Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

Provisional Certificate of Approval

NMI P6/10B/92

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.

Conweigh Innovation Model CONW Weighing Instrument

submitted by Conweigh Innovation Pty Ltd
1 / 58 Frederick Street
Northgate QLD 4013

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 01/08/21, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern provisionally approved – interim certificate issued	5/07/16
1	Pattern provisionally approved – certificate issued	16/12/16

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI P6/10B/92' 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.

Special

NMI believes that acceptable results can be achieved in typical operation. However, for this type of instrument, the ability to perform within the specified maximum permissible errors may be influenced by characteristics of the container being weighed, the site at which the weighing takes place, and installation and usage of the equipment (including matters such as ground condition).

It is the responsibility of the user to exercise control over such matters to ensure compliance with this approval and to ensure performance within the appropriate maximum permissible errors.

In the event of unsatisfactory performance this approval may be withdrawn.

This approval shall NOT be used in conjunction with General Certificate No 6B/0.

Provisional

Instruments purporting to comply with this approval shall be marked with approval number 'NMI P6/10B/92' and only by persons authorised by the submittor. (Note: The 'P' in the approval number may be a temporary marking.) On request, the submittor shall supply details of the serial numbers and locations of all instruments.

The approval will remain provisional pending consideration of performance following a period of 12 months of demonstrated use. The submittor shall retain details of testing carried out over this period, and supply to NMI on request. Additional testing may be required at NMI's discretion.

In the event of unsatisfactory performance the approval may be cancelled (or altered).

The submittor shall implement such modifications as required by NMI. In the event that such modifications (if any are required by NMI) are not made to the satisfaction of NMI, this approval may be withdrawn.

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

Mario Zamora

TECHNICAL SCHEDULE No P6/10B/92

1. Description of Pattern approved on 5/07/16

The Conweigh Innovation model CONW is a class (III) single interval self-indicating non-automatic weighing instrument (system) of 40000 kg maximum capacity with a verification scale interval of 50 kg, intended for the weighing of shipping containers or similarly constructed objects.

The system comprises four CONW-WP2 weighing/display modules (Figure 1), each intended for attachment to the corner of the container being weighed, which communicate with a mobile device (using Android or iOS operating system) which runs the Conweigh Tech App application that calculates the total container weight.

The system is intended for the weighing of containers in a 'single lift' (i.e. the container is lifted and weighed) – it is not approved for weighing whilst the container load is increased or decreased.

Note: The system may be known as a Conweigh Innovation model CONW or ConWEIGHR, or may also be known as a Rinstrum model CONW or ConWEIGHR.

1.1 Load Receptor

The shipping container itself forms the load receptor. The attachment of the weighing/display module to the container is by way of the standard container securing holes, and via a slider bracket which is attached via a pin to the weighing/display module (Figure 1 (b)).

1.2 Weighing/Display Module

Each CONW-WP2 weighing/display module incorporates a CAS model WBK-10t load cell of 10 000 kg maximum capacity (as approved in NMI S422) and a Rinstrum model R320 indicator (as approved in NMI S420 – also known as a Conweigh model CONW-WT), together with additional electronics, including a communication module (utilising the Bluetooth protocol) and battery. The operator controls (front panel buttons) of each Rinstrum model R320 are disabled (except for the power button which may operate to switch on the display).

The scale interval of each individual weighing/display module is 2 kg. It is only the total container weight value provided by the Conweigh Tech App which is approved for trade use. Hence, the display of each individual Rinstrum model R320 indicator is not intended for trade use and is marked "THIS READING NOT FOR TRADE USE" or similar.

1.3 Levelling

Each weighing/display module incorporates a level bubble. The instrument is to be used with the modules level.

The weighing/display modules and slider bracket connected to the shipping container are both provided with a number of holes through which the pin connecting the two may be inserted. This provides a degree of height adjustment. The system is used with the foot of each weigh/display module resting on a polyethylene pad (also supplied by Conweigh) – the use of additional packing pieces beneath this pad may provide additional height adjustment.

It is the operator's responsibility to ensure that the weighing/display modules are level when in operation (according to the level bubble provided) to ensure accurate weighing. To aid in this, the Conweigh Tech App application provides a checklist for correct operation.

