

# Automatic Titration System

## RSolv-3090-C

The RSolv-3090-C Automatic Titrator complements our wide range of products dedicated to efficient and accurate laboratory analysis. The RSolv-3090-C potentiometric titrator can perform acid/base, redox (ORP), complexometric, precipitation, non-aqueous, argentometric and ion selective titrations. This powerful titrator dispenses the titrant, detects the endpoint and performs all necessary calculations and graphs automatically. In addition to titration mode, the RSolv-3090-C also operates as a fully functional pH, mV/ORP and ion selective electrode (ISE) meter. This titrator is supplied with a pack of standard methods or you can create your own. Methods (standard or user) can be easily transferred between titrators via USB flash drive or PC application.



### Titration Capabilities

#### Dynamic Titrant Dosing:

The dynamic dosing feature allows for timely and accurate titration results by relating the titrant volume dosed to the mV response from the titration reaction. This provides for larger doses near the beginning of a titration and smaller, more precise doses near the titration endpoint.

#### Signal Stability Timing:

The signal stability feature monitors when the mV response of the titration reaction stabilizes before providing the next titrant dose. This ensures reliable measurement values throughout the length of a titration.

#### Equivalence Endpoint Detection:

Equivalence endpoint detection is critical in applications where fixed endpoints are not specified in standard methods. This endpoint indicates where the mV response from the titration is greatest with respect to the volume of titrant dosed.

#### Multiple Titration Types:

Paired with the right electrode from our sensor line, our potentiometric titrator can perform acid/base, redox (ORP), complex precipitation, non-aqueous, argentometric and titrations with an ion selective electrode.

### Methods of Analysis

#### Customizable Methods:

The RSolv-3090-C can store up to 100 user-defined or standard titration methods. Each method may be customized and optimized for performance based on application and user requirements.

#### Titration Method Support:

On-site installation, training and customization is available from one of our applications or service experts. Riki Global offers continued support via phone or webinar for any questions you might have along the way.

#### Market Specific Methods Packs:

Riki Global offers titration method packages for various markets including food, beverage, dairy, wine and more. Ask our Sales Consultants about which methods in our library are available for your specific needs.

#### Adaptable Standard Methods

Our technical experts can program and customize standard methods developed by such affiliations as ISO, ASTM, AOAC, AOCS,

EPA and more directly onto your titrator. Ask our Sales Consultants which standard methods are possible with our RSolv-3090-C system



## Burettes and Dosing System

### Exchangeable Burette System:

With Riki's Clip-Lock Burette, it only takes a few seconds to exchange titrants and reagents, preventing cross-contamination and saving time.

### Multiple Burette Sizes:

The RSolv-3090-C comes standard with a 25ml Burette but may be equipped with a 5mL, 10ml, or 50ml Burette. Each Burette is constructed with a ground glass syringe and chemically resistant PTFE plunger.

### Precision Dosing Pump:

Our unmatched 40000 step piston driven pump is capable of dosing extremely small and precise volumes of titrant or reagent. Burette validation certificate is traceable to NIST.

### Chemically Resistant Tubing:

Aspiration and Dispensing Tubes are constructed of durable, chemically resistant PTFE and feature a light-blocking polyurethane outer sleeve to protect light sensitive reagents.

### Flexibility:

The titrator offers support for two Buretters, which allows you to switch between titrants effortlessly.

## Interface and Display

### Detailed Titration Graphs:

A real-time titration curve can be displayed during each titration; this feature is useful when new methods are tested or when a procedure requires optimization.

### Interactive Color Display:

A large, color LCD screen clearly shows the chosen titration method along with results, units, titration volume, temperature and mV values. The RSolv-3090-C also offers multi-language support.

### Simple and Quick Navigation:

Virtual key selections present on the display allow for simple and quick navigation between screens and menus without getting lost in a nest of information.

## Data and Storage

### Customizable Titration Reports:

Each titration report is fully customizable so users can ensure they are storing and filling the appropriate data required for their application and procedures.

