MEASURING QUALITY. SINCE 1796

KRÜSS

FLAME PHOTOMETER

DETERMINING THE CONCENTRATION OF ALKALINE AND EARTH ALKALINE ELEMENTS IN THE LABORATORY AND PROCESS ANALYSIS

MADE IN GERMANY

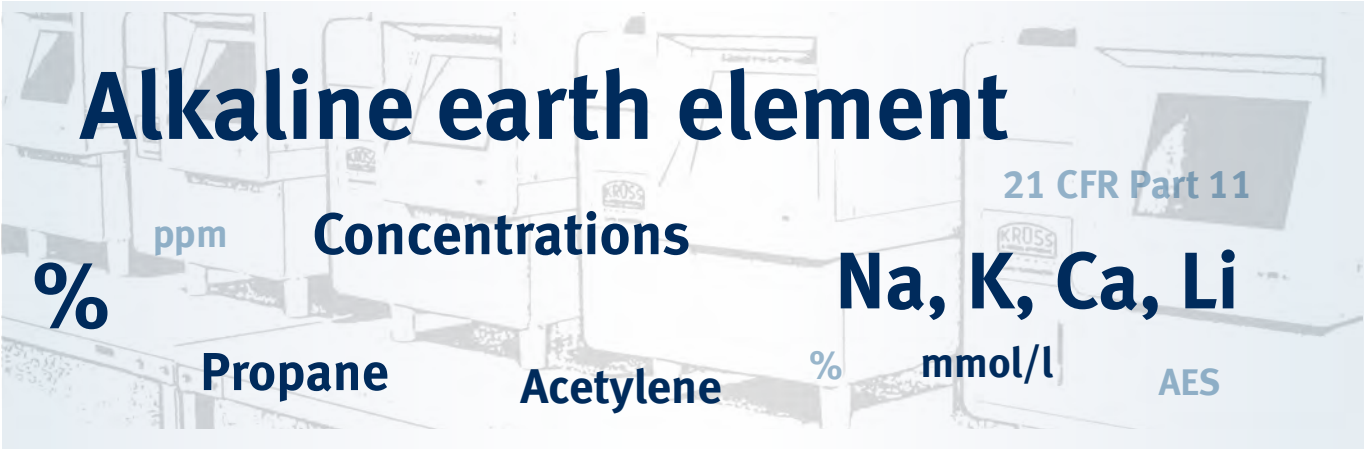
KRUESS.COM

Flame Photometers FP8000 SERIES

The A.KRÜSS flame photometers are an aconomic, robust and durable solution for use in laboratory and process operations. This devices allow simple and cost-effective determination of alkali and alkaline earth element concentrations in aqueous solutions. The FP8000 series presents worldwide unique measuring devices for simultaneous measurement of the elements Na, K, Ca and Li. The measurement by flame photometer is carried out for these elements simultaneously in one step. Five measurement channels are available to be individually configured.
Thanks to the proven measurement procedure as well as to modern device electronics and innovative process control, our flame photometers achieve highly accurate and reproducible results. With costs of just 1 cent per measurement, the FP8000 series is the most economical measurement method for alkali and alkaline earth metals.

KEY FEATURES

- Maximum operational safety through intelligent security mechanisms
- Flame photometry simultaneous measurement of up to five alkaline and alkaline earth elements
- Fast measurement: up to 300 measurements per hour – international top position!
- User administration with two authorisation levels
- Traceability of all measured data and device-specific data
- Complete traceability of measurement results
- Extensive interfacing options and comfortable handover of measurement results
- Compliance with international norms and standards such as GMP / GLP and 21 CFR Part 11