Note: Each weigh/display module may also incorporate a tilt sensor which may provide a message where excess tilt is detected, however the accuracy and stability of this device have not been checked. Consequently this device is not approved (although it may be present for operator information) – the level bubble provided is the only device approved for determining whether the weigh/display module is level.

1.4 Indicator / Software

The operator interface of the instrument is provided by the software application (Conweigh Tech App) operating on a mobile device (e.g. mobile phone/tablet).

The operating system of the mobile device is Android version 4.4.4, or iOS version 4.0, or later versions.

The mobile device communicates with the weighing/display modules via the Bluetooth protocol (which is designed to ensure error free communications). For communications to occur between a weighing/display module and the Conweigh Tech App, the module and mobile device must first be paired.

The Conweigh Tech App accesses a database of weighing/display modules to ensure that the weighing modules operate only with a pre-defined set of 4 weighing/display modules (i.e. the 4 weighing/display modules are verified together as a set). This database also contains details of mobile devices and Conweigh Tech App versions with which the system operation has been verified, to ensure that system only uses such verified combinations.

Note: A pre-defined set of 4 weighing/display modules may operate with different mobile devices – the Conweigh Tech App is considered the significant module rather than the mobile device itself.

1.4.1 Software version

The version number of the Conweigh Tech App is accessible via the ⓘ button provided in the Conweigh Tech App interface. See Figure 3.

Conweigh Tech applications which contain the legally relevant version 6.x.x software are approved (x is a wildcard which denotes versions incorporating changes which do not affect legally relevant aspects of the system operation).

1.5 Operation

The operation of the Conweigh CONW system is as follows:

(a) Turn on mobile device and open Conweigh Tech App application – this will guide user operation.

(b) Set up the 4 weighing/display modules, standing them in pairs in a vertical orientation with slider bracket and pin attached, but otherwise unloaded (not attached to the container).

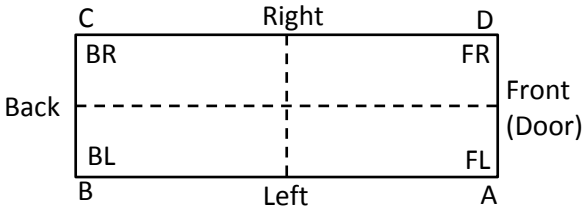
(c) Turn on each weighing/display module using its power push-button.

(d) Wait for all weighing/display modules to initialise and connect to the app (in some cases user operation may be needed to ensure this).

(e) Initiate zeroing via the Conweigh Tech App application. Wait until the app indicates that all weighing/display modules have been zeroed.

(f) Operator lifts container (using various possible means – crane, jack etc), attaches slider brackets to the container, connects the slider brackets to the weighing/display modules (inserting the pin to adjust height), and lowers the container to be supported by the weighing/display modules.

The weigh/display modules are identified as 'A', 'B', 'C', and 'D' within a set. They are intended to be used in a standard arrangement as shown below (looking from above – 'Front' being the container door):



Note: It may be necessary to repeat and re-adjust to ensure weighing/display modules are all level.

(g) Operator confirms all readings are valid, and ready for summing – this may involve individually 'locking' the weight value provided from each weighing/display module.

(h) Operator presses 'Calculate' button to determine total container weight value. A window is displayed showing the weight value.

In certain situations where various conditions are not met, the weight value may be accompanied by the text "NOT FOR TRADE USE", in which case the weight value is not approved for trade use.

(i) The system may send the results of the weighing process to clients or other parties (see Figure 4).

Note: The above is a general outline, additional steps may be involved. In addition administrative information may need to be recorded.

1.6 Zero

Each weighing/display module has a semi-automatic zero-setting device with a nominal range of not more than 4% of its maximum capacity. Any zero-tracking facility of the R320 indicators shall not be operational.

Prior to commencing weighing operations, the weighing/display modules shall be zeroed as described in ***1.5 Operation*** (b) to (e) above.

1.7 Display Check

A display check of the Rinstrum R320 indicators is initiated whenever power is applied to them.