### Flexible GLP Management

All necessary GLP (Good Laboratory Practice) information can be recorded with each sample including: sample identification, company and operator name, date, time, electrode ID codes, and calibration information.

### Effortless Data Transfer

Data can easily be transferred to a USB flash drive or PC with the RSolv-3090-C application software. The USB port allows for the transfer of titration methods, titration reports, and software upgrades via USB flash drive.

## Connectivity and Functionality



### Multifunctional with Four Working Modes:

The RSolv-3090-C functions as a titrator, pH meter, mV/ORP meter and ISA meter. Valuable laboratory bench space is saved, and multiple analysis can be performed on one sample.

### Multiple Connections (RSolv-3090-C only)

The titrator offers device support for two analog boards, which allows two electrodes and two stirrers to be simultaneously connected to one unit.

### Multiple Peripherals

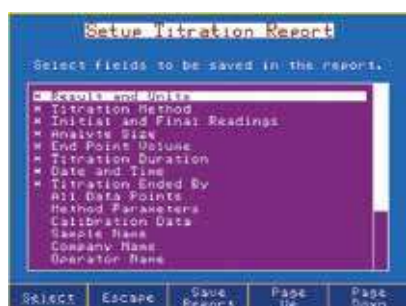
Users can print reports directly from the titrator using a standard parallel printer. An external monitor and keyboard may be attached for added versatility, as well as an analytical balance for automatic sample mass entry for titrations.

## Versatile Data Management

RSolv-3090-C titration system can be easily incorporated into any existing GLP data management program:

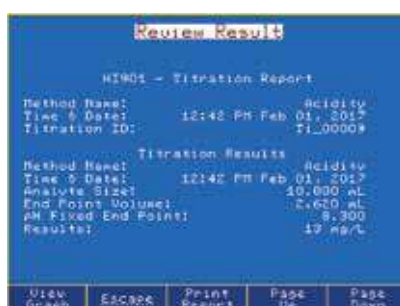
Easily record all necessary GLP information with every sample, such as sample identification, company and operator name, date, time, electrode ID codes and calibration information.

- Data can be transferred to a PC using RSolv-3090-C software
- The USB port allows for the easy transfer of methods, reports and software upgrades via USB flash drive.
- Users can print reports of analyses directly from the titrator using a standard parallel printer
- An external monitor and keyboard can be attached for added versatility



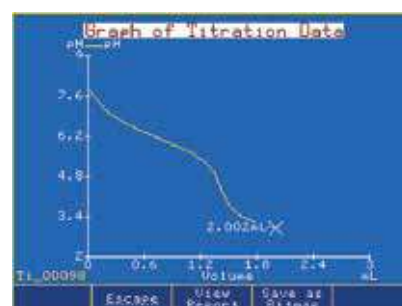
### Customizable reports

Data to be stored in titration reports is fully customizable



### Titration reports

Titration or pH/mV/ISE results can be viewed on-screen or transferred to a USB flash drive or PC

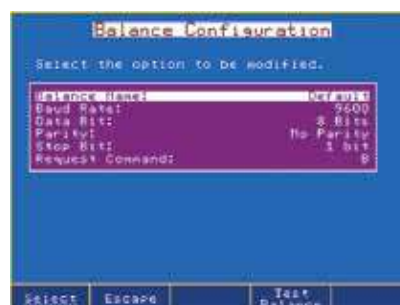


### Titration graphs

Titration graphs can be viewed on-screen or saved as images and transferred along with titration report



Fully customizable titration methods.



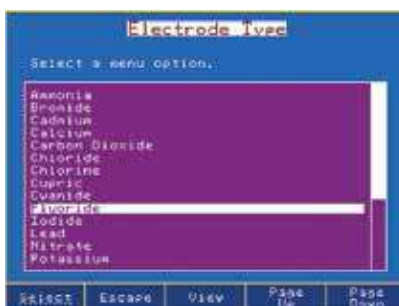
Fully configurable balance interface.



