



United Kingdom of Great Britain and Northern Ireland

Certificate of EC type-examination of a measuring instrument

Number: UK/0126/0004 Revision 1

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

In accordance with the requirements of the Measuring Instruments (Automatic Catchweighers) Regulations 2006 (SI 2006/1257) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 (SI 2006/1270) which implement, in the United Kingdom, Council Directive 2004/22/EC, this certificate of EC type-examination has been issued to:

**Digi Europe Ltd
Digi House
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Haverhill
Suffolk, CB9 8DG
United Kingdom**

in respect of an automatic catchweighing instrument designated the HI-700 (weight/weight-price labeller) or the CW-700 (checkweigher), having the following characteristics:

Maximum capacity	Max	≤	6000 g
Minimum capacity	Min	≥	50 g (Class X)
	Min	≥	50 g or 20 e (whichever is higher) (Class Y)
Scale interval	e	≥	1 g
Accuracy class	Y(a) and XIII(1)		

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 Glas
for Chief Executive
National Weights & Measures Laboratory
Department for Innovation, Universities & Skills
Stanton Avenue
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United Kingdom

Issue Date: 28 February 2008
Valid Until: 25 March 2017
Reference No: T1108/0039

Descriptive Annex

1 INTRODUCTION

This pattern of an automatic catchweigher, designated the HI-700, operates as an automatic weight or weight/price labeller (Category Y). The instrument is designated the CW-700 when configured to operate only as an automatic checkweigher (category X).

The instrument comprises a self-indicating and price-computing weighing machine with associated thermal label printer and mechanical handling facilities. It is designed to weigh packs dynamically with the rate of operation depending upon the pack weight.

Pricing, pack and labelling information is stored in files called PLUs selectable by the operator for the commodity or labels being processed. Labels are printed for the above transaction data and are applied to the packs automatically.

The instrument provides indications of:

- price per unit weight from £0.01 to £9999.99 per kg by £0.01 intervals
- price-to-pay from £0.01 to £9999.99 by £0.01 intervals (rounded to the nearest 1p, with 0.5p rounded up)

2 FUNCTIONAL DESCRIPTION

2.1 Mechanical

2.1.1 The HI-700 (Figure 1) comprises a weigher and a thermal label printer (labeller). The weigher and labeller are mounted on separate fabricated floor standing stainless steel frames on adjustable stainless steel feet, with electrical and pneumatic connections between the weigher and labeller.

2.1.2 A level-indicator is provided on the front of the weigher scale conveyor unit. On the frame are mounted the in-feed and scale conveyor sections. In-feed guides may be fitted which are adjustable. A transparent plastic cover is located over the scale conveyor which shall be in place during normal automatic weighing operation. Two photocells are used for pack detection. They are located at the trailing edge of the in-feed and scale conveyors.

2.1.3 The control cabinet is located beneath the conveyors which houses the electronics and electrical control elements of the instrument. A display console is mounted on a support behind the scale conveyor. The display unit consists of a colour LCD touch screen (Figure 2).

2.1.4 The weighing system comprises a scale conveyor mounted on a load cell. Packs are weighed as they pass over the scale conveyor. The operating speed of the conveyor is selected by the operator. The load cell is an HBM PW15.

2.1.5 The thermal label printer module comprises a labelling conveyor and printer mechanism mounted on the frame. The printer mechanism comprises the print head, label feed and applicator. The printer mechanism is located above the out-feed conveyor and has adjustable height, lateral and rotational position. It contains the hardware necessary to print, feed and apply self-adhesive labels from a reel. The label application is powered by pneumatics, with a pressure regulator mounted on the frame of the weigher. The label

applicator contains a vacuum device which is used to hold the label in place on the applicator, the label is then placed onto the pack as it reaches the required position.

