SOCIETÀ COOPERATIVA
BILANCIAI

D70 Terminal

$$C \in$$

Use and maintenance manual

Table of Contents

1. GENERAL

1.1 Declaration of conformity

See QUICK START manual.

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!

✔ The safe operation of the system is the responsibility of the operator, who must have a thorough knowledge of the system.

✔ The user is responsible for ensuring that the installation conforms to the applicable regulations.

✔ The equipment must be installed by specialised personnel who have read and understood this manual.

✔ **"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 maintain the system.

✔ In the event of any problems, contact your nearest Service Centre.

✔ Any attempt on the part of unauthorised personnel to dismantle or modify the terminal is prohibited; any such attempt shall invalidate the warranty and release the manufacturer from all liability for any injury or damage.

✔ Alteration or removal of the data plates and seals is strictly prohibited; check that all plates and seals are present and legible, if not contact 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 system components 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 maybe 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 the installation, operation and maintenance of the terminal.

✔ In order to more clearly illustrate 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. Do not operate the system in these conditions under any circumstances whatsoever, but remove the safety guards for the time strictly required to carry out the required repairs or maintenance then fit them 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.

⚠ DANGER ⚠

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

⚠ CAUTION ⚠

Denotes an operation or procedure where failure to observe the instructions could result in minor injury or damage to the instrument.

✋ WARNING ✋

Information or instructions on how the system is to be operated correctly in order to maximise its service life or prevent loss or damage of programmed data or to optimise operation with regard to metrological standards.

1.4 Description of the terminal

Digital weight indicator mod. D70 allows highly accurate and reliable weighing operations to be carried out.

This terminal is available in two versions called D70A and D70B. The D70A version is particularly suitable for use in the industrial and commercial weighing sectors since its configuration allows it to be easily installed on weighing platforms. The D70B version is a terminal for use in plants with the least possible amount of equipment for installation in electric panels (concrete mixing, batching plants, etc.).

The terminal can also be used in the piece counter mode.

Certain of the characteristics that distinguish the two versions of the terminal are listed below:

Version D70A	*Version D70B*
✔ connection to a scale with analogue cells (up to four 350 Ohm cells); ✔ 2 serial outputs with RS232 and RS232/422/485 output standards; ✔ a12V power supply by means of an external adapter (85-265 VAC); ✔ rechargeable internal batteries can be used for operation in the absence of mains power.	✔ connection to a scale with analogue cells (up to twelve 350 Ohm cells); ✔ 2 serial outputs with RS232 and RS232/422/485 output standards; ✔ 1 analogue output with (0 - 10) V voltage and (0 (4) - 20) mA current; ✔ mains power supply (85-265 VAC); ✔ the terminal can be powered by 12 V external batteries or an external adapter.

1.5 Technical characteristics of the terminal

	Version D70A	**Version D70B**
Power supply:	85-265 Vac 50/60 Hz (with external power supplier)	85-265 Vac 50/60 Hz (with external power supplier and internal power supplier)
	12 Vdc (with external batteries)	12 Vdc (with external batteries)
	7.2 Vdc (with rechargeable batteries)	-
Rechargeable internal batteries (optional):	Nickel metal hydrate (Ni-MH) AA rechargeable 1.5 V	
Maximum power:	12 W	12 W
Load cell connection:	up to 4 analogue load cells of 350 Ohm via 9-pin D-type connector	up to 12 analogue load cells of 350 Ohm via 9-pin D-type connector
Maximum impedance:	80 Ohm	29 Ohm
Load cell power supply:	5 Vdc	10 Vdc
Internal resolution:	200000 points @ 25 conv/sec	200000 points @ 25 conv/sec
Resolution in type-approved version:	6000 divisions maximum	6000 divisions maximum
Maximum input signal:	15 mV	23 mV
Sensitivity:	0,5 µV/division	1 µV/division
Full scale stability:	< 5ppm/°C	< 5ppm/°C
Zero stability:	< 5ppm/°C	< 5ppm/°C