1.8 Descriptive Markings and Notices

Instruments are marked with the following data, together in one location, in the form shown at right (#1):

Manufacturer's mark, or name written in full	Conweigh Innovation Pty Ltd
Indication of accuracy class	(III)
Pattern approval number for the instrument	NMI 6/10B/92 #2
Maximum capacity	*Max* ..... kg #3

Minimum capacity	*Min* ..... kg #3
Verification scale interval	*e* = ... kg #3
Serial number (of the instrument – i.e. the set)	Equipment Set SN: ……..
Serial number of each weighing/display module	A: …….. B: …….. C: …….. D: ……..

#1 The above markings are provided within the Conweigh Tech App application.

#2 The 'P' in the approval number may be a temporary marking.

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

The 'Information' screen, see 1.12 below, provides information regarding the weighing/display modules with which the system has been verified.

For each CONW-WP2 weighing/display module, markings are provided as shown below:

Manufacturer's mark, or name written in full	Conweigh Innovation Pty Ltd
Pattern approval number for the instrument	NMI P6/10B/92
Pattern approval mark for the indicator	Indicator: NMI S420
Pattern approval mark for the indicator	Loadcell: NMI S442
Maximum capacity	*Max* ..... kg
Scale interval	*d* = ... kg
Serial number (of the module):	……..

In addition a marking of "THIS READING NOT FOR TRADE USE" or similar is provided (see 1.2 above).

Note: The 'P' in the approval number may be a temporary marking.

1.9 Additional Features

Instruments may provide additional features, including features relating to uneven container loading (e.g. weight values of the individual weighing/display modules). These functions and displays are not approved for trade use. Where weight values are provided, it shall be clearly indicated that these are not for trade use.

1.10 Power Supply

Each weighing/display module incorporates a rechargeable battery, to provide power for the module electronics, including the Rinstrum R320 indicator.

The mobile device provides its own power.

1.11 Interfaces

Instruments 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 Supplementary Certificate No S1/0B (in particular in regard to the data and its format).

Note: The instrument may also provide measurement data output that is intended for use other than for trade use. In such cases it is important that the information is clear and unambiguous and avoids any confusion regarding the result of weighing and it's status (i.e. it may need to be accompanied by a statement such as 'NOT FOR TRADE USE').

1.12 Verification Provision

Provision is made for the application of a verification mark.

The verification mark is provided in software from a database maintained by the manufacturer, and is accessible via the ⓘ button provided in the Conweigh Tech App interface.

The software checks the database to ensure that the modules and parameters correspond to the verified equipment, and returns details of the verification, licensee and verification date for display. See Figure 3.

Should it be necessary for the verification mark to be obliterated, the manufacturer may be contacted to implement this through the database.

1.13 Sealing Provision

The Rinstrum model R320 indicator of each weighing/display module is sealed in accordance with its approval (NMI S420).

TEST PROCEDURE No P6/10B/92

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures, taking into account the following notes.

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*.

Notes:

Testing of the system comprises three elements:

A. Mobile Device / Conweigh Tech App / Weighing/Display Module compatability checks

In which satisfactory operation of a particular version of the Conweigh Tech App when operating on a particular type of mobile device whilst connected to Conweigh CONW weighing/display modules is verified.

(i) Check to ensure unaltered values from the weighing/display modules are transferred to the Conweigh Tech App, and that the calculation of container weight is correct and rounded to the approved verification scale interval.

(ii) Check that the Conweigh Tech App displays correctly on the particular mobile device type (e.g. considering different screen size/configuration).

B. Weighing Performance Testing

In which performance testing of a system using a pre-defined set of four weighing/display modules is carried out to verify that performance is with maximum permissible errors.

Testing shall be in accordance with any relevant tests specified in the National Instrument Test Procedures, taking into account the following notes.

(i) The tests may be applied to the instrument in-situ (using a platform of known weight, provided to represent a container and able to be loaded by standard weights).

Testing shall be carried out with the weighing/display modules arranged to be level (vertical), and set to zero prior to loading. For testing purposes a platform of known (calibrated) weight representing a container may need to be provided.

(ii) As indicated in ***1. Description of Pattern*** the instrument is intended for single lift weighing. This approach should be utilised in testing, and testing with decreasing load values is not required.

(iii) Testing should be carried out with the foot of each weighing/display module tilted close to the limiting value of tilting of the level bubble provided.

C. Confirming Verification

In which a database maintained by the manufacturer is populated to reflect results of the testing and checks indicated above (this database being accessed by the Conweigh Tech App to display the verification mark on request). A check is carried out to ensure the correct verification is accessed.

