

# Thermo Scientific Orion Star T900 Series Laboratory Titrators

Potentiometric titrators for performing  
automated pH, redox, or ion titrations



# Thermo Scientific Orion Star T900 Series Titrators

## Automate titrations for simple accuracy

For more than 50 years, we have been a driving innovator and global leader in liquid sensing technology designed to make complex measurements routine, reliable, and accurate – in the lab, online and in the field.

Food and Beverage

Environmental

Water

Wastewater

Industrial

Consumer Products

Academic

Research

Electrochemistry technology coupled with a state-of-the-art reagent dispensing system to create a modern, simplified automated titrator designed to make performing titrations easier, more reliable, more reproducible and faster than manual titrations. The automated titrators expand the number of ions and compounds that can be measured beyond direct electrode analysis and offer dynamical process controls that adjust the titration to optimize analysis results.

Thermo Scientific™ Orion Star™ T900 series titrators are designed to:

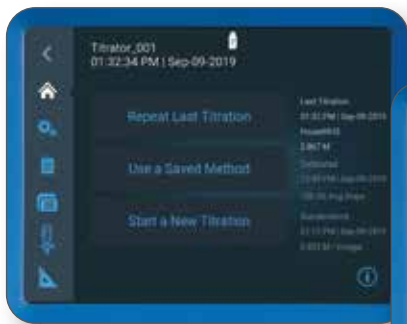
- Increase laboratory productivity by automating titrations
- Offer easy-to-use navigation from setup to live titration analysis to data transfer
- Showcase onscreen instructions, help menus and titrations on large color graphic touchscreen
- Create and save up to ten custom user-defined methods or use preprogrammed protocols

Include Thermo Scientific Orion Star T900 series automated titrators in your lab workflow and see what reliable, reproducible, accurate results can do for your work. The analysis capabilities of these titrators combined with their simplicity make them an ideal partner for your expanding laboratory.

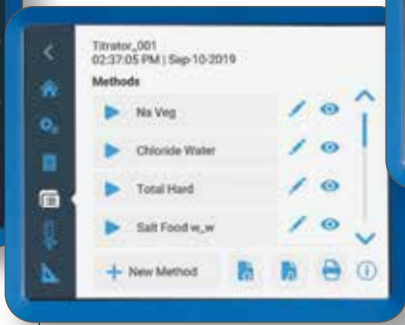
### Orion Star T900 Series Laboratory Titrator Family

- Orion Star T910 pH Titrator
- Orion Star T920 Redox Titrator
- Orion Star T930 Ion Titrator
- Orion Star T940 All-in-One Titrator





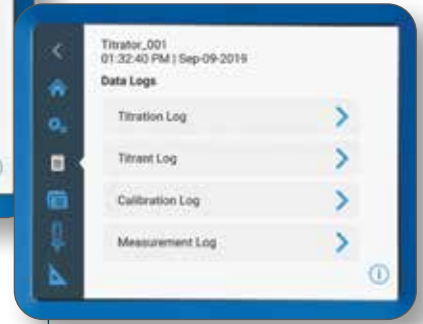
Large, easy-to-view, lab glove compatible touchscreen display with onscreen instructions and help menus enables fast, easy setup and operation.



Customizable methods save electrode, titrant and sample titration settings so routine procedures can be repeated without additional setup or pre-work and methods can be shared among titrators using a USB flash drive.



Automated titrant delivery system with high-accuracy burette and dispenser provides consistent results and automatic results calculations simplifies analysis and reduces computational errors.



Internal data storage maintains a history of sample titrations, titrant standardizations, electrode calibrations and direct measurements – all with date and time stamp – to preserve critical data and facilitate easy data transfer to an external device.

## Titrators Focused on Ease of Operation



Simple data transfer to printer, USB flash drive or computer software so critical data can be easily exported to view, share and meet GLP or SOP requirements.





# Durable Titrators with Rugged Designs



Titrator connections are simple to use with clearly labeled functions, including three USB ports for printer, USB flash drive, and computer software connections.



Easy to install and replace parts minimize downtime with replaceable burettes, tubing, dispenser and additional high-wear components.



Robust electrode holder provides secure, smooth electrode movement throughout the measurement process.



Paired with premium ROSS pH electrode, Orion redox and Orion ion selective electrode technology to provide a complete measurement system optimized for accurate, reproducible sample analysis.

Bottle holder helps secure titrant to prevent spills and can be easily disconnected from the titrator for flexible placement on the lab bench.

Color-coded tubing and connectors simplify tubing installation and maintenance.

Stirrer probe provides consistent sample mixing, helps prevent damage to electrodes and is easy to rinse between samples.





