

NIRS™ DS2500 Feed and Forage analyser The next step in NIR analysis



Near infrared analysis just keeps on getting better. With the FOSS NIRS™ DS2500, near infrared analysis has taken yet another step towards ultimate performance. Combining exceptional accuracy across a broad wavelength range of 400 to 2500 nm with full compatibility with all your existing and future FOSS solutions, this instrument brings the future of near infrared technology one step closer. Designed for use in the laboratory or feed mill, the NIRS DS2500 is ideal for:

- Routine control of intake for optimal use of raw materials
- Routine production control for improved efficiency and economy
- Final product monitoring on diverse control parameters

Sample	Parameters
Direct measurements of feed and forage samples in ground or unground form, for example direct measurement of pellets	FOSS global calibrations include: Fat, Protein, Moisture, Ash, Starch and Crude Fiber. Access to relevant reference analysis makes it possible to develop additional calibrations for parameters such as Amino Acids, NDF, ADF, Colour and more.



Unmatched optical performance

The NIRS™ DS2500 uses highly accurate optical NIR technology to give best-in-class performance across the full wavelength range of 400 to 2500 nm. Regardless of whether you are testing moisture, fat and protein or more demanding parameters such as amino acids, ash or fibers, the NIRS DS2500 delivers precision results in under a minute. With this high performing instrument on your team, you can be sure that you are getting the highest level of quality control at all stages of production.

100% calibration compatibility

The NIRS DS2500 can be pre-calibrated with global data for the most common feed types and ingredients and is also 100% backwards compatible with FOSS NIRSystem™ II solutions, InfraXact™ and XDS™ instruments. Its compatibility makes it easy to leverage data from NIRSystem II, InfraXact and XDS units using straightforward migration paths without any loss of performance.

Factory standardised

It's easy to get started using the NIRS DS2500 as every instrument that leaves the factory is hardware standardised. Light intensity, bandwidth and wavelength precision are thoroughly controlled in the final stages of production to ensure complete consistency between instruments. Furthermore, once an instrument is up and running, in-built measurement standards help to control its performance to ensure that no deviations occur over time. This keeps continuous control of consistency between instruments and makes it easy to add any new instruments to your operation. Multiple instruments can easily use the same calibrations without any modifications.

Built for the task

The NIRS DS2500 has been created for high performance in even the harshest production conditions. Robust, easy-to-use and IP65 certified, it withstands humidity, dust, vibrations and temperature fluctuations. This high level of solidity makes the NIRS DS2500 suitable for at-line use by anyone in any production plant.

Why choose FOSS?

For decades FOSS has worked with the feed industry to keep pace with 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 is available for you to choose from according to your business requirements.

Visit www.foss.dk for more information about how FOSS dedicated analytical solutions can help you to produce feed products effectively and with optimal profit.

Technology

Uncompromising and highly versatile

The new predispersive monochromator technology used in the NIRS DS2500 ensures versatility and stability across the full spectral range from 400 to 2500 nm. With the highest possible signal-to-noise ratio, the NIRS DS2500 can effortlessly manage analysis of demanding parameters such as amino acids as well as other low level parameters in need of high accuracy.

The spectrometer is equipped with internal standards for control of light intensity, bandwidth and wavelength position. Its stability can be validated to ensure that data transfer is continuously seamless, even over time. Designed to deliver ongoing exceptional performance, the NIRS DS2500 monochromator will not normally need recalibration. However, internal as well as external standards can be used for automatic recalibration and quality control of the spectrometer.

Online remote instrument management

FOSS Mosaic networking software allows you to connect your NIRS DS2500 to the internet for remote instrument management. Once connected, either a FOSS NIR specialist or your in-house team can manage and optimise the performance of your instrument(s) online without interrupting routine operations. With Mosaic you can manage all the settings on your instrument(s) and can carry out task such as:

- Instrument and calibration surveillance
- Instrument diagnostics for QC management
- Slope and intercept adjustment
- Calibration updates and optimisation
- Central reporting
- Protection of valuable data and calibrations
- Online technical support

Mosaic software also allows the user to remotely set up and monitor an instrument locally (LAN) without an internet connection.



NIRS™ DS2500 key features

- Unmatched optical performance across the full wavelength range (400 - 2500 nm)
- Factory standardised for seamless calibration transfer
- 100% compatible with calibrations from FOSS NIRSystem™ II, InfraXact™ and XDST™ instruments
- Consistent results even in harsh environments
- Ready to use calibrations for feed and ingredients
- Suitable for networking using LAN (local) or WAN (internet)
- New predispersive monochromator
- Wide range of cups and accessories for dry samples, liquids and slurries



Operational and calibration development software

FOSS NIRS DS2500 operates on the user-friendly ISIScan Nova software that supports the latest calibration technologies, as well as networking options. Its many features include:

- Automatic database storage of results
- Supported regression methods: PLS, MPLS, LOCAL, FOSS-ANN prediction
- Real-time outlier detection for each constituent
- Graph and trend analysis display
- Product control with control limits, target values and reports
- User-defined fields for tracking sample information
- LIMS compatibility (export only)
- Customer support available online

Improved traceability with RFID tags

A range of sample cups fitted with RFID tags (Radio Frequency Identification) can be used with the NIRS DS2500. In multi-product environments, this allows plant operators to significantly improve traceability by making sure that the right sample cups are used by all operators. Not only does this minimise risk of error, it also simplifies operation.

Proven calibration development

Calibration development is supported by proven WinISI calibration software, which includes PLS, MLR and LOCAL calibration algorithms, a calibration monitoring program and LOCAL database management.

