FOSS

NIRS™ DA1650 Feed and Forage analyser

Ready to use near infrared analysis for forward-looking feed mills

Future-proof analysis
The NIRS DA1650 uses state-of-the-art near infrared technology to bring high accuracy NIR analysis to smaller feed mills and laboratories. Easy to install and even easier to use, it offers highly accurate analysis on all the main parameters such as Fat, Protein, Moisture, Fiber, Starch and Ash. This makes it ideal for:

- Routine control of standard quality control parameters at intake of a wide variety of samples
- Routine production control for improved efficiency and economy
- Monitoring of final product quality

Sample	Parameters
Direct measurement of feed and feed ingredient samples in ground or unground form, for example direct measurement of pellets	Standard parameters: Fat, Protein, Moisture, Fiber, Starch and Ash

Dedicated Analytical Solutions

Get started with near infrared analysis

Rapid return on investment

Designed to meet the needs of smaller feed production plants, the NIRS DA1650 is highly accurate, easy to use and cost-effective. This precision instrument requires little training to operate and carries out near infrared analysis of key parameters in feed and feed ingredients in under a minute.

Its versatility means can be used at all stages of production to instantly improve the profitability of your plant. Whether you want to check raw material intake for payment, assess incoming material for optimal segregation or make sure final products are on spec, the NIRS DA1650 is the right instrument for the job.

Precalibrated for feed and feed ingredients

The NIRS DA1650 can be pre-calibrated for the basic parameters that have the greatest impact on production costs - Protein, Fat and Moisture, Fiber, Starch and Ash. This pre-calibration ensures the most up-to-date calibrations and removes the need to invest time and resources in developing new calibration models. Based on a range of samples taken from all over the world, FOSS global calibrations are robust, require low maintenance and are ready to use right from day one.

User-friendly operation

Sampling and testing are designed to be as easy as possible so anyone working in your plant can operate the machine. Using an built-in PC with an intuitive touch screen interface, analysis is straightforward. Simply place a cup of your test substance straight in the analyser and the results are displayed on the screen in under a minute.

Robust and stable

Whatever your operating environment, the NIRS DA1650 delivers high performance. Robust and IP 65 certified, it withstands humidity, dust, vibrations and temperature fluctuations. This level of solidity makes it suitable for use in even the harshest conditions. And with no moving parts, it is highly reliable and requires little maintenance.

Instant analysis results

Unlike time-consuming wet chemistry analysis, this new analyser gives you analysis results on the main parameters for feed and feed ingredients quickly, effectively and not least – accurately. The instrument can carry out precision analysis on a variety of sample forms such as ground or unground and pellets.

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

Precision technology

The NIRS DA1650 is a Diode array (DDA) based NIR reflectance and transreflectance analyser with a versatile scanning range of 1100 - 1650 nm. This range makes it the ideal instrument for highly accurate analysis of all standard feed parameters such as Fat, Protein, Moisture, Fiber, Starch and Ash.
It is fully compatible with other FOSS analytical instruments, such as the NIRS DS2500 and the ProFoss in-line NIR analyser enabling you to easily leverage data using straightforward migration paths.

Factory standardised for complete control

Getting started with the NIRS DA1650 couldn't be simpler as every instrument that leaves the factory is hardware standardised. Light intensity, bandwidth and wavelength position are all thoroughly controlled in the final stages of production to ensure complete consistency between instruments. Furthermore, once the instrument has been taken into use, internal standards control its performance to ensure no deviations occur over time. This continuous control minimises differences between instruments and makes it simple to add any new instruments to your range.

Intuitive software

The NIRS DA1650 is operated on ISIscan NOVA software using an integrated and intuitive touchscreen. This user-friendly software supports the latest calibration technologies as well as networking options. In addition to its ready-to-use calibration models, it offers a variety of other features including:

- Automatic database storage of results
- Supported regression methods: PLS, MPLS, LOCAL, FOSS-ANN prediction
- Real-time outlier detection for each constituent
- Product control with control limits and target values
- User-defined fields for tracking sample information
- LIMS compatibility (export only)
- Customer support available on-line
- Easy sample export into WinISI calibration software

Online remote instrument management

FOSS Mosaic networking software allows you to connect your NIRS DA1650 instrument to the internet for remote instrument management. Once connected, a FOSS NIR specialist or your in-house team can monitor and optimise the performance of your instruments online without interrupting routine operations.

