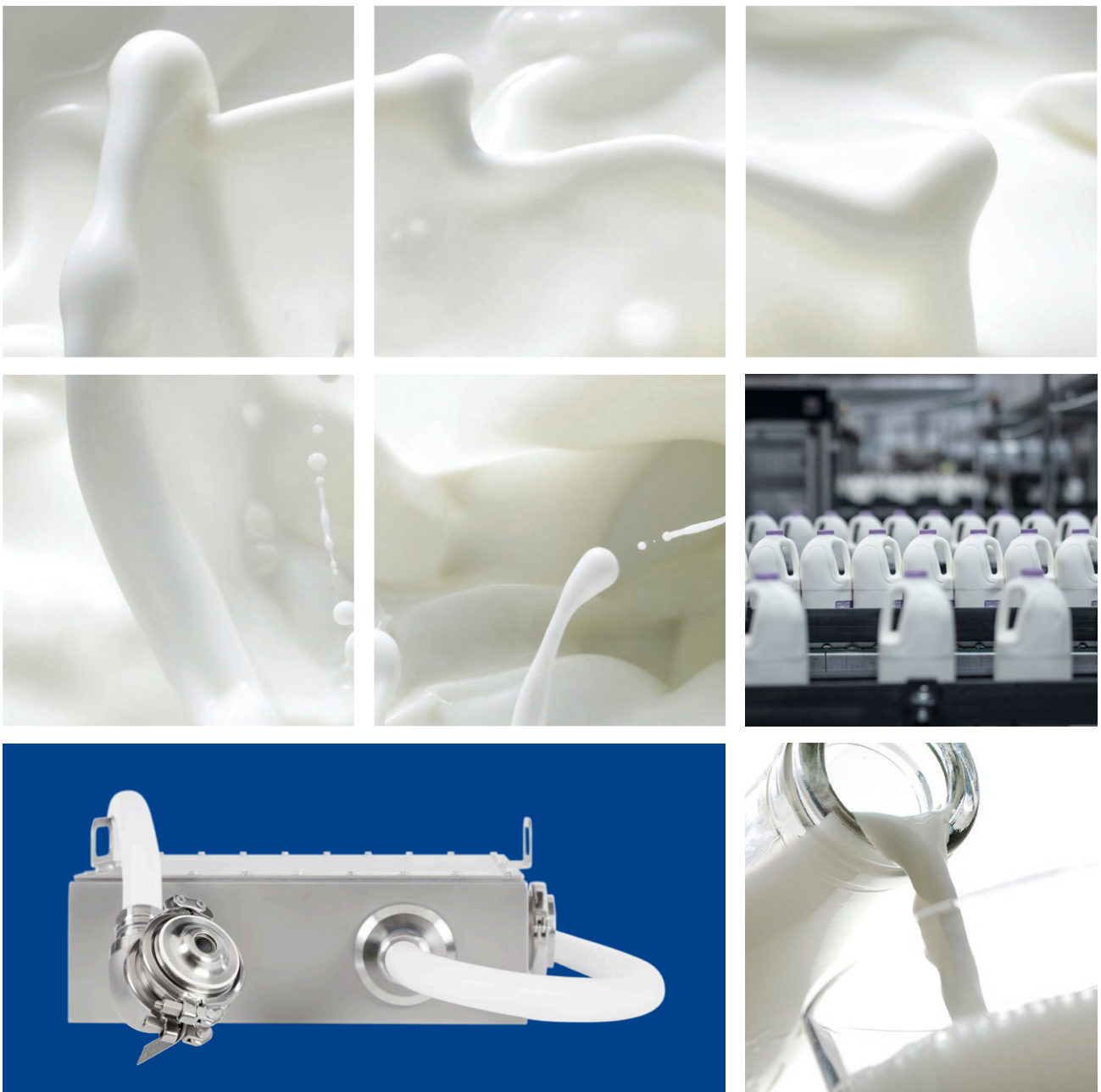


FOSS

PROFOSS™ 2
MILK STANDARDIZATION



ANALYTICS BEYOND MEASURE

OPTIMIZE YOUR RAW MATERIAL USAGE

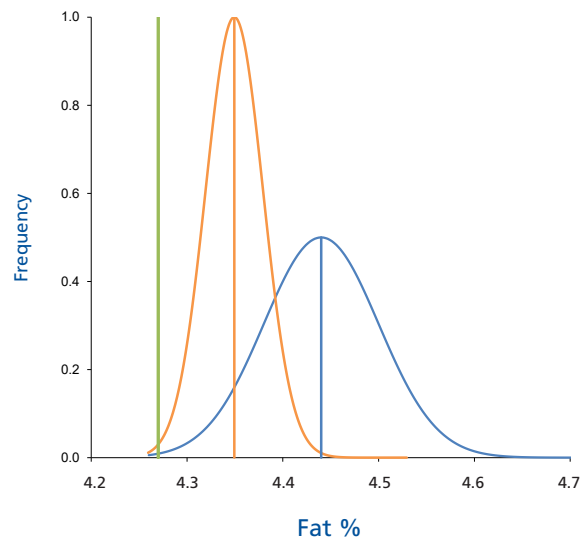
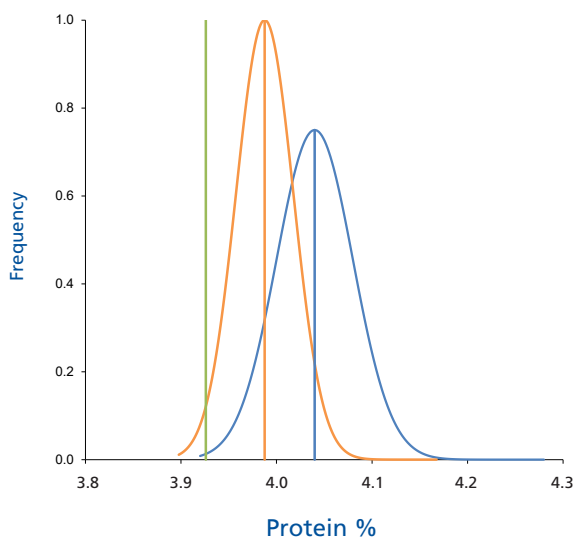
A common goal for milk standardization is to make the best use of raw materials and ensure that final products are as close to target specifications as possible, in terms of fat, protein and total solids. In this way, yield and profit can be improved with confidence while always meeting quality and legislative requirements.

In-line process control allows yet more value to be gained from NIR analytical technology. By measuring directly in the process and getting results every few seconds, process variation of key parameters such as protein and total solids can be more closely monitored. Instead of controlling your process based on single laboratory results, you can control the production in real-time and significantly reduce the measurement uncertainty. This allows you to make real-time adjustments and bring final products closer to target.

PROFIT IMPROVEMENT

Reduce your protein or total solids variation and increase yield and profit.

- Product specification
- Production variation and mean today
- New production variation and mean



True in-line results integrated in intelligent PID loops will reduce your variation significantly and enable you to move your targets closer to specifications.

As an example, at a daily production of 500.000 kg., reducing your average fat content by just

0,01% will save 120.000 Euro of butterfat per year.

FOSS can provide dedicated ROI calculations for cheese and powder, including protein savings, upon request.



INTRODUCING PROFOSS™ 2: YOUR PASSPORT TO IN-LINE PROCESS CONTROL

The ProFoss™ 2 solution builds on the success of the original ProFoss solution by exploiting the latest advances in analytical technology such as instrument calibration, connectivity for data sharing, probe design, full integration with a benchtop analyser such as MilkoScan™ FT3 for reference analysis and much more. With ProFoss 2, dairy producers can benefit from in-line NIR process analysis with the highest level of analytical performance across their production and quality laboratory setup.



Achieve complete control of your milk standardization with a ProFoss 2 in-line sensor installed directly in the process line. ProFoss™ 2 provides a continuous flow of real-time results. Optimize the use of raw materials and run production consistently closer to target specifications.

