Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

Supplementary Certificate of Approval

No S711

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.

Rice Lake Model 920i Digital Indicator System

submitted by Associated Scale Services Pty Ltd
Unit 4, 47 Learoyd Road
Acacia Ridge QLD 4110

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 July 2004.

This approval becomes subject to review on 1/03/21, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 & 2 approved – certificate issued	2/02/16
1	Pattern amended (allowed units) – certificate issued	4/02/16

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI S711' and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S711' in addition to the approval number of the instrument, 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.

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*.

Dr A Rawlinson

TECHNICAL SCHEDULE No S711

1. Description of Pattern approved on 2/02/16

A Rice Lake model 920i (desktop version) digital indicator (Figure 1).

The approved specifications of the system are shown in Table 1, and the system may be configured to form part of a class (III) or (IIII) weighing instrument as follows:

- A class (III) weighing instrument with a single weighing range of up to 10 000 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 three partial weighing ranges (each with its own verification scale interval) in which case it is approved for use with up to 10 000 verification scale intervals per partial weighing range; or
- A class (IIII) multi-interval weighing instrument with up to three 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
- A class (III) multiple range weighing instrument with up to three weighing ranges, in which case it is approved for use with up to 10 000 verification scale intervals per weighing range; or
- A class (IIII) multiple range weighing instrument with up to three weighing ranges, in which case it is approved for use with up to 1000 verification scale intervals per weighing range.

The changeover between weighing ranges is automatic.

TABLE 1 – Specifications

Maximum number of verification scale intervals	6000 for class (III) 1000 for class (IIII)
Minimum sensitivity	1.0 μV/scale interval
Fraction of maximum permissible error	p_i = 0.5
Excitation voltage	10 V DC (i.e. ±5 V)
Maximum excitation current	457 mA
Minimum load impedance	21.875 Ω
Maximum input impedance	2000 Ω
Measuring range minimum voltage	-10 mV
Measuring range maximum voltage	70 mV
Number of wires	4 or 6 wires, shielded
Temperature range	-10°C to +40°C

Note: The above specifications apply for each load receptor / A/D conversion module.

The instrument has two card slots, each of which may be fitted with a single or dual A/D conversion card. Hence the indicator may incorporate up to 4 analog to digital (A/D) conversion modules, each of which may be connected to a single load receptor. Hence the indicator may display weight values for up to 4 load receptors.

The instrument has a stainless steel enclosure with a LED display for the weight value.

Use of units other than tonnes (t), kilograms (kg) or grams (g) is not approved for trade use.

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices (see clause **1.6.1 Interfaces** below).

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.

The instrument is NOT FOR TRADING DIRECT WITH THE PUBLIC and shall be so marked.

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 the maximum capacity of the instrument may be fitted.

A pre-set subtractive tare device of up to the maximum capacity of the instrument (or up to Max_1 for multi-interval instruments) may be fitted.

1.3 Display Check

A display check is initiated whenever power is applied.

1.4 Linearisation Facility

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

1.5 Power Supply

The Rice Lake model 920i indicator operates from mains AC power (115 or 230 V AC nominal).

Alternatively, the Rice Lake model 920i may operate from a 10 – 60 V DC supply.

Note: The DC power supply option requires a power supply input of 10 – 60 V DC of no less than 25 W. Please consult the submitter regarding the acceptability of the power supply.

1.6 Additional Features

Instruments may be fitted with a number of additional functions including set-point facility and accumulator. However these are not approved for trade use.

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.

In addition, the indicator may be provided with an integral data storage device (DSD).

For each weighing request, weighing results together with identification including date and time are stored into the storage device.

Data from the storage device shall only be used for trade if the format of the output complies with NMI General Supplementary Certificate No S1/0B.

1.6.1 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.

Note particularly that 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.

Instruments may be fitted with RS-232/RS485 serial data interface, digital/analogue inputs/outputs, 20 mA current loop, or a pulse or bus interface card.

1.6.2 Multiple Baseworks Facility

See the note at clause **1.6 Additional Features**.

(a) Individual weight display

A number of baseworks (load receptors) may be connected to a single Rice Lake model 920i digital indicator. The indicator screen can be arranged to provide one display for each basework and one display providing a ‘total’ display. The display for each basework is identified by a number at the upper right corner of it’s display (e.g. Scale #2r1 indicates ‘scale 2’ operating in its first range, Scale #1r2 indicates ‘scale 1’ operating in its second range).

A particular basework/display may be selected using the up/down arrows of the indicator. The basework/display at the top of the screen is the currently selected basework/display (i.e. on which functions such as tare may operate).

