

Technical Specifications

ProFoss Reflection:

Analysis time: 5 – 50 ms / integration time; Average time per result 3 – 15 seconds
Measurement mode: Reflection (Window reflectance; Direct Light, Powder Probe)
Wavelength range: 1100 – 1650 nm
Detector: InGaAs Diode array
Spectral dispersion: 1.1 nm / pixel

ProFoss Transmittance

Analysis time: 5 ms – 60 sec / integration time; Average time per result 3 – 15 seconds
Measurement mode: Transmittance (Lateral transmittance, transmittance probe pair)
Wavelength range: 850 – 1050 nm
Detector: Si Diode array
Spectral dispersion: 1.0 nm / pixel

General:

Light source lifetime: Dual lamp system MTBF = 17500 h
Software package: ISIScan™ for instrument control; ISICAL™ for calibration development
Wavelength accuracy: 0.5 nm
Wavelength precision: < 0.02 nm
Wavelength stability: < 0.01 nm/°C
Noise: < 60 micro AU
Random Vibrations: 0.4 grms at 10 – 150 Hz according to IEC 60068-2-64
0.4 grms at 10 – 1250 Hz according to FOSS internal standard
(more information available on request)
Temperature: -5 – 40°C (23 – 104°F). With purge -5 – 65°C (23 – 149°F)
Installation in ATEX zone: 0 – 40°C (32 – 104°F). With purge 0 – 65°C (32 – 149°F)
Purge air: Flow rate minimum 5 l/min,
> 99.9% water free, > 99.9% free of oil and fine particles down to 0.3µm
Ambient humidity: 10 – 90 % relative
Dimensions (w × h × d): 42 × 42 × 13.5 cm (16.5 × 16.5 × 5.3 inches) + brackets to hold the unit
Weight: 20 kg / 44 lbs
Cabinet: 1.5 mm (lid 2.5mm) Stainless Steel EN 1.4301 (SS2333)
Protection: IP69K¹⁾ according to IEC 60529 and DIN 40050 part 9, NT ELEC 023
Communication: Ethernet, OPC, RINA, FossCare™
Power supply: Recommended isolated or conditioned line power
100 – 240 VAC, 50 – 60 Hz, 2.0 A, 150W

¹⁾ IP6x is the highest protection for dust entering the unit. IPx9K means protected against the effect of high-pressure water and/or steam cleaning at high temperature.

FOSS

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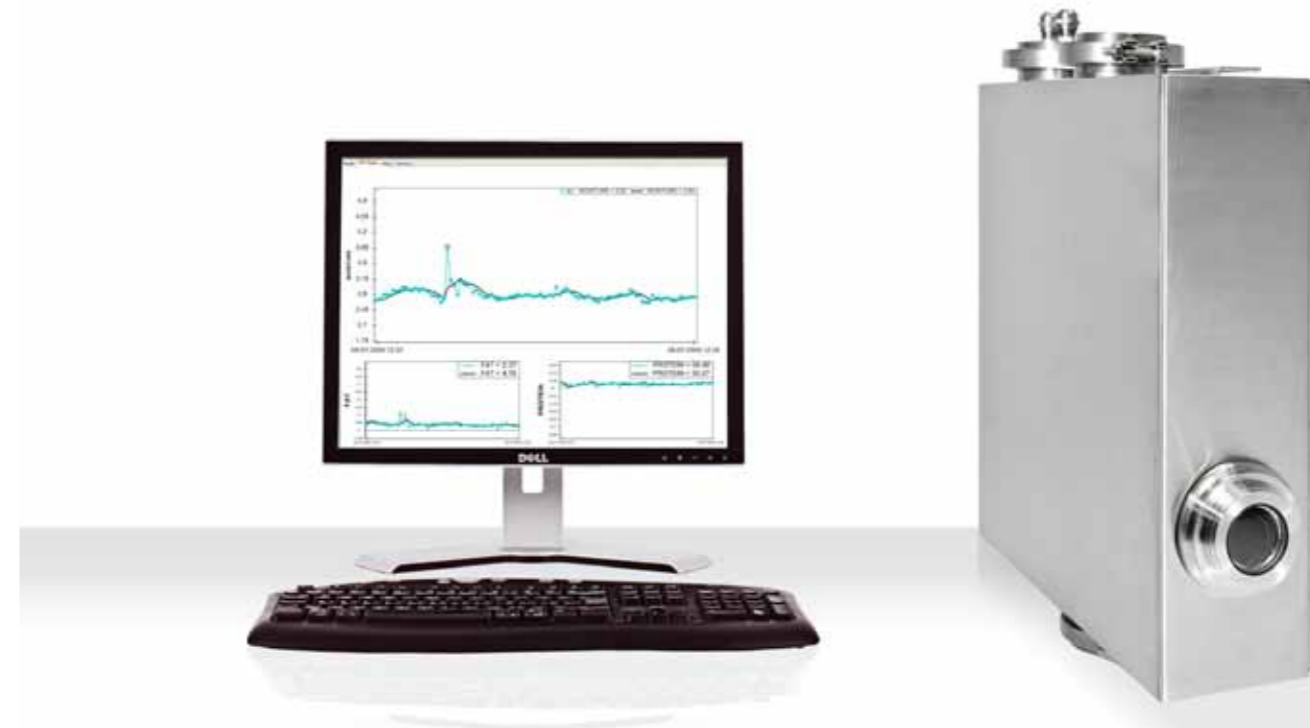
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ProFoss™