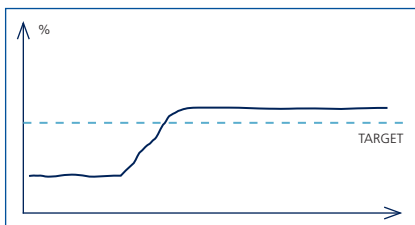


IMPROVE YOUR MILK STANDARDIZATION

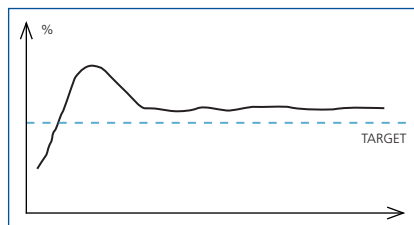
PROCESS ANALYSIS ADVANTAGES

- Production close to target specifications
- Increased yield and profit
- Less rework and start-up variation
- Optimised mass-balance
- Real-time process control
- Process regulation for short term process changes

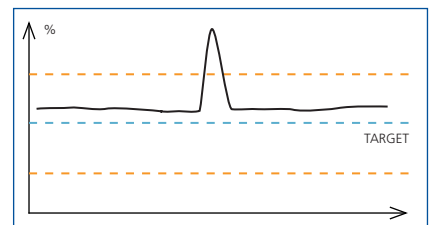
AUTOMATIC PROCESS CONTROL WITH PROFOSS™ 2:



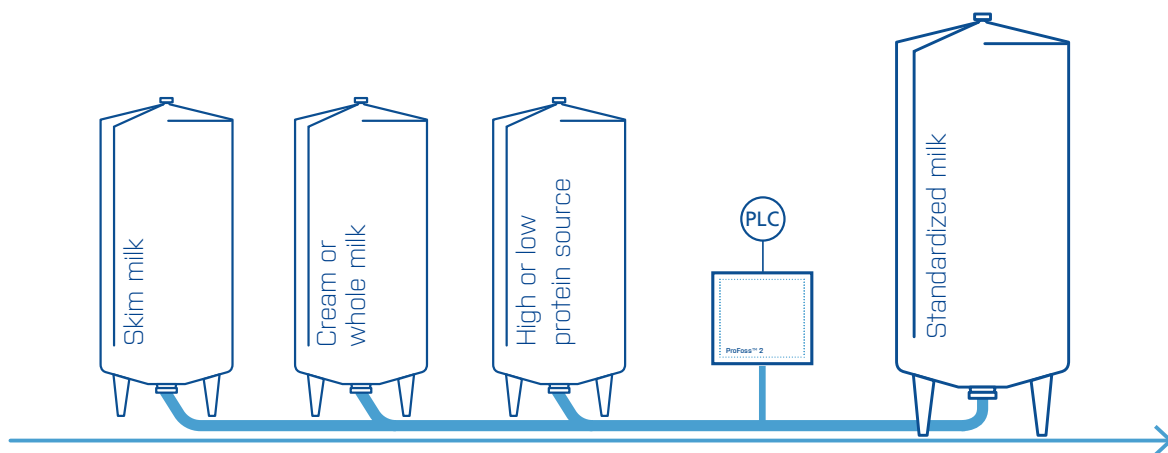
Production closer to target.



Reduce start-up variation.



React in real-time on results out of spec.



Control parameters

- Fat
- Protein
- Total solids
- F/P ratio
- F/TS ratio
- P/SNF ratio

Typical installation point

- Installation as close to the blending point as possible in order to validate and adjust final fat, protein and total solids content
- Can be used for both flow blending or off the separator standardization

Dedicated product interface

- Lateral transmittance interface connected directly to the pipe
- True in-line – no bypass
- No moving parts
- No hygiene compromises. 3A hygiene certified

CONTROL YOUR MILK STANDARDIZATION USING REAL-TIME ANALYSIS

ProFoss™ 2 provides real-time analysis results enabling you to react immediately on process changes and significantly reduce your process variations. Move fat, protein or total solids targets closer to product specifications and increase yield, profit and quality.

A high frequency of results ensures that nothing gets missed and that you will always have a precise picture of any fluctuations in the process. The ProFoss 2 lateral transmittance probe enables penetration deep into the product, allowing a larger product presentation to be measured. The latest generation of the lateral transmittance probe gives a significantly increased signal-to-noise ratio for higher speed and unique accuracy and stability.

At the same time, ready-to-use calibrations and the consistency of measurements ensures that multiple ProFoss 2 instruments can be relied on to always give the same high quality measurements.

THE LATERAL TRANSMITTANCE PROBE

ProFoss™ 2 is based on near infrared technology and uses a lateral transmittance probe to analyse directly in the process pipe.

