



United Kingdom of Great Britain and Northern Ireland

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

**Number: UK/0126/0018 revision 1**

issued by the Secretary of State for Innovation, Universities and Skills  
Notified Body Number 0126

In accordance with the requirements of 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:

**AEW Delford Systems  
Main Road  
Dovercourt  
Harwich, CO12 4LP  
United Kingdom**

in respect of an automatic catchweighing/checkweighing instrument designated the Guardian Series and having the following characteristics:

Maximum capacity	$999 \text{ g} \leq \text{Max} \leq 6000 \text{ g}$
Minimum capacity	$\text{Min} \geq 80 \text{ e}$
Scale interval	$e \geq 0.5 \text{ g}$
Number of scale intervals	$n \leq 4000$ (per partial weighing range) maximum of three weighing ranges
Maximum belt speed	72 m/min
Accuracy class	XIII(1) and Y(a)

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.

This Revision replaces earlier versions of the certificate.

Signatory: G Glas  
for Chief Executive  
National Weights & Measures Laboratory  
Department of Innovation, Universities & Skills  
Stanton Avenue  
Teddington  
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United Kingdom

Issue Date: 12 June 2008  
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Reference No: T1108/0030/29

# Descriptive Annex

## 1 INTRODUCTION

This pattern of an automatic catchweighing instrument, designated the Guardian Series, operates as an automatic checkweigher (Category X). The instrument may also operate as an automatic catchweigher (Category Y). The Guardian Series comprises the G2200 and G1000.

When used as category X, the instrument comprises a weighing device, mechanical handling facilities and a reject device. When used as category Y the instrument comprises a weighing device and mechanical handling facilities. The instrument is designed to weigh packs dynamically.

## 2 FUNCTIONAL DESCRIPTION

### 2.1 Mechanical

**2.1.1** The instrument (Figures 1 and 2) is constructed in stainless steel. The framework is a fabricated floor standing stainless steel frame on adjustable feet. On the frame are mounted the modular conveyor sections (in-feed, weigh head, and out-feed) and the main console. A level indicator is mounted on the weigh head. The out-feed conveyor can be equipped with one of a number of reject devices, including a flipper, drop flap or ram (category X). The instrument is used in category Y to weigh open goods (not pre-packaged).

**2.1.2** The control cabinet, situated at the rear of the instrument, houses the electrical hardware. A console, mounted above the control cabinet contains the keyboard and display. Photocells are used for pack detection.

**2.1.3** Packs are weighed as they pass over the weigh head conveyor which runs continuously at the speed of the in-feed and out-feed conveyors. The weighing system is constructed around a Tedeo Huntleigh 240 C3 load cell, capacity 20 kg. The load cell is thermostatically controlled and is housed in an oil filled box.

**2.1.4** The main differences between the G2200 and the G1000 are the appearance (as shown in Figures 1 and 2), the level of waterproofing and a limited choice of weigh conveyor lengths on the G1000.

### 2.2 Electrical (control cabinet)

**2.2.1** The control cabinet is accessed from a door at the rear. Inside are the WI/O board, circuit breakers, mains filters, power supplies, motor drive cards and appropriate connectors for external electrical interfaces such as the out-feed mechanisms and external peripherals.

**2.2.2** The main electrical interface to the out-feed mechanisms is a CAN data bus. This uses a high-speed communication protocol used to control the electronics on the out-feed system. The control cabinet also houses the Voltage to Frequency converter electronics, which are connected to the weigh table load cell. The interface between the V2F electronics and the microprocessor located in the console is via CAN data bus.

**2.2.3** Mounted towards the bottom of the control cabinet is the motor enable board. This board houses a number of relays used to control the motors. It also contains terminal strips for connection of the start and stop buttons mounted on the console fascia, etc.