ProFoss™ is a process analysis system based on high resolution diode array technology. It provides non destructive analysis of products such as flour, feeds, meals, ground meat and dairy products directly in the process line without bypass – a true in-line system

Features and benefits

- High resolution diode array technology for accurate and continuous analysis in reflectance or transmittance mode
- Built-in instrument factory standardisation for quick and simple implementation of one or several analysers
- Uptime protection systems for low maintenance
- Dedicated sample interfaces provides accuracy and rapid implementation
- Instant measurement of complete wavelength range for direct measurement of fast moving samples
- Quantitative and qualitative data for better in-line process control
- Dual lamp technology retaining accuracy when the backup lamp is activated providing consistent uninterrupted analytical accuracy
- Integrated intelligent FOSS calibration tool, ISICAL™ enables anyone to develop calibrations
- FOSS standard OPC interface for integration to local control systems enables automatic regulation of the process

Description

ProFoss™ is a process analysis system based on high resolution diode array technology. It provides non destructive analysis of products such as flour, feeds, meals, ground meat and dairy products directly in the process line without bypass.

The analyser is housed in a robust cabinet mounted at the relevant location in the production area. Measurements are displayed in the control room and results can be fed into a regulation system for closed-loop automatic control.

The solution helps to optimise the use of raw materials and to consistently run production closer to target specifications.

Precise instrument matching enhances method development, minimises implementation efforts and ensures calibration model transferability between analysers.

Dedicated Analytical Solutions

FOSS

System description

The ProFoss™ analyser is available with dedicated interfaces based on reflectance or transmittance technology whichever is best suited for each application area. Measurements are done directly on the moving sample in the process stream. A high-intensity dual-lamp light source illuminates the sample directly or through an optical fiber. The light interacts with the sample and the reflected or transmitted light is measured by the diode array sensor. The backup lamp in the dual lamp system secures uptime and analytical accuracy is unchanged even after switching to a new lamp.

The complete wavelength range is measured instantaneously enabling measurements also on fast moving samples with high accuracy. Calibrations are transferable between units ensuring easy expansion to other measurement points. Integration to process regulations systems can be done through the FOSS OPC interface.

Dedicated sample interfaces



Window reflection:

In-line analysis of paste, granulates, powdered products etc in pipes or transport systems without bypass can be performed. The products pass over the interface window. The window reflection interface can easily be installed into the production line using standard GEA Tuchenhagen flowcells or welding an interface flange into the wall of the pipe/transport system.

Temperature: 150°C (302°F)
Pressure: Vacuum > 1 torr, Pressure < 3000 PSI
Lens: Sapphire; Diameter 45 mm, thickness 12 mm, with food grade EPDM O-ring seal
Hygiene: USDA, Dairy
Pipe flowcells: Fits directly into GEA Tuchenhagen Varinline Access units (DN40 to DN150 with 68 mm opening)
Transport system: Stainless steel welding flange



Direct light:

In-line analysis of products where direct contact with the product is not a technically feasible solution i.e. product transported on a conveyer belt.

Lens: Sapphire; Diameter 45 mm, thickness 12 mm, with food grade EPDM O-ring seal
Hygiene: USDA, Dairy
Distance: 100 – 250 mm to sample surface
Scanning area: 20 – 85 mm Ø

Powder probe:

In line analysis of fine powder like dairy powders etc. The powder probe interface can easily be installed into a hopper or pipe with free falling product. The probe has no moving parts. The probe is automatically cleaned with compressed air before each analysis.

Material: Teflon (PCTFE)
Diameter: 1"
Length: 7"
Fiber: Steel armoured fiber bundle (1, 3, 5 or 10 meters)
Air: Clean compressed air 43 – 72 PSI
Temperature: Max 120°C
Installation: 1" Swagelok crimp fitting
Hygiene: USDA, Dairy
Cleaning: Wash in water, hot or cold depending on product



Lateral transmittance:

In line analysis of slurries and viscous products such as WPC, Cream Cheese, Mozzarella etc. The Lateral transmittance probe does not restrict the flow rate of the product and can easily be installed in the production line using a standard GEA Tuchenhagen flowcell for installation in a pipe or by welding an interface flange into the wall of a tank.

Materials: Stainless steel
Lens: Sapphire, 5 mm thick, with food grade EPDM O-ring seal
Temperature: Max 150°C (302°F)
Pressure: 10bar, 145 PSI
Hygiene: USDA, Dairy
Optical fiber: Steel armoured fiber bundle (1, 3, 5 or 10 meters)
Pipe flowcells: Fits directly into GEA Tuchenhagen Varinline Access units (DN40 to DN150, 1 ½" to 6" with 68 mm opening or DN 25, 1" with 50 mm opening)
Tank: Stainless steel welding flange.



Standards and approvals

ProFoss™ is CE labeled and complies with the following directives:

- EMC Directive (2004/108/EC)
- Low Voltage Directive (LVD) (2006/95/EC)
- RoHS Directive (2002/95/EC)
- Packaging and packing and waste Directive (94/62/EC)
- WEEE Directive (2002/96/EC)
- ATEX Directive, (94/9/EC), Zone 20 (EN 61241-1-2004 - Explosion safety for DUST-Protection by enclosure tD)
- IECEx, Zone 20 (IEC 61241-1-2004 - Explosion safety for DUST-Protection by enclosure tD)
- REACH Directive (1907/2006/EC)
- Developed and produced according to FOSS ISO approval ISO 9001