Conformity with international standards

21 CFR Part 111	Code of Federal Regulations (CFR) part of Title 21/ Code of Federal Regulations, establishes the United States Food and Drug Administration (FDA) - Requirements for electronic records and signatures
GMP / GLP	Good Manufacturing Practice; Good Laboratory Practice
DIN EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use Part 1: General requirements
DIN EN 61010-2-061	Safety requirements for electrical equipment for measurement, control, and laboratory use. Particular requirements for laboratory atomic spectrometers with thermal atomization + ionization
DIN EN 61000-3-2	Electromagnetic compatibility (EMC) – Limits for harmonic current emissions (Equipment input current))
DIN EN 61000-4-2	Electromagnetic compatibility (EMC) Testing and measurement techniques; Electrostatic discharge immunity test
DIN EN 61000-4-4	Electromagnetic compatibility (EMC) Testing and measurement techniques Electrical fast transient / burst immunity test
DIN EN 61000-4-5	Electromagnetic compatibility (EMC) Testing and measurement techniques;urge immunity test
DIN EN 50082-1	Electromagnetic compatibility (EMC) Generic immunity standard; Residential, commercial and light industry
DIN EN 55011	Industrial, scientific and medical equipment Radio-frequency disturbance characteristics – Limits and methods of measurement

FLAME PHOTOMETER
Video

SCAN ME

1 Flame photometer measurement (AES) - Comparison with other measurement methods

Methods[2)]	AES[1)]	AAS	ICP - OES	Electrodes	Mass spectrometers
MEASURABLE ELEMENTS	Alkali and earth alkali metals	MANY	MANY	One element per electrode	ALL
ACCURARCY	HIGH	MEDIUM	MEDIUM	MEDIUM	VERY HIGH
DETECTION LIMITS	ppb to ppm	ppb to ppm	ppb to ppm	ppb to ppm	ppt and below
COST PER MEASUREMENT	LOW	MEDIUM	HIGH	LOW	VERY HIGH
MEASURING RATE	VERY FAST	MEDIUM	MEDIUM	SLOW	MEDIUM
MULTI-ELEMENT MEASUREMENTS	YES	CONDITIONAL	YES	NO	YES
DEVICE OPERATION	SIMPLE	ADVANCED	ADVANCED	SIMPLE	VERY ADVANCED
METHOD CREATION	VERY SIMPLE	SIMPLE	COMPLEX	SIMPLE	COMPLEX
24/7 - MEASUREMENT MODE	YES	YES	YES	CONDITIONAL	CONDITIONAL

AES[1)] = Atomic emission spectroscopy; [2)] Further information see online article LABO website

1.1 Instruction Manual

The instruction manual is in German and English available for CSP partners with login in at the download area on the KRÜSS website.

1.2 Video Flame photometer - Function

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1.3 Video Flame photometer – All Models of the FP800 Series at a glance

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2 Flame photometer models - Comparison measurement values ppm and mmol/l

