



United Kingdom of Great Britain and Northern Ireland

## Certificate of EC type-examination of a measuring instrument

**Number: UK/0126/0007**

issued by the Secretary of State for Trade and Industry  
Notified Body Number 0126

In accordance with the requirements of the Measuring Instruments (Automatic Gravimetric Filling Instruments) Regulations 2006 (SI 2006/1258) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 which implement, in the United Kingdom, Council Directive 2004/22/EC, this certificate of EC type-examination has been issued to:

**Premier Tech  
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Rivière-du-Loup (Quebec)  
G5R 6C1  
Canada**

in respect of an automatic gravimetric filling instrument, comprising of a controller designated the SpeedAC NXT, a material feed mechanism, and a weigher comprising of a load receptor and associated load cell(s) and having the following characteristics:

<i>Reference accuracy class:</i>	<i>Ref(x)</i>	$\leq 0.2$
<i>Maximum capacity:</i>	<i>Max</i>	$\leq 10$ kg
<i>Minimum load:</i>	<i>Min</i>	$\geq 2$ kg
<i>Scale interval:</i>	<i>e</i>	$\leq 0.001$ kg
<i>Number of scale intervals:</i>	<i>n</i>	$\geq 10000$

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

Signatory: G Stones  
for Chief Executive  
National Weights & Measures Laboratory  
Department of Trade and Industry  
Stanton Avenue  
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United Kingdom

Issue Date: 16 May 2007  
Valid Until: 15 May 2017  
Reference No: T1105/0028

# Descriptive Annex

## 1 INTRODUCTION

This pattern of an automatic gravimetric filling instrument for dispensing predetermined loads of powdered or granular materials consists of a feeding device, a weighing unit, and a SpeedAC NXT controller incorporating a microprocessor.

The operator selects the predetermined (target) weight and other operational inputs via the keyboard on the front of the controller. The microprocessor operates the weigher in response to signals from the controller, the load cell(s) and plant sensors.

The display on the front of the controller shows the predetermined weight and the actual weight of the weighing unit when the machine is operating.

## 2 FUNCTIONAL DESCRIPTION

### 2.1 Mechanical

#### 2.1.1 Feeding device

The feeding device may be any one of the following:

- Gravity Feeder (G) or High Speed Gravity Feeder (GHS)
- Gravity Feeder with Agitator (A) or High Speed Gravity Feeder with Agitator (AHS)
- Single Screw (SS) or Double Screw (DS) Feeder
- Belt Feeder (B) or High Speed Belt Feeder (BHS)
- Vibratory Feeder (V)

#### 2.1.2 Weighing unit

**2.1.2.1** In the case of net weighing, it comprises a load receptor incorporating a discharge device for weighing of target weights in the weigh hopper, which can have one or two discharge gates, with each discharge gate pneumatically driven by one or two air cylinders. The discharge gate(s) are controlled by sensors to ensure the correct operation of the machine.

**2.1.2.2** For gross weighing, it comprises a load receptor without a discharge device for weighing directly into bags (gross weighing). The load receptor incorporates a bag spout and clamp which may be round or conical in shape. The bag clamps are operated by two air cylinders which are actuated simultaneously. Sensors detect when the clamps are closed.

### **2.1.3** Load cell(s)

Any compatible load cell(s) may be used providing the following conditions are met:

- There is a respective OIML Certificate of Conformity (R60) or a Test Certificate (EN45501) issued for the load cell by a Notified Body responsible for type examination under Directive 90/384/EEC.
- The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules (WELMEC 2, Issue 2, 1996, section 11), and any particular installation requirements. A load cell marked NH is allowed only if humidity testing to EN45501 has been conducted on this load cell.
- The compatibility of load cells and indicator is established by the manufacturer by means of the compatibility of modules form, contained in the above WELMEC 2 document.
- The load transmission conforms to one of the examples detailed in WELMEC 2.4 Guide for Load Cells.

### **2.1.4** Pneumatic

**2.1.4.1** The air cylinders which operate the weigh hopper discharge flaps, bag clamps and feed cut-off gates are double acting type used in conjunction with directional control valves having solenoid-pilot air actuators and spring or pilot air return actuators. The operating pressure range is 3 - 6 bar, over pressures are prevented by a pressure regulator and under pressures are detected by a pressure switch.