## **2.3 Electronics (console)**

**2.3.1** The main processor board (“PM860 board”) and the electronics board (“Elvis board”) are custom-designed boards which contain most of the electronics for the instrument, and are located in the console. The PM860 microprocessor board is based around the Motorola MPC860 Power PC. Part of the non-volatile memory is protected by a switch to control access to parts of the set-up data.

## **2.4 Weigh head unit**

**2.4.1** The load cell is a Tedeia Huntleigh 240 C3, capacity 20 kg. The utilisation of the load cell shall be greater than or equal to 5 %.

**2.4.2** The load cell is connected to the V2F circuit which provides the  $\pm 5$  V excitation voltage and converts the measured voltage into a pulse train, the frequency of which depends upon the voltage. Information relating to the frequency of the pulse train is transmitted to the main processor board along with a second static pulse train, which is used as a reference. The method of interface between the V2F electronics and the console is via CAN data bus.

## **2.5 Devices**

**2.5.1** The instrument has the following devices:

- Initial zero setting device ( $\leq 20\%$  of Max)
- Automatic zero setting device active during automatic operation (adjustable time interval from 1 to 255 packs)
- Zero tracking device active during dynamic operation
- Pre-set tare device
- Static calibration not accessible to the user
- Dynamic adjustment device accessible to the user
- Belt speed setting accessible to the user
- Internal memory
- Device to determine the stability of equilibrium, active during dynamic operation
- Device that acts upon significant faults

### 3 TECHNICAL DATA

3.1 The Guardian Series has the following technical characteristics.

Maximum capacity:	$999 \text{ g} \leq \text{Max} \leq 6000 \text{ g}$
Minimum capacity (Min):	$\geq 80e$
Scale interval:	$e \geq 0.5 \text{ g}$
Maximum number of scale intervals:	$n \leq 4000$ (per partial weighing range) maximum of three weighing ranges
Maximum belt speed:	72 m/min
Tare:	$T \leq -1000 \text{ g}$
Load cell model	Tedea Huntleigh 240
Load cell $E_{\text{max}}$	20 kg
Climatic environment	0°C to +35 °C
	Non-condensing (closed)
Electromagnetic environments	E1 and E2
Power supply	110 - 480 V.a.c. 50/60 Hz
Accuracy class	XIII(1) and Y(a)

### 3.2 Documentation and drawings

Description	Drawing number	Rev.	Remarks
G2200 Reference Manual		3	
V-F converter board	1572371	1	
Parts list V-F converter board	1572362	2	1 page
Weigher I/O board	1521211	1	
Parts list weigher I/O board	1521212	9	5 pages
Elvis PCB (processor)	1521563	1	
Parts list Elvis PCB (processor)	1521562	3	7 pages
CAN I/O board	1572387	1	
Parts list CAN I/O board	1572389	5	4 pages

### 3.3 Software

3.3.1 The legally relevant software is version number 1.0. The software version is shown in the start-up window when the instrument is in warm-up mode.

## 4 PERIPHERAL DEVICES AND INTERFACES

### 4.1 Interfaces

4.1.1 The instrument may have the following interfaces:

- (i) RS 422
- (ii) RS 232
- (iii) Parallel I/O port
- (iv) RS 485
- (v) CAN

## **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

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;
- 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;
- 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 Paragraph 8.1 of Annex I.

## **5 APPROVAL CONDITIONS**

The certificate is issued subject to the following conditions:

### **5.1 Legends and inscriptions**

**5.1.1** The instrument bears the following legends:

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

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

**6.1** The ‘CE’ marking, supplementary metrology marking and certificate number are located on the side of the control cabinet. The CE mark shall be impossible to remove without damaging it. The data 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** The load cell is secured to the base plate by a wire and seal through two of the fixing screws. The base plate is secured to the main frame by a wire and seal through two of the fixing screws.

**6.3** Access to the configuration and calibration of the instrument is by use of a calibration switch located on the Elvis board. This secured by use of a sheet metal bracket which is wired and sealed to prevent unauthorised access (Figure 3).