Specification		Model: FP8400	Model: FP8500	Model: FP8600	Model: FP8700
Measurement Range	Na	0.01 – 4500 ppm 0.0004 – 200 mmol/l	0.01 – 4500 ppm 0.0004 -200 mmol/l	0.01 – 4500 ppm 0.0004 – 200 mmol/l	0.1 – 45000 ppm 0.004 – 2000 mmol/l
	K	0.01 – 4500 ppm 0.0003 – 110 mmol/l	0.01 – 4500 ppm 0.0003 – 110 mmol/l	0.01 – 4500 ppm 0.0003 – 110 mmol	0.1 – 45000 ppm 0.003 – 1100 mmol/l
	Li	0.01 – 4500 ppm 0.0014 – 600 mmol/l	0.01 – 4500 ppm 0.0014 – 600 mmol/l	0.01 – 4500 ppm 0.0014 – 600 mmol/l	0.1 – 45000 ppm 0.014 – 6000 mmol/l
	Ca	0.50 – 4500 ppm 0.0125 – 110 mmol/l	0.50 -4500 ppm 0.0125 – 110 mmol/l	0.50 – 4500 ppm 0.0125 – 110 mmol/l	5.0 – 45000 ppm 0.125 – 1100 mmol/l
Detection Limit	Na	0.01 ppm 0.0004 mmol/l	0.01 ppm 0.0004 mmol/l	0.01 ppm 0.0004 mmol/l	0.1 ppm 0.004 mmol/l
	K	0.01 ppm 0.0003 mmol/l	0.01 ppm 0.0003 mmol/l	0.01 ppm 0.0003 mmol/l	0.1 ppm 0.003 mmol/l
	Li	0.01 ppm 0.0014 mmol/l	0.01 ppm 0.0014 mmol/l	0.01 ppm 0.0014 mmol/l	0.1 ppm 0.014 mmol/l
	Ca	0.03 ppm 0.0075 mmol/l	0.03 ppm 0.0075 mmol/l	0.03 ppm 0.0075 mmol/l	0.3 ppm 0.075 mmol/l
Precision	Na	0.2 % bei 40 ppm 0.2 % bei 1.74 mmol/l	0.2 % bei 40 ppm 0.2 % bei 1.74 mmol/l	0.4 % bei 40 ppm 0.4 % bei 1.74 mmol/l	0.6 % bei 40 ppm 0.6 % bei 1.74 mmol/l
	K	0.2 % bei 40 ppm 0.2 % bei 1.03 mmol/l	0.2 % bei 40 ppm 0.2 % bei 1.03 mmol/l	0.4 % bei 40 ppm 0.4 % bei 1.03 mmol/l	0.6 % bei 40 ppm 0.6 % bei 1.03 mmol/l
	Li	0.2 % bei 40 ppm 0.2 % bei 5.71 mmol/l	0.2 % bei 40 ppm 0.2 % bei 5.71 mmol/l	0.4 % bei 40 ppm 0.4 % bei 5.71 mmol/l	0.6 % bei 40 ppm 0.6 % bei 5.71 mmol/l
	Ca	0.2 % bei 40 ppm 0.2 % bei 1.00 mmol/l	0.2 % bei 40 ppm 0.2 % bei 1.00 mmol/l	0.4 % bei 40 ppm 0.4 % bei 1.00 mmol/l	0.6 % bei 40 ppm 0.6 & bei 1.00 mmol/l
Accuracy	Na	1 % bei 40 ppm 1 % bei 1.74 mmol/l	1 % bei 40 ppm 1 % bei 1.74 mmol/l	1 % bei 40 ppm 1 % bei 1.74 mmol/l	1 % bei 40 ppm 1 % bei 1.74 mmol/l
	K	1 % bei 40 ppm 1 % bei 1.03 mmol/l	1 % bei 40 ppm 1 % bei 1.03 mmol/l	1 % bei 40 ppm 1 % bei 1.03 mmol/l	1 % bei 40 ppm 1 % bei 1.03 mmol/l
	Li	1 % bei 40 ppm 1 % bei 5.71 mmol/l	1 % bei 40 ppm 1 % bei 5.71 mmol/l	1 % bei 40 ppm 1 % bei 5.71 mmol/l	1 % bei 40 ppm 1 % bei 5.71 mmol/l
	Ca	1 % bei 40 ppm 1 % bei 1.00 mmol/l	1 % bei 40 ppm 1 % bei 1.00 mmol/l	1 % bei 40 ppm 1 % bei 1.00 mmol/l	1 % bei 40 ppm 1 % bei 1.00 mmol/l

3 Flame photometer laboratory version – FP8400 Model

With the FP8000 series A.KRÜSS Optronic presents unique measurement solutions for the simultaneous measurement of Na, K, Ca and Li. Low operating costs are one of the many strengths of the FP8000 series. In addition, our devices offer high accuracy combined and fast sample measurements. The FP8400 flame photometer is the base version and distinguishes itself by its ease of operation. As an economical entry-level model, it is used for a wide range of laboratory applications: measurement food samples, IV-solutions, determining the quality of high-purity glassware and vials for pharmaceutical packaging or classification of concrete composition just to name a few.

Economic base model with available modular retrofit kits.