Users can develop their own product calibrations using WinISI calibration software for a number of diverse parameters such as Amino Acids, NDF, ADF, Colour and more.*

WinISI can also be integrated with FOSS Mosaic networking software for remote calibration management. Simply create or adjust your product calibrations using WinISI and distrib-

ute them to your instruments using Mosaic. Mosaic can also collect sample data from your production plants for calibration development.

FOSS Global and regional calibrations

The NIRS DS2500 can be ordered pre-calibrated with global or regional calibrations for many types of feed and feed ingredients. FOSS global calibrations** are based on extensive samples from all over the world. Robust, low maintenance and easy to use from day one with full calibration support using our remote network software Mosaic. See the table below showing examples of the standard error of prediction (SEP) achievable using FOSS global calibrations. Note these values will depend on the validation sample set used. You can read more on our Application notes documents.

Regional calibrations contain fewer samples, or are of regional interest. Please contact your local FOSS sales representative to find out more.

Part of a complete high performing solution

Whether you are new to NIR or an experienced user, FOSS offers a complete and customised support program*** for your NIRS DS2500.

- On site preventive maintenance visits
- Preventive maintenance parts
- Software updates
- Remote instrument surveillance
- On-line and off-line calibration support
- Discounts on customised calibration development service
- Discounts on additional service visits
- Self maintenance training and video on demand support
- Priority support response

* Please note that calibration development requires access to good data reference analysis of the desired parameters.

** FOSS global calibrations include protein, moisture, ash, fat, starch and crude fiber.

*** Not all services are available in all countries.

Calibration	Products	Components/SEP					
		Protein	Fat	Moisture	Fibre (crude)	Ash	Starch
Compound Feed*	Ground	0,8	0,46	0,37	0,74	0,93	1,2
	Unground	1,09	0,8	0,5	0,65	1,15	1,81
Dry pet food	Cat, dog	0,7	0,6	0,2	-	0,9	-
Plant based Feed ingredients	Cereals**	1,17	0,63	0,63	0,93	0,64	-
	Corn Gluten	1,75	0,73	0,84	1,02	0,83	2,64
	Soymeal	0,78	0,66	0,24	0,67	0,5	-
Animal byproducts	Meat & Bone meal	1,52	1,28	0,78	-	2,62	-
	Fish meal	1,28	0,43	0,4	-	0,81	-

* Cattle, poultry, pig, goat, sheep
** Wheat, Barley, Corn, Rye, Oat

The standard error of prediction (SEP) is the standard deviation (SD) of differences between Near-infrared Spectroscopy (NIRS) predictions and the associated reference data. The results of NIRS testing are usually compared to those of reference testing on the same samples.



Secure your investment with a FossCare™ Support Agreement

Let FOSS take care of you for a maximum return on your analytical investment. Get a four year warranty as part of the new FossCare Premium Preventive Maintenance Agreement or two years as part of any other FossCare agreement. In addition to the peace of mind afforded by the warranty period, the continual preventive maintenance pays off by keeping your analytical instruments working perfectly every day, year after year.

Why preventive maintenance?

As with any analytical solution, it is essential that your FOSS instrument receives regular maintenance to ensure optimal performance and extended lifetime. Avoiding expensive downtime is a matter of following factory standards and preventively replacing parts before they wear out. In turn, this helps ensure reliable and consistent results at the highest level.

Preventive and predictive maintenance combined with global support from 300 dedicated service, application, software and calibration specialists keeps your instrument running perfectly all year round.

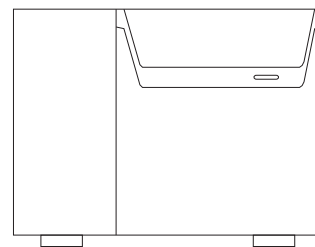


Benefits of a FossCare™ Support Agreement:

- Extended Warranty (two or four years depending on the chosen agreement)
- Regular maintenance; the instrument is diagnosed, cleaned, adjusted, tested, fine tuned and recalibrated
- Minimal downtime from replacing components before they are worn out
- Consistent, accurate and reliable results you can always trust
- Preventative maintenance visits when it suits you (your business)
- 24/7 phone support - no need to worry about closing hours or PO
- Low, fixed service budget prevents unexpected expenses
- Discounts on additional services, spares, training and software upgrades

Contact your local Foss office for more information.

Specifications



Feature	Specification
Dimensions (W x D x H)	375 x 490 x 300 mm
Weight	27 kg
Degree of protection	IP 65
Measurement mode	Reflectance or transmittance (for liquids)
Wavelength range	400 - 2500 nm
Detector	Silicon (400 - 1100 nm), Lead Sulfide (1100 - 2500 nm)
Optical bandwidth	8.75 ±0.1 nm
Spectral resolution	0.5 nm
Number of data points	4200
Absorbance range	Up to 2 AU
Analysis time	<1 minute*
Wavelength accuracy	<0.05 nm
Wavelength precision (Based on a single analyser)	<0.005 nm
Wavelength precision instrument-to-instrument (Based on a group of analysers)	<0.02 nm
Photometric noise**	400 - 700 nm < 50 micro au 700 - 2500 nm < 20 micro au

* Adjustable

** Noise = RMS for 10 co-added, 10 second scans

Installation requirements

NIRS™ DS2500	
Voltage supply	100-240 V AC *, frequency 50-60 Hz, Class 1, protective earth
Ambient temperature	5 - 40°C
Storage temperature	-20 to 70°C
Ambient humidity	< 93% RH
Mechanical environment	Stationary during use
EMC environment	Laboratory use, Industry requirements

*Mains supply voltage fluctuations not exceeding $\pm 10\%$ of the rated voltage.

Legal data

The equipment is CE labelled and complies with the following directives:

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

PC requirements

Contact your local FOSS representative for information.

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