(i) Enter information regarding A and B above into the verification database maintained by the manufacturer. This information will include:

- Conweigh Mobile App versions and Mobile Device Types with which they have been verified as operating successfully (as per A above).
- The serial numbers of sets of weighing/display module serial numbers which have been tested and found to operate within maximum permissible errors, together with their parameters as tested, and a serial number for the complete instrument concerned.
- Licensee's code and location and date of verification.

Note: NMI may also require additional administrative arrangements in regard to this database.

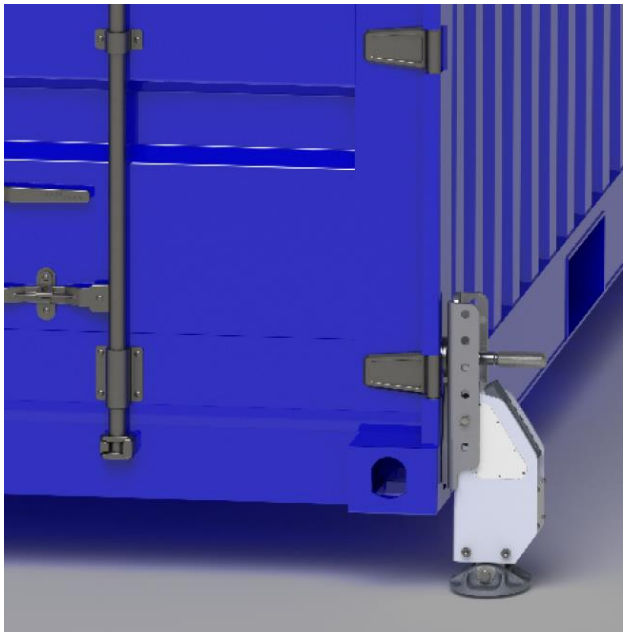
(ii) With a set of weighing/display modules connected (via Bluetooth) to a mobile device running the Conweigh Mobile Ap, access the information menu (ⓘ button) and confirm that the verification information correctly reflects the status of equipment verified.

Gravity Variation

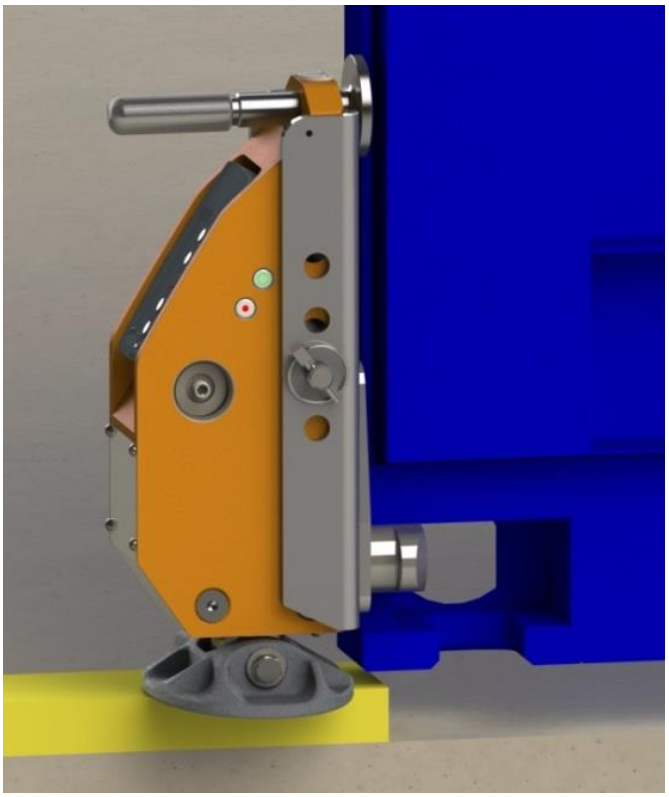
Where the instrument is verified in one location and subsequently moved to another location, the effects of differences in the acceleration of gravity at each location may need to be considered.

Note: NMI's Trade Measurement Section should be consulted regarding any special arrangements which may be necessary in regard to operation of a mobile weighing instrument of this type.

