



Australian Government
Department of Industry,
Science and Resources

**National
Measurement
Institute**

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 15/1/8

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

Foss Model Infratec NOVA Grain Protein Measuring Instrument

submitted by Foss Pacific Pty Ltd
Unit 5, 3-4 Anzed Court
Mulgrave VIC 3170.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI M8, *Pattern Approval Specifications for Protein Measuring Instruments for Grain*, dated July 2004.

This approval is subject to review at the decision of the Chief Metrologist in accordance with the conditions specified in the document NMI P 106.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern provisionally approved – interim certificate issued	27/10/14
1	Pattern amended (validity date) – interim certificate issued	23/04/15
2	Pattern amended (validity date) – interim certificate issued	23/09/15
3	Pattern approved – interim certificate issued	16/10/15
4	Pattern approved – certificate issued	11/05/16
5	Address updated and variant 1 provisionally approved – interim certificate issued	1/08/19
6	Special conditions (no of instruments) amended – certificate issued	17/09/19

Document History (cont...)

Rev	Reason/Details	Date
7	Validity date amended – certificate issued	18/09/19
8	Pattern amended (typo correction) and variant 1 approved – certificate issued	19/03/21
9	Pattern approval NOTE corrected & review date removed – certificate issued	10/11/21
10	Variant 2 provisionally approved – certificate issued	18/09/23
11	Revised special conditions of variant 2 – certificate issued	24/01/24
12	Variant 2 approved – certificate issued	22/08/24

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 15/1/8' and only by persons authorised by the submitter.

Instruments purporting to comply with this approval and currently marked 'NMI P15/1/8' may be re-marked 'NMI 15/1/8' but only by persons authorised by the submitter.

It is the submitter's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0B.

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.



Darryl Hines
Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 15/1/8

1. Description of Pattern Provisional approved on 27/10/14 approved on 16/10/15 amended on 19/03/21

A Foss model Infratec NOVA grain protein measuring instrument (Figure 1) used to determine the protein content of a whole grain sample of barley or wheat.

The model Infratec NOVA is fitted with an LCD touch screen display/keyboard.

Instruments are approved for use over:

- an operating range of 6 to 22% protein with a scale interval of 0.1%
- an operating range of up to 50 to 90 kg/hL with a scale interval of 0.1 kg/hL
- a weighing range of up to 0.25 to 0.45 kg with a scale interval of 1 g
- an operating temperature range of 5 °C to 40 °C

which must be so marked.

1.1 Design

The model Infratec NOVA instrument automatically determines the protein content of a sample of grain, and displays the value in increments of 0.1%, by passing a monochromatic light beam through the sample and to a detector; the detected signal is amplified and processed by the internal computer. Results are displayed on the LCD touch screen and may also be exported or printed via an Ethernet/USB port.

1.2 Test Weight Module

Instruments may be fitted with an integral Test Weight Module to automatically determine the bulk density of a sample of barley or wheat grain by weighing a sample packed in the test cell. Results are displayed on the LCD touch screen display.

The Test Weight Module has a cylindrical test cell of a fixed volume of 0.45 litre directly supported by a single SCAIME Model AG5 C3 load cell of 6.25 kg maximum capacity.

1.3 Alternative Unit

Instruments may display the weight value of grain sample captured in the test cell and with a scale interval of 1 g. The value shall be used for density measurement calculations only. This approval does not include the use of the instrument as a weighing instrument.

1.4 Interfaces

Instruments may be fitted with interfaces as follows:

- (a) USB interfaces.
- (b) Ethernet interface.
- (c) VGA port.

1.5 Power Supply

The instrument is powered by a 24 V AC/DC mains adaptor.

Note: The AC/DC mains adaptor supplied for the instrument was ADAPTER TECH model STD-24050 power supply (output 24 V DC, 5 A) – the submitter should be consulted regarding the acceptability of alternative power supply units.

1.6 System Software

Instruments are fitted with Windows 8 embedded Standard software, Foss operator interface software ISIScan Nova 7.0.6.16 and Foss measurement software Infratec Nova 15.11.4a. The measurement software version is displayed in the Instrument Details report.

Access to the software versions may be obtained by the following procedure:

- a) At the operation window, press 'Care' icon and then 'Configuration' button.
- b) At the configuration window, select the 'Import' tab and then press the 'Edit' button to access the 'Mosaic Manager' program.
- c) At the Mosaic Manager window, press the 'Instruments' button from the menu bar at the left hand side of the screen, and then select the 'Report' from the menu bar at the top of the screen to open the pull down menu.
- d) Select the 'Instrument details' item to general the Instrument Details report.

1.7 Descriptive Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Foss
Pattern approval number for the instrument	NMI 15/1/8
Model designation
Serial number of the instrument
Approved operating range to% protein
Scale interval%
Density operating range kg/hL
Density scale interval kg/hL
Weight operating range kg
Weight scale interval g
Grain type
Special temperature limits	5°C to 40°C
Power supply	100 - 240 VAC, 47 - 63 Hz

1.8 Verification Provision

The instrument can be verified for trade use to measure both protein and density or alternatively to only measure protein or only density. Instruments which are verified to only measure one aspect shall be marked with a notice near the display, stating which measurement is NOT approved for trade use, e.g. 'The protein measurement is not approved for trade use' or similar.

The instrument shall only be marked with one verification mark.

1.9 Sealing Provision

Provision is made for sealing the calibration adjustments by a PIN, and evidence of alteration of the calibration model and configuration is provided by an audit trail.