Compensated temperature range:	- 10 + 40°C	- 10 + 40°C
Operating temperature range:	- 10 + 40°C	- 10 + 40°C
Protection class:	IP20	IP20
Humidity:	85 % @ 40°C	85 % @ 40°C

1.6 Dimensions and weight of the terminal

Weight:

650 g

750 g (with internal power supplier)

800 g (with internal batteries)

Dimensions of panel slot for rack assembly: 200 mm x 104 mm (base x height)

The dimensions are given in mm.
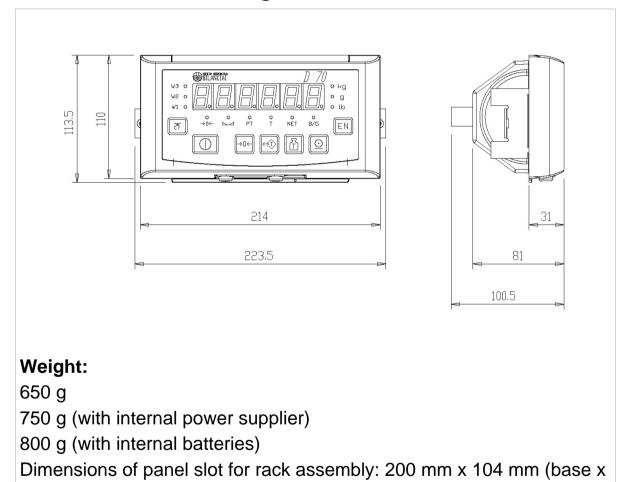
Figure 1.1 - Overall dimensions and weight of the rack version of the terminal *(citi1201.jpg)*

Weight:

650 g

750 g (with internal power supplier)

800 g (with internal batteries)

The dimensions are given in mm.
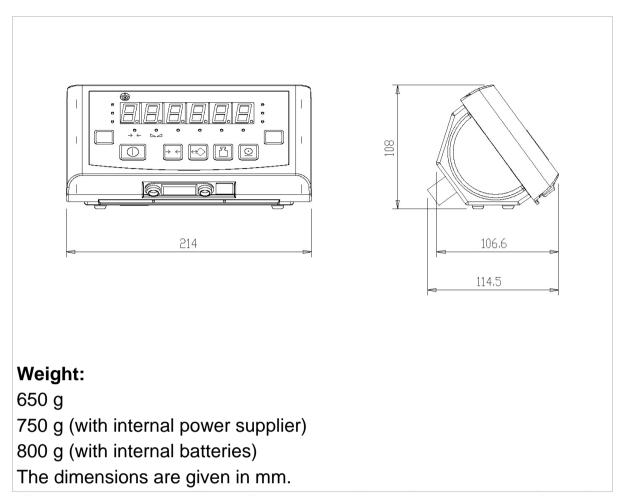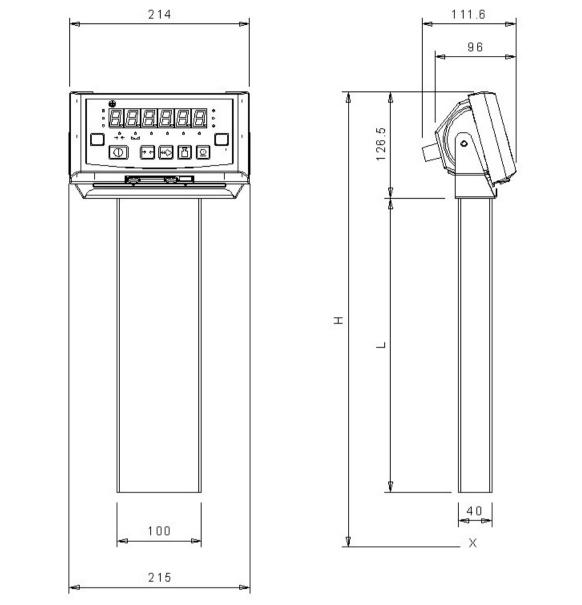
Figure 1.2 - Overall dimensions and weight of the table version of the terminal *(citi1202.jpg)*

Key

X = support of the instrument

Low stand

✔ L = 350 mm / H ~ 500 mm

TALL stand

✔ L = 900 mm / H ~ 1055 mm

Weight:

650 g, 750 g (with internal power supplier), 800 g (with internal batteries). The dimensions are given in mm.

