



Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval

NMI S778

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.

A & D Model AD-4406A Digital Indicator

submitted by A & D Australasia Pty Ltd
 32 Dew Street
 Thebarton SA 5031.

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 76, *Non-automatic weighing instruments, Parts 1 and 2*, dated October 2015.

This approval becomes subject to review on 1/06/24, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – certificate issued	31/05/19

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI S778' and only by persons authorised by the submitter.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S778' in addition to the approval number of the instrument, and 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 Certificates No S1/0B.

The values of the performance criteria (maximum number of scale intervals etc.) applicable to an instrument incorporating the pattern approved herein shall be within the limits specified herein and in any approval documentation for the other components.

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
Pattern Approval, Policy and
Licensing Section

TECHNICAL SCHEDULE No S778

1. Description of Pattern

approved on 31/05/19

An A & D model AD-4406A digital mass indicator (Figure 1 and Table 1) which may be configured to form part of:

- A class III weighing instrument with a single weighing range of up to 6000 verification scale intervals; or
- A class IIII weighing instrument with a single weighing range of up to 1000 verification scale intervals; or
- A class III multi-interval weighing instrument with up to two partial weighing ranges (each with its own verification scale interval) in which case it is approved for use with up to 6000 verification scale intervals per partial weighing range; or
- A class IIII multi-interval weighing instrument with up to two partial weighing ranges (each with its own verification scale interval) in which case it is approved for use with up to 1000 verification scale intervals per partial weighing range; or

The instrument has an ABS enclosure with an LCD display for display of the weight value.

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices (see clause 1.6 below).

TABLE 1 – Specifications

Maximum number of verification scale intervals	6000 (class III) 1000 (class IIII)
Minimum sensitivity	0.5 μV / scale interval
Excitation voltage	5 V DC
Maximum excitation current	60 mA
Fraction of maximum permissible error	$p_i = 0.5$
Minimum load cell impedance	83 Ω
Maximum load cell impedance	3000 Ω
Measuring range minimum voltage	0 mV
Measuring range maximum voltage	35 mV
Maximum tare range	-100% Max
Operating temperature range	-10°C to +40°C
Load cell connection	4-wire or 6-wire shielded
Maximum value of load cell cable length per wire cross section (*)	600 m/mm ² (6-wire only)

(*) Additional connection cable between indicator and load cell or load cell junction box. In case of a 4-wire connection load cell(s) are connected directly to indicator.

This approval does not include the use of the indicator as an automatic weighing instrument, unless specifically mentioned in a certificate of approval for such an instrument.

1.1 Zero

A zero-tracking device may be fitted.

The initial zero-setting device has a nominal range of not more than 20% of the maximum capacity of the instrument.

The instrument has a semi-automatic zero-setting device with a nominal range of not more than 4% of the maximum capacity of the instrument.

1.2 Tare

A semi-automatic subtractive tare device of up to maximum capacity of the instrument may be fitted.

1.3 Power Supply

Power for the A & D AD-4406A instrument may be supplied by either:

- an AC/DC mains adaptor; or
- 6 x C size dry battery.

Note: The AC/DC mains adaptor supplied for the instrument was an AND mains adaptor type TB-S200 power supply model RHD-10W090100 (9 V DC, 1 A) – the submitter should be consulted regarding the acceptability of alternative power supply units.

1.4 Display Check

A display check is initiated whenever power is applied.

1.5 Linearisation Facility

Instruments are fitted with a linearisation correction facility having up to three correction points.

1.6 Interfaces

The indicator may be fitted with interfaces for the connection of auxiliary and/or peripheral devices. Any interfaces shall comply with clause 5.3.6 of document NMI R76 (the basic intent of which is that it shall not be possible to alter weighing results via the interfaces).

Any measurement data output from the instrument or its interfaces shall only be used for trade in compliance with NMI General Supplementary Certificate No S1/0B (in particular in regard to the data and its format).

Indications other than the indications of measured mass (i.e. gross, tare, net, totals) displayed either on the indicator or on an auxiliary or peripheral device, are not for trade use.

Instruments may be fitted with RS232 and digital inputs/outputs.

1.7 Additional Features

The additional functions (other than the indications of measured mass, i.e. gross, tare, net, totals, displayed either on the indicator or on an auxiliary or peripheral device) are not approved for trade use.

The indicator also has additional functions including holding, ‘HiHi/Hi/OK/Lo/LoLo’ checkweighing, setpoint, simple batch and accumulation.

Note: In particular circumstances (e.g. in regard to weighbridge or public weighbridge operation), Trade Measurement legislation or other NMI Certificates of Approval may impose requirements in regard to specific features, methods of operation, or records to be provided (and in what form).



Certain features of this instrument are able to be configured by the installer or user. Whilst NMI believes that an acceptable configuration can be achieved for typical basic modes of operation, it may also be possible for the instrument to be configured to produce unacceptable configurations, and use of some configurations may be inappropriate in different situations. It is the responsibility of the installer and user to ensure that the configuration is acceptable and meets relevant requirements for any particular situation.

1.8 Verification Provision

Provision is made for the application of a verification mark.

1.9 Descriptive Markings and Notices

Instruments carry the following markings:

Manufacturer’s mark, or name written in full	A & D
Indication of accuracy class	 or 
Maximum capacity (for each range)	<i>Max</i> kg #1
Minimum capacity (for each range)	<i>Min</i> kg #1
Verification scale interval (for each range)	<i>e</i> = kg #1
Serial number of the instrument
Pattern approval mark for the indicator	NMI S778
Pattern approval mark for other components #2

#1 These markings are shown near the display of the result.

#2 May be located separately from the other markings.

In addition, instruments not greater than 100 kg capacity carry a notice stating NOT TO BE USED FOR TRADING DIRECT WITH THE PUBLIC, or similar wording.

Notes:

For multi-interval instruments the markings shall be as above, with the exception that the ‘Maximum capacity’ and ‘Verification scale interval’ shall be marked for both interval ranges, e.g. as follows:

Maximum capacity	<i>Max</i>/..... kg
Verification scale interval	<i>e</i> =/..... kg

1.10 Sealing Provision

Provision is made for the access to the calibration adjustments to be sealed by the application of lead and wire type seals or similar as shown in Figure 2.

1.11 Software

The legally relevant software is designated r 1xx, where 'xx' refers to the identification of non-legally relevant software.

The software version and number may be accessed by holding down the 'F2' key, and pressing the 'F1' key and then the 'NET/GROSS' key.

TEST PROCEDURE No S778

Instruments should be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

Maximum Permissible Errors

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

For multi-interval and multiple range instruments with verification scale intervals of $e_1, e_2 \dots$, apply e_1 for zero adjustment, and maximum permissible errors apply $e_1, e_2 \dots$, as applicable for the load.

FIGURE S778 – 1



A & D Model AD-4406A Digital Indicator (Pattern)

FIGURE S778 – 2



Sealing of AD-4406A Digital Indicator

Typical Sealing Methods

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