## **2.2** Electrical

**2.2.1** The SpeedAC NXT controller housing is fabricated from stainless steel plate. The controller can be provided in a universal, wall, panel or desk-top mount configuration (Figure 1). The front panel (Figure 2) has a backlit LCD panel and a twenty-seven key keyboard, five of the twenty seven keys are programmable software keys. The LCD panel displays the weight and user information.

**2.2.2** The indicator can be fitted with a two-card expansion board (six-card on the wall mount model), and may be fitted with any of the following optional cards:

- Analogue output card
- Dual channel serial expansion card
- 24 channel digital I/O card
- Profibus DP card

## 2.3 Devices

The SpeedAC NXT controller is provided with the following operational features:

- Semi-automatic zero setting device (4% of Max).
- Automatic zero setting device (4% of Max) with selectable interval corresponding to the number of weighing operations (Max: 100) or time (Max: 30 min).
- Automatic subtractive tare device (gross weighers only). This facility is set at machine level such that the operation of the machine (gross or net) cannot be altered.
- Automatic material in-flight correction with selectable interval corresponding to the number of weighing operations (Max: 50) or time (Max: 15 minutes).
- Automatic dosing time regulator (capacity regulator) to optimally set the medium and/or full flow switch-off point.
- Weight evaluation (target weight checking device).
- Pre-selection counter (pre-selection of number of weighing operations).
- Memory for storing parameters associated with filling material and/or target weight, dribble/medium and/or full flow switch-off points and limiting value for weight evaluation.

## 3 TECHNICAL DATA

3.1 The SpeedAC NXT has the following technical characteristics:

Reference accuracy class	Ref(x) $\geq$ 0.2
Power supply	115 VAC or 230 VAC
Maximum tare (gross weigher only)	-100% Max
Maximum capacity	$\geq$ 10 kg
Minimum load	$\geq$ 2 kg
Scale interval	$\geq$ 0.001 kg
Maximum number of scale intervals	10000
Load cell excitation voltage	$\pm$ 5 VDC (10 VDC)
Minimum load cell impedance	21.875 $\Omega$
Maximum load cell impedance	2000 $\Omega$
Minimum input voltage per scale interval	1 $\mu$ V
Measuring range minimum voltage	-10 mV
Measuring range maximum voltage	70 mV
Fraction of maximum permissible error	P <sub>ind</sub> = 0.5
Operating temperature range	- 10 °C to + 40 °C
Climatic environment	Closed, non-condensing
EM Classification	E1 and E2
Load cell cable	6 cores around PVC filler in centre, tinned copper braid, flexible PVC overall jacket. Maximum length = 100 m for 4-wire operation

Maximum cable length for 6-wire operation				
Load cell Impedance <sup>(1)</sup>	Cable size			Unit of length
	0.2 mm <sup>2</sup>	0.5 mm <sup>2</sup>	1.0 mm <sup>2</sup>	
22 Ω	14	33	71	Metres
44 Ω	28	66	142	Metres
87 Ω	56	133	283	Metres
350 Ω	224	535	1134	Metres

<sup>(1)</sup> calculated by dividing the single load cell impedance by the number of load cells

### 3.2 Documentation and drawings

Installation Manual	67887, version 3.0
Operating and Maintenance Manual	00010.5.1, Revision 1.6
SpeedAC NXT electrical diagrams	175275_E, Version 00
Assembly Drawing, 920i CPU Board	67612 revision F

### 3.3 Software

**3.3.1** The SpeedAC NXT controller comprises two programs; firmware and user program. The former is developed and controlled by RLWS, the latter is developed by Premier Tech. All weighing programs are included in the firmware developed by RLWS, whereas the user program is not legally relevant.

**3.3.2** The legally relevant part of the firmware has a version number LR 1.00. This version number changes with each modification made to the legally relevant part of the firmware. It is possible to display this version number by pressing the Gross/Net key for 3 seconds on the user interface. The non-legally relevant part of the firmware has another version number (V3.03 for example). This version changes with each modification. All downloads are checked for validity and all download history is recorded and kept available by RWLS.

**3.3.3** Calibration and configuration of the controller is effected via the set-up button located at the back of the instrument. Password protection is provided to prevent unauthorised access to these facilities. An “audit trail” number (Audit number: XXXXXX) is updated each time the instrument is calibrated or configured. This number can be accessed by pressing the Gross/Net key for 3 seconds on the user interface. The number is then written on a “tamper-evident” label located on the instrument at every change. “User programs” can be downloaded without update of the audit trail number as they do not affect the legally relevant software.