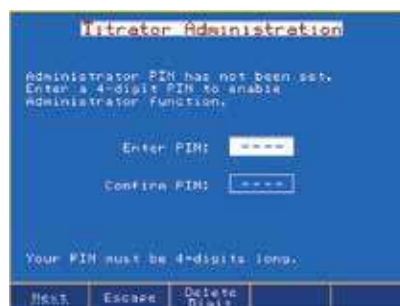
Up to five-point pH calibration with automatic buffer recognition



Relative mV calibration allows for a mV offset



Selectable ISEs preprogrammed with molecular weight and ion charge.



A 4-digit numeric PIN can be set to prevent unauthorized changes from being made.

## Technical Specifications

Specifications		RSolv-3090-C1	RSolv-3090-C2
pH	Range	-2.0 to 20.0 pH; -2.00 to 20.00pH; -2.000 to 20.000pH	
	Resolution	0.1; 0.01; 0.001pH	
	Accuracy (@25°C/77°F)	±0.001pH	
	pH Calibration	up to five-point calibration, eight standard buffers and custom buffers	
mV	Range	-2000.0 to 2000.0	
	Resolution	0.1mV/0.1µA	
	Accuracy (@25°C/77°F)	±0.1mV	
	mV Calibration	single point offset	
ISE	Range	1-10 <sup>-6</sup> to 9-99.10 <sup>10</sup>	
	Resolution	1; 0.1; 0.01	
	Accuracy (@25°C/77°F)	±0.5% monovalent; ±1% divalent	
	ISE Calibration	up to five-point calibration, seven standard solutions and five user-defined standards	
Temperature	Range	-5.0 to 105.0°C; 23.0 to 221.0°F; 268.2 to 378.2K	
	Resolution	0.1°C; 0.1°F; 0.1K	
	Accuracy (@25°C/77°F)	±0.1°C; ±0.2°F; ±0.1K, excluding probe error	
Additional Specification	Temperature Compensation	manual (MTC) or automatic (ATC)	
	Analog Board(s) Each Analog Board Provides: 1) BNC (pH/mV/ISE) input, 2) Reference Input, 3) temperature Input, 4) Stirrer Input	1	2
	Analog Board(S) Capacity	1	2
	Dosing PumpCapacity	2	2
	Burette Included	1 (25 mL)	1 (25 mL)
	Burette Size Capability	5, 10, 25, 50mL	
	Burette Resolution	1/40000	
	Display Resolution	0.001mL	
	Dosing Accuracy	+0.1% of full burette volume	
	Methods	load up to 100 methods (standard and use-defined)	
	Potentiometric titrations	acid-base, redox, precipitation, complexometric, non-aqueous, argentometric	
	Measurement Units	user-specified expression of concentration units to suit specific calculation requirements	
	Burette Auto-Detection	burette size is automatically recognized when inserted into the pump unit	
	Programmable Stirrer	Overhead propeller type, 200-2500RPM, resolution 100RPM	
	Polarized Sensor	0 ... ±2000 mV / 0 ... ±80µA	
	Measurement range:	Resolution: : 0.1 mV / 0.1 µA	

Endpoint determination	equivalence point (1st or 2nd derivative) or fixed pH/mV value
Real Time & Stored Graphs	mV-volume or pH-volume titration curve, 1st derivative curve or 2nd derivative curve pH mode, mV mode or ISE mode: pH/mV/concentration versus time
Display	5.7" (320 x 240 pixel) backlit color LCD
Languages	English, Portuguese, Spanish
Data Storage	up to 100 titration and pH/mV/ISE reports
USB Host (Side)	flash drive compatibility for transfers of methods and reports
Peripherals (Rear)	connections for VGA display, PC-keyboard, parallel printer, USB device input, RS232
GLP Conformity	instrumentation data storage and printing, capabilities
Operation Environment	10 to 40°C (50 to 104°F), up to 95%RH
Storage Enviroment	-20 to 70°C (-4 to 158°F), up to 95% RH
Power	100-240 VAC "-10" models, US plug (type A); "-2" models, European plug (type C)
Dimentions	390x350x380mm (15.3x13.8x14.9 in)
Weight	approxomately 9 kg (20 ibs.) with one pump, stirrer and sensors



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