2.2 Electrical

2.2.1 The HI-700 weigher comprises the following:

- Teraoka SBC-710 SBC Controller (as detailed in Test Certificate TC5944)
- ADC Power Supply
- DSP A/D conversion PCB

2.3 Devices

2.3.1 The instrument is provided with the following devices:

- Initial zero-setting device ($\leq 4\%$ of Max)
- Semi-automatic zero-setting device
- Automatic zero-setting after time interval (≤ 15 mins) or number of packs
- Zero-tracking device
- Preset tare device
- Semi-automatic tare device (subtractive)
- Zero indication
- Rate of operation setting accessible to user
- Static and dynamic calibration not accessible to user
- Price computation

3 TECHNICAL DATA

3.1 The HI-700 has the following technical characteristics:

Maximum capacity (Max)	≤ 6000 g
Scale interval (e)	≥ 1 g
Minimum capacity (Min)	≥ 50 g or 20 e (whichever is higher) (Class Y)
	≥ 50 g (Class X)
Tare (T)	$\leq - 3000$ g
Max operating rate*	≤ 150 packs/min
Max conveyor speed	≤ 71.5 m/min
Load cell model	: HBM PW15
Load cell capacity	: 15 kg
Climatic environment	: 0 to 30 °C
	Non-condensing (closed)
Electromagnetic environments	: E1
Power supply	: 220-240 V a.c. / 50-60 Hz single phase
Label applicator pneumatic pressure	: 4-6 bars
Display/keyboard location	: Colour LCD touch screen
Accuracy class	: Y(a) and XIII(1)

* dependant upon pack weight and instrument configuration

3.2 Documentation and drawings

TA-HI700GA-1-0	HI-700 General arrangement
X888-A2	HI-700 Control enclosure
IHI-07005.4	DSC ADC PCB assembly
000-026-14	Digi 700 name plate
TA-HI700SS-24	Location of rating/serial plate
TA-HI700SS-01 and 03	Sealing of A/D assembly in control box
HI-700UM-04	HI-700 User Manual (Issue 4, 01/2007)
HI-700SM-01	HI-700 Service Manual (Issue 1, 04/2005)

3.3 Software

3.3.1 The software version number is 2.xx.xx which is displayed during the power-up sequence of the instrument. The legal metrological code is contained within a dll, HI700.dll. The dll is protected by a checksum which is also displayed during the power-up sequence. Any modification in the dll will result in a change in the checksum value and an error being detected. Access to the Windows operating system is prevented by password protection.

3.3.2 In addition to the weight and weight-price labelling modes of operation, the instrument is provided with non-weighed items (fixed price and fixed weight) and average weight modes of operation.

3.3.3 The parameters (nominal weight and tolerance limits) used by the average weight mode are calculated by the system and cannot be modified. An average weight label contains the nominal weight with the associated units of measurement, the 'e' symbol, and a fixed price. Any pack that falls outside of the average weight limits is not labelled (i.e. rejected). The instrument is designated the CW-700 when configured to operate only as a checkweigher.

4 PERIPHERAL DEVICES AND INTERFACES

4.1 Interfaces

The instrument may have the following interfaces:

- USB
- Serial (RS232)
- Ethernet

4.2 Peripheral devices

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 Marking

6.1.1 The ‘CE’ marking, supplementary metrology marking and certificate number are located on the side of the control cabinet (Figures 3 and 4). The CE mark shall be impossible to remove without damaging it. The data plate shall be impossible to remove without it being destroyed.

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

6.2 Access to metrological settings is secured by a switch on the A/D board. The A/D board is enclosed by a metal case and is secured by a tamper-evident seal (Figure 5).

6.3 Access to the static and dynamic calibration facility is password protected. The instrument increments a calibration value (audit trail number) each time it is re-calibrated. The value is recorded on a tamper evident label on the outside of the metal case protecting the A/D board. The current audit trail number can be displayed on the instrument display.

7 ALTERNATIVES

7.1 Having the instrument configured with the following weighing parameters:

Maximum capacity (Max)	≤ 12000 g
Scale interval (e)	≥ 2 g
Minimum capacity (Min)	≥ 100 g or $20 e$ (whichever is higher) (Class Y)
	≥ 100 g (Class X)
Tare (T)	$\leq - 6000$ g

The maximum rate of operation is 150 packs/min, which is dependant upon the pack weight and instrument configuration. The load cell is an HBM PW30.

