titration control, it offers other measurement modes:

- Conductivity Mode that covers 0 to 3×10^5 in 5 sub-ranges, readout in mS/cm or µS/cm, and measurement of salinity, resistivity and TDS
- Ion Mode with a range of 9.99×10^9 to 1.00×10^{-9} and direct readout in any units, plus 8 indirect modes
- pH Mode with selectable resolution to 0.001pH
- mV Mode with a range of ± 1800.0 mV, absolute or relative, and even direct temperature readout in °C, °F or °K

The big LCD keeps you abreast of all operations at all times. Select titration mode for a full-screen graphical display of titration progress. Then bring up a conductivity measurement to the VGA resolution display. Switch channels to add an ISE measurement -- with your titration is still displayed. Even switch to a 4-window display to track pH, concentration, conductivity, and titration measurements simultaneously.

The Model 270 MultiMode Controller comes with an electrode support arm, glass-body combination pH/ATC electrode and operating manual. The Model 260 Titration Controller comes with power supply and operating manual.

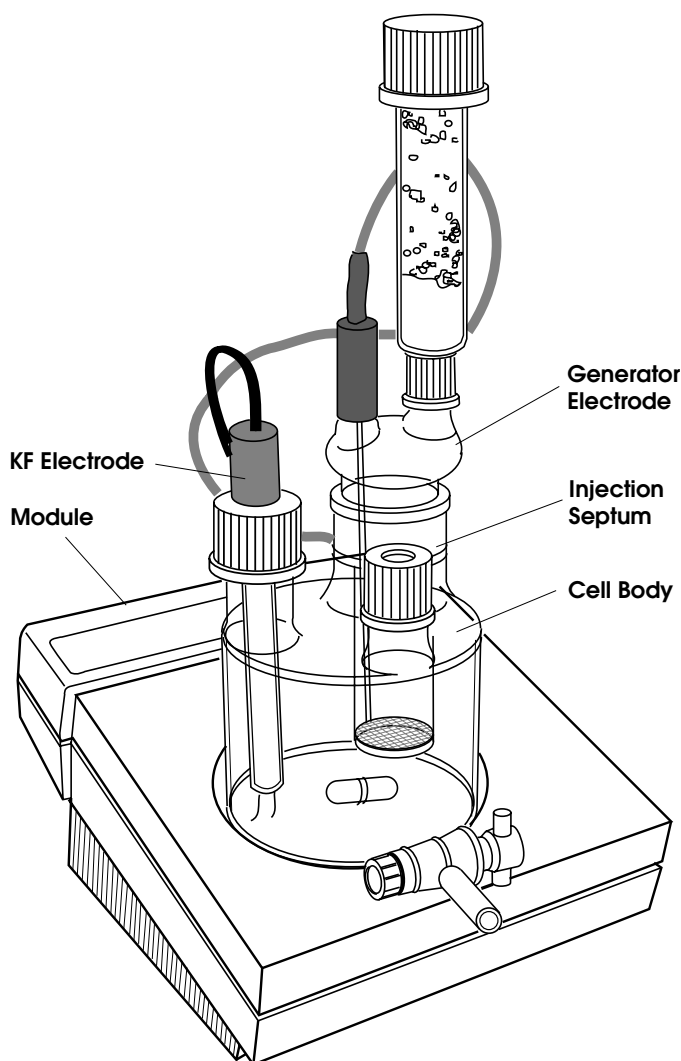
Controllers measure 8L x 10-1/8W x 3-1/2H (20 x 26 x 9cm). Net weight, 4 3/8 lb. Order Denver Coulometric KF titrator modules separately -- see information on following page.

Model 270 Controller/MultiMode Meter
Model 260 Controller

Cat. No.
02-226-129
02-226-125

Model 275KF Coulometric KF Titration Module

Microprocessor-controlled by either Denver Model 260 or 270 Titration Controller. Receives commands from the controller for stirrer operation, transfer of weights (entered manually or transferred from an optional balance), testing of the KF reagents, and autozero of the reaction cell's moisture content -- then titrates to completion automatically and signals the controller when titration is done. Continuously monitors the KF electrode during titration, updating control settings, measuring titration current and checking for titration endpoint every 0.002 seconds. Titration progress and results are displayed on the controller's display panel. Rear connections permit hook-up to an optional balance and connection of additional titrator modules for multiple titrations. Anode/cathode are easily installed and removed and is independently replaceable. Samples are injected into cell directly through the septum. All glass cell features low background moisture leakage



Specifications and Ordering Information

Titration Mode	
Range	10µg to 20mg H ₂ O
Accuracy	±2µg or ±0.5%
Resolution	0.1µg
Rate	3500µg H ₂ O /min. (maximum)
Endpoint Control	0 to 99 sec. persistence time and 0 to 9.9 µg/sec. slope (programmable)
Capacity	1000mg H ₂ O (for single charge reagents)
Displays	4.8"W x 3.6"H Backlit VGA resolution
Titration	Full-screen display of titration progress
Measurement Information	3/4"H single channel, 5/16"H dual channel
Menus	1/8"H for date, time, temperature, standards
Help Screens	Guide user through all modes and procedures
Keypad Controls	Context-sensitive aid for keys and procedures
Data Memory Points	Sealed; audible entry
Power-on Self-test	250; 10 year backup
Error Messages	Yes
Data Output	Yes
Alarm	On demand; when stable; at selected intervals at titration completion
	High/low set points for all modes

Additional Modes

	Model 270 Multi-Mode Meter/Controller	Model 260 Titration Controller
Conductivity Range	0 to 3 x 10 ⁵ , ±0.5% µS/cm	—
Salinity Ranges	0 to 70ppt NaCl equiv. salinity; ±0.5%, 0 to 42 ppt Practical Salinity; ±0.5%	—
Resistivity	30 to 100 megohm*cm; ±0.5%	—
pH	-2.000 to 20.000; ±0.002	—
Ion	1.00 x 10 ⁻⁹ to 9.99 x 10 ⁻² ; ±0.17n%	—
mV	±1800.0; ±0.1	—
Temperature	-5.0° to +105.0°C; ±0.3°C	—
Inputs	RS-232-C to computer; two BNC/pin (for pH/ISE/mV); two ATC; conductivity/ATC	RS-232-C to computer
I/O	RS-232-C to computer or printer; serial network to titrator modules	RS-232-C to computer or printer; serial network to titrator modules
Outputs	Two mV channels buffered electrode outputs to analog recorder	

Denver's No-Nonsense, Two-Year Warranty. Simply stated, should any Denver titration controller or system fail to perform to specification within the stated two-year warranty period, it will be repaired or replaced at no charge.

Model 275KF includes:

Assembly includes titration module with stirrer, titration cell, generator electrode assembly, dual platinum KF indicator electrode, controller interface cable, power supply and operating manual.

Model 275KF

Titration Accessories, Model 275KF

Coulometric Cell with KF Electrode	13-635-110A
Coulometric Cell (w/o electrode)	13-635-110B
Coulometric Cell Body	13-635-110C
Coulometric Cell Generator Assembly	13-635-110D
Injection Septum (10/pkg.)	13-635-110G
Interface Cable for M/A Series Balances	13-635-110F
Interface Cable for DI Series Balances	13-635-110E

Cat. No.

02-226-133



Denver Instrument Company

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