

Karl Fischer Titrator MA - 101C

APPLICATIONS

Pharmaceuticals

Cosmetics

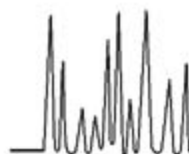
Organic Chemicals

Inorganic Chemicals

Petrochemicals

Food & Beverages





SPECTRALAB

Analytical Approach to Analytical Instruments

Web : www.spectralabinst.com

Karl Fischer Titrator MA - 101C

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Karl Fischer titration is an accurate, fast and most efficient method for determining the moisture content in samples. When the sample is titrated in the presence of SO_2 , I_2 , and an organic base, moisture from the sample gets extracted in the solvent. However, moisture from gases and liquids gets easily dissolved in methanol. Therefore, specially dried methanol is used as a solvent in Karl Fischer titration.



Constant Polarising Current Source

A Dual Platinum electrode is used across which a constant current is generated by a polarizing current source. For starting titration very low volume of dried methanol is needed in the vessel with a capacity

of 150 or 250ml .

Automatic addition of Kf Reagent

Kinetically controlled doses of Karl Fischer reagents are added to the solution in a hermetically sealed vessel as per stop criteria selected and the end-point volume is evaluated automatically. The instrument is continuously monitoring drift in the vessel and neutralizes it automatically.

Reagent standardisation as per USP 23/921

The built in reagent standardization procedure by water (H_2O) or Sodium Tartrate ($C_4H_4Na_2O_6 \cdot 2H_2O$) for KF Titer / concentration is in compliance with USP 23/921.

Inert liquid handling path

The liquid handling path comprises of Teflon tubing, Teflon three way valve, and a gas tight syringe with Teflon piston. It creates a chemically inert system for this highly sensitive analysis.

Magnetic Stirrer for Homogenous Mixing

The magnetic, adjustable speed stirrer is a part of the system in which a sample is stirred vigorously to extract the moisture efficiently.

Automatic drift compensation

Even very small samples can be analyzed, as we have facility of auto drift compensation. It increases accuracy

Result printouts in various formats

The result, including drift, is printed in tabulated form and is displayed on back lighted liquid crystal display (LCD) screen.

FEATURES

▲ Advanced Microcontroller based userfriendly

SPECIFICATIONS

● Burette : 20ml Interchangeable

state-of-the-art product design with alphanumeric splash proof soft touch keyboard. User interactive software in a dialogue mode for easy operation with protection against invalid entries. Quit and back keys for better user interaction.

Quick interchangeable burette assembly with intelligent recognition for its volume. Burette calibration factor for correction to true end point volume.

51 user methods. Out of which Five standard methods which are not editable / deletable.

Report printouts giving Sample Id., Sample Name, with Date and Time for authentication. Auto incremented Run Number. Factory entered Customer Name & Instrument Sr. No. for GLP compliance.

3 modes of titration : Blank, Titer, and Sample

Result units : % w/w, % w/v & ppm

Selectable report format (for GLP Compliance)

- * Document report * Brief report
- * Parameter report * Statistics report

* Reports can be obtained even after power failure

Statistics function for mean, standard deviation and linearity of last five titrations

Real Time Clock (RTC) for date & time printout of titration time . Display of pretitration stir time.

Built - in standardization procedure for Water /Sodium Tartrate (as per USP) . Moisture in oil as per ASTM method

Quick monitoring, and automatic neutralization of drift into vessel to keep ready for next titration

End point delay up to 99 sec for the samples releasing moisture slowly

Data down loading facilities to PC. 21 CFR Part II compliance

Burette resolution	: 1/20,000 or 0.001 ml .
Filling time	: less than 20 sec.
Data Memory	: Non volatile
End point Detection	: Voltametric
Measuring Range	: 10µg to 500 mg Water
KF Delivery	: Stepper Motor driven Piston Burette
End Point Potential	: Adjustable
End Point Time	: 1 to 99 sec
Dosing	: Kinetically controlled volumes & delay times.
Programmability	: 51 User Methods.(5 default)
Result units	: %w/w , %w/v, ppm , mg/ml
Drift	: Manual or Automatic compensation
Reporting	: Drift report, Brief report, Parameter report, report in document format last 3 results in Titer mode & 10 in sample mode in Tabular format.
Interface	: PC, Printer, and Balance.
Power	:
Dimension	:
Weight	:



SPECTRALAB Karl Fischer Titrator
Model MA 101C
as per specifications (Refer above)

Standard Accessories

- * KF Electrode : 1 No.
- * KF Vessel (150 ml) : 1 No.
- * Manual : 1 No.
- * Mains Cord : 1 No.