In dairy production, it is important for the infrared light to penetrate through a large product volume to obtain a good representative measurement. Light from the lateral transmittance probe penetrates deeper into the product than any other solution, making several scans during each measurement cycle. This ensures a highly representative result.

The ProFoss 2 probe is based on a sanitary design which meets international hygiene standards. The probe can be cleaned as part of the normal CIP procedures in the production plant.

The latest generation of the ProFoss 2 lateral transmittance probe has been developed to yield even more reliable analysis data. It has a higher intensity of light which offers a better signal-to-noise ratio and improved transferability, ensuring that all ProFoss 2 instruments can be relied on to always give high quality measurements. The frequency of measurements has also been boosted to give a clearer evaluation of variations in fat, protein and total solids, allowing for closer control against production targets.





THE POWER OF IN-LINE: PROFITABLE MILK STANDARDIZATION

The reliability of measurements of fat, protein and total solids across all units and production lines is assured with standardized instruments that all measure the same.

A standardized analyser with transferable calibrations significantly reduces the implementation and maintenance costs for in-line process control.

The high uniformity standards and robust design of the latest generation ProFoss™ 2 solution ensures that the same calibration can be used on multiple instruments which measure the same product. This also ensures that only minimal updates to calibrations are required during the instrument lifetime. In contrast, solutions with lower standards will require separate calibrations for each instrument and more frequent updates.

Administration is easy due to the use of transferable calibrations based on the industry benchmark MilkoScan™ FT3 benchtop analyser. ProFoss 2 provides facilities to evaluate measurements against the MilkoScan FT3 on a regular basis. The performance validation procedure is made simple and reliable with automatic data transfer.

PROFOSS™ 2 HIGH RESOLUTION NIR TECHNOLOGY



ProFoss™ 2 is unique in employing a near infrared-based analysis technology known as high resolution diode array analysis. The high resolution technology ensures accuracy and reliability with measurements based on a high density of data points.

PROFOSS™ 2:

- High resolution diode array NIR technology for accurate and continuous analysis
- Built-in instrument standardisation for quick and simple implementation
- Unique lateral transmittance probe interface providing accuracy and rapid implementation
- Quantitative and qualitative data for better in-line process control
- Minimal maintenance with standardised instruments and unmatched transferability
- Interface for integration to control systems enables automatic regulation (Ethernet, 4-20mA, Profibus, etc. communication)



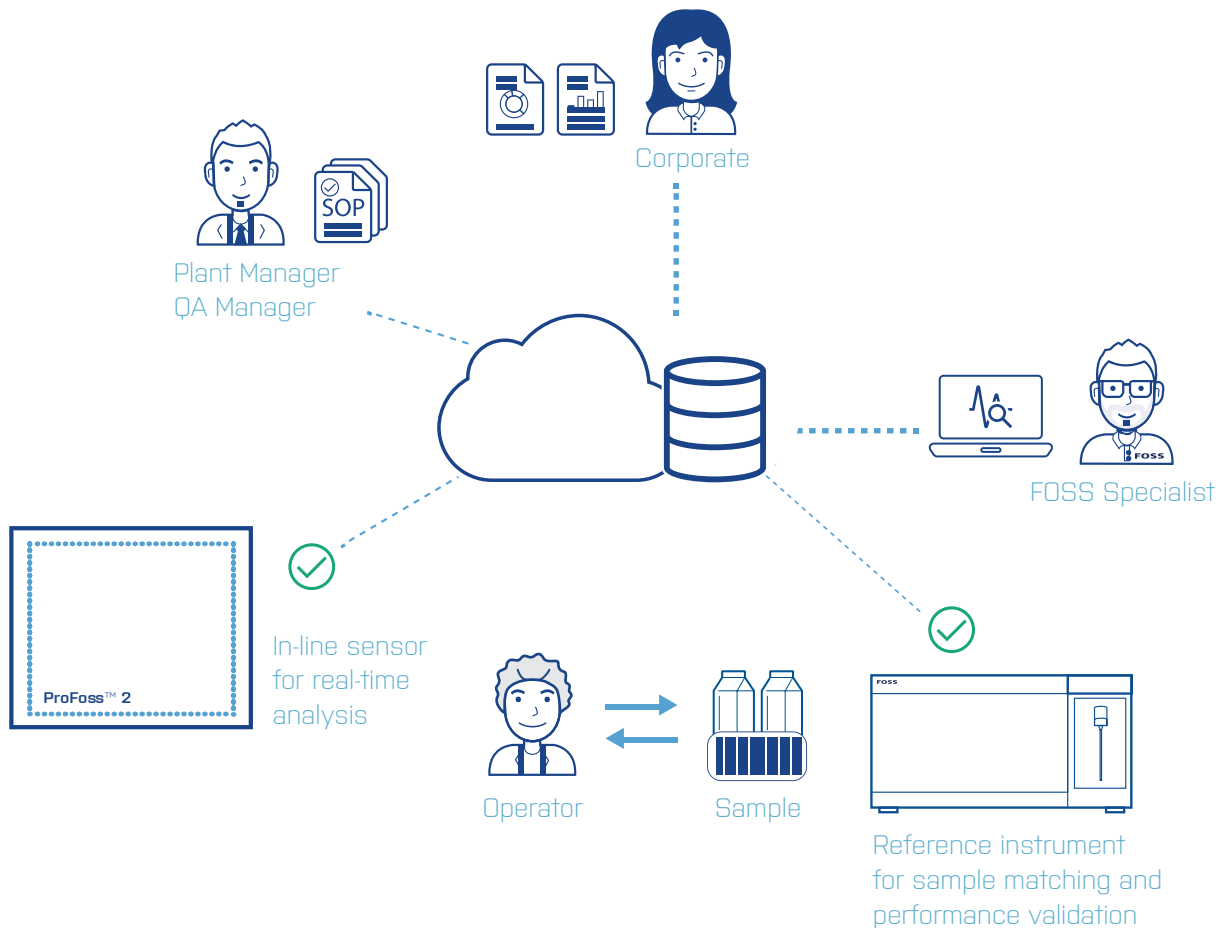
The revolutionary ProFoss™ 2 performance evaluation procedure is used to match in-line results with those from reference benchtop instruments such as the MilkoScan™ FT3.