Orion Star T900 series automated titrators offer a reliable, easy to use solution for your potentiometric titration needs at a budget-friendly price. Their compact, rugged design delivers high value in a small bench space. A large, intuitive touchscreen provides easy access to a library of methods, customizable for your sample needs. Internal data storage makes maintaining titration history simple, and exporting data to a printer or external drive seamless. Include Orion Star T900 series automated titrators in your lab workflow and watch reliable, reproducible, accurate results take your work to the next level.

	Orion Star T910 pH Titrator	Orion Star T920 Redox Titrator	Orion Star T930 Ion Titrator	Orion Star T940 All-in-One Titrator
Titration Technique	Equivalence point or preset endpoint			
Incremental Technique	–	–	Multiple known addition (MKA)	
Equivalence Points	1 or 2			
Preset Endpoints	1, 2 or 3			
Multiple Known Addition Points	–	–	Up to 5	
Titration Types	Direct or back titration			
Blank Options	Fixed value or variable value using titration			
Cycles Per Titration Run	Up to 5 cycles, option to exclude cycle results from average results and RSD calculations			
Titrant Determination	Standardization titration or manual concentration input			
Titration Process Control	Routine, quick, careful or user defined			
Titration Precision	±0.5 % RSD, dependent on environment and handling conditions			
Stirrer Probe Speeds	5 selectable speeds, 250 to 3700 RPM			
Sample ID	Auto-incremental, manual or off			
Titration Setup Wizard	Yes, using Start a New Titration workflow			
Customizable Methods	Up to 10 methods with optional password protection			
Methods Transfer	Import/export via USB flash drive, summary to computer software or compact printer			
Data Logs	Sample titration, titrant standardization, calibration, direct measure – 100 data sets each			
Data Log Export	CSV or Report (PDF) file			
Time and Date	Yes, with nonvolatile battery backup			
Direct Measure Modes	pH	Redox	Ion Selective Electrode (ISE)	pH, Redox, ISE
Calibration Modes	1 to 5 point pH	1 point relative mV	1 to 5 point ISE	1 to 5 point pH, 1 point relative mV, 1 to 5 point ISE
Temperature Input	Manual or automatic with optional 1 point ATC probe offset calibration			
Display Type	5.7" color capacitive touchscreen, 640 x 480 resolution, with adjustable backlight and lab glove compatibility			
Audible Notifications	Titration Cycle Complete, Maximum Titrant Volume, Data Log Full, Calibration Due, Maintenance Reminder			
Updateable Firmware	Yes, using USB flash drive			
Burette Sizes	10 mL, 20 mL (included), 50 mL – meet ISO8655-3 requirements			
Burette Resolution	Advanced micro-step technology provides 25,600 micro-steps per motor revolution for smooth and precise burette positioning (2 million micro-steps over full burette stroke range)			
Burette Functions	Automatic rinse cycles for flushing and discrete dispense volume with continuous option			
Certifications	CE, TUV 3-in-1, FCC, EN/EIC61326-1, IEC 61010, IP-51			
Weight and Dimensions	12.5 lbs, 10" x 16" x 14" (L x W x H); 5.67 kg, 25.4 cm x 40.6 cm x 35.6 cm (L x W x H)			
Power Requirements	100 to 240 V, 50/60 Hz			
Titrator Warranty	1 year			

## Orion Star T910 pH Titrator

Use the Orion Star T910 pH titrator for dedicated acid-base titrations including titratable acidity of juices and wines, acidity of food products, alkalinity of waters, acidity and alkalinity of consumer products, total acid number (TAN) and total base number (TBN). Titration techniques include equivalence point titrations and preset pH endpoint titrations for versatile sample analysis. Pair the titrator option with any of our premium ROSS pH electrodes or select one of our preconfigured titrator and electrode kits for a bundled discount.

The 8102BNUWP ROSS Ultra pH electrode and 927007MD stainless steel ATC temperature probe are ideal for most standard pH titrations including preset endpoint titrations that include temperature. The 8172BNWP ROSS Sure-Flow pH electrode is designed for challenging samples that can clog standard pH electrodes or that require a fast-flowing sleeve-type junction.



Cat. No.	Description
START9100	Orion Star T910 pH titrator, includes 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.
START9101	Orion Star T910 pH titrator standard ROSS kit, includes 8102BNUWP ROSS Ultra pH electrode, 927007MD ATC probe, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.
START9102	Orion Star T910 pH titrator ROSS Sure-Flow kit, includes 8172BNWP ROSS Sure-Flow pH electrode, 927007MD ATC probe, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.

## Orion Star T920 Redox Titrator

Use the Orion Star T920 redox titrator for dedicated redox titrations including sulfite/SO<sub>2</sub> and reducing sugar in juice and wine, ascorbic acid (vitamin C) and peroxide value in food products, dissolved oxygen in wastewater by Winkler titration and organic matter in soil. Titration techniques include equivalence point titrations and preset mV endpoint titrations for versatile sample analysis. Pair the titrator option with any of our premium Orion redox electrodes or select our preconfigured titrator and electrode kit for a bundled discount. The 9778BNWP redox electrode is ideal for most standard redox titrations with its robust glass body for chemical resistance in a variety of samples.