**6.4** The V2F box is covered with a sheet metal bracket which is wired and sealed via the fixing screws.

**6.5** 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**

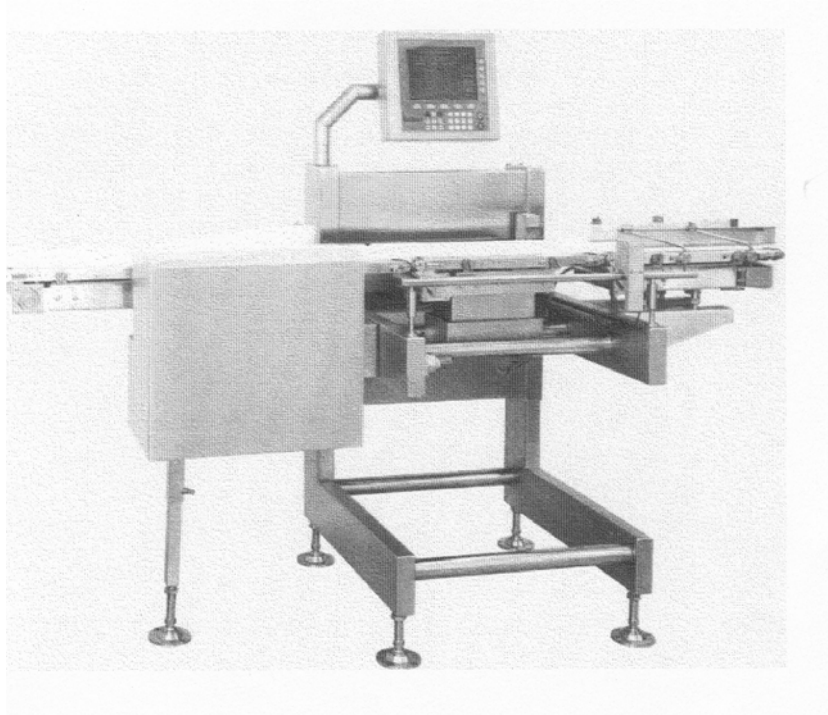
**7.1** Having the instruments configured for multi-lane operation (up to 4 lanes).

## **8 ILLUSTRATIONS**

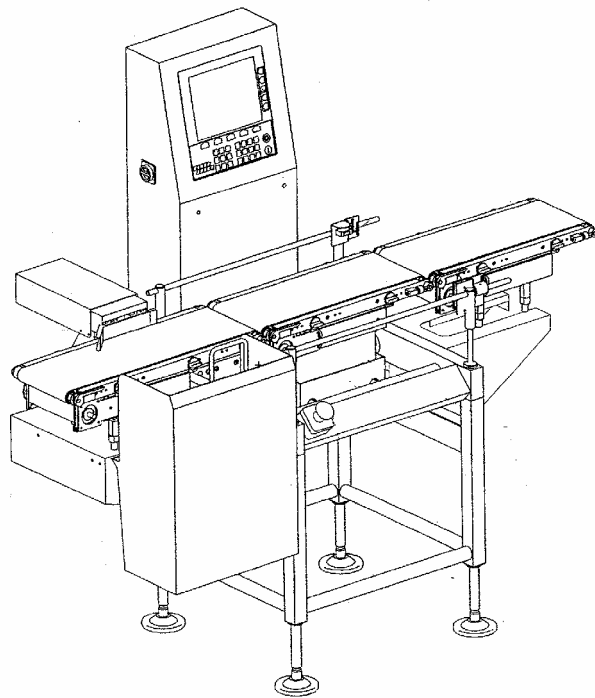
- Figure 1 G2200 instrument  
Figure 2 G1000 instrument  
Figure 3 Sealing of calibration switch