Optional Accessories
(Please order as per requirement)

compliance.

- Microcontroller based variable speed, magnetic stirrer with digital indication.

Note : Printer or PC to be procured separately. However, interface for both is built in.

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Various formats for printouts are available . Printouts can be selected as per the requirement. Some of sample printouts are shown here.

DOCUMENT REPORT

SPECTRALAB		SPECTRALAB	
ORGANISATION	:	SPECTRALAB	
KF TITRATOR	MA - 101C		
LOCATION :	THANE		
DATE : 01/12/05		TIME: 09:35	

SAMPLE NAME	:	PUDIN HARA	
SAMPLE NUMBER	:		
BATCH NUMBER	:	01	
REMARKS	:		
OPERATOR	:	SHILPA T	
SIGNATURE	:		
Selected Parameters			
KF	TITNo	:	1
Sample Mode			
Br.Fact	:	1.000	
Dose 1	:	00.020ml	
Dose 2	:	00.010ml	
Dose 3	:	00.001ml	
Dose 4	:	00.001ml	
Wait 1	:	00sec	
Wait 2	:	00sec	
Wait 3	:	00sec	
Wait 4	:	02sec	
Ep Delay	:	10sec	
Stir Time	:	005sec	
Dynmv1	:	1500.0mV	

RESULT REPORT

DATE : 01/12/05		TIME: 09:35	
KF	TITNo	:	1
Sample Mode			
KF Titer	:	06.1747mg/ml	
Total.Wt	:	01.00000 gms	
Holder Wt	:	00.00000gms	
Sample Wt	:	01.00000gms	
Blank	:	00.0000, l	
Duration	:	0064sec	
Drift	:	000ug/min	
Initial mV	:	0758mV	
EpmV	:	0635mV	
EpmL	:	00.4010ml	
Ep_Blank	:	00.4010ml	
Moist	:	002.47605mg	
% Moist	:	0000.247%(w /w)	

PARAMETER REPORT

KF	TITNo	:	1
Sample Mode			

Dynmv2	1000.0mV
Dynmv3	700.0mV
+ Window	660.0mV
EpMv	650.0mV
- Window	600.0mV
Result Report	
KF Titer	06.1747mg/ml
Total.Wt	01.00000 gms
Holder Wt	00.00000gms
Sample Wt	01.00000gms
Blank	00.0000,l
Duration	0064sec
Drift	000ug/min
Initial mV	0758mV
EpmV	0635mV
EpmL	00.4010ml
Ep_Blank	00.4010ml
Moist	002.47605mg
% Moist	0000.247%(w/w)

Br.Fact	1.000
Dose 1	00.020ml
Dose 2	00.010ml
Dose 3	00.001ml
Dose 4	00.001ml
Wait 1	00sec
Wait 2	00sec
Wait 3	00sec
Wait 4	02sec
Ep Delay	10sec
Stir Time	005sec
Dynmv1	1500.0mV
Dynmv2	1000.0mV
Dynmv3	700.0mV
+ Window	660.0mV
EpMv	650.0mV
- Window	600.0mV

DRIFT REPORT

SPECTRALAB
 ORGANISATION : SPECTRALAB
 KF TITRATOR MA - 101C
 LOCATION : THANE
 DATE :01/12/05 TIME: 09:35

Drift Report

DATE 20/02/06 TIME : 10:12

Drift Time 00:10

Drift No.	µg/min
01	0000
02	0000
03	0000
04	0021
05	0000
06	0000
07	0025
08	0000
09	0019
10	0000
11	0000
12	0033
13	0000
14	0000
15	0018
16	0023
17	0000
18	0000
19	0025
20	0000

DRIFT

For slow moisture releasing samples, the titration time is required to keep very long. Although the vessel is airtight & the possibility of external moisture entering is very low, still for further accurate measurement drift correction is vital. The instrument is capable of monitoring the drift. A record of time vs drift can be obtained and if necessary automatic correction can be applied using titration time & drift in mgs/min.

COMPUTER LINK



Computers and laboratory data management system are becoming more and more wide spread. The MA 101C is optimally equipped to transmit the results to PC via its RS 232C interface. The transfer of data to PC is in compliance with 21 CFR part II.

