

SOCIETÀ COOPERATIVA  
**BILANCI**



*Ripetitore RD52HL: manuale di uso e manutenzione*

***RD52HL repeater scale: use and maintenance manual***

*Répétiteur RD52HL: manuel d'utilisation et d'entretien*

*Anzeige-Terminal RD52HL: Gebrauchs- und  
Wartungsanleitung*

*Repetidor RD52HL: manual de uso y mantenimiento*

*Repetidor RD52HL: manual de utilização e manutenção*



Italiano

English

Français

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Español

Português

81320030

10.06.2004



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# 1. GENERAL INFORMATION

## 1.1 Declaration of conformity

<b>DECLARATION OF CONFORMITY</b>	
Manufacturer:	<b>SOCIETÀ COOPERATIVA BILANCIATI</b>
Address:	Via S. Ferrari, 16 41011 Campogalliano (MO)- Italy
The electronic terminal model:	<b>RD52HL</b>
with the options	all those described in this manual
<b>conforms to:</b>	
✓ standards EN45501, EN50081-1 in accordance with the requirements of Directive 89/336 EEC (electromagnetic compatibility)	
✓ standard EN60950 in accordance with the requirements of Directive 73/23 EEC (low voltage directive)	

## **1.2 Foreword**

- ✓ The aim of this manual is to provide the operator, through the use of text and illustrations, with essential information regarding the installation, safe operation and maintenance of the weighing system.
- ✓ This manual must be kept in a safe place where it is readily available for consultation! Always observe the instructions contained in the manual!
- ✓ Safe operation of the system is the responsibility of the operator, who must be fully familiar with it.
- ✓ The user is responsible for ensuring that the installation conforms to the applicable regulations.
- ✓ The equipment must only be installed by specialised personnel who have read and understood this manual.
- ✓ The term "**specialised personnel**" means any personnel who, by virtue of the training they have received and their professional experience, have been explicitly authorised by the "System safety supervisor" to install, operate and service the system.
- ✓ Contact your nearest Service Centre if problems occur.
- ✓ Any attempt on the part of the user or unauthorised personnel to dismantle, modify or tamper with the terminal is prohibited. Any such attempt shall invalidate the warranty and relieve the manufacturer from all liability for any damage or injury to persons or property.
- ✓ It is also forbidden to alter or remove the data plates and seals on the terminal. Make sure that all plates and seals are present and legible, if not contact the After-Sales Service.
- ✓ The manufacturer shall not be liable for any damages caused by incorrect handling of the terminal.
- ✓ The information and illustrations contained in this manual were up to date at the time of publication.
- ✓ The manufacturer is committed to a policy of continuous product improvement and parts of the system may therefore be subject to modification.
- ✓ All the technical information contained in this manual remains the exclusive property of the manufacturer and may not be disclosed to third parties.
- ✓ No part of this document may be reproduced or transmitted in any

form, including publication in computerised form or on the World Wide WEB, without the explicit written permission of the manufacturer.

- ✓ This manual may not be used for purposes other than those directly related to installation, operation and maintenance of the terminal.
- ✓ In order to more clearly describe certain maintenance or adjustment operations, some of the illustrations in this manual show the weighing system with the safety guards removed. Under no circumstances may the system be operated in these conditions. The safety guards may only be removed for the time strictly required to carry out the required repairs or maintenance work after which they must be fitted back in place.

### **1.3 Symbols**

Below is a list of the symbols used in this manual to alert the reader to the various hazards associated with the operation and maintenance of the instrument.



*Denotes an operation or procedure where failure to observe the instructions will result in death or serious injury.*

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### **1.4 Description of the terminal**

The digital weight repeater is an electronic device that can be connected to weighing terminals with load cells of the strain gauge type.



**1.5 Technical characteristics of the terminal**

Digits displayed:	6
Numeric range:	0 - 999999
Decimal point settings:	(0000.0) - (000.00) - (00.000)
Reception time-out:	5 s
Piloting via serial link:	RS232 or RS422
Power supply:	85-265 Vac 50/60 Hz
Operating temperature range:	-10 +40°C
Protection:	IP65
Holder:	Stainless steel

## **1.6 Operation**

Whenever it is connected to the electricity main, the weight repeater comes on and tests the digits and LEDs, which light up in sequence. After this, the program number and software release are displayed.