FIGURE P6/10B/92 – 1



(a) Weighing/display module attached to container



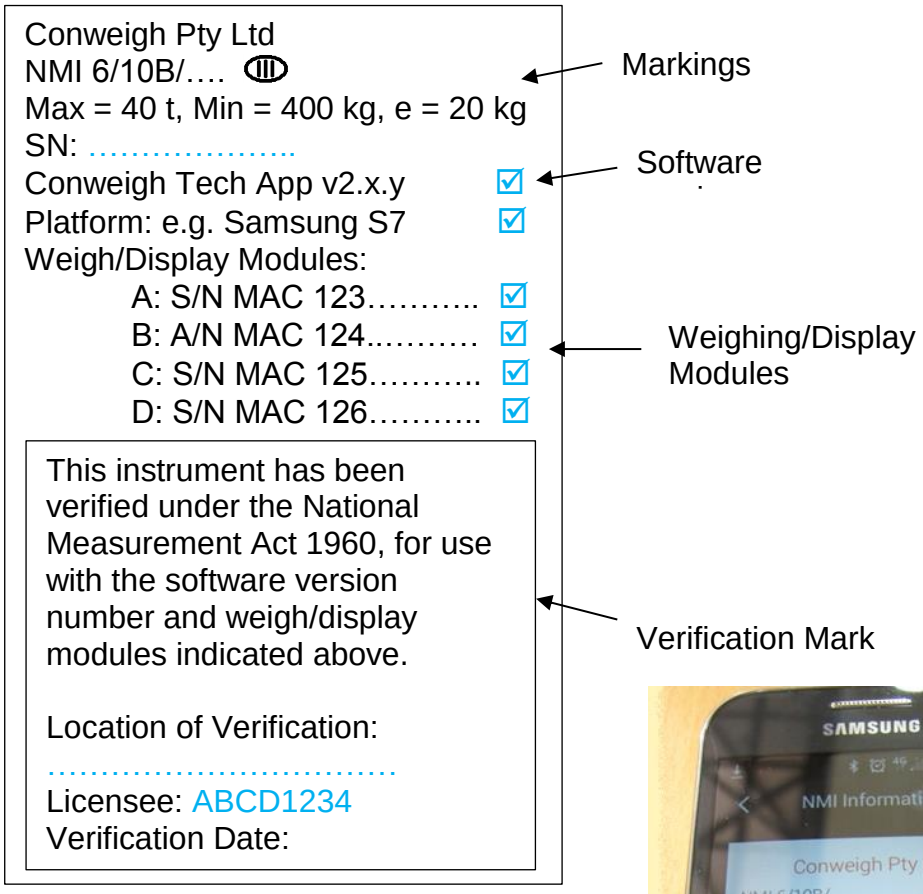
(b) CONW- WP2 shown with section through container and pad

Conweigh Innovation Model CONW Weighing/Display Module

FIGURE P6/10B/92 – 2

Mobile device with Conweigh Tech App application (typical)

FIGURE P6/10B/92 – 3



Conweigh Tech App - Information screen
Showing markings and verification information

FIGURE P6/10B/92 – 4

VERIFIED GROSS MASS CERTIFICATE

Certificate #: 59985435-1

CONWEIGH
THE WEIGH TO GO

Shippers Details:

Booked By: James Oliver - Conweigh
1/58 Frederick St. Northgate QLD 4014

Shippers Details: Mason Kratz
1/58 Frederick St. Northgate QLD 4014

Container ID: RWLU 816854 8

Maximum Gross Mass: 30,480 kg

Container Tare Mass: 2,185 kg

Container Verified Gross Mass:

23 080 kg

Weight Status: SAFE

Weighing Job Details:

Booking Number: CWB59985436

Weight Seal ID: CW0000001

Date & Time: 01 March 2016 - 16:54

Equipment ID: CWE000001

Calibration Status & Date: Valid - 02 February 2016

Weight Certified By:

John Smith

John Smith
Conweigh Accredited Technician

Technician Registration Number: CWT654826
Company: JS Container Weighing

Conweigh Pty. Ltd. (ABN 67 609 108 796)
1/58 Frederick St. Northgate QLD Australia 4014
www.conweigh.net

Phone: 1300 022 232
Email: vgm@conweigh.net

Sample Weight Report

NOTE: A similar report, but indicating NOT FOR TRADE USE may be prepared (e.g. where a certificate is required for purposes not related to trade measurement).

~ End of Document ~