Cat. No.	Description
START9200	Orion Star T920 redox titrator, includes 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.
START9201	Orion Star T920 redox titrator kit, includes 9778BNWP glass-body redox electrode, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.

## Orion Star T930 Ion Titrator

Use the Orion Star T930 ion titrator for dedicated ion concentration titrations including salt in food products, calcium in juice and milk, total hardness of drinking water and wastewater, chloride in drinking water and wastewater, ammonia and Total Kjeldahl Nitrogen (TKN) of wastewater and surfactants in consumer products. Titration techniques include equivalence point titrations and preset mV endpoint titrations plus multiple known addition (MKA) mode. Using MKA mode, the titrator performs an automated calibration and calculation of sample concentration by adding aliquots of standard to sample, removing the need for a separate calibration and minimizing matrix effects. Pair the titrator option with any of our premium Orion ion selective electrodes or select our preconfigured titrator and electrode kits for a bundled discount.



Cat. No.	Description
START9300	Orion Star T930 ion titrator, includes 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.
START9301	Orion Star T930 ion titrator chloride/salt kit, includes 9780SC silver billet electrode, 91CBNC electrode cable, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.
START9302	Orion Star T930 ion titrator chloride multiple known addition (MKA) kit, includes 9617BNWP chloride electrode, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, pint bottle cap, computer cable, literature on USB drive, 110-240 V power supply.
START9303	Orion Star T930 ion titrator sodium multiple known addition (MKA) kit, includes 8611BNWP ROSS sodium electrode, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, pint bottle cap, computer cable, literature on USB drive, 110-240 V power supply.
START9304	Orion Star T930 ion titrator ammonia multiple known addition (MKA) kit, includes 9512HPBNWP high performance ammonia electrode, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, pint bottle cap, computer cable, literature on USB drive, 110-240 V power supply.
START9305	Orion Star T930 ion titrator surfactant kit, includes 9342BN surfactant electrode, 900200 reference electrode, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.
START9306	Orion Star T930 ion titrator total hardness kit, includes 9720BNWP calcium electrode, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.

## Orion Star T940 All-in-One Titrator

Use the Orion Star T940 all-in-one titrator for flexible pH, redox and ion concentration titrations including equivalence point titrations, preset pH or mV endpoint titrations plus multiple known addition (MKA) mode for automated known addition of various ions. Pair the titrator option with any of our premium ROSS pH electrodes or Orion redox and ion selective electrodes or select one of our preconfigured titrator and electrode kits for a bundled discount.



Cat. No.	Description
START9400	Orion Star T940 All-in-One titrator, includes 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.
START9401	Orion Star T940 All-in-One titrator standard ROSS kit, includes 8102BNUWP ROSS Ultra pH electrode, 927007MD ATC probe, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.
START9402	Orion Star T940 All-in-One titrator ROSS Sure-Flow kit, includes 8172BNWP ROSS Sure-Flow pH electrode, 927007MD ATC probe, 20 mL burette, stirrer probe, dispenser probe, tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supply.



## Orion Star T900 Series Titrator

### Prioritize Lab Throughput

Start the titration and let the instrument run unattended until the titration is complete so you can focus on other tasks.

### Fast Setup Time

Setup and save electrode, titrant and titration parameters once using methods and then access up to ten methods as needed without any additional setup – methods allow the same test protocols to be used by multiple operators for impressive productivity and consistent test results.

### Minimal Cost and Downtime

Easily replaceable titrator parts minimize maintenance downtime while long lasting electrodes may reduce the cost of ownership.

### Our Support

Email and phone technical support, application notes and technical sales resources.

### Securely Document Test Results

View results live, in the summary table and within the 100 point data log – also easy to transfer results for long term data retention using printer, computer or USB flash drive.

### Accurate, Reproducible Results

Automating the titration workflow enables analysis to be run using the same setup parameters and calculations every time.

### Applications Database

Tested and validated preprogrammed methods can be loaded onto your titrator and used as a template for fast, easy creation of custom user-defined methods.



To view all of our titrators, accessories and reagents, visit [thermofisher.com/titrator](http://thermofisher.com/titrator)

Ask your local technical sales representative about our service offering for the Orion Star T900 series titrators including calibration certification, validation and maintenance programs, start-up and installation assistance, IQ/OQ documentation and extended warranty options, available through Thermo Fisher Scientific and select channel partners.

Find out more at [thermofisher.com/titrator](http://thermofisher.com/titrator)

[wlp.techsupport@thermofisher.com](mailto:wlp.techsupport@thermofisher.com)