Nederlands **Meetinstituut**

Test certificate

Number **TC6604** revision 1
Project number 507216

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).
Applicant	A&D Instruments Ltd. 24, Blacklands Way Abingdon Business Park, Abingdon Oxford OX14 1DY United Kingdom
In respect of	The model of an **indicator,** tested as a part of a weighing instrument (for non-automatic weighing instruments class (III) and (IIII)). Manufacturer : A&D Type : AD-4405, AD-4406 and AD-4407
Characteristics	Electronic, self-indicating device, with single - or multi-interval indication. The maximum number of verification scale intervals will be: $n \leq 4000$ for class (III) instruments (per partial weighing range) or $n \leq 1000$ for class (IIII) instruments (per partial weighing range). Maximum of 2 partial weighing ranges. In the description number TC6604 revision 1 further characteristics are described.
Description and Documentation	The instrument is described in the description number TC6604 revision 1 and documented in the documentation folder number TC6604-1, appertaining to this test certificate.
Remarks	Summary of the test involved: see Appendix number TC6604 revision 1. This revision test certificate replaces the earlier versions, except for its documentation folder.

Dordrecht, 19 October 2005
NMi Certin B.V.

Ing. C. Oosterman
Manager Product Certification

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NMi Van Swinden Laboratorium B.V. (27228703)
NMi Certin B.V. (27.233.418)
Verispect B.V. (27.228.700)

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
Block diagram AD-4405	BD AD-4405	--	
Block diagram AD-4406	BD AD-4406	--	
Block diagram AD-4407	BD AD-4407	--	
Main board AD-4405, PC3874	7PZ+3874A	--	3 pages including parts list
Main board AD-4406, PC3875	7PZ+3875	--	3 pages including parts list
Main board AD-4407 PZ3874	7PZ+3874B	--	3 pages including parts list

EMC protection measures:
- The A/D-section on the main board is shielded with a metal cover;
- Ferrite around (5 turns) the internal load cell cable (AD-4405);
- Ferrite around (3 turns) the internal load cell cable (AD-4406);
- Ferrite around (4 turns) the internal load cell cable (AD-4407);
- The case is made of metal (AD-4407).

1.2 Essential characteristics

List of devices:
- Determination stability of equilibrium;
- Zero indicator;
- Semi-automatic zero-setting;
- Initial zero-setting;
- Zero-tracking;
- Semi-automatic subtractive tare;
- Tare weighing;
- Preset tare;
- Indication of stable equilibrium;
- Gravity compensation;
- Calibration / set-up mode via a switch on the main board;
- Checking the display;
- Changing from gross to net;
- Indications other than primary indications;
- Indication of additional information;
- Memory storage;
- Totalization.

Connections:
- Power supply:
  - AD-4405 and AD-4407: 230 V AC 50 Hz;
  - AD-4406: 7 - 10 V DC;
- The applied error fraction p_i is 0.5;
- The minimum value allowed for the signal voltage per verification scale interval is 0.5 μV;
- The excitation power supply for the load cell is 5 V DC;
- The minimum input impedance of the load cell is 87 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 has the identification number r2.xx, where the xx part will vary as software is modified, but only if the modification does not affect the metrological characteristics of the indicator and it's compliance with the requirements of EN 45501 and OIML R76.
- The identification number will be displayed after pressing the key sequence:
  For AD-4405 and AD-4407: Press and hold [Net/B/G] + [on/off], then press [Net/B/G].
  For AD-4406: Press and hold [F1] + [F2], then press [Net/B/G].

1.3 Essential shapes

The indicator is built according to the drawings:
- AD-4405 External view, drawing number D304893;
- AD-4406 External view, drawing number D304894;
- AD-4407 External view, drawing number D304895;
- AD-4405 Exploded view, drawing number EV AD-4405;
- AD-4406 Exploded view, drawing number EV AD-4406;
- AD-4407 Exploded view, drawing number EV AD-4407.

The data plate is secured against removal by sealing or will be destroyed when removed and contains the following information:
- This test certificate number TC6604;
- 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 drawings:
- AD-4405 Sealing wire, drawing number SW AD-4405;
- AD-4406 Sealing wire, drawing number SW AD-4406;
- AD-4407 Sealing wire, drawing number SW AD-4407.

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 another party to the EEA agreement.

Inside the cabinet is a calibration lock, located on the main board.

1.4 Conditional parts

Description	Drawing number	Rev.	Remarks
Power filter board (AD-4405 and AD-4407)	PC3415A	A	

The interface section is located on the main board and on separate interface boards. The indicator may be equipped with one or more of the following protective interfaces that have not to be secured:

- RS-232C;
- RS-422/ RS-485
- Relay output;
- Control input;
- Analog output;

1.5 Conditional characteristics.

Check weighing mode with:

- Set points;
- Indication of selected set point(s).

1.6 Non-essential parts

Display;
Keyboard;
Internal printer (AD-4405).

1.7 Non-essential characteristics

Counting device (pcs).

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Appendix

Tests carried out for this test certificate on the A&D indicator:

Test	Type or version	Institute
Temperature effect on the sensitivity with minimum weighing range and input impedance of 87 Ω. (20, 40, -10, 5 and 20 °C)	AD-4405, AD-4406	NMi Certin B.V. NMI Australia
Temperature effect on the no load indication with minimum weighing range and input impedance of 87 Ω. (20, 40, -10, 5 and 20 °C)	AD-4405, AD-4406	NMi Certin B.V. NMI Australia
Damp heat, steady state	AD-4405, AD-4406	NMi Certin B.V. NMI Australia
Repeatability	AD-4405	NMi Certin B.V.
Warm-up time	AD-4405	NMi Certin B.V.
Span stability	AD-4405, AD-4406	NMi Certin B.V. NMI Australia
Checklist	AD-4405, AD-4406	NMi Certin B.V.
Cable length between the indicator and load cell	AD-4405	NMi Certin B.V.
Stability of equilibrium	AD-4405	NMi Certin B.V.
EMC tests are performed with a load cell impedance of 350 Ω		
Power voltage variation	AD-4405, AD-4406 and AD-4407	NMi Certin B.V.
Short time power reduction	AD-4405, AD-4406 and AD-4407	NMi Certin B.V.
Electrical bursts	AD-4405, AD-4406 and AD-4407	NMi Certin B.V.
Electrostatic discharges	AD-4405, AD-4406 and AD-4407	NMi Certin B.V.
Electromagnetic susceptibility	AD-4405, AD-4406 and AD-4407	NMi Certin B.V. NMI Australia