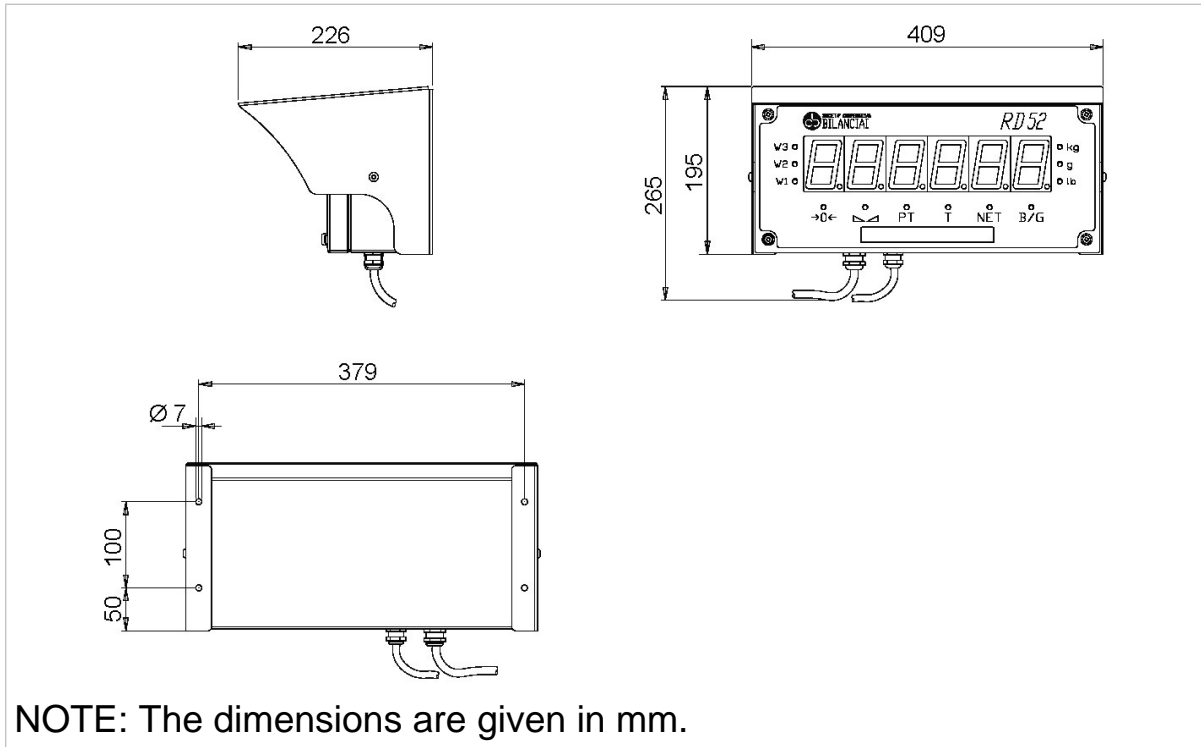
This is followed by flashing dashes which remain on until the repeater is connected to the serial line. If valid data are transmitted along the serial line, they are immediately displayed. The data remain displayed for up to 5 seconds, as determined by the time-out setting. If no other signal is transmitted to the repeater, the central segments begin to flash once this time has elapsed.

The type of string received can either be CB (see *par. 5.3.1 on page 1-23*) or EXTENDED (see *par. 5.3.2 on page 1-24*) and acknowledgement is automatic.

If the string is the CB type, enter the number of decimal digits using the SETUP switch on the board (consult *par. 3.4 on page 1-18*). If an EXTENDED string is received, all the information is within the string itself and there is no need to set anything. This string also handles the metrological indications on the front panel of the display in the automatic mode.

The serial interface used can be either RS232 or RS422, depending on the connection made. The repeater automatically selects the type of interface used, checking the lines piloted.

**1.7 Overall dimensions**



**Figure 1.1 - Dimensions of the digital weight repeater (citi1101.jpg)**

### ***1.8 Obtaining technical assistance***

In the event of any operating faults requiring the intervention of specialised technicians, contact the manufacturer or your nearest Service Centre. To enable us to deal with your request swiftly, always state the serial number of your terminal, which can be found on the seal label. Also provide information about the system in which the terminal is installed.

### ***1.9 Warranty***

The warranty conditions are specified in the contract of sale.

## **2. SAFETY INSTRUCTIONS**

### ***2.1 Prohibited uses***

The instrument you have purchased is a weighing system and has been designed and manufactured as such. The instrument is primarily intended for weighing goods.

- ✓ It is forbidden to use the terminal without taking the necessary precautions for safe use.
- ✓ Use of the terminal in places with potentially explosive atmospheres or in areas where there is a risk of fire is strictly prohibited.

Any other use shall only be permitted if explicitly authorised by the Manufacturer.