Figure 1.3 - Overall dimensions and weight of terminal version on stand *(citi1203.jpg)*

Weight:

650 g

750 g (with internal power supplier)

800 g (with internal batteries)

The dimensions are given in mm.
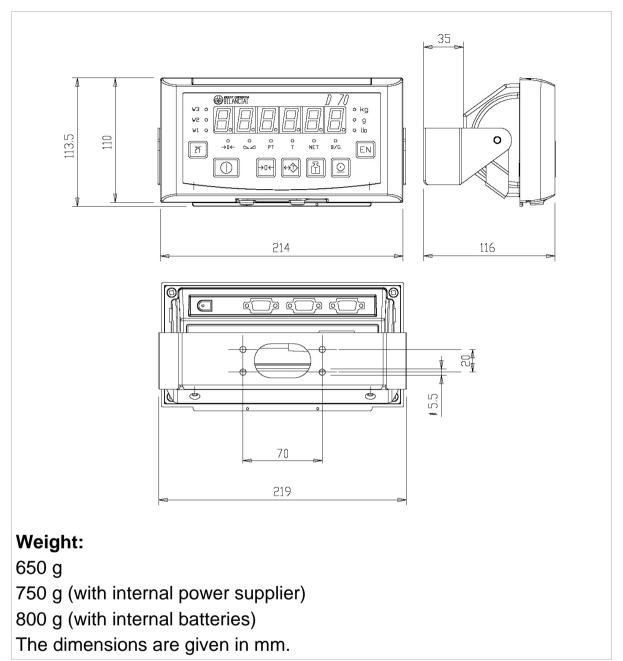
Figure 1.4 - Overall dimensions and weight of wall mounted version of the terminal *(citi1204.jpg)*

114.5

25.5   106.7

105

195

214

Weight:

650 g

750 g (with internal power supplier)

800 g (with internal batteries)

The dimensions are given in mm.
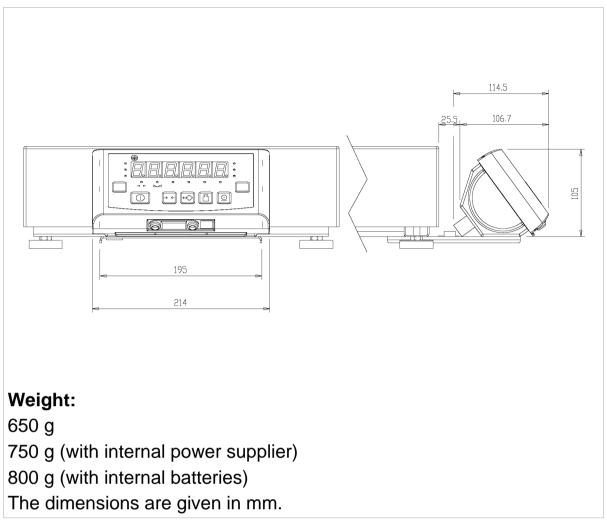
Figure 1.5 - Overall dimensions and weight of the terminal version on PMA platform *(citi1205.jpg)*

1.7 How to dispose of electric or electronic waste

This symbol on the weighing instrument purchased means that:

✔ this electric or electronic appliance cannot be disposed of as solid urban waste;

✔ it must be disposed of separately;
✔ it can be returned to the dealer when a new instrument is purchased;
✔ improper use or disposal of this instrument may pollute the environment or harm the human health;
✔ failure to comply with the aforementioned instructions is liable to the penalties established by law.