(b) Summed weight display

Where two or more baseworks are connected to a single Rice Lake model 920i indicator, the sum of the gross weight values for the individual baseworks/displays may be calculated and displayed in the summing display (identified by 'Total' in its top right corner). The displayed sum is the arithmetic sum of the gross weight values for all individual displays.

Operation of the zero button when either the 'Total' display, or any of the individual baseworks/displays is selected, will zero all baseworks/displays (if all baseworks/displays are within the zero range).

When the 'Total' display is selected, operation of the tare button will set the 'Total' display to show 0 kg NET (with a Tare symbol displayed). The individual baseworks/displays will remain displaying their GROSS weight value. Taring is not available when an individual basework/display is selected. The GROSS value for the 'Total' display may be shown using the Gross/Net button.

Notes regarding summed weight display:

- The scale interval of the summing indicator shall be of a value to suit the sum of the scale intervals of the primary indicators being summed and the summed result. The summing indicator shall be able to display all possible combinations of the scale intervals of all primary indicators, e.g. where the primary indicators are dual range 20 kg and 50 kg, the summing indicator must be able to indicate 70 kg, therefore the summing indicator will need a scale interval of 10 kg.
- All weight displays in the system shall display the same units of measurement (e.g. all kg or all t).
- The summed value shows non-numerical characters if any of the primary indicators display an error message or a negative value.

Note regarding identification of baseworks/displays:

Where a number of baseworks are connected to and displayed by the indicator, there shall be a clear identification and correspondence between each display and its corresponding basework. This may require additional markings (e.g. to identify baseworks as '1', '2', '3' or '4'). Where a display showing the sum of weight values from different platforms is present, a clear indication of the baseworks comprising this sum shall be provided (e.g. 'Total = 1 + 2 + 3 + 5').

1.6.3 Weighbridge Modes

See the note at clause **1.6 Additional Features**.

The instrument may be fitted with facilities for facilitating transactions, particularly weighbridge transactions.

This may include the entry and recording of information such as client identification, product information and vehicle registration, and the storage of pre-set tare values.

These 'weighbridge modes' may provide for:

- Simple vehicle weighing, where the gross weight of a vehicle is determined by a single weighing;

- Inbound/outbound weighing, where a vehicle is weighed before and after a loading or unloading operation; and
- Weighing with pre-set vehicle weight, where the net weight of a vehicle is determined from the gross weighing operation and the application of a pre-set tare value.

Other functions such as to provide an indication of axle or group loading may be provided, however these are not approved for trade use.

1.6.4 Data Storage Memory

See the note at clause **1.6 Additional Features**.

The indicator may contain memory (or external memory may be provided) for the storage of weighing results.

For each weighing (for which a print-out command is issued), weighing results together with information uniquely identifying the results such as the following are stored into the storage device:

- Unique ID to identify each weighing
- Date/time of each weighing
- NET weight with unit of measurement
- TARE weight with unit of measurement

Note that when this memory becomes full, the first 25% of records are automatically deleted.

1.7 Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Rice Lake Weighing Systems
Name or mark of manufacturer's agent	Associated Scale Services
Indication of accuracy class	(III) or (IIII)
Maximum capacity (for each range)	*Max* ..... kg #1
Minimum capacity (for each range)	*Min* ..... kg #1
Verification scale interval (for each range)	*e* = ... kg #1
Maximum subtractive tare	*T* = - ..... kg #2
Serial number of the instrument	…….
Pattern approval mark for the indicator	NMI S711
Pattern approval mark for other components	..... #3

#1 These markings shall also be shown near the display of the result if they are not already located there.

#2 This marking is required if *T* is not equal to *Max*.

#3 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.

Note:

For multi-interval and multiple range instruments the markings shall be as above, with the exception of the following (examples are for instruments with two partial ranges):

(i) For multi-interval instruments;

Maximum capacity	Max ...../..... kg
Verification scale interval	e = .../…... kg

(ii) For multiple range instruments, the maximum capacity, minimum capacity and verification scale interval for each range shall be marked, with an indication of the range to which they apply, e.g.

Range	1	2
Max	…. kg	…. kg
Min	…. kg	…. kg
e =	…. kg	…. kg

Where more than one basework is connected to the indicator, appropriate markings shall be provided for each basework, and shall be clearly identified with the corresponding basework/display (e.g. ’1’, ‘2’, ‘3’, ‘4’ as per note in 1.6.2(b) above).

1.8 Software Versions

The legally relevant software is designated version V5.10.xx where ‘xx’ may vary according to non-legally relevant functionality.

The software version is displayed at the bottom left of the screen as part of the ‘power-on’ initialisation sequence.

