

## Automate ion concentration titrations for simple accuracy

Potentiometric titrator for accurate ion titrations with easily reportable results.



### Markets

- Food and Beverage
- Environmental
- Water
- Wastewater
- Industrial
- Consumer Products
- Academic
- Research

The Thermo Scientific™ Orion Star™ T930 ion titrators are designed to increase your laboratory productivity by automating titrations. Our core electrochemistry technology is integrated with a state-of-the-art reagent dispensing system to create modern, simplified automated titrators designed to make performing titrations easier, more reliable and more reproducible than manual titrations.

Use the Orion Star T930 ion titrator for dedicated ion concentration titrations and multiple known addition (MKA) testing including:

- Chloride/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
- 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.

### This compact titrator is designed to:

- Offer easy-to-use navigation from setup to live titration analysis to data transfer
- Showcase titrations, onscreen instructions and help menus on a large color graphic touchscreen display
- Create and save up to ten user-defined methods
- Save up to 100 titration data sets with date/time stamp
- Facilitate data transfer to printer, computer or USB drive

# Durable Titrators with Rugged Design

## Benefits of Orion Star T930 Ion Titrator:

- **Accurate, Reproducible Results:** Automating the titration workflow enables analysis to be run using the same setup parameters and calculations every time.
- **Fast Setup Time:** Setup and save electrode, titrant and titration parameters once using methods.
- **Prioritize Lab Throughput:** Start the titration, and let the instrument run unattended.
- **Minimal Cost and Downtime:** Easily replace titrator parts to minimize maintenance downtime while long lasting electrodes may reduce the cost of ownership.
- **Securely Document Test Results:** View results live, in the summary table and within the 100-point data log.
- **Applications Database:** Tested and validated preprogrammed methods can be easily loaded onto your titrator via USB flash drive.



Titrator connections have clearly labeled functions, including three USB ports for printer, USB flash drive, and computer software connections.



Minimize downtime with easy-to-install and easy-to-replace burettes, tubing, dispenser and additional high-wear components.



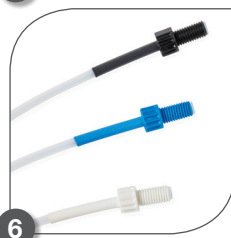
Electrode holder provides secure, smooth electrode movement throughout the measurement process.



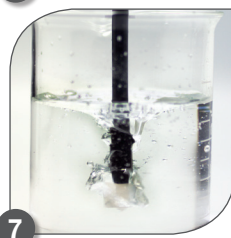
Pair with premium Orion ion selective electrode technology to provide a complete measurement system optimized for accurate, reproducible sample analysis.



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.

## Product Specifications

### Orion Star T930 Ion Titrator

|   |   |
|---|---|
| <b>Titration Technique</b>                                | Equivalence point or preset endpoint  |
| <b>Equivalence Points</b>                                 | 1 or 2  |
| <b>Preset Endpoints</b>                                   | 1, 2 or 3   |
| <b>Multiple Known Addition Points</b>                     | Up to 5   |
| <b>Titration Types</b>                                    | Direct or back titration  |
| <b>Blank Options</b>                                      | Fixed value or variable value using titration   |
| <b>Cycles Per Titration Run</b>                           | Up to 5 cycles with option to exclude cycles from average results and RSD calculations  |
| <b>Titrant Determination</b>                              | Standardization titration or manual concentration input   |
| <b>Titration Process Control</b>                          | Routine, quick, careful or user defined   |
| <b>Titration Precision</b>                                | ±0.5 % RSD, dependent on environment and handling conditions  |
| <b>Stirrer Probe Speeds</b>                               | 5 selectable speeds, 250 to 3700 RPM  |
| <b>Sample ID</b>  | Auto-incremental, manual or off   |
| <b>Titration Setup Wizard</b>                             | Yes, using Start a New Titration workflow   |
| <b>Methods</b>  | Up to 10 customizable methods with optional password protection   |
| <b>Methods Transfer</b>                                   | Import/export via USB flash drive, summary to computer software or compact printer  |
| <b>Data Logs</b>  | Sample titration, titrant standardization, calibration, direct measure – 100 data sets each   |
| <b>Data Log Export</b>                                    | CSV or Report (PDF) file, short or long format  |
| <b>Time and Date</b>                                      | Yes, with nonvolatile battery backup  |
| <b>Direct Measure Mode</b>                                | Ion concentration with mV and temperature   |
| <b>ISE Range / Resolution / Relative Accuracy</b>         | 0.0001 to 19990<br>0.0001 minimum, 1 to 4 significant digits (user selectable)<br>±0.2 mV or ±0.05% of reading, whichever is greater  |
| <b>ISE Calibration Mode</b>                               | 1 to 5 point  |
| <b>mV Range / Resolution / Relative Accuracy</b>          | -2000.0 to +2000.0 mV /<br>0.1 mV /<br>±0.2 mV  |
| <b>Temperature Range / Resolution / Relative Accuracy</b> | -5.0 to 100.0 °C; 23.0 to 212 °F /<br>0.1 °C; 0.1 °F /<br>±0.2 °C   |
| <b>Temperature Input</b>                                  | Manual or automatic with optional 1 point ATC probe offset calibration  |
| <b>Display Type</b>                                       | 5.7" color capacitive touchscreen, 640 x 480 resolution, with lab glove compatibility   |
| <b>Display Backlight</b>                                  | Yes, adjustable   |
| <b>Languages</b>  | Chinese, English, French, German, Italian, Japanese, Korean, Portuguese, Spanish  |
| <b>Audible Notifications</b>                              | Titration Cycle Complete, Maximum Titrant Volume, Data Log Full, Calibration Due, Maintenance Reminder  |
| <b>Updateable Firmware</b>                                | Yes, using USB flash drive  |
| <b>Burette Sizes</b>                                      | 10 mL, 20 mL (included), 50 mL  |
| <b>Burette Resolution</b>                                 | 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) |
| <b>Burette Dosing Accuracy</b>                            | Meets ISO8655-3 requirements  |
| <b>Burette Functions</b>                                  | Automatic rinse cycles for flushing and discrete dispense volume with continuous option   |
| <b>Certifications</b>                                     | CE, TUV 3-in-1, FCC, EN/IEC 61326-1, IEC 61010, IP-51   |
| <b>Dimensions</b>   | 10" x 16" x 14" (L x W x H); 25.4 cm x 40.6 cm x 35.6 cm (L x W x H)  |
| <b>Weight</b>   | 12.5 lbs; 5.67 kg   |
| <b>Power Requirements</b>                                 | 100 to 240 V, 50/60 Hz  |
| <b>Warranty</b>   | 1 year  |