SYSTEM LINEARITY

SPECTRALAB
 ORGANISATION : SPECTRALAB
 KF TITRATOR MA 101C

LOCATION : THANE

DATE : 01/12/05 TIME : 09:35

System Linearity

Serial No. : MA 2896

Sr. No.	Weight	EPML
1	001.000	000.0290
2	002.000	000.0660
3	003.000	000.1040
4	004.000	000.2080
5	005.000	000.1730

Correlation Coefficient = 0.91832

Compiled By :

Sign :

Date :

RELATIVE STANDARD DEVIATIONS

SPECTRALAB
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 KF TITRATOR MA - 101C

LOCATION : THANE

DATE : 01/12/05 TIME : 09:35

Relative Standard Deviation

Serial No. : MA 2896

Sr. No.	Results
1	000.0014
2	000.0016
3	000.0017
4	000.0028
5	000.0017

Mean 00.0018

Standard Deviation 00.00045

Relative Standard Deviation 25.000000

Compiled By :

Sign :

Date :

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Accessories add convenience for use of basic instrument.
 Accessories enhance the capabilities of the basic instrument.
 Accessories make the system complete.
 In short Accessories give meaning to the instrument.
 By carefully choosing the accessories one can get maximum out of the instrument





Fill-Drain Pump is a stand alone unit with separate drain fill ports. It is used for siphoning foul smelling or harmful chemicals used in KF analysis from the titration vessel facilitating the easy and odourless disposal of waste. It also has an additional fresh solvent filling facility for safe and easy operation.



For KF Interchangeable burette is useful if the application is to use KF reagent of different strength say 1 mg / ml or 2 mg/ml etc. Use of this accessory saves time in rinsing. Saves reagent. Achieves safety in reagent handling.



Certain samples are not possible to dissolve in Methanol. Also there could be some limitations due to physical nature of the sample (e.g. It could be sticky) or due to some interference from the sample which introduce errors. The Drying Oven technique is useful in this case.

In this method sample is heated in a glass oven and resulting vapour is carried into the titration vessel using dry inert carrier gas like Nitrogen.

SPECTRALAB KF OVEN is designed keeping utmost importance in mind for convenience and accuracy. A large sample boat (30 ml) permits use of more sample quantity where the moisture is extremely low.

The assembly consists of heated glass oven, precise temperature controller, pressure gauge, pressure regulator, flow regulating needle valve, purge solenoid and a magnetic system for moving the sample boat. In & out of the heating zone.



Temp range : 10°C above ambient to 300°C.
Power : 230v AC, 50 Hz, 150w.
[Rotameter (Optional) available for N₂ Flow indication]

Applications : Polymer resins, granules, oils

Applications :- Polymer chips, granules, oils, fats, fibres, foils, food products, dairy etc.

VESSELS

Various sizes and shapes of KF Vessels are available cater varied applications. Each vessel is with 5 ports.

Large vessel (250 ml) are suited for large quantity or many samples. Small size vessels (150 ml) are ideal for low sample size or low moisture levels.

Vessel with drain cock is convenient for draining off the contents, however it is not suggested for samples creating solid residues

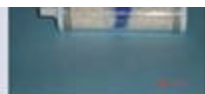
The vessels are all glass, totally air tight to prevent entry of external moisture.



MISCELLANEOUS



MOISTURE TRAP :



Used on the top of KF reagent bottle. Prevents vacuum build up without allowing external moisture & hydrocarbons to enter.



Moisture trap for titration vessel is with silica Gel to prevent entry of external moisture



MAGNETIC STIRRER WITH HOLDING RING:

Magnetic Stirrer with holding rings ensures stability of the vessel and uniform stirring for proper mixing.



DISPENSING CAPILLARIES:

Dispensing capillaries are made up of glass. The design of the capillary gives proper dispersion of reagent added.

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Growth
Philosophy

An Analytical Approach to Analytical Instruments

Spectralab is instrumental in identifying the needs of analytical Chemists, and in bringing the solutions to their doorsteps.



Area
of activity

Right from inception – Spectralab is engaged in developing cost effective import substitute, state - of - the - art products, which find applications in Quality control, R & D, Environmental safety and similar fields. Our products are being used in several reputed organisations all over India – Chemical, Pharmaceutical, Fertilizers, Petrochemical Industries, Research Institutes, National Laboratories, Atomic Energy, Defence, Public Sector Units, Multinationals, I.I.T.'s, Leading Universities, Pollution Control Boards etc.



The team

We have a strong R & D base, Application Lab for developing applications & infrastructure for production of multidiscipline complex Analytical Instruments. With reputation of efficient, after sales service and high quality control standards, we have established an important position in the Analytical Instruments Sector in India.



Customer
Satisfaction

This would not have been possible, without the good wishes of several satisfied customers. Our growth is mainly due to the mouth to mouth publicity.

WE BELIEVE, YOUR PATRONAGE AS OUR ASSET & YOUR WORDS OF APPRECIATION, AS OUR SALES FORCE.



presented by :

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