Basic Features:

- Reliable and simultaneous measurement of up to five alkali/alkaline earth elements
- Suited for applications with moderate sample numbers per day
- Very high precision
- Maximum operational safety ensured by automatic security mechanisms
- User administration providing multiple user levels and individual permisions
- User-friendly and intuitive operation via integrated touchscreen
- Mutiple data interfaces and convenient data transfer
- Compliant with international standards such as GMP / GLP and 21 CFR Part 11

3.1 Basic technical data FP8400 - Model

Specification	Key data
CALIBRATION	▪ Linear with 2 standards ▪ Non-linear with 6-8 standards, polynomial curve fit
DRIFT	▪ 1% in 60min
REFERENCE LINE (OPTIONAL)	▪ Lithium-reference line (5 mmol/l) ▪ Caesium guideline upon request
SAMPLE VOLUME	▪ 2.5 ml

Specification	Key data
COMBUSTION GAS	▪ **Propane:** Recommended for alkali metals ▪ **Butane:** Possible propane replacement ▪ **Acetylene** for flame photometry: Recommended for alkaline earth elements
DISPLAY	▪ TFT-Display with integrated 8.4“ TFT touchscreen, 800x600 Pixel
INTERFACES	▪ 2 x USB, 1 x Ethernet, 1 x RS-232 for printer
FEASIBILITY OF RETROFITTING	▪ Retrofit kits to other models available

3.2 Measurement specification FP8400 Model

	Na	K	Li	Ca
MEASUREMENT RANGE	▪ 0.01-4500 ppm 0.0004-200 mmol/l	▪ 0.01-4500 ppm 0.0003-110 mmol/l	▪ 0.01-4500 ppm 0.0014-600mmol/l	▪ 0.50-4500 ppm 0.0125-110 mmol/l
DETECTION LIMIT	▪ 0.01 ppm 0.0004 mmol/l	▪ 0.01 ppm 0.0003 mmol/l	▪ 0.01 ppm 0.0014 mmol/l	▪ 0.03 ppm 0.0075 mmol/l
PRECISION	▪ 0.2 % at 40 ppm 0.2 % at 1.74 mmol/l	▪ 0.2 % at 40 ppm 0.2 % at 1.03 mmol/l	▪ 0.2 % at 40 ppm 0.2 % at 5.71 mmol/l	▪ 0.2 % at 40 ppm 0.2 % at 1.00 mmol/l
ACCURACY	▪ 1 % at 40 ppm 1 % at 1.74 mmol/l	▪ 1 % at 40 ppm 1 % at 1.03 mmol/l	▪ 1 % at 40 ppm 1 % at 5.71 mmol/l	▪ 1 % at 40 ppm 1 % at 1.00 mmol/l

4 Flame photometer process version – FP8500 Model

With the FP8000 series A.KRÜSS Optronic presents unique measurement solutions for the simultaneous measurement of Na, K, Ca and Li. Low operating costs are one of the many strengths of the FP8000 series. In addition, our devices offer high accuracy combined and fast sample measurements. The FP8500 flame photometer combines the features of the FP8400 model with an automated calibration enabling 24/7 fully automated measurements of continuous liquid streams. Customizable measurement times from one second up to several minutes can be set and for data transmission a variety of interfaces are available. Various laboratory applications are possible with this device, such as process monitoring, bypass measurements or automated continuous measurement.

Equipment: Base unit + external valve box with control unit (for online measurement)

Basic Features:

- Reliable and simultaneous measurement of up to five alkali/alkaline earth elements
- Optional remote control of several devices via central process unit
- Optimized for 24-hour operation with continous high precision
- Maximum operational safety ensured by automatic security mechanisms
- User administration providing multiple user levels and individual permisions
- User-friendly and intuitive operation via integrated touchscreen
- Mutiple data interfaces and convenient data transfer
- Compliant with international standards such as GMP / GLP and 21 CFR Part 11

4.1 Basic technical data FP8500 - Model

Specification	Key data
CALIBRATION	▪ Linear with 2 standards ▪ Non-linear with 6-8 standards, polynomial curve fit
DRIFT	▪ 1% in 60min
REFERENCE LINE (OPTIONAL)	▪ Lithium-reference line (5 mmol/l) ▪ Caesium guideline upon request
SAMPLE VOLUME	▪ 2.5 ml

