



Nederlands Meetinstituut

Test certificate

Number **TC6033** revision 2
Project number 211942
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Issued by NMI Certin B.V.
Hugo de Grootplein 1
3314 EG Dordrecht
The Netherlands

Notified Body Number 0122

In accordance with Paragraph 8.1 of the European Standard on Metrological aspects of non-automatic weighing instruments EN 45501:1992/AC:1993 and the Welmec guide for testing indicators (Welmec 2.1, August 2001). The applied error fraction p_i , meant in the paragraph 3.5.4. of this standard is 0.5.

Applicant Ranger Instruments
41 Success Street
Acacia Ridge, QLD, 4110
AUSTRALIA

In respect of The model of an **indicator**, tested as a part of a weighing instrument (for non-automatic weighing instruments class **III** and **III**).

Manufacturer	Type
Ranger Instruments	2100 series
Procon Engineering	EP20-100 series
Shering Weighing Ltd.	Command 920
FUTURA SRI	2100
Iberfluid Instruments SA	Plantweigh 2100
Wesmar AB	2100

Characteristics Electronic, self-indicating device, with single-interval indication. The maximum number of verification scale intervals will be:
 $n \leq 6000$ for class **III** instruments or
 $n \leq 1000$ for class **III** instruments.

In the description TC6033 revision 2 further characteristics are described.

Description and Documentation The instrument is described in the description number TC6033 revision 2 and documented in the documentation folder TC6033-3, appertaining to this test certificate.

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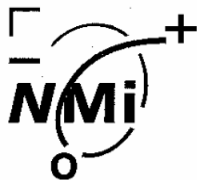
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Remarks Summary of the test involved: see Appendix number TC6033 revision 2.
This revision test certificate replaces the earlier version, including its
documentation folder.

Delft, 16 October 2002
NMI Certin B.V.

P.P.M. van Enckevort
Manager Certification Delft



1 General information about the indicator

All properties of the indicator, whether mentioned or not, may not be in conflict with the standard mentioned in the test certificate.

1.1 Essential parts

Description	Drawing number	Rev.	Remarks
Main PCB	2100-000	2.1	--
Bill of Materials	SA-2100D	1.1	--

1.2 Essential characteristics

List of devices:

- determination stability of equilibrium;
- indication of stable equilibrium;
- calibration / set-up mode;
- the calibration and set-up mode are secured with a password, this software seal uses a non-resettable event counter that contains a number that will be incremented each time any parameter changes or calibration change is made and saved. The calibration value is shown in the display at start-up;
- changing from B to N (temporarily);
- initial zero-setting;
- semi-automatic zero-setting;
- zero-tracking;
- zero indicator;
- semi-automatic subtractive tare balancing;
- counting device (in case of type 2100);
- temporarily display of digital indication other than primary indication;
- acting upon significant faults;
- display checking;
- weighing unstable samples (in case of type 2100);
- totalisation function.

Connections:

- power supply of 9 - 15V DC, supplied directly or by:
 - Battery Pack;
 - DC Power Supply;
 - AC Power Supply;
- the minimum value allowed for the signal voltage per verification scale interval is 1 μ V;
- the excitation power supply for the load cell is 8 V DC;
- the minimum input impedance of the load cell is 40 Ω ;
- the maximum input impedance of the load cell is 1100 Ω ;
- "Remote-sensing" is used;
- no special cable length has to be provided for the connection between the indicator and the junction box or load cells.



Software:

- the software of type 2100 has the identification number: V 2.x
- the software of type 2150 has the identification number: V 1.x
- for both types the identification number will be displayed at start-up.

1.3 Essential shapes

The indicator is built according to drawings:

- Ranger 2100 Outline drawing, drawing number 2100-211;
- Outline drawing 2150, drawing number 2150-211;
- Outline drawing EP20-100, drawing number EP20-100;
- 2100 Exploded View, drawing number 2100-208.

The data plates and front panel are secured against removal by sealing or will be destroyed when removed and contain the following information:

- this test certificate number TC6033;
- the calibration counter value;
- manufacturers name or mark.

To secure components that may not be dismantled or adjusted by the user, the indicator has to be secured in a suitable manner on the locations indicated in the drawing Ranger 2100 Series Sealing Diagram, drawing number 2100-209. The securing component has to bear either:

- a mark of the manufacturer laid down in a notified body approved quality system (Annex II of the Directive 90/384/EEC), or
- an official mark of a Member State of the EEC, or an other party to the EEA agreement.

1.4 Conditional parts

The interface section is located on the main board. The indicator may be equipped with the following protective interfaces that have not to be secured:

- RS232;
- RS485;
- Discrete I/O.

1.5 Non-essential parts

Display;
Keyboard;
Relay module;
Remote display;
Serial splitter.



Tests carried out for this test certificate on the Ranger Instruments indicators, type 2100 / 2150:

Test	Type or version	Institute
Temperature effect on the sensitivity with minimum weighing range and input impedance of 40 Ω. (20, 40, -10, 5 and 20 °C)	Type 2100	NMi Certin B.V.
Temperature effect on the no load indication with minimum weighing range and input impedance of 40 Ω. (20, 40, -10, 5 and 20 °C)	Type 2100	NMi Certin B.V.
Damp heat, steady state	Type 2100	NMi Certin B.V.
Repeatability	Type 2100	NMi Certin B.V.
Warm-up time	Type 2100	NMi Certin B.V.
Span stability	Type 2100	NMi Certin B.V.
Checklist	Type 2100 & Type 2150	NMi Certin B.V.
Cable length between the indicator and load cell	Type 2100	NMi Certin B.V.
Stability of equilibrium	Type 2100	NMi Certin B.V.
EMC tests are performed with a load cell impedance of 390 Ω		
Voltage variations	Type 2100	NMi Certin B.V.
Short time power reductions	Type 2100	NMi Certin B.V.
Electrical bursts	Type 2100 & Type 2150	NMi Certin B.V.
Electrostatic discharges	Type 2100	NMi Certin B.V.
Immunity to radiated electromagnetic fields	Type 2100 & Type 2150	NMi Certin B.V.