TitroLine *KF*

The dialogue mode: volumetric water analysis in simple steps!

Karl Fischer titrations easily performed

Practically nothing can go wrong when you use the TitroLine *KF* for water analysis according to the Karl Fischer titration procedure: Each step in the analysis is prompted in a dialogue on the large display. The pre-parameterized methods can be called up easily and will facilitate your work. The versatility of the TitroLine *KF* makes it an ideal choice for KF analysis in the pharmaceutical, chemical, food, and mineral oil industries.

Easy – with methods

The TitroLine *KF* is already programmed with the following methods ready for you to use: sample titration, water titre, liquid standard titre, tartrate dihydrate titre, oven blank value and solvent blank value. All methods stored in the TitroLine *KF* are preassigned with the commonly used parameters. You can, however, change these parameters as required.

We are always glad to help you with your applications

The staff in our application laboratory are pleased to advise and assist you and will place the know-how they have gained through many years of practical work with KF titrations at your disposal. The application manual 'KF Titration in Practical Applications', which is enclosed with the TitroLine *KF*, puts some of this experience at your disposal. You will also find further applications in our application database at our Internet web site (www.schott.com/labinstruments) where application data can be downloaded.

The TitroLine *KF* includes everything you need for water analysis according to Karl Fischer. The scope of supply includes the titrator, reagent bottle, titration stand TM KF, titration vessel, electrode and a starter kit (6 syringes with tubular needles, molecular sieve and three ampoules with a water standard specification). The waterproof mini keyboard TZ 2825 is available as an optional extra.

Adaptable for all sample types

For samples with very high water content, a specific **pre-titration volume** can be added in a single step at the start of the analysis to accelerate the titration process.

With the **extraction time** function, the start of the titration process can be delayed until the sample has dissolved or the water content has been extracted. As a criterion to end such titrations, a choice can be made between **drift stop** and the traditional **end point delay.**

The variation of the shutdown current and the **pole voltage** being applied enables proper adaptation to any solvent. For applications with the KF oven, the **max. titration period** is more suitable than the shutdown time or the drift stop.

For samples that only release water with difficulty, the **min. titration period** enables simultaneous extraction of the water during the titration.

Titration stand TM KF

At the press of a button used titration samples are drawn off by the titration stand TM KF. You can then place fresh solvent into the system by pressing another key. An integrated magnetic stirrer in the TM KF ensures even distribution of the solvent and sample.

The seals on the titration vessel avoide moisture penetration to a minimum (minimum drift!). The removable glass vessel is available in two sizes and is easy to clean.

KF

The TitroLine *KF* – also an example of good laboratory practical work

Automatic selection of the correct calculation formula

Two different formulas may be used to calculate the result of a Karl Fischer titration. When choosing the method, the correct formula is automatically selected and pre-assigned with the corresponding values. Measurement units for the result can be selected from %, ppm, mg, mg/l, mg/pc (pc = piece) and ml. The titre is always shown in mg/ml, and the blank value in ml.

Quality assessment with statistics

For a statistical evaluation of the analysis, the mean value, standard deviation and the relative standard deviation can be determined. The mean value of the titre and of the blank value is the automatic reference for the calculation of the sample result.

Documentation – exactly the way you need it

To document your results, you can connect a printer, such as the TZ 3460, to one of the two RS-232-C interfaces. For documentation of your results, you can choose to print the results in standard, brief or GLP form. The GLP documentation includes the consumption, result, statistics, originally weighed quantity/submitted quantity, date, time, sample ID, titre, blank value, drift, titration period, method used, titration parameter, calculation formula with values used and an addition input field for the user.

Using your PC and the titration software ›KF-Soft‹, you can also display your KF titrations as curves. All results can be reliably documented in the database integrated in the PC and retrieved at will.

Sample labelling with a keyboard

Sample IDs can be entered using the external, protected keyboard TZ 2825 (optional). Alternatively, the PC keyboard TZ 2835, which is available as an accessory, or any other PC keyboard with a DIN plug can be connected.

We will support your instrument qualification

Within the framework of quality management systems, the traceability of analysis results is becoming increasingly important. We will gladly help you with a logbook that will provide you with the form sheets for the **IQ** (Installation Qualification), **OQ** (Operational Qualification) and **PQ** (Performance Qualification) qualifications. Using the logbook, the commissioning, routine work and verification of the TitroLine *KF* can be efficiently documented.