Expand the functionality of your Orion Star T930 ion titrator with key accessories designed to help increase your lab productivity. Easy to install replacement parts minimize maintenance downtime and ensure your Orion Star T930 ion titrator is ready for sample analysis.

- Pair the Orion Star T930 ion titrator with any premium Orion ion selective electrode or for a bundled discount, select a preconfigured titrator and electrode kit.
- The 9780SC silver billet electrode with 91CBNC electrode cable are ideal for potentiometric halide determinations including chloride and precipitation titrations.

| Ordering Information |   |
|----------------------|---|
| Cat. No.             | Description   |
| <b>STARA-106</b>     | Orion compact ink ribbon printer, 100-240 V                     |
| <b>START-B10</b>     | Orion Star T900 series 10 mL burette                            |
| <b>START-B20</b>     | Orion Star T900 series 20 mL burette                            |
| <b>START-B50</b>     | Orion Star T900 series 50 mL burette                            |
| <b>START-TB1</b>     | Orion Star T900 series standard tubing kit                      |
| <b>START-TB2</b>     | Orion Star T900 series light blocking tubing kit                |
| <b>START-TB4</b>     | Orion Star T900 series burette tubing                           |
| <b>START-TB5</b>     | Orion Star T900 series reagent bottle tubing                    |
| <b>START-TB6</b>     | Orion Star T900 series dispenser tubing                         |
| <b>START-BT1</b>     | Orion Star T900 series 1 L plastic bottle                       |
| <b>START-BT2</b>     | Orion Star T900 series 1 L glass amber bottle                   |
| <b>START-BT3</b>     | Orion Star T900 series 1 L plastic bottles, 12 pack             |
| <b>START-BT4</b>     | Orion Star T900 series 1 L glass amber bottles, 12 pack         |
| <b>START-CP1</b>     | Orion Star T900 series GL38 reagent bottle cap                  |
| <b>START-CP2</b>     | Orion Star T900 series GL45 reagent bottle cap                  |
| <b>START-CP3</b>     | Orion Star T900 series cap for Orion 475 mL (pint) bottles      |
| <b>START-DS1</b>     | Orion Star T900 series dispenser probe                          |
| <b>START-DVK</b>     | Orion Star T900 series dispense verification kit                |
| <b>START-B00</b>     | Orion Star T900 series burette cover                            |
| <b>START-BT0</b>     | Orion Star T900 series reagent bottle holder                    |
| <b>START-EH1</b>     | Orion Star T900 series electrode holder assembly                |
| <b>START-EH2</b>     | Orion Star T900 series stopper for electrode holder             |
| <b>START-EH3</b>     | Orion Star T900 series cable management accessory               |
| <b>START-PS1</b>     | Orion Star T900 series 110 V US/Japan power supply              |
| <b>START-PS2</b>     | Orion Star T900 series 220 V Euro power supply                  |
| <b>START-PS3</b>     | Orion Star T900 series 240 V UK/Singapore power supply          |
| <b>START-PS4</b>     | Orion Star T900 series 230 V Australia/New Zealand power supply |
| <b>START-PS5</b>     | Orion Star T900 series 220 V China power supply                 |
| <b>START-TB3</b>     | Orion Star T900 series drying tube                              |
| <b>START-UM1</b>     | Orion Star T900 series user manual on USB                       |
| <b>START-USB</b>     | Orion Star T900 series USB computer cable                       |
| <b>START-VK1</b>     | Orion Star T900 series valve replacement kit                    |

| Ordering Information |  |
|----------------------|--|
| Cat. No.             | Description  |
| <b>START9300</b>     | Orion Star T930 ion titrator, includes 20 mL burette, stirrer probe, dispenser probe, standard tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supplies   |
| <b>START9301</b>     | Orion Star T930 ion titrator chloride/salt kit, includes 9780SC silver billet electrode, 91CBNC electrode cable, 20 mL burette, stirrer probe, dispenser probe, standard tubing kit, 1 L plastic bottle, GL38 bottle cap with drying tube, computer cable, literature on USB drive, 110-240 V power supplies |

## Water and Lab Products

**Australia:** (613) 9757-4300 In Australia: (1300) 735-295 **China:** (86) 21-6865-4588  
**Germany:** (49) 6184-90-6321 **India:** (91) 22-6716-2261/2247 **Japan:** (81) 045-453-9175  
**North America:** 1-978-232-6000 Toll Free: 1-800-225-1480 **Singapore:** (65) 6778-6876

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