

## MilkoScan™ FT1

Milk standardisation with in-built abnormality screening



The MilkoScan™ FT1 analyser is dedicated to liquid dairy production. It allows you to control and standardise liquid dairy products while simultaneously screening for abnormalities. It is ideal for:

- Rapid control at the platform for optimal segregation, fair payment and screening for abnormalities
- Milk standardisation for optimal use of raw material and consistent quality products
- Monitoring the quality of final products

Sample	Parameters
Liquid and semi-solid dairy products such as milk, cream, whey and others	Fat, Protein, Lactose, Total Solids, SnF, FPD, Total Acidity, Density, FFA, Citric Acids, Casein, Urea, Sucrose, Glucose, Fructose, Galactose



Raw material intake



Production



Finished products

## Value

### Pay the right price

Providing up to 120 reliable measurements per hour, the MilkoScan FT1 helps to ensure that payments to suppliers are neither too high nor too low, but spot on.

### Protect against adulteration

Raw milk containing abnormalities is a growing problem. The abnormalities can be caused by deliberate adulteration, for example, with lard or melamine or by accidents if water or cleaning agents are mixed with the milk. With the MilkoScan FT1 you can screen incoming raw milk samples to identify a suspect raw milk sample quickly and as a normal part of everyday testing. The suspect sample can then be further analysed to determine the contaminant.

### Smart segregation

A quick measurement at intake for mass balance calculation allows effective and reliable results for subsequent standardisation of milk entering production.

### Standardise for profit and consistent quality

The concept of standardising milk in the process is increasingly popular as a means to improving economy in dairy production. For instance, consider the advantage of more accurate information about fat content. A dairy plant producing 300,000 litres of milk per day can use the accuracy of the MilkoScan FT1 to carefully adjust the mass balance of milk in silos with savings of e.g. 0.014% fat per processed litre of milk. Over the course of a year, this seemingly small saving mounts up to US\$ 60,000.

Beyond the financial gains of standardisation, the improved consistency of end products builds and protects your brand.

The MilkoScan FT1 is also ideal for ensuring final product consistency as well.

### Rapid return and low running costs

A wealth of technical features built on the renowned MilkoScan platform ensures smooth operations for a fast return on investment and economic long term use.

### FOSS your global partner in profitable dairying

For decades FOSS has helped dairies and milk testing laboratories to keep pace with their analysis demands. FOSS is unique in offering a range of dedicated solutions based on both indirect and reference methods. FOSS solutions provide analysis and control throughout the production process, from raw material to finished product and from routine analysis to at-line and in-line process control.

Support is provided by certified support engineers stationed close to our customers across the globe. Local, competent and certified they keep your analytical solution running at peak performance for maximum productivity, payback and profit. A range of proactive services are available for you to choose from according to your business requirements.

Visit [www.foss.dk](http://www.foss.dk) for more information about how FOSS dedicated analytical solutions can help you produce dairy products effectively and with optimal profit.



# Technology

## **Purpose built FTIR unit for reliable analysis operations**

Built on the well proven technology behind the world's most widely used FTIR analyser - the MilkoScan FT120 - the MilkoScan FT1 provides a solid platform for liquid milk analysis. With Fourier transform infrared technology (FTIR), the operator does not have to handle any chemicals. Tests are easy to perform with a low risk of operator error.

The FTIR interferometer scans the full mid-infrared spectrum which makes it a robust FTIR solution for use in the laboratory and offers high repeatability and sensitivity.

The accuracy and repeatability of results are comparable to the chemical methods (or better), but does not require the long testing time. The performance is in compliance with AOAC (Association of Analytical Chemists) and IDF (International Dairy Federation).

Results are automatically stored on a PC for traceability.

## **Auto clean and low sample temperature for flexible analysis**

The automatic clean and zero module reduces operator time by allowing rapid single sample analysis with no time required for cleaning. The operator can just present the sample and leave after 30 seconds.

A wide operating range (5 - 55°C) allows direct analysis of even cold but homogeneous samples.

## **Instrument standardisation**

MilkoScan FT1 instruments are standardised for high stability, for example, to give the same results regardless of cuvette wear. Likewise, if a new cuvette is installed, only minor slope and intercept adjustments are required.