Specification	Key data
COMBUSTION GAS	▪ **Propane:** Recommended for alkali metals ▪ **Butane:** Possible propane replacement ▪ **Acetylene** for flame photometry: Recommended for alkaline earth elements
DISPLAY	▪ TFT-Display with integrated 8.4“ TFT touchscreen, 800x600 Pixel
INTERFACES	▪ 2 x USB 1 x Ethernet ▪ 1 x RS-232 for matrix printer ▪ Upgrade 4-20 mA analogue, passive current interface
FEASIBILITY OF RETROFITTING	▪ Retrofit kits to other models available

4.2 Measurement specification FP8500 - Model

	Na	K	Li	Ca
MEASUREMENT RANGE	▪ 0.01-4500 ppm 0.0004-200 mmol/l	▪ 0.01-4500 ppm 0.0003-110 mmol/l	▪ 0.01-4500 ppm 0.0014-600 mmol/l	▪ 0.50-4500 ppm 0.0125 - 110 mmol/l
DETECTION LIMIT	▪ 0.01 ppm 0.0004 mmol/l	▪ 0.01 ppm 0.0003 mmol/l	▪ 0.01 ppm 0.0014 mmol/l	▪ 0.03 ppm 0.0075 mmol/l
PRECISION	▪ 0.2 % at 40 ppm 0.2 % at 1.74 mmol/l	▪ 0.2 % at 40 ppm 0.2 % at 1.03 mmol/l	▪ 0.2 % at 40 ppm 0.2 % at 5.71 mmol/l	▪ 0.2 % at 40 ppm 0.2 % at 1.00 mmol/l
ACCURACY	▪ 1 % at 40 ppm 1 % at 1.74 mmol/l	▪ 1 % at 40 ppm 1 % at 1.03 mmol/l	▪ 1 % at 40 ppm 1 % at 5.71 mmol/l	▪ 1 % at 40 ppm ▪ 1 % at 1.00 mmol/l

5 Flame photometer laboratory version with added autosampler – FP8600 Model

With the FP8000 series A.KRÜSS Optronic presents unique measurement solutions for the simultaneous measurement of Na, K, Ca and Li. Low operating costs are one of the many strengths of the FP8000 series. In addition, our devices offer high accuracy combined and fast sample measurements. The FP8600 flame photometer is the laboratory version (FP8400 model) upgraded with an added autosampler (72 sample). The FP8600 model measures up to 72 samples as well as perform the required calibrations autonomously. With 300 measurements per hour this model is the premium choice for all applications where high sample throughput is crucial.

Base unit + autosampler with control unit

Basic Features:

- Reliable and simultaneous measurement of up to five alkali/ alkaline earth elements
- Automated calibration and sample measurement with high precision
- Minimal supervision by user required after sample preparation
- Maximum operational safety ensured by automatic security mechanisms
- User administration providing multiple user levels and individual permissions
- User-friendly and intuitive operation via integrated touchscreen
- Multiple data interfaces and convenient data transfer
- Compliant with international standards such as GMP / GLP and 21 CFR Part 11

5.1 Basic technical data FP8600 - Model

Specification	Key data
CALIBRATION	▪ Linear with 2 standards ▪ Non-linear with 6-8 standards, polynomial curve fit
DRIFT	▪ 1% in 60min
REFERENCE LINE (OPTIONAL)	▪ Lithium guideline with 35 mg/l or 5 mmol/l ▪ Caesium guideline on request
SAMPLE VOLUME	▪ 2.5 ml

Specification	Key data
COMBUSTION GAS	▪ **Propane:** Recommended for alkali metals ▪ **Butane:** Possible propane replacement ▪ **Acetylene** for flame photometry: Recommended for alkaline earth elements
DISPLAY	▪ TFT-Display with integrated 8.4“ TFT-Touchscreen, 800 x 600 Pixel
INTERFACES	▪ 2 x USB, 1 x Ethernet, 1 x RS-232 for matrix printer
FEASIBILITY OF RETROFITTING	▪ Retrofit kits to other models available

