



Australian Government
Department of Industry,
Innovation and Science

**National
Measurement
Institute**

**Supplementary Certificate of Approval
NMI S737**

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.

Laumas Model TLB4 Digital Mass Indicator

submitted by Laumas Elettronica
Via Primo Maggio, 6
Montechiarugolo,
Parma 43022
Italy

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 1/2/22, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variant 1 approved – certificate issued	19/01/17

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI S737' and only by persons authorised by the submitter.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S737' 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 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 S737

1. Description of Pattern

approved on 19/01/17

A Laumas model TLB4 digital mass indicator (Figure 1 and Table 1) which may be configured to form part of a weighing instrument as follows:

- A class III weighing instrument with a single weighing range of up to 10 000 verification scale intervals;
- A class III multi-interval weighing instrument with up to three partial weighing ranges in which case it is approved for use with up to 10 000 verification scale intervals;
- A class III weighing instrument with single range, or multi-interval range (3 partial ranges), and with up to 1000 verification scale intervals.

The changeover between weighing ranges is automatic.

The Instrument has an ABS enclosure and may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices.

The instrument has 7 segment LED display for display of the weight value.

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	10 000 class III Single or multi-interval (up to 3 partial) range 1000 for Class III
Minimum sensitivity	0.25 μV / scale interval
Excitation voltage	5 V DC
Minimum input impedance for load cells	21.9 Ω , collectively for all channels
Maximum excitation current	228.3 mA
Fraction of maximum permissible error	$p_i = 0.5$
Maximum load cell impedance	1100 Ω
Measuring range minimum voltage	-39 mV
Measuring range maximum voltage	+39 mV
Maximum tare range	-100% Max
Operating temperature range	-10°C to +40°C
Load cell connection (analogue load cell)	
a) 4 wire system:	
4 wires shield. Maximum length: 10 m/mm ²	
b) 6 wire system:	
6 wires screened. Maximum length: 1926 /mm ² (for n = 10 000). Maximum resistance / wire: 32.6 Ω .	

1.1 Zero

Zero is automatically corrected to within $\pm 0.25e$ whenever the instrument comes to rest within $0.5e$ of zero.

Note: For multi-interval, zero is automatically corrected to within $\pm 0.25e_1$ whenever the instrument comes to rest within $0.5e_1$ of zero.

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

The instrument has a semi-automatic zero-tracking device 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

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

1.3 Initial Display Check

Upon switch-on, the display will check the 7 segment of the number in sequence 111111 \rightarrow 999999 (ONLY in case of trade approved program).



1.4 Power Supply

The power supply is 12 - 24 V DC supplied by an AC/DC mains adaptor.

Note: The AC/DC mains adaptor supplied was a model DHECN made HDR-45-24, 100 - 240 V AC power supply (output 12 V DC, 5 A) – the submitter should be consulted regarding the acceptability of alternative power supply units.

1.5 Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Laumas Elettronica SRL
Indication of accuracy class	 or 
Maximum capacity	<i>Max</i> kg #1
Minimum capacity	<i>Min</i> kg #1
Verification scale interval	<i>e</i> = kg #1
Maximum subtractive tare	<i>T</i> = - kg #2
Serial number of the instrument
Pattern approval number for the indicator	NMI No S737
Pattern approval number for other components #3

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

#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 instruments the markings shall be as above, with the exception of the following (example is for instruments with three partial ranges):

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






1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Sealing Provision



The calibration adjustments can be sealed by preventing access within the instrument enclosure as shown in Figure 2. The calibration parameters are protected by opening the jumper that is located inside the instrument. The instrument can also be protected by software method (in which a customer password table is required), and audited by checking the access number. Follow the steps below for checking if the calibration adjustment is protected.

(a) Checking information menu.

- * Press   buttons. The indicator should display PASSUN if the parameters are protected, CALIB if they are not.
- * Press   buttons to select INFO, and then press  button to enter the information menu.
- * Observe the parameters scrolled through. After displaying 'PrOG' the indicator should display 'LEGAL' if the indicator is used for single range instrument; or 'LEGMI' if the indicator is used for multi-interval instrument. Note: if the indicator displays 'nOtLEG' then the parameters is not for trade purpose, therefore the indicator is not set for legal use.
- * After indicator displays 'refnUN', record the next displayed number on the seal for verification purpose.

b) Hardware seal.

For checking if the calibration jumper is removed (therefore parameters are protected).

Press   buttons. The indicator should display PASSUN if the parameters are protected, CALIB if they are not.

c) Software seal.

Alternatively, the indicator calibration can be protected by password using password table provided by manufacturer.

1.8 Additional Features

The additional functions (other than the indications of measured mass, i.e. gross, tare, net displayed either on the indicator or an auxiliary or peripheral device) 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.

1.9 Interfaces

The instrument 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 (e.g. printing) 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).

Instruments may be fitted with RS-485 serial data interface, 4 - 20 mA current loop (analogue output), 10 V DC output, and digital inputs/outputs.

2. Description Variant 1

approved on 19/01/17

Certain sub-models (Figure 1) which have the same specifications and functions as the pattern but having different type of interface device are listed in Table 2.

Table 2: sub-models

Sub-model	Difference
TLB4 CC-Link	It features a Remote Device Station CC-Link interface instead of the analogue output
TLB4 CANopen	It features a slave CANopen interface instead of the analogue output
TLB4 DeviceNet	It features a slave DeviceNet interface instead of the analogue output
TLB4 EtherCAT	It features a slave EtherCAT interface (composed by two ports) instead of the analogue output
TLB4 EtherNet/IP	It features an adapter EtherNet/IP interface (composed by two ports) instead of the analogue output
TLB4 EthernetTCP/IP	It features an Ethernet (IEEE 802.3) port instead of the analogue output
TLB4 MODBUS/TCP	It features a slave Modbus/TCP port instead of the analogue output
TLB4 POWERLINK	It features a slave Powerlink interface (composed by two ports) instead of the analogue output
TLB4 PROFINET IO	It features a device Profinet IO interface (composed by two ports) instead of the analogue output
TLB4 PROFIBUS	It features a slave Profibus DP port instead of the analogue output
TLB4 RS485	No analogue output
TLB4 SERCOS III	It features a slave SERCOS III interface (composed by two ports) instead of the analogue output

TEST PROCEDURE

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 the *National Trade Measurement Regulations 2009*.

Tests

For multi-interval 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 S737 – 1a



TLB4 (Pattern)



TLB4 CC-Link



TLB4 CANopen



TLB4 DeviceNet



TLB4 EtherCAT



TLB4 Ethernet/IP

Laumas Model TLB4 Indicator (Pattern) and Some Sub-models (Variant 1)

FIGURE S737 – 1b



TLB4 EthernetTCP/IP



TLB4 Modbus/TCP



TLB4 Powerlink



TLB4 Profinet IO



TLB4 Profibus DP



TLB4 RS485

Additional Sub-models (Variant 1)

FIGURE S737 – 1c



TLB4 Sercos III

Additional Sub-model (Variant 1)

FIGURE S737 – 2



Typical Sealing Method

~ End of Document ~