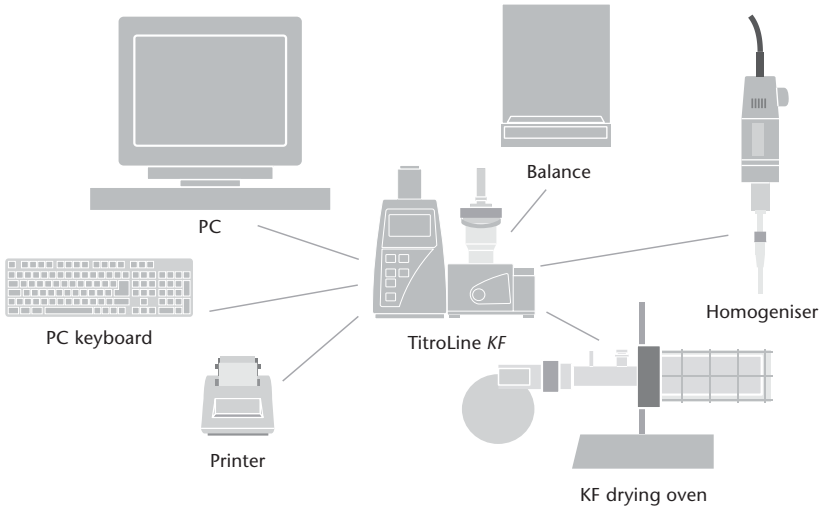
Technical data

Dosing accuracy	systematic error 0.1 %;
	random error 0.05 %;
	determined according to EN ISO 8655-6
Display	matrix LCD 69 x 39 mm, 64 x 128 pixels
	with background illumination, contrast adjustable
Electrode	connection for double platinum electrode; output voltage 100 mV,
	adjustable between 5 ... 200 mV by means of software;
	connection: 2 x 4 mm socket
Keyboard	5-pole DIN socket for TZ 2825
	and PC keyboards with DIN plug
RS-232-C interfaces	two bidirectional RS-232-C interfaces for PC/printer
	and balance/appliances
Cylinder	20 ml made of DURAN® (borosilicate glass 3.3)
Valve	3/2-port directional control valve made of PTFE / ETFE
Hoses	FEP with UV protection
Housing material	Polypropylene and Polyflamm RPP 371 NT, 20 % talcum
Front foil	Polyester
Dimensions	310 x 265 x 205 mm (H x W x D)
	with titration stand TM KF and titration vessel,
	310 x 135 x 205 mm (H x W x D)
	height including of dosing unit (without titration stand)
Weight	approx. 3.2 kg for complete appliance with titration stand;
	approx. 2.1 kg for basic appliance
Ambient temperature	+10...+40 °C (for operation and storage)
Power supply	230 V~, 50/60 Hz or 115 V~; 50/60 Hz
Power consumption	30 VA
Conformity	EN ISO 8655, part 3

Precise and robust

All components of the TitroLine *KF* are designed for maximum accuracy. The glass cylinders made of DURAN® borosilicate glass are precisely calibrated and provided with an UV protective coating. The dosing piston is driven by a step motor with a resolution of 8,000 steps. The motor-controlled 3/2-way valve is made of extremely resistant PTFE/ETFE.

All parts of the TitroLine *KF* that come into contact with liquids are made of chemically resistant materials. A polyester front foil protects the keyboard and display, and the tubing is in FEP with UV protection.



Connections and PC control

The TitroLine *KF* is equipped with two RS-232-C interfaces. This, for example, will allow you to connect a balance for automatic transfer of the weighing data and a printer at the same time. Instead of the printer, you can connect a PC and use the titration software KF-Soft to document your data reliably, to store your data in the integrated database or to retrieve and process your data as required.

Ordering information

TITRONIC® *basic* and TITRONIC® *universal*	**Order no.**
TITRONIC® *basic* module 1, (230 V)	**285212572**
TITRONIC® *basic* module 2, same as module 1, with magnetic stirrer TM 96, (230 V)	**285212823**
TITRONIC® *universal* 20 ml module 1, (230 V)	**285212429**
TITRONIC® *universal* 20 ml module 2, same as module 1, with magnetic stirrer TM 96, (230 V)	**285212437**
TITRONIC® *universal* 50 ml module 1, (230 V)	**285212445**
TITRONIC® *universal* 50 ml module 2, same as module 1, with magnetic stirrer TM 96, (230 V)	**285212494**
TITRONIC® *basic* module 1, (115 V)	**285212564**
TITRONIC® *basic* module 2, same as module 1, with magnetic stirrer TM 96, (115 V)	**285212815**
TITRONIC® *universal* 20 ml module 1, (115 V)	**285211921**
TITRONIC® *universal* 20 ml module 2, same as module 1, with magnetic stirrer TM 96, (115 V)	**285211962**
TITRONIC® *universal* 50 ml module 1, (115 V)	**285211979**
TITRONIC® *universal* 50 ml module 2, same as module 1, with magnetic stirrer TM 96, (115 V)	**285211987**
TitroLine *easy*	
TitroLine *easy* module 1 without electrode, (230 V)	**285212597**
TitroLine *easy* module 2 for pH titration, same as module 1, with one pH-electrode and buffer set, (230 V)	**285212848**
TitroLine *easy* module 3 for halogenide titration, same as module 1, with one silver combination electrode, (230 V)	**285212864**
TitroLine *easy* module 1 without electrode, (115 V)	**285212589**
TitroLine *easy* module 2 for pH titration, same as module 1, with one pH-electrode and buffer set, (115 V)	**285212831**
TitroLine *easy* module 3 for halogenide titration, same as module 1, with one silver combination electrode, (115 V)	**285212856**
TitroLine *KF*	
TitroLine *KF*, complete, (230 V)	**285212248**
TitroLine *KF*, complete, (115 V)	**285212231**
Accessories for TITRONIC® *basic*, TITRONIC® *universal*, TitroLine *easy* and TitroLine *KF*	
TZ 2005, bottle top adapter, GL 45	**285221055**
TZ 2008, bottle top adapter, S 40	**285221088**
TZ 2007, bottle top adapter GL 45, with 1 L reagent bottle, clear	**285221071**
TZ 2004, bottle top adapter GL 45, with 1 L reagent bottle, brown	**285221047**
TZ 3460, RS 232 printer including data cable, (230 V)	**285225608**
TZ 2825, mini PC keyboard (only TitroLine *KF*)	**285212753**
TZ 1052, KF drying oven, (230 V)	**285214721**
TZ 1050, accessory for KF drying oven	**285218107**
TZ 2073, KF-Soft for TitroLine *KF*	**285221733**
TZ 2074, TitroLine Chart for TitroLine *easy*	**1015738**

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SCHOTT-GERÄTE GmbH
P.O.Box 2480
55014 Mainz
Hattenbergstrasse 10
55122 Mainz
Germany

Phone: +49 6131/66-5111
Fax: +49 6131/66-5001
E-mail: titration@schott.com
www.schott.com/labinstruments

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