FossManager™ software gives a common view of sample identifications and results from both benchtop and in-line sources on one page. The overview facilitates efficient surveillance of calibration performance and any necessary adjustments through pre-planned FossAssure™ services.

HIGHER YIELD ENSURED BY PREDICTABLE PERFORMANCE

The latest technology behind ProFoss™ 2 ensures consistent performance day in, day out and year after year. Building on the reliable measurements delivered by each and every analyser unit, software and digital connectivity services help to maintain stable high performance across whole populations of instruments.

Calibrations can be monitored and adjusted remotely from anywhere. Automatic instrument monitoring and alerts can be set up and maintenance schedules can be proactively planned for optimal up-time.



Software and digital connectivity services contribute to reliable performance across individual or whole populations of instruments. ProFoss 2 units can be monitored and managed from a single desktop, for example, when making calibration adjustments or proactively planning maintenance cycles for optimal uptime. This can be done from anywhere in the world from any PC.



A FAST RETURN ON INVESTMENT

With any process analysis solution, you are effectively putting your production in the hands of technology. FOSS is the right partner to provide a reliable solution with consistently high uptime.

ProFoss™ 2 is simple to install directly in the production line and comes with a total service solution to help protect your investment. SmartCare™ service and support plans offer the option of preventative maintenance for maximum uptime and minimized repair costs

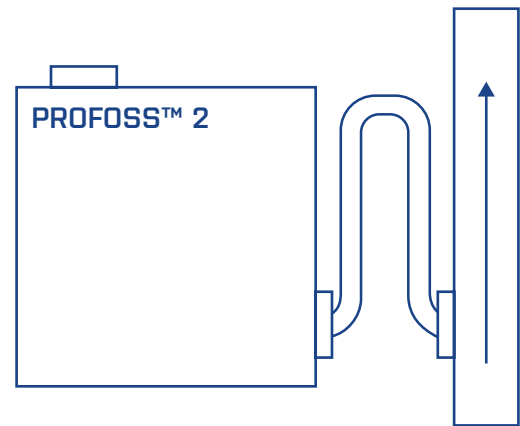
THE NEW PROFOSS™ 2 SOLUTION OFFERS:

- Proven technology for precision and trouble-free operation
- User-friendly interfaces allowing anyone in the plant to contribute to process control
- Service programmes offering a range of options to suit your business
- Service in a timely manner by fully trained local staff onsite and/or remotely through internet

DEDICATED PRODUCT INTERFACE

LATERAL TRANSMITTANCE:

The 3rd generation lateral transmittance probe does not restrict the flow rate of the product. It can easily be installed in the production line using a standard Varinline connection for installation in a pipe. In combination with the ProFoss™ 2 unit, it is perfect for in-line analysis of milk.