5.2 Measurement specification FP8600 - Model

	Na	K	Li	Ca
MEASUREMENT RANGE	▪ 0.01-4500 ppm 0.0004-200 mmol/l	▪ 0.01-4500 ppm 0.0003-110 mmol/l	▪ 0.01-4500 ppm 0.0014-600mmol/l	▪ 0.50-4500 ppm 0.0125-110 mmol/l
DETECTION LIMIT	▪ 0.01 ppm 0.0004 mmol/l	▪ 0.01 ppm 0.0003 mmol/l	▪ 0.01 ppm 0.0014 mmol/l	▪ 0.03 ppm 0.0075 mmol/l
PRECISION	▪ 0.4 % at 40 ppm 0.4 % at 1.74 mmol/l	▪ 0.4 % at 40 ppm 0.4 % at 1.03 mmol/l	▪ 0.4 % at 40 ppm 0.4 % at 5.71 mmol/l	▪ 0.4 % at 40 ppm 0.4 % at 1.00 mmol/l
ACCURACY	▪ 1 % at 40 ppm 1 % at 1.74 mmol/l	▪ 1 % at 40 ppm 1 % at 1.03 mmol/l	▪ 1 % at 40 ppm 1 % at 5.71 mmol/l	▪ 1 % at 40 ppm 1 % at 1.00 mmol/l

6 Flame photometer laboratory version with added autosampler, diluter, mixer – FP8700 Model

With the FP8000 series A.KRÜSS Optronic presents unique measurement solutions for the simultaneous measurement of Na, K, Ca and Li. Low operating costs are one of the many strengths of the FP8000 series. The FP8600 flame photometer is the laboratory version (FP8400model) upgraded with an added autosampler, diluter and mixer. This model is the premium choice for all application where prior sample dilution is required. Multiple automated safety mechanisms ensure high operational safety. The FP8700 model with its automated dilution feature and an autosampler is especially suited for laboratories faced with intensive sample preparation and high sample throughput. Up to five measurement channels can be customised individually to optimize for various element combinations and concentration ranges. The FP8700 model achieves 60 measurements per hour with highest precision.

Automated process for high sample volume operation

Basic Features:

- Reliable and simultaneous measurement of up to five alkali/alkaline earth elements
- Automated calibration, dilution and sample measurement with high precision
- Suitable for small sample volumes (microliter range) and high concentrations
- Fully automated measurements with high precision
- Maximum operational safety ensured by automatic security mechanisms
- User administration providing multiple user levels and individual permissions
- User-friendly and intuitive operation via integrated touchscreen
- Multiple data interfaces and convenient data transfer
- Compliant with international standards such as GMP / GLP and 21 CFR Part 11

6.1 Basic technical data FP8700 - Model

Specification	Key data
CALIBRATION	▪ Linear with 2 standards ▪ Non-linear with 6-8 standards, polynomial curve fit
DRIFT	▪ 1% in 60 min
REFERENCE LINE (OPTIONAL)	▪ Lithium guideline with 5 mmol/l ▪ Caesium guideline upon request
SAMPLE VOLUME	▪ Microliter range - depending on dilution ration and sample tube

Specification	Key data
COMBUSTION GAS	▪ **Propane:** Recommended for alkali metals ▪ **Butane:** Possible propane replacement ▪ **Acetylene** for flame photometry: Recommended for alkaline earth elements
DISPLAY	▪ TFT-Display with integrated 8.4“ TFT Touchscreen, 800 x 600 Pixel
INTERFACES	▪ 2 x USB, 1 x Ethernet, 1 x RS-232 for matrix printer
FEASIBILITY OF RETROFITTING	▪ Retrofit kits to other models available