In particular:

✔ the outer casing and the mechanical components are made from plastic and/or metal materials;
✔ there are printed circuits with electronic components inside the casing;
✔ there is an Ni-Cd or Li battery on the CPU board;
✔ the electrical connections are made with insulated copper conductors;
✔ the rechargeable batteries or accumulators are the Ni-MH or Pb type.

⚠CAUTION⚠

This instrument must be disposed of separately, returned to the dealer or taken to a differentiated waste collection center.

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 quote 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 conditions of warranty are stipulated 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 the weighing of 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 expressly authorised by the Manufacturer.

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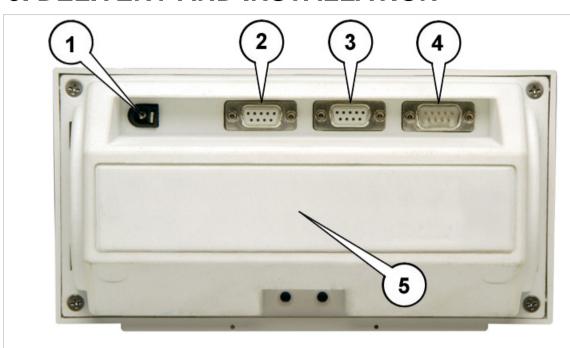
The operating conditions for the electronic terminal are subject to the regulations in force in the country in which the terminal is used. All use of the terminal in conditions which do not comply with these regulations is prohibited.

2.3 Prescriptions of use

✔ Strictly comply with the instructions in this manual during use.
✔ In the event of any discrepancy between the information in this manual and the instrument purchased, contact your Dealer or the Manufacturer's After-Sales Service for clarification.
✔ Always observe the indications given on the warning and danger plates on the terminal.
✔ Check that all the safety guards are in place and that the connection cables are in good condition and connected correctly.
✔ Check that the terminal is connected to an electrical outlet socket equipped with an effective earth connection. Make sure that the line complies with the applicable regulations. Check 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), these devices must be disconnected from the electrical supply before connection to the terminal.

✔ All maintenance and/or repairs must be carried out by authorised personnel only.

✔ Always disconnect the terminal from the electrical supply and wait a few minutes before accessing the internal components.
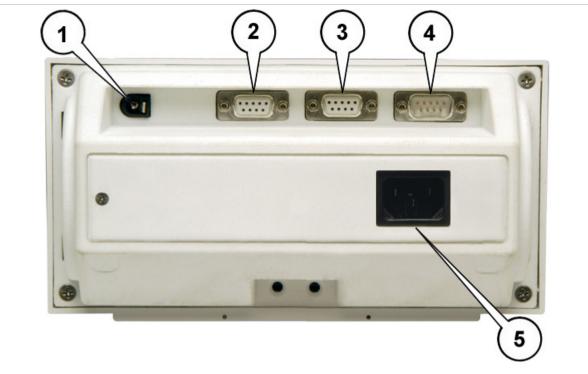
3. DELIVERY AND INSTALLATION

Key

1. Jack connector for 12 V power input
2. 9-pin female connector (COM1) for serial connection
3. 9-pin female connector (COM2) for serial connection
4. 9-pin male connector (JBIL) for connection to the weighing platform
5. Battery holder

Figure 3.1 - Rear part of terminal (version D70A) *(citi1206.jpg)*

Key

1. Jack connector for 12 V power input
2. 9-pin female connector (COM1/Analogue output) for serial connection
3. 9-pin female connector (COM2) for serial connection
4. 9-pin male connector (JBIL) for connection to the weighing platform
5. Mains power socket

Figure 3.2 - Rear part of terminal (version D70B) *(citi1207.jpg)*

3.1 Connection of the terminal to the electrical supply line

⚠ DANGER ⚠

Check that:

✔ *the voltage and frequency of the electricity main are as indicated on the data plate of the adapter;*

✔ *the power socket is compatible with the plug of the adapter;*

✔ *the warning and danger signs are present and legible;*

✔ *failing this, notify your maintenance personnel or contact our Assistance Service directly;*

To correctly connect the terminal to the electricity main, proceed as follows:

✔ insert the connector