7.2 Having an alternative model type WI-700, where WI denotes an increased conveyor width.

7.3 Having an alternative model type MI-700 (Figure 6), where MI denotes conveyors mounted on a single stand, the labeller being closer to the weigher and the speed being restricted to a maximum of 100 packs per minute (corresponding to a belt speed of 47,5 meters per minute).

7.4 Having an alternative construction of the instrument as shown in Figure 7, in which case the instrument is designated as the xx-700SF, where xx is the model type HI, WI or CW. The weigher and labeller are combined into a single frame, with the control box location behind the conveyors.

7.5 Having additional thermal label printer modules connected. Labellers may be mounted beneath the conveyor to apply labels to the underside of packs.

7.6 Having a “long scale” option, in which case the conveyor length is 650 mm. The maximum throughput is limited to 100 packs per minute for xx-700 versions and 75 packs per minute for xx-700SF versions of the instrument, where xx is the model type HI, WI or CW.

7.7 Having a sleeving and printing machine connected. The following interlocks shall be provided to ensure correct operation of the instrument:

- All non-weighed packs (underweight, overweight or unstable) pass through the system without a sleeve being applied. Data is not sent to the printer and a “Bad Pack” signal is sent to the sleeving system.
- The system ensures that the correct data is placed on the correct pack.
- If an error occurs with the printer or the sleeving system, the whole system is stopped. The system must be reset and all packs cleared from the system before automatic operation can be restarted.

7.8 Having an alternative conveyor assembly and machine construction as shown in Figure 8. The conveyors are modified to allow them to be more easily detached for cleaning purposes, and are now enclosed by two solid stainless steel frames mounted on top of the tubular base frame.

7.9 Having an alternative version, designated the AP-700 UB, which includes a simple unintelligent printer manufactured by Teraoka Seiko Co. Ltd. The printer may be mounted above or below the conveyer or in a combination of both positions as shown in Figure 9.

7.10 Having an alternative unit price indication of Price/100g. The instrument provides indications of:

- price per unit weight from £0.01 to £9999.99 per 100g by £0.01 intervals
- price-to-pay from £0.01 to £9999.99 by £0.01 intervals (rounded to the nearest 1p, with 0.5p rounded up)

7.11 Having the instrument modified as follows: Teraoka SBC-710 SBC Controller replaced by a Teraoka main board type TPB 02930 and associated power supply unit type TBT 280. This alternative is approved for an E2 electromagnetic classification.

8 ILLUSTRATIONS

- Figure 1 Photograph of HI-700
- Figure 2 Operation touch screen display
- Figure 3 Rating plate location
- Figure 4 Rating plate
- Figure 5 Sealing of A/D enclosure
- Figure 6 Schematic of MI-700
- Figure 7 Schematic of HI-700SF
- Figure 8 Alternative conveyer assembly and machine construction
- Figure 9 Alternative Printer AP-700 UB

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0004 Rev 1	28 February 2008	Authorised alternative 7.11 added.
UK/0126/0004	26 March 2007	Type examination certificate first issued.



Figure 1 Photograph of HI-700

Operation Screen				
Max=5.000kg e=0.001kg Min=0.050kg T= 3.000kg				
PLU No. 00000001	top label and total label		19/02/2007 08:36	
Packs Per Minute 0		<Shop Name>		Batch Information
Dates		<Customer Name>		Pack Count 11 ↑
Pack Date	190207	<Ing 1>		Pack Count Down 0
Sell By	200207	<Ing 2>		Running Totals
		PN:0	Txt:0.89	Weight kg 5.743
				Price € 9.00
Weight		Unit Price	Pack Price	
0.000 kg		€/kg 1.23	€ 0.00	
Tare >0< G		Catch Weight Mode		
0.000 kg				
Label Feed	Print Sub Total	Machine Speed	Automatic Mode	Labeller ▲
Traceability	EN	Print Offset	Label Position	Main Menu ▼