The audit trail records each change to the calibration model/configuration and its parameters, including all information from the creation to the latest modifications.

Access to the audit trail of test weight module and protein prediction models may be obtained by the following procedure:

- a) At the operation window, press 'Reports' icon.
- b) At the reports window, select 'NTEP audit events (PDF)' and press the 'View' button to generate the Audit Trail report.

Access to the audit trail of Slope and Intercept may be obtained by the following procedure:

- a) At the operation window, press 'Care' icon and then 'Configuration' button.
- b) At the configuration window, select the 'Import' tab and then press the 'Edit' button to access the 'Mosaic Manager' program.
- c) At the Mosaic Manager window, press the 'Instrument' button from the menu bar at the left hand side of the screen, and then select the 'Report' from the menu bar at the top of the screen to open the pull down menu.
- d) Select the 'Slope/Intercept' item to general the Slope/Intercept report.

2. Description of Variant 1 provisionally approved on 01/08/19 amended on 17/09/19 approved on 19/03/21

A Foss model Infratec™ grain protein measuring instrument (Figure 2) which is similar to the pattern but have an ABS casing and alternative LCD touch screen display.

3. Description of Variant 2 provisionally approved on 18/09/23 approved on 22/08/24

The pattern and variant 1 fitted with an upgraded embedded single PC board.

3.1 System Software

Instruments are fitted with Windows 10 IoT Enterprise LTSB 2016 Standard software, Foss operator interface software ISIsScan Nova and Foss measurement software Infratec Nova as listed in Tables 1 or 2.

TABLE 1 – Approved Software Versions for Pattern

ISIsScan Nova	Measurement Firmware
8.9.0.362	23.0.0b
8.9.2.10	23.0.0b
8.9.5.42	23.0.0f

TABLE 2 – Approved Software Versions for Variant 1

ISIScan Nova	Measurement Firmware
8.6.0.342	18.12.7a
8.6.1.81	18.12.7a
8.9.0.362	23.0.0b
8.9.5.42	23.0.0f

The software versions are displayed in the Instrument Information report. Access to the software versions may be obtained by the following procedure:

- a) At the operation window, press 'Reports' icon.
- b) At the Reports window, select 'Instrument diagnostics (PDF)' and press the 'View' button to generate the Instrument Information report.

3.2 Sealing Provision

Provision is made for sealing the calibration adjustments by a PIN, and evidence of alteration of the calibration model and configuration is provided by an audit trail.

The audit trail records each change to the calibration model/configuration and its parameters, including all information from the creation to the latest modifications.

Access to the audit trail of test weight module and protein prediction models may be obtained by the following procedure:

- a) At the operation window, press 'Care' icon and then 'SHOW ADVANCE SETTINGS' button.
- b) At the advance setting window, press the 'LOCAL CONFIGURATOR' button. The Login Prompt is displayed. Enter the User ID and Password and then press the 'OK' button to access the 'Local Configurator' program.
- c) At the Local Configurator window, press the 'Report' from the top menu bar to open the pull down menu, and then select the 'NTEP audit events' item to generate the Audit Events report.

Access to the audit trail of Slope and Intercept may be obtained by the following procedure:

- a) At the operation window, press 'Care' icon and then 'SHOW ADVANCE SETTINGS' button.
- b) At the advance setting window, press the 'LOCAL CONFIGURATOR' button. The Login Prompt is displayed. Enter the User ID and Password and then press the 'OK' button to access the 'Local Configurator' program.
- c) At the Local Configurator window, press the 'Report' from the top menu bar to open the pull down menu, and then select the 'SlopeInterceptHistory' item to generate the Instrument Slope and Intercept History report.

TEST PROCEDURE No 15/1/8

Protein Measurement

Instruments tested for initial verification shall comply with the certificate of approval and technical schedule, and the maximum permissible errors for initial and subsequent verifications at the operating conditions in effect at the time of verification.

Instruments shall comply with the requirements of, and shall be tested in conjunction with any relevant tests in, the document NMI M8, *Pattern Approval Specifications for Protein Measuring Instruments for Grain*, dated July 2004.

Maximum Permissible Errors

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

Ensure that instruments are only being used within the special temperature limits stated elsewhere in this Technical Schedule.

The serial number of the measuring instrument shall be recorded at the time of any verification.

Density Measurement

Verification of the instrument shall be carried out by comparison with a reference chondrometer (instruments designated as either Franklin, Kern or Schopper are acceptable).

The procedure shall be carried out using samples of barley and wheat grain that are free from impurities and under the same ambient conditions of temperature and humidity where measurements are normally made.

Take one test sample large enough to fill the filling hopper of the reference chondrometer and the test cell of the Test Weight Module.

Carry out five measurements on the reference chondrometer in accordance with any relevant tests specified in the General Supplementary Certificate No 4/10/0A; carry out five measurements on the instrument using the same test sample of grain (#). For each measurement, determine the density of the sample of grain. The mean value of the density should then be determined for both the instrument and the reference chondrometer.

The discrepancy of the two mean values shall be within ± 0.5 kg/hL.

(#) The difference between the highest and lowest value of the density shall not exceed 0.5 kg/hL

Ensure that instruments are only being used within the special environment limits stated elsewhere in this Technical Schedule.

FIGURE 15/1/8 – 1



Foss Model Infratec NOVA Grain Protein Measuring Instrument (Pattern)

FIGURE 15/1/8 – 2



Foss Model Infratec™ Grain Protein Measuring Instrument (Variant 1)

~ End of Document ~