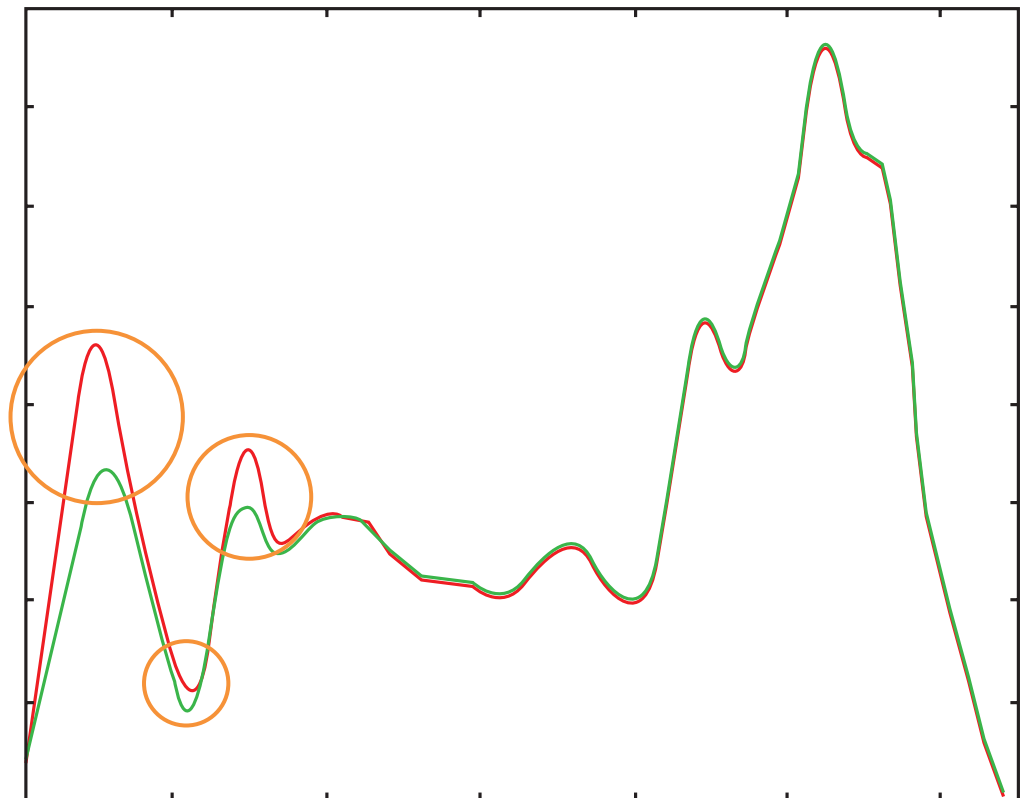
## **Calibrations ready to use**

Ready-made calibrations allow for the simultaneous analysis of major parameters in most raw, intermediate and finished dairy products. The calibrations are based on the extensive FOSS FTIR database built up over more than 15 years.

If your product recipe changes or you are developing new dairy products, you can easily make your own calibrations. The software has a purpose-built calibration toolbox that easily guides you through the calibration development process.



Natural raw milk has a particular spectrum – a unique fingerprint. If the sample is somehow different from normal milk it will be detected immediately with spectrum screening as shown by the red line for an abnormal sample against the normal shown in green.



## Integrated abnormality screening

Integrated food safety screening is provided in the form of the FOSS abnormality screening module (ASM).

The ASM Module allows MilkoScan analysers based on Fourier Transform Infrared (FTIR) technology to be programmed to screen for abnormalities in milk. The screening is done at the same time as the compositional measurements are performed.

No extra equipment or time is required.

A sample of milk is tested against a profile for normal milk, and a warning is given if there is a mismatch. This alerts the user to the need for further testing to determine the nature of the abnormality.

Natural raw milk has a particular infrared spectrum – a unique fingerprint. Using FTIR analysis, it is possible to program an analyser to recognise the spectra (or fingerprint) representing pure raw milk. A warning is then given when samples do not meet the criteria for pure milk. If the sample is somehow different from pure milk it will be detected immediately.

Some examples of what can be detected include:

- Cleaning agents
- Milk mixing
- Addition of water
- Protein and fat adulterants

In practice, ASM allows screening for an unlimited number of unknown and known potential adulterants, including lard, cleaning agents, melamine and many others.

Warning levels can be set for these known adulterants, and the limiting factor for both known and unknown abnormalities is defined by the mid-infrared wavelength range used, which covers a vast range of potential abnormalities.

## Simple to use software

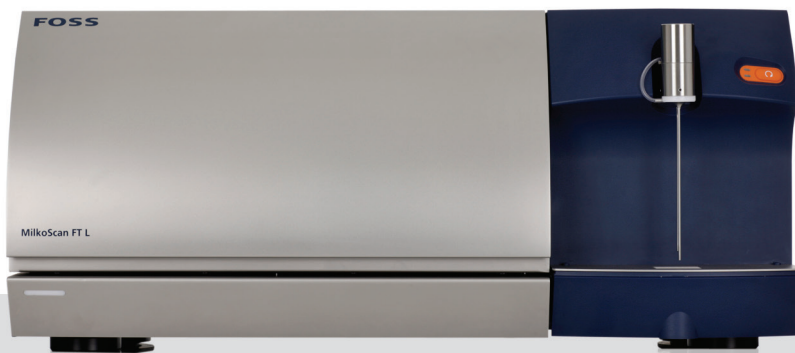
Software is easy to learn and use and includes valuable time-saving features such as:

- Control chart for monitoring instrument stability
- Easy Slope & Intercept adjustment
- Development of new calibrations
- Outlier detection
- Reprediction