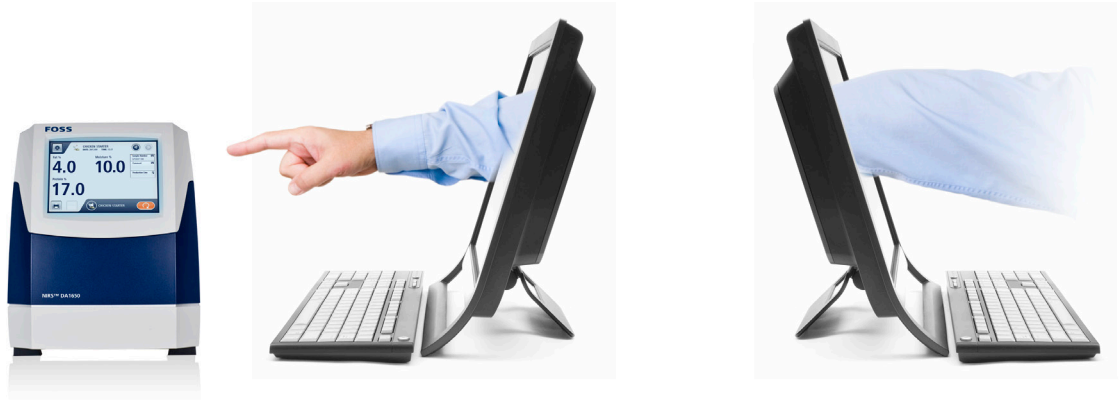
With Mosaic you can manage all the settings on your instrument(s) and carry out tasks such as:

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

Mosaic software also allows the user to remotely control one or several instruments locally (LAN) without an internet connection.

Key features

- Simple to use
- Rapid analysis of protein, fat and moisture
- Low maintenance
- Robust design
- Factory standardised
- Compatible with other FOSS NIR solutions
- Calibrations for common feed and forage products
- Remotely supported through Mosaic network software
- Built-in computer with intuitive touchscreen interface



The power of networking: instruments can be monitored remotely by experts in NIR, calibration data can be collected and transferred, and calibration updates/instrument adjustments can be made without the local user having to take any action.

WinISI and networking software

You can develop your own calibrations for NIRS DA1650 using WinISI calibration software. This software can be integrated with Mosaic networking software to make it simple to transfer your calibrations from a central location to your instruments. Mosaic can also be used to collect and send sample data from your instrument for calibration development.

Global and regional calibrations

NIRS DA1650 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 different regions and countries, collected over the years. This means they are robust, require little maintenance and are easy to use already from day one. Full calibration support is available using our remote networking software Mosaic.

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

Achievable performance - DA1650 (SEP):

Likewise, required sample data for calibration development can be sent from plants via Mosaic.
Networking also allows a central administrator to check that all instruments using a new parameter have the correct slope and bias for analysis. A master set of samples is sent for analysis on each instrument and the results can be compared to decide any necessary adjustments for individual instruments.

Parameters: Fat, Protein, Moisture, Fiber, Starch and Ash

DDA technology with wavelengths from 1100 - 1650 nm is most suitable for these basic parameters. For more flexibility in choice of parameters, we recommend the NIRS DS2500 with its full wavelength range and increased performance.

Part of a complete high performing solution

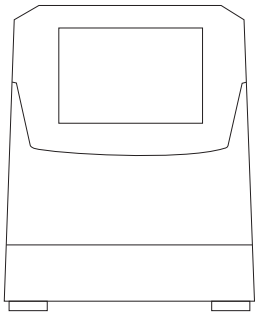
Whether you are new to NIR or an experienced user, FOSS offers a complete and customised support program for your NIRS DA1650 instrument.

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

Achievable performance – DA 1650 (SEP)		Parameters					
Calibration	Products	Protein	Fat	Moisture	Fibre (crude)	Ash	Starch
Compound Feed*	Ground	0,9	0,45	0,5	0,6	0,4	2,5
	Unground	1,0	0,55	0,55	0,8	1,1	2,0
Dry Pet food	Cat, Dog	0,9	0,45	0,5	0,4	0,9	-
Plant based Feed ingredients	Cereals**	0,45	0,4	0,55	0,5	0,4	2,5
	Corn Gluten	0,75	0,55	0,55	1,0	1,0	2,8
	Soymeal	0,8	0,5	0,55	0,8	0,5	2,5
Animal byproducts	Meat & Bone Meal, Fish meal	0,8	0,5	0,5	-	1,0	-

** 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.



Specifications

Feature	Specification
Dimensions (W x D x H)	230 x 530 x 280 mm
Weight	16 kg
Degree of protection	IP 65 (Dust and water proof)
Measurement mode	Reflectance or Transflectance (for liquid samples)
Wavelength range	1100 - 1650 nm
Detector	256 pixel InGaAs diode array
Optical bandwidth	10.44 ±0.5 nm
Spectral resolution	0.5 nm/data point
Number of data points	1100
Absorbance range	Up to 2 AU
Analysis time	<1 minute*
Wavelength accuracy	<0.5 nm
Wavelength precision	<0.05 nm (standard deviation)
Wavelength temperature stability	<0.02 nm/ °C

* Adjustable

Installation requirements

NIRS™ DA1650	
Voltage supply	100 - 240 V AC*, frequency 50 - 60 Hz, Class 1, protective earth
Ambient temperature	5 - 40°C
Storage temperature	-20°C to 70°C
Ambient humidity	< 93% RH
Mechanical environment	Stationary during use
EMC environment	Laboratory use, Industry requirements
* Mains supply voltage fluctuations not exceeding ±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

Built-in touch screen computer included.
Contact your local FOSS representative for information.

FOSS

FOSS
Foss Allé 1
DK-3400 Hilleroed
Denmark

Tel.: +45 7010 3370
Fax: +45 7010 3371

info@foss.dk
www.foss.dk

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