## **9 CERTIFICATE HISTORY**

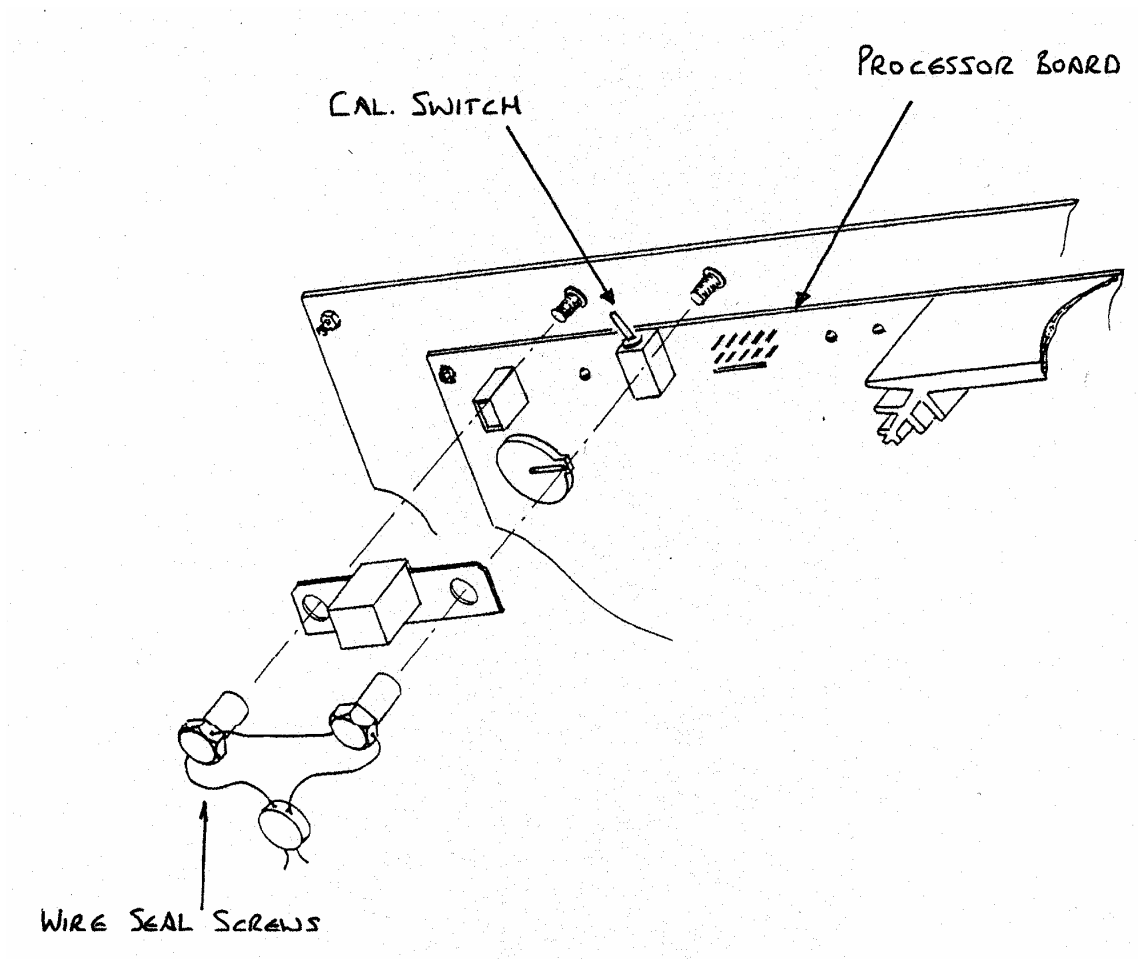
<b>ISSUE NO.</b>	<b>DATE</b>	<b>DESCRIPTION</b>
UK/0126/0018	27 July 2007	Type examination certificate first issued.
UK/0126/0018 rev 1	12 June 2008	Class Y(a) added to the certificate.



**Figure 1 G2200 instrument**



**Figure 2 G1000 instrument**



**Figure 3 Sealing of calibration switch**