## Part of a complete high performing solution

Whether you are new to infrared based analytical instruments or an experienced user, FOSS offers a complete and customised support program for your MilkoScan FT1:

- On site preventive maintenance visits
- Preventive maintenance parts
- Remote instrument surveillance
- Online and offline calibration support
- 24/7 hotline phone support
- Self maintenance training and video on demand support



## Networking capability for data export and remote instrument management

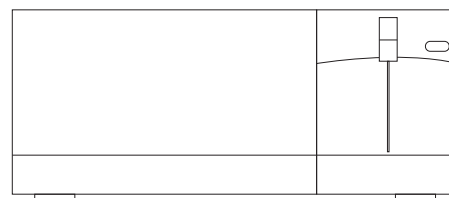


Measurement data can be exported to a LIMS system via a direct network connection.

In addition, FOSS Mosaic networking software allows you to connect the instrument to the internet for remote management by experts in the field of FTIR instrument maintenance and support, either by in-house experts or from FOSS. A number of tasks can be performed remotely including:

- Instrument surveillance
- Slope & Intercept adjustment
- Monitoring performance e.g. wear on the cuvette

# Specifications



Feature	Specification
Calibration range	Up to 50% Fat Up to 7% Protein Up to 7% Lactose Up to 55% Total Solids
<b>Included calibrations</b> <ul style="list-style-type: none"> <li>• Milk</li> <li>• Cream</li> <li>• Whey</li> <li>• Yoghurt</li> </ul>	Fat, Protein, Lactose, Total Solids, SnF, FPD, Total Acidity, Density, FFA, Citric Acids, Urea, Casein, Glucose, Galactose Fat, Protein, Lactose, Total Solids, SnF, FPD Fat, Protein, Lactose, Total Solids Fat, Protein, Total Solids
<b>Optional calibrations</b> <p><b>Fortified Milk &amp; Whey</b></p> <ul style="list-style-type: none"> <li>• Concentrated Milk</li> <li>• Infant Formula Calibration</li> <li>• UF Whey Calibration</li> <li>• Evaporated Whey Calibration</li> </ul> <p><b>Yoghurt &amp; Fermented</b></p> <ul style="list-style-type: none"> <li>• Yoghurt/Fermented Products</li> <li>• Quark Calibration</li> </ul> <p><b>Dessert &amp; Ice Cream</b></p> <ul style="list-style-type: none"> <li>• Dessert &amp; Ice Cream</li> <li>• Desserts &amp; Flavoured Milks with Vegetable fat</li> </ul>	Fat, Total Solids, SnF Fat, Total Solids, SnF Protein, Total Solids Fat, Total Solids, Total Acidity, Lactose  Fat, Protein, Lactose, Glucose, Sucrose, Total Sugars, Total Solids, SnF, Fructose Fat, Protein, Total Solids  Fat, Protein, Lactose, Glucose, Sucrose, Fructose, Total Sugars, Total Solids Fat, Protein, Total Solids
ASM module	Calibration tool and ready to use model for screening for abnormal milk
Targeted models for adulteration	Hydroxyproline, Sodium nitrite, Melamine, Maltodextrine, Cyanuric Acid
Accuracy	≤1% CV *on major raw cow Milk components (Fat, Protein , Lactose, Total Solids)
Repeatability	≤ 0.25% CV* on major raw cow Milk components (Fat, Protein , Lactose, Total Solids)
Analysis time	30 seconds for milk
Sample volume	8 ml.
Sample temperature	5 - 55°C ( the sample must be homogeneous)
Cleaning	Automatic and programmable
Purging Efficiency	≥ 99%
Calibration Routine	Slope / Intercept adjustment
Network connections	LIMS, Mosaic
Optical System	Hermetically sealed, humidity control

# Installation requirements

Dimensions (H*W*D):	382 x 850 x 543 mm
Weight:	80 kg
Power Supply:	(115 or 230) $\pm$ 15% V/AC - 50/60 Hz
Power Consumption:	Max. 600 VA during measurement, 80 VA in standby
Ambient Temperature:	10 - 35°C
Ambient Humidity:	< 80 RH, Cyclic up to 93 RH from low to high, working temperature in 93 RH
Environment:	For best performance place the instrument on a stable surface away from excessive and continuous vibration
Noise Level:	70 dB (measured when the instrument is analysing, at 1.6 m level and 60 sec. equivalent)

## Standards and approvals

MilkoScan™ FT1 is CE labelled and complies with the following directives:

- ElectroMagnetic Compatibility (EMC) Directive 2004/108/EC
- Low Voltage Directive (LVD) 2006/95/EC
- Packaging and packaging waste Directive 94/62/EC
- WEEE Directive 2002/96/EC
- REACH Directive 1907/2006/EC

MilkoScan FT1 is in compliance with AOAC (Association of Analytical Chemists) and IDF (International Dairy Federation).

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