6.2 Measurement specifications FP8700 - Model

	Na	K	Li	Ca
MEASUREMENT RANGE	▪ 0.1-45000 ppm 0.004-2000 mmol/l	▪ 0.1-45000 ppm 0.003-1100 mmol/l	▪ 0.1-45000 ppm 0.014-6000 mmol/l	▪ 5.0-45000 ppm 0.125-1100 mmol/l
DETECTION LIMIT	▪ 0.1 ppm 0.004 mmol/l	▪ 0.1 ppm 0.003 mmol/l	▪ 0.1 ppm 0.014 mmol/l	▪ 0.3 ppm 0.075 mmol/l
PRECISION	▪ 0.6 % at 40 ppm 0.6 % at 1.74 mmol/l	▪ 0.6 % at 40 ppm 0.6 % at 1.03 mmol/l	▪ 0.6 % at 40 ppm 0.6 % at 5.71 mmol/l	▪ 0.6 % at 40 ppm 0.6 % at 1.00 mmol/l
ACCURACY	▪ 1 % at 40 ppm 1 % at 1.74 mmol/l	▪ 1 % at 40 ppm 1 % at 1.03 mmol/l	▪ 1 % at 40 ppm 1 % at 5.71 mmol/l	▪ 1 % at 40 ppm 1 % at 1.00 mmol/l

7 Certified standards, controls and reference lines for flame photometers

Large number of standards, used for testing the flame photometers, for checking the methods and results or the use of lithium as a reference line. Lasts usually over 1 year.

Item number	Description	Content/Function	Quantity
FP8050-001	▪ A.KRÜSS-Standard 1 (certificated)	▪ Na/K/Li/Ca each 10 mg/l	▪ 100 ml
FP8050-002	▪ A.KRÜSS-Standard 2 (certificated)	▪ Na/K/Li/Ca each 20 mg/l	▪ 100 ml
FP8050-003	▪ A.KRÜSS-Standard 3 (certificated)	▪ Na/K/Li/Ca each 30 mg/l	▪ 100 ml
FP8050-004	▪ A.KRÜSS-Standard 4 (certificated)	▪ Na/K/Li/Ca each 40 mg/l	▪ 100 ml
FP8050-005	▪ A.KRÜSS-Standard 5 (certificated)	▪ Na/K/Li/Ca each 50 mg/l	▪ 100 ml
FP8050-007	▪ Standard 140/5 (certificated)	▪ Na 140 mmol/ K 5 mmol	▪ 100 ml

7.1 Reference line lithium

The Flame Photometers of the FP8000 series can be operated with or without a reference line (internal standard). The measurement procedure using a reference line is a technique which minimizes system interferences such as unsteady spray, temperature effects and flame fluctuations. In special cases this can improve measurement precision. With this technique, all samples and standards are diluted with a solution containing a constant concentration of a reference element which would not be present in the intended samples otherwise. Lithium is an established reference element for this purpose. Lithium is not present in most samples and thus cannot distort the reference line.

Item number	Description	Content/Function	Quantity
FP8050-009	▪ Reference line li (lithium)	▪ 7000 mg/l concentrate	▪ 100 ml

7.2 Cleaning Solutions

The dilution concentrate improves the flow of all samples in the instrument and prevents the formation of fungi and algae. Neutral cleaner for the regular flushing of the system and the general cleaning. Alkaline cleaner for eliminating persistent contaminations except proteins. Deproteinising cleaner is used to specifically remove proteins.

Item number	Description	Content/Function	Quantity
FP8051-001	▪ Diluent Concentrate	▪ Stabilising agent and surfactant	▪ 500 ml
FP8051-002	▪ Rinse Solution	▪ Electrolyte-free neutral cleaner	▪ 500 ml
FP8051-003	▪ Cleaning Solution	▪ Alkaline cleaner (pH ~12)	▪ 6 x 100 ml
FP8051-004	▪ Deproteinising Solution	▪ Buffer solution for protein removal	▪ 5 x 100 ml