PROFOSS™ 2, DESIGNED FOR PROCESS ENVIRONMENT AND PROCESS OPTIMISATION:

ProFoss™ 2 is a flexible and easy-to-implement solution with key food safety certifications. Implementing ProFoss 2 provides insight into the process to help maximise production yield across multiple production lines. ProFoss 2 is supported by a range of digital services.

STANDARDS AND APPROVALS

ProFoss 2 is CE labeled and complies with the following directives:

- 3A hygiene approval
- Low Voltage Directive 2014/35/EU
- EMC (Electro Magnetic Compatibility) Directive 2014/30/EU
- Packaging and Packaging Waste Directive 94/62/EC
- WEEE Directive 2012/19/EU
- RoHS directive 2011/65/EU
- REACH Regulation (EC) No. 1907/2006

Additional for ProFoss™ 2 Ex:

- ATEX & IECEx certified

TECHNICAL SPECIFICATIONS

Measuring technology: Lateral Transmittance	
Analysis frequency	Real time: Average analysis time per result 2 - 3 seconds
Wavelength range	850 - 1050 nm
Detector	Si Diode Array
Spectral dispersion Si Diode Array detector	1.0 nm/pixel
Process line interface	Sapphire, 5 mm thick, with food grade FFPM O-ring seals Fits into standard GEA Tuchenhagen Varinline Access Units with Ø68 mm opening (Type N)
Product temperature	Max 150°C (302°F)
Product pressure	Production pressure < 30 bar (< 435 PSI). Shock pressure < 75 bar (< 1088 PSI). Warning! Varinline access units higher than DN 80 permit a maximum pressure of 10 bar (145 PSI).
Optical fiber protection:	Steel armoured (1, 3, 5 or 10 metres)

Technology	NIR technology	
Software package	ISIScan NOVA™ for instrument control	
Wavelength accuracy	< 0.5 nm	
Wavelength precision	< 0.02 nm	
Wavelength temperature stability	< 0.01 nm/ °C	
Spectral noise	< 60 micro AU	
Vibrations - require optical fiber fixation	Can handle most vibration situations (0.4 Grms)	
Ambient operating temperature	ProFoss™ 2 -5°C to 40°C (23 °F to 104 °F), cooling with a compressed air line allows use up to 65°C (149 °F)	ProFoss™ 2 Ex 0°C to 50 °C (32 °F to 122 °F)
Pressurised air – cooling (Amb. Temp. 40 - 65°C)	Cooling air flow rate minimum 5 l/min, >99.9% water free, >99.9% free of oil and fine particles down to 0.3 µm	
Ambient humidity	< 90% RH	
Dimensions (W x D x H)	w x h x d = 420 x 420 x 135 mm (16.5 x 16.5 x 5.3 inches) + brackets to hold the unit	
Weight	25 kg (20 kg)	
Power supply	1 phase, 100-240 VAC (max ±10% of the rated voltage), max. 40 VA, 50 - 60 Hz	
Cabinet / Housing materials	1.5 mm (lid 2.5mm) Stainless Steel EN 1.4301 (SS2333)	
Mechanical environment	Process control equipment	
Degree of protection	ProFoss™ 2: IP69*	ProFoss™ 2 Ex: IP6X
Approvals	ProFoss™ 2: CE	ProFoss™ 2 Ex: CE, ATEX, IECEx certified (Dust explosion approved)
Hygiene	3A hygiene certified	
Communication	KEPServerEX (Ethernet, Analogue Profibus/Profinet) to PLC/SCADA; FossManager™	
Network	High quality, shielded LAN cable; minimum category 5e. RJ 45 (IP 67) LAN connections	
Operation	Indoor use or outdoor shielded from rain and direct sunlight	

* IP69 is the highest protection for dust entering the unit. IP69 means protected against the effect of high-pressure water and/or steam cleaning high temperature.

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