1.9 Sealing Provision

Provision is made for access to the calibration switch within the instrument to be sealed by use of destructible adhesive labels, or sealing screws and lead and wire (or similar) type seals (Figure 2). The sealing shall restrict access within the indicator housing, as well as restricting access to the calibration switch (located beneath an access hole).

1.10 Verification Provision

Provision is made for the application of a verification mark.

2. Description of Variant 1 approved on 2/02/16

The Rice Lake model 920i in universal, panel mount, deep enclosure and wall mount versions as shown in Figure 3. Apart from the enclosure type, these differ according to the number of option card slots available, which affects the maximum number of baseworks (load receptors) which may be connected to the indicator.

Version	No of card slots	Max. No of baseworks
Desktop (the pattern)	2	4
Universal	2	4
Panel Mount	4	8
Deep Enclosure	4	8
Wall Mount	8	16

3. Description of Variant 2 approved on 2/02/16

The Rice Lake model 820i (Figure 4) which is similar to the pattern but has a smaller display and is available only with either one or two load receptor A/D conversion inputs - hence only one or two baseworks (load receptors) may be connected.

The Rice Lake model 820i is available in a panel mount and a universal/desktop version.

TEST PROCEDURE No S711

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

The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

Maximum Permissible Errors

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

Tests

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

FIGURE S711 – 1

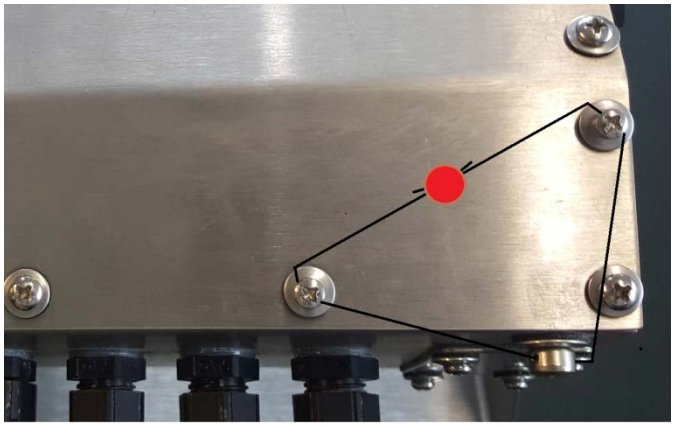
(a) Rice Lake model 920i indicator (desktop version)

(b) Display layout

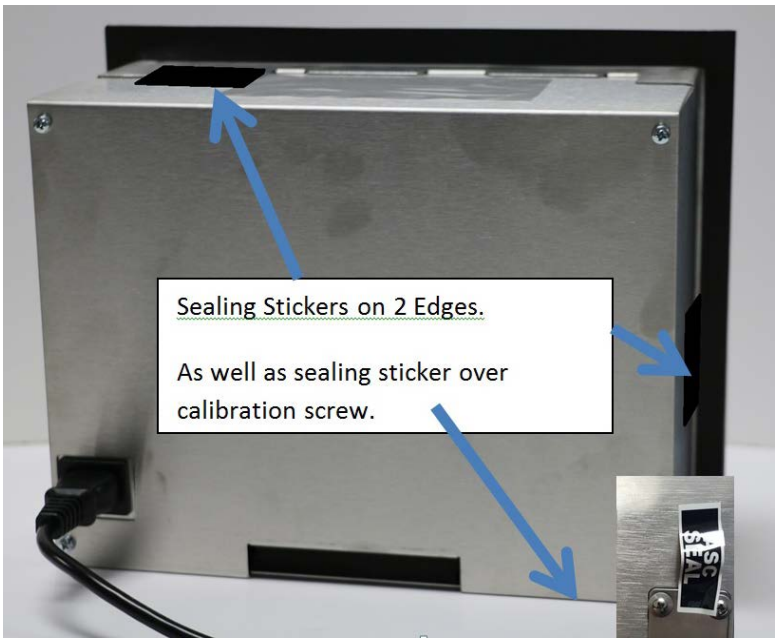
Rice Lake Model 920i Digital Indicator System

FIGURE S711 – 2

Destructible adhesive label sealing
(Desktop version)



Lead and wire (or similar) sealing



Destructible adhesive label sealing
(Panel mount version)

Typical Sealing
(similar arrangements apply for other indicator versions)

FIGURE S711 – 3

920i Deep Enclosure

Rice Lake 920i Indicator, Various Versions (Pattern & variant 1

FIGURE S711 – 4

(a) Panel mount version (b) Universal/Desktop version

Rice Lake 820i Indicator, Various Versions (variant 2)

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