7.3 Accessories all flame photometer models

Item number	Articles
FP8010	▪ Replacement hose – for cutting custom lengths: PVC hose, d8mm, D12mm, 2m; drip hose / older models
FP8011	▪ Replacement hose – for cutting custom lengths: PVC hose, d7 mm D10 mm 2 m; drip hose / older models
FP8012	▪ Replacement hose – for cutting custom lengths: PVC hose, d5mm, D8mm, 2m; gas supply / older models
FP8013	▪ Replacement hose – for cutting custom lengths: Silicon hose, d2mm, D5mm; drip hose
FP8014	▪ Replacement hose – for cutting custom lengths: Silicon hose, d0.8mm, D1.6mm, 2m; mixer-nebulizer connection
FP8015	▪ Replacement hose – for cutting custom lengths: Silicon hose, d2mm, D4mm, 2m; diluter standby connection
FP8016	▪ Replacement hose – for cutting custom lengths: Silicon hose, d1mm, D3mm, 2m; diluter autosampler connection
FP8017	▪ Replacement hose – for cutting custom lengths: PVC hose d10mm, D13mm, 2m; drip hose
FP8018	▪ Drip canula - For drop shaping prior to drop counting
FP8019	▪ Drain canula with plug - For water level stabilization in the liquid drainage system
FP8020	▪ Nebulizer - Nebulizes the aspirated sample
FP8021	▪ Nebulizer-gaskets, 3 different types - For replacement of the one inner and two outer gaskets
FP8022	▪ Nebulizer-cleaning wires - For removal of internal blockages inside the nebulizer
FP8023	▪ Aspiration canula for manual measurements and for manual sample aspiration – blunt needle tip
FP8024	▪ Aspiration canula for autosampler for sample aspiration via autosampler – sharp needle tip
FP8025	▪ Nebulizer chamber - Selects suited aerosol size for burner
FP8026	▪ Gas mixing chamber - Mixes the nebulised sample with the fuel gas
FP8027	▪ Gasket burner pot
FP8028	▪ Gasket burner insert
FP8047	▪ Gasket for glass cylinder outside
FP8038	▪ Burner pot - Suitable for propane and acetylene
FP8049	▪ Burner strainer ring - Fixing for wire sieves inner glass cylinder
FP8029	▪ Burner insert (burner nozzle) - Suited for propane and acetylene
FP8030	▪ Socket wrench for burner inset - Only required for devices with serial numbers 80880 1 XXXX
FP8031	▪ Outer Glass cylinder, including already inserted gasket - Material: High-quality laboratory glass DURAN glass / borosilicate glass
FP8032	▪ Inner Glass cylinder, includes ignition mechanism - Material: High-quality laboratory glass DURAN glass / borosilicate glass
FP8033	▪ Sieves - Prevents too high flame tips
FP8034	▪ Container for standby solution (2L) - Including tubing attachments for FP8500, FP8600, FP8700
FP8036	▪ Test tube plastic (10 ml) - Suited for standard Autosampler tray
FP8037	▪ Autosampler tray - Accommodates up to 72 samples
FP8037-13	▪ Autosampler tray d=13mm (for test tubes up to 13 mm ∅) - For smaller tube diameters and lower sample volumes
FP8039	▪ Additional fifth detector (please order filter separately)
FP8040	▪ Filter Na - Wavelength filter for Sodium emission
FP8041	▪ Filter K - Wavelength filter for Potassium emission
FP8042	▪ Filter Li - Wavelength filter for Lithium emission
FP8043	▪ Filter Ca - Wavelength filter for Calcium emission
FP8044	▪ Filter Cs -Wavelength filter for Caesium emission
CBM910	▪ 24-character matrix printer
CBM910F	▪ Ink ribbon for ~~dot matrix~~ printer CBM910
CBM910P	▪ Plain paper roll for printer CBM910
CBM916	▪ Interface cable for printer CBM910

7.4 Accessories specific for FP8600 Model

Item number	Articles
FP8024	▪ Sample canula (sharp needle tip) - For sample aspiration via autosampler
FP8036	▪ Test tube plastic (10 ml) - Suited for standard Autosampler tray
FP8035	▪ Cleaning tube for autosampler (50 ml) - For automated cleaning of the autosampler aspiration needle

7.5 Accessories specific for FP8700 Model

Item number	Articles
FP8024	▪ Aspiration canula for autosampler - For sample aspiration via autosampler – sharp needle tip
FP8036	▪ Test tube plastic (10 ml) - Suited for standard Autosampler tray
FP8035	▪ Cleaning tube for autosampler (50 ml) - For automated cleaning of the autosampler aspiration needle
FP8048	▪ Syringe for diluter 2.5 ml

Directly to the KRÜSS-Shop
flame photometer accessories

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