Australian Government
Department of Industry, Science, Energy and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 15/3/1

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.

Schmidt+Haensch Model M202 Polartronic Polarimetric Saccharimeter

submitted by Thermo Fisher Scientific Australia Pty. Ltd.
5 Carribean Drive
Scoresby VIC 3179

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 R 14*, Self-indicating Polarimetric Saccharimeters Graduated in Accordance with the ICUMSA International Sugar Scale*, dated October 2012.

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 & variants 1 to 4 approved – certificate issued	23/03/16
1	Pattern amended, variants 5 & 6 approved – certificate issued	15/02/22

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 15/3/1' and only by persons authorised by the submittor.

It is the submittor'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 15/3/1

1. Description of Pattern

approved on 23/03/16
amended on 15/02/22

A Schmidt+Haensch model M202 Polartronic Sugar Purity Analyser Polarimetric Saccharimeter (Figure 1) approved for measuring the optical rotation of linear polarised light transmitted through a cane sugar juice sample in angular degrees (°) and which is then calculated/converted to sugar degrees (°Z).

The cane juice is contained by a polarimeter (pol) tube sealed by cover glasses at both the ends.

The angular degree (°) optical rotation caused by the 'normal sugar solution' or equivalent quartz plate standard has been published for several wavelengths and is equivalent to 100 °Z units on the ICUMSA International Sugar Scale (SPS – 1: 2007).

The pattern is fitted with a TFT screen and a keypad display/control panel.

1.1 Field of Operation

The instrument is approved as an accuracy class 0.05 instrument and has a measuring range of ±259 °Z and a verification scale interval of 0.01 °Z.

The instrument has two wavelengths for measurement, 589.44 nm and 882.60 nm.

The instrument can display the wavelength selected, the measured sample temperature and the angle of optical rotation, and the calculated value from angle to International Sugar Scale (°Z).

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices. The auxiliary devices shall not be able to alter the measurement results.

Instruments are approved for use with polarimeter (pol) tubes of 50, 100 or 200 mm in length.

1.2 Zero

The instrument has a zero button for resetting instrument to zero values when there is no test sample inserted.

1.3 Software

The instrument displays the software version after the instrument is turned on. The software version of this pattern is M29375P 286.12.

1.4 Power Supply

The instrument is powered by 100-240 V AC mains power.

1.5 Polarimeter (pol) Tube

Refer to General Certificate of Approval No 15/4/0 for requirements applicable to pol tubes used to measure the optical rotation of cane juice for payment purposes. A test procedure allowing pol tubes to be verified is included in the document.

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Sealing Provision

Provision is made for the instrument to be sealed by the application of one or more mechanical seals (Figure 2) or an electronic seal shall be implemented.

The calibration points (shown in Figure 2) shall be physically sealed by either a sealing wire with crimp seal (lead or plastic), or destructible adhesive sticker or foil label.

Acceptable electronic seals shall meet the following requirements:

- Prevention of unauthorised access to adjustment facilities, e.g. password protection or different password for different staff security level.
- Generation of an audit trail, e.g. a time stamped, comprehensible record of the most recent action(s) performed on the instrument that can affect metrological properties.

1.8 Descriptive Markings and Notices

Instruments shall carry the following markings:

Manufacturer's mark, or name written in full	Schmidt+Haensch
Importer or distributor's mark, or name written in full	Thermo Fisher Scientific
Indication of accuracy class	0.05
Serial number	……
Verification scale interval	0.01 °Z
Wavelength	589.44 nm 882.60 nm
Temperature range	15 °C to 30 °C
Length of Polarimeter tube (For instruments without automatic tube recognition)	…… mm
Pattern approval number	NMI No 15/3/1

2. Description of Variant 1 **approved 23/03/16**

A Schmidt+Haensch model M101 which has similar characteristics and parameters to the pattern, except it has only one 882.60 nm wavelength for measurement.

3. Description of Variant 2 **approved 23/03/16**

A Schmidt+Haensch model N202 which has similar characteristics and parameters to the pattern, except the verification scale interval (resolution) is 0.05 °Z.

4. Description of Variant 3 **approved 23/03/16**

A Schmidt+Haensch model N101 which has similar characteristics and parameters to variants 1 and 2, except it has only 882.60 nm wavelength for measurement and the verification scale interval (resolution) is 0.05 °Z.

5. Description of Variant 4 **approved 23/03/16**

Certain other models which have similar characteristics and parameters as the pattern and variants 1 to 3, except having a TFT touchscreen display/control panel. These variants are identified as model M101 touch, M202 touch, N101, or N202.

6. Description of Variant 5 approved 15/02/22

A Schmidt+Haensch model V202 (Figure 3) which has similar characteristics and parameters to model M202 (pattern) and model M202 Touch (variant 4), is the upgraded replacement version of the M202 and M202 Touch. The differences are higher reproducibility, new improved hardware, and 7" capacitive touchscreen display.

The software version of this variant is M29375P 286.13.

7. Description of Variant 6 approved 15/02/22

A Schmidt+Haensch model V101 which has similar characteristics and parameters to model M101 (variant 1) and model M101 Touch (variant 4), is the upgraded replacement version of the M101 and M101 Touch. The differences are higher reproducibility, new improved hardware, and 7" capacitive touchscreen display.

The software version of this variant is M29375P 286.13.

TEST PROCEDURE No 15/3/1

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures (NITP 15.2 Part 1).

Instruments should be tested using a suitable test procedure.

Maximum Permissible Error

The maximum permissible error for class 0.05 instruments is ±0.05 °Z.

FIGURE 15/3/1 – 1

Schmidt+Haensch Model M202 Polartronic Sugar Purity Analyser
(Polarimetric Saccharimeter)

FIGURE 15/3/1 – 2

Typical Mechanical Sealing Provision

FIGURE 15/3/1 – 3

Schmidt+Haensch Model V202 Polartronic Sugar Purity Analyser
(Polarimetric Saccharimeter)

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