### ***2.2 Regulations***

The operating conditions for the electronic terminal are subject to the regulations in force in the country in which the terminal is used. All use of the terminal in conditions which do not comply with these regulations is prohibited.

### ***2.3 Prescriptions for use***

- ✓ Strictly comply with the instructions in this manual during use.
- ✓ In the event of discrepancy between the information in this manual and the instrument purchased, contact your Dealer or the Manufacturer's After-Sales Service for explanations.
- ✓ Always observe the indications given on the warning and danger plates on the terminal.
- ✓ Make sure that all the safety guards are in place and that the connection cables are in a good condition and connected correctly.
- ✓ Make sure that the terminal is connected to an electrical outlet socket equipped with an efficient earth connection. Make sure that the line complies with the applicable regulations. Make sure that there is no difference in potential between the earth and neutral conductors.
- ✓ If the terminal is to be connected to other devices (e.g. a computer or other), these devices must be disconnected from the electricity main before connection to the terminal.

- ✓ All maintenance work and/or repairs must be carried out by authorised personnel only.
- ✓ Always disconnect the terminal from the electricity main and wait a few minutes before accessing the internal components.

## **3. DELIVERY AND INSTALLATION**

### ***3.1 Recommendations for installation***

Use the supplied brackets to fix the repeater.

Avoid direct sunlight on the display if this is installed outdoors.

### ***3.2 Connection of the terminal to the electricity main***



*Check that:*

- ✓ the voltage and frequency of the electricity main correspond to the indications on the warning plate affixed to the terminal;*
  - ✓ the mains outlet socket to which the terminal is connected is equipped with an earth;*
  - ✓ the mains outlet socket is in the immediate vicinity of the terminal and is equipped with a disconnecter switch;*
  - ✓ the warning and danger plates are affixed to the casing enclosing the instrument;*
  - ✓ failing this, notify your maintenance personnel or contact our Assistance Service directly.*
- 

Proceed in the following way to connect the terminal to the electricity main in the correct way:

- ✓ insert the plug of the power lead into the right power socket;*
- ✓ operate the disconnecter switch.*

The terminal complies with the European Directive governing electromagnetic compatibility, however it is good practice to provide a separate power supply line for the terminal.

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**⚠ DANGER ⚠**

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*The power cable plug has IP20 protection.*

*Prepare an adequately protected connection to the electricity main to suit the environmental conditions.*

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The socket must be equipped with a disconnecter switch.

### **3.3 Serial connection**

The display has a 10-pin connector with the following configuration:

<b>SERIAL CONNECTION</b>	
<b>PIN</b>	<b>DESCRIPTION</b>
1	RX422-
2	RX232
3	TX232
4	RTS
5	GND
6	RX422+
7	TX422-
8	CTS
9	TX422+



The repeater can be linked in the RS232 or RS422 modes, using the relative pins of the connector. The repeater automatically selects the right internal interface.

If the supplied standard extension is used, connect as indicated in the following table:

<b>9-PIN CONNECTOR</b>	<b>SIGNAL</b>	<b>REPEATER TERMINAL PIN</b>
2	RX232	3
3	TX232	2
5	GND	5
7	TX422-	1
9	TX422+	6
1	RX422-	7
6	RX422+	9

### **3.4 Opening and closing the weight repeater to set the switch**

- ✓ Disconnect the mains cable and serial cable from the repeater;
- ✓ unscrew the four screws that fix the upper cover of the display using a screwdriver;
- ✓ remove the cover;
- ✓ power by keeping the SETUP switch depressed: the position of the decimal point will appear on the display. Press the switch to move the decimal point to the four available positions (0 by default; 1, 2, 3 decimal numbers) in the cyclic mode.
- ✓ Release the switch for 4 seconds to allow the terminal to return to the display mode. Remember that the settings are only valid for the CB string (see *par. 5.3.1 on page 1-23*). In the case of the EXTENDED string (see *par. 5.3.2 on page 1-24*), the settings make no difference and the decimal point is set automatically.
- ✓ Close up the instrument by working through the operations described above in reverse order.

## **4. CONTROLS, DISPLAY, SWITCHING THE TERMINAL ON AND OFF**

### ***4.1 Display of the weight and accessory indications***

Besides the weight, the following symbols are displayed on the weight repeater:



***Stable weight symbol***

Indicates that the displayed weight is stable and can be printed and/or transmitted.



***"Center zero" symbol***

Indicates that the weight detected by the platform is near zero, between  $-1/4 + 1/4$  of the division.

