Australian Government
National Measurement Institute
Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval

NMI S621

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.

Gedge Systems Model GS600 Digital Indicator

submitted by Gedge Systems Pty Ltd
27 Rhur Street
Dandenong South VIC 3175

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 1/03/18, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – interim certificate issued	28/02/13
1	Pattern and variant 1 approved – certificate issued	10/12/14

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI S621' and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S621' 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.

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.

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*.

Dr A Rawlinson

TECHNICAL SCHEDULE No S621

1. Description of Pattern approved on 28/02/13

A Gedge Systems model GS600 digital indicator (Figure 1 and Table 1) which may be configured to form part of:

- A weighing instrument with a single weighing range of up to 6000 verification scale intervals; or
- A 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 6000 verification scale intervals per partial weighing range.
- A multiple range weighing instrument with up to three weighing ranges, in which case it is approved for use with up to 6000 verification scale intervals per weighing range. The changeover between weighing ranges is automatic.

The instrument has a liquid crystal display including provision for display of the weight value and for one line of alphanumeric information/menus.

The instrument operates from mains AC power (230 V AC, 50/60 Hz).

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

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.

TABLE 1 — Specifications

Maximum number of verification scale intervals	6000 or 6000 per range
Minimum sensitivity	0.8 µV/scale interval
Excitation voltage	10 V DC
Maximum excitation current	230 mA
Fraction of maximum permissible error	P_i = 0.5
Minimum load cell impedance	43 Ω
Maximum load cell impedance	1200 Ω
Nominal load cell impedance	350 Ω
Measuring range minimum voltage	0 mV/V
Measuring range maximum voltage	3.5 mV/V
Maximum tare range	100%
Operating temperature range	-10°C to +40°C
Load cell connection	4 wire or 6 wire plus shield

1.1 Zero

Zero may be automatically corrected to within ±0.25*e* whenever the instrument comes to rest within 0.5*e* of zero or whenever power is applied (in the case of multi-interval or multiple range configurations *e* in this sentence refers to e_1).

If the instrument comes to rest outside that range but within the zero setting range, zero may be set by pressing the zero button.

The instrument has a semi-automatic zero-setting device (to set the instrument to within ±0.25*e* of zero) with a nominal range of not more than 4% of the maximum capacity of the instrument.

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

1.2 Tare

The instrument has provision for subtractive semi-automatic and pre-set tare devices of up to maximum capacity (to the maximum of the lowest partial weighing range for a multi-interval instrument).

1.3 Display Check

A display check is initiated whenever power is applied or by use of the TEST/CLEAR TARE button.

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

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.

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.

Data derived from any analog output or interface shall not be used for trade use.

Interfaces of the following types may be fitted:

- RS232C serial data interface
- Digital input, relay output

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

The calibration and set-up modes of the indicator can be secured with a passcode. To ensure that a passcode has been set, press the ‘SF1’ and ‘ENTER’ keys together until the word “_ _ enter SF1 PIN” message scrolls across the notification area. This indicates that a passcode has been set.

In addition, a non-resettable calibration event counter increments each time that any parameter or calibration is changed and saved.

When the instrument is first powered up, it will display the firmware version number (version 0.02.08) and the calibration ID number. The calibration ID number is the calibration event counter and the value at the time of verification shall be recorded on a destructible adhesive label attached to the instrument.

Any subsequent alteration to the calibration or parameters will be evident as the recorded value and the current calibration event counter value will differ.

1.7 Descriptive Markings and Notices

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

Manufacturer's mark, or name written in full	……..
Indication of accuracy class	
Pattern approval mark for the instrument	NMI S621
Maximum capacity	*Max* ..... g or kg or t #1
Minimum capacity	*Min* ..... g or kg or t #1
Verification scale interval	*e* = ... g or kg or t #1
Maximum subtractive tare	*T* = - …… g or kg or t #2
Serial number of the instrument	……..

#1 These markings are also 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*.

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

Notes:

(i) For multiple range instruments the markings shall be as above, with the exception that 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, as shown in the instrument display (e.g. 'Range 1')

Range	Range 1	Range 2	(*)
Max	…. kg	…. kg	
Min	…. kg	…. kg	
e =	…. kg	…. kg	

(*) The markings for each weighing range shall be clearly associated with an indication of the corresponding range (i.e. 'Range 1') to correspond to the weighing range designations shown in the instrument display.

(ii) 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	*Max* ...../..... kg
Verification scale interval	*e* = .../..... kg

2. Description of Variant 1 approved on 10/12/14

The model GS-600B (Figure 2) which is similar to the pattern (GS-600), except that the GS-600B has additional interface capabilities (additional relay outputs) for use with certain additional functions (e.g. setpoint relay functions). The additional functions (other than the indications of measured mass, i.e. gross, tare, net, displayed either on the indicator or on an auxiliary or peripheral device), are not approved for trade use.

TEST PROCEDURE No S621

Instruments should be tested in conjunction with any tests specified in the approval documentation for the instrument to which the pattern is connected, as appropriate, and 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 S621 – 1

Gedge Systems Model GS600 Digital Indicator (Pattern)

FIGURE S621 – 2

Gedge Systems Model GS600B Digital Indicator (Variant 1)

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