## **4 PERIPHERAL DEVICES AND INTERFACES**

### **4.1 Interfaces**

The instrument may be fitted with the following protected interfaces:

- RS232
- RS485
- Analogue output
- 24 channel digital I/O
- Profibus DP

### **4.2 Peripheral devices**

**4.2.1** The instrument may be connected to any peripheral device that has been issued with a test certificate by a Notified Body responsible for Annex B (MI-006) under Directive 2004/22/EC in any Member State and bears the CE marking of conformity to the relevant directives; or

**4.2.2** A peripheral device without a test certificate may be connected under the following conditions:

- it bears the CE marking for conformity to the EMC Directive 89/336/EEC; and
- it is not capable of transmitting any data or instruction into the weighing instrument, other than to release a printout, checking for correct data transmission or validation; and
- it prints weighing results and other data as received from the weighing instrument without any modification or further processing; and
- it complies with the applicable requirements of Directive 2004/22/EC Paragraph 8.1 of Annex I.

**4.2.3** The printout of individual weight readings is for information purposes only, except for preset values and the number of weighing operations.

## **5 APPROVAL CONDITIONS**

The certificate is issued subject to the following conditions:

### **5.1 Legends and inscriptions**

The following legends are durably and legibly marked on a rating plate (Figure 3) located on the controller:

‘CE’ marking  
Supplementary metrology marking  
Notified body identification number  
Accuracy class  
Serial number  
Manufacturers mark or name  
Certificate number

**5.2** The instrument shall be permanently installed or shall be provided with a level indicator.

## **6 LOCATION OF SEALS AND VERIFICATION MARKS**

**6.1** The ‘CE’ mark shall be impossible to remove without damaging it. The rating plate shall be impossible to remove without it being destroyed.

The markings and inscriptions shall fulfil the requirements of Paragraph 9 of Annex I of the Directive 2004/22/EC.

**6.2** Each time the instrument is calibrated or configured, an “audit trail” number is updated and recorded on a “tamper-evident” label on the controller (see 3.3.3).

**6.3** The load cell connection and the A/D converter are protected with seals to prevent any modification by unauthorised personnel (Figures 4 and 5). It shall be impossible to remove the seals without them being destroyed.

**6.4** Components that may not be dismantled or adjusted by the user will be secured by either a wire and seal or tamper evident label and securing mark. The securing mark may be either:

- a mark of the manufacturer and/or manufacturer’s representative, or
- an official mark of a verification officer.

## **7 ALTERNATIVES**

**7.1** Having the filling system without the low air pressure limit switch fitted, in which case the correct air pressure shall be maintained, and the underfill / overfill alarms shall be set to ensure the correct operation of the weigher. If the underfill / overfill alarm is activated, following a loss of the recommended minimum supply air pressure, all the fills completed since the last check cycle shall be checkweighed on a suitable approved non-automatic weighing instrument or discarded. The recommended minimum supply air pressure shall be marked on, or adjacent to, the rating plate of the instrument.

## **8 ILLUSTRATIONS**

- Figure 1 Photograph of controller mount options  
Figure 2 SpeedAC NXT front panel  
Figure 3 Rating plate  
Figure 4 Location of seal on load cell connections  
Figure 5 Location of seal on A/D converter connections

## **9 CERTIFICATE HISTORY**

<b>ISSUE NO.</b>	<b>DATE</b>	<b>DESCRIPTION</b>
UK/0126/0007	16 May 2007	Type examination certificate first issued.



Figure 1 Photograph of controller mount options



Figure 2 SpeedAC NXT front panel

**CHRONOS**  
A business unit of Premier Tech

Type: \_\_\_\_\_ Ser. No.: \_\_\_\_\_  
 Certificate No.: \_\_\_\_\_ Year: \_\_\_\_\_ V: \_\_\_\_\_ Hz: \_\_\_\_\_ bar  
 Accuracy class Ref(x): \_\_\_\_\_ Max: \_\_\_\_\_ kg Min: \_\_\_\_\_ kg e: \_\_\_\_\_ kg d: \_\_\_\_\_ kg T: \_\_\_\_\_ kg °C: \_\_\_\_\_ °C

AUTOM. GRAVIMETRIC FILLING INSTRUMENT / WEIGHER FOR:

Product(s)	Accuracy class X(x)	Max fill kg	Min fill kg	Average number of fill	Range/min.