Figure 2 Operation touch screen display

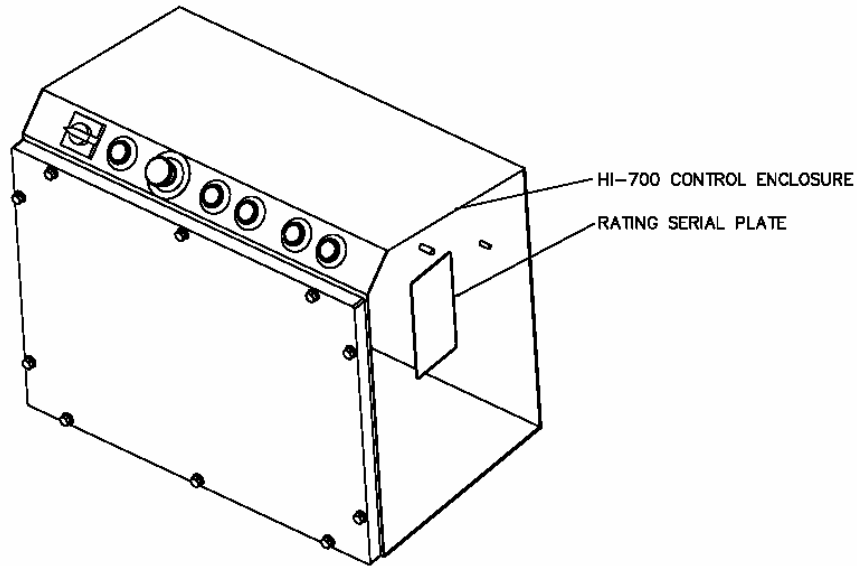


Figure 3 Rating plate location

<p>MANUFACTURED BY DIGI EUROPE LTD HAVERHILL, SUFFOLK U.K.</p>			
MODEL	<input type="text"/>		
SER No.	<input type="text"/>		
CE M	<input type="text"/>		
<p>CLASS <input type="text"/> R51 CERT No. UK/0126/0004</p>			
MAX SPEED (m/min) <input type="text"/>		Peeke/min <input type="text"/>	
Max	Min	and	Tore
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
AIR PRESSURE		<input type="text"/> bar	
TEMPERATURE RANGE		<input type="text"/> °C	
<p>! WARNING— THIS APPARATUS MUST BE EARTHED</p>		<p>POWER REQUIREMENTS: PUISSANCE DE RACCORDEMENT: ANSCHLUSS/LEISTUNGS-WERTE:</p>	
<p>! ATTENTION— L'APPAREIL DOIT ETRE MIS A LA TERRE</p>		V	<input type="text"/> ~
<p>! ACHTUNG— DIESES GERÄT MUSS GEERDET WERDEN</p>		Hz	<input type="text"/> ϕ <input type="text"/>
<p>ALWAYS REPLACE FUSE WITH CORRECT TYPE AND RATING</p>		I _{va}	<input type="text"/> A
<p>REPLACER UN FUSIBLE DE MEME DIMENSION AVEC L'INTENSITE ADEQUATE</p>		<p>PRIMARY FUSE RATING: VALEUR FUSIBLE PRINCIPAL: HAUPTSICHERUNGS-WERTE:</p>	
<p>BEIM AUSTAUSCH DER SICHERHEITEN AUF RICHTIGEN WERT UND TYPE ACHTEN</p>		I _{ca}	<input type="text"/> A,T
		I _{so}	<input type="text"/> kA
		doc. No.	<input type="text"/> cct ref
		m	<input type="text"/> Kg