**PT**

***Tare symbol entered via the keyboard***

The flashing indication means that a tare has been digitized via the keyboard.

**T**

***Tare symbol memorized via acquisition***

The flashing indication means that a tare has been memorized via acquisition.

**B/G**

***Gross weight symbol***

When this symbol lights up it means that a gross weight is displayed.

**NET**

***Net weight symbol***

When this symbol is on it means that a tare has been memorized via acquisition.

If the **PT** indication is also on at the same time, it means that a tare has been entered via the keyboard.

**W1 W2 W3**

***Indication of the weighing range for  
multiextension instruments (ME)***

**kg, g, lb, ...**

***Unit of measurement of the weight displayed***

If the indication flashes, the weight is within the minimum weight range.

## ***4.2 Switching the terminal on and off***

Connect the digital weight repeater to the electricity main as explained in *par. 3.2 on page 1-15*.

## **5. PROGRAMMING DIALOGUES VIA SERIAL LINKS**

### ***5.1 Symbols used***

The conventions used to describe the characters on the serial link are listed below.

- ✓ The normal characters are simply indicated by means of their symbol.
- ✓ The control characters are set within brackets and expressed in capital letters.

For example:

<CR> indicates the carriage return character.

<SP> indicates the space character.

- ✓ The hexadecimal value of the character is given in numbers and capital letters if necessary.

For example: <CR>(0DH) or \$(24H).

- ✓ The variables are given in lower case letters between brackets.

For example:

<um>=unit of weight measurement.

The values can be:

kg = kilograms

<SP>g = grams

lb = pounds

<SP>t = tons

**5.2 Communication protocol**

Baud rate:	4800
Number of start bits:	1
Number of data bits:	7
Number of stop bits:	2
Parity:	EVEN
Encoding:	ASCII
Communication interface:	RS232, RS422

### 5.3 Strings

The format of the data string transmitted to the display can be the CB type or EXTENDED type.

#### 5.3.1 Cb (or Bilanciai) string

1 <sup>st</sup> character	\$(24H)	character at the start of the string
2 <sup>nd</sup> character	<s>	s=stability s=0 weight stable s=1 weight not stable s=3 weight not valid (negative or overloaded)
3 <sup>rd</sup> -7 <sup>th</sup> character		net weight if the weight consists of more than 5 digits, the least significant ones will not be transmitted
8 <sup>th</sup> character	<CR>(ODH)	character that ends the string

**5.3.2 Extended string**

1 <sup>st</sup> character	\$(24H)	character at the start of the string
2 <sup>nd</sup> -10 <sup>th</sup> character		net weight with sign and decimal separator if required
11 <sup>th</sup> character	<SP>(20H)	space
12 <sup>th</sup> -20 <sup>th</sup> character		tare with sign and decimal separator if required
21 <sup>st</sup> character	<SP>(20H)	space
22 <sup>nd</sup> -23 <sup>rd</sup> character	<um>	unit of measurement
24 <sup>th</sup> character	<SP>(20H)	space
25 <sup>th</sup> character	<s1>	scale status
26 <sup>th</sup> character	<s2>	scale status
27 <sup>th</sup> character	<s3>	scale status
28 <sup>th</sup> character	<s4>	scale status
29 <sup>th</sup> character	<CR>(0DH)	
30 <sup>th</sup> character	<LF>(0AH)	

The <s1>, <s2>, <s3>, <s4> characters are ASCII characters that must be interpreted as hexadecimal value. Each character represents 4 bits of different meaning. For example, ASCII character "a" on the input must be interpreted as hexadecimal character "A";

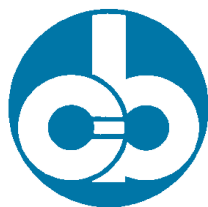
1	0	1	0
bit3	bit2	bit1	bit0



When the value of the bit is "1", it means that the corresponding signal is in the true condition. The meanings of the signals are as follows:

<s1>	bit 0	minimum weight signal
	bit 1	tare blocked signal
	bit 2	preset(1)/self-weighed(0) rate signal
	bit 3	"center zero" signal
<s2>	bit 0	LSB weighing extension signal (ME only)
	bit 1	stable weight signal
	bit 2	overload signal
	bit 3	MSB weighing extension signal (ME only)
<s3>	bit 0	tare entered signal
	bit 1	tare blocked cancelled signal (ME only)
	bit 2	weight not valid
	bit 3	printing in progress
<s4>	bit 0	approved instrument
	bit 1	converter faulty
	bit 2	error in scale configuration parameters
	bit 3	not used





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