CE M 07

Figure 3 Rating plate

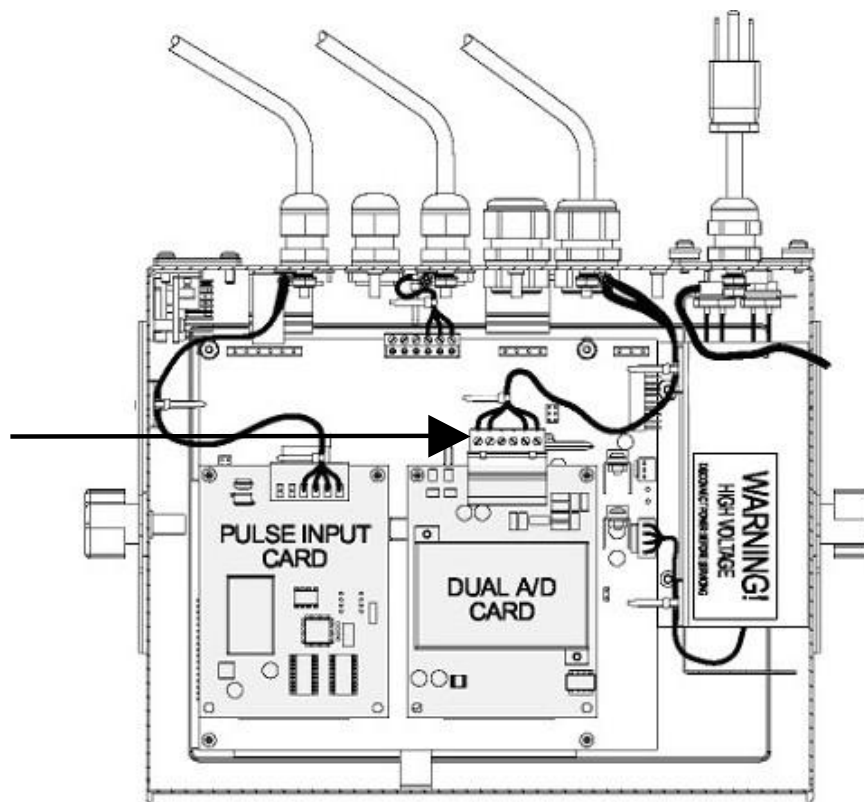
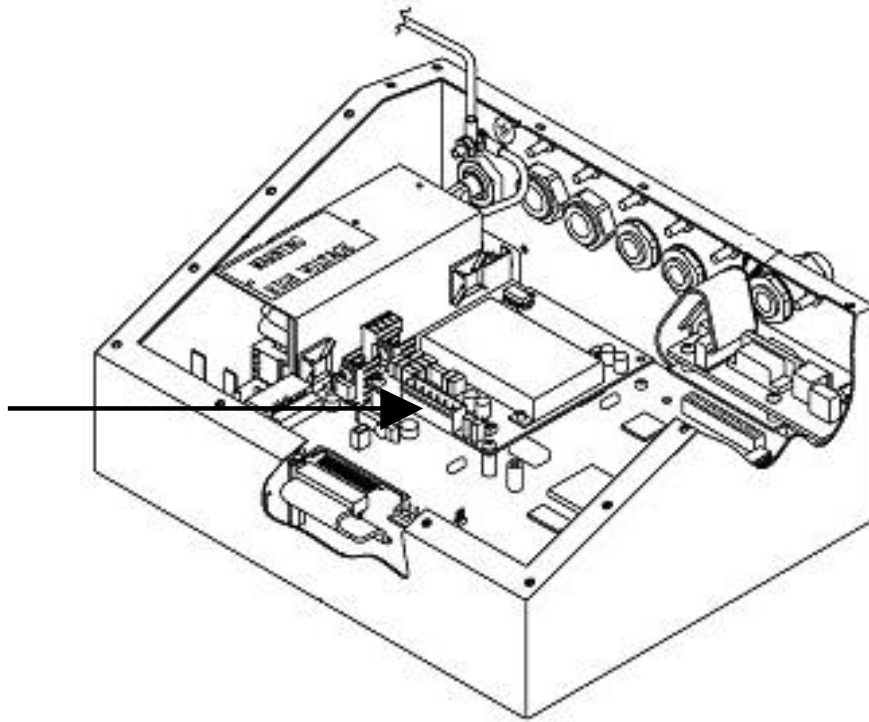


Figure 4 Location of seal on load cell connections



**Figure 5** Location of seal on A/D converter connections

**Price £10.00 net**

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NATIONAL WEIGHTS AND MEASURES LABORATORY

Department of Trade and Industry

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