Figure 4 Rating plate

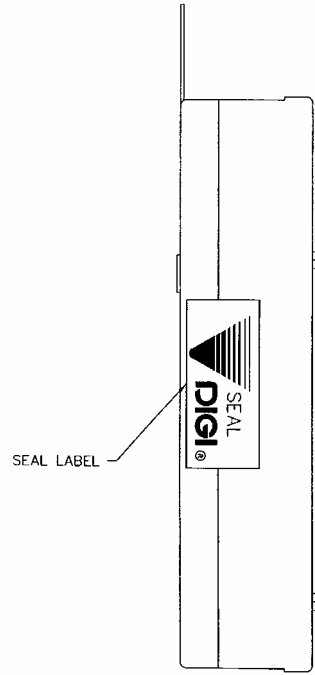


Figure 5 Sealing of A/D enclosure

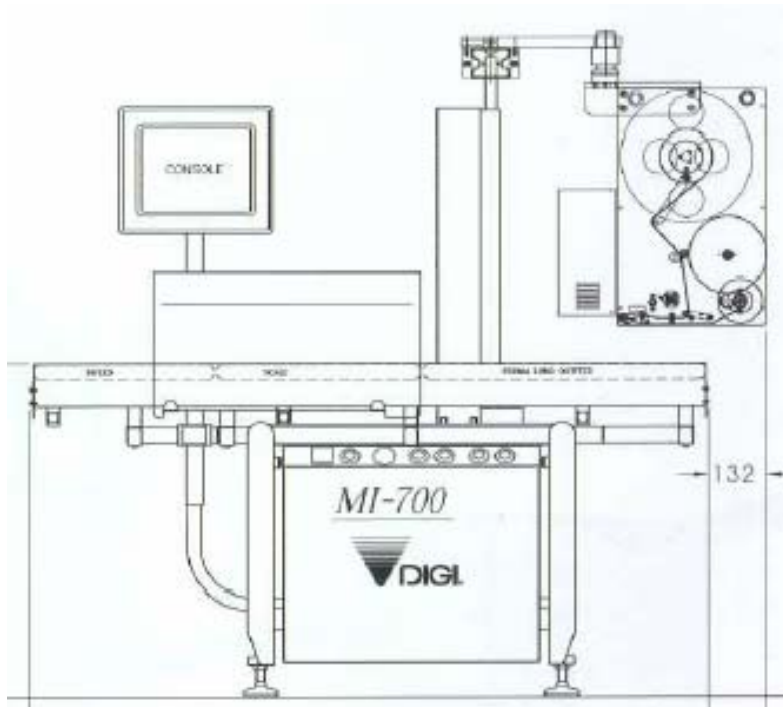


Figure 6 Schematic of MI-700

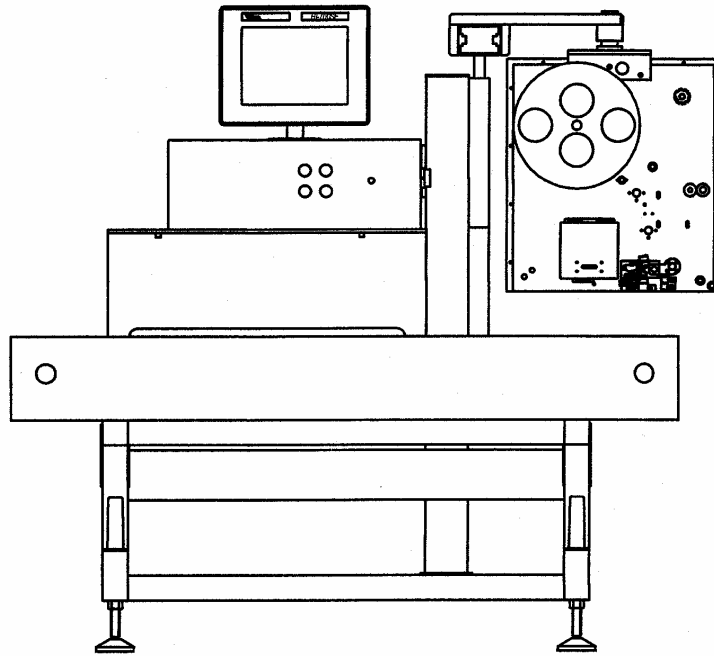


Figure 7 Schematic of HI-700SF



Figure 8 Alternative conveyor assembly and machine construction



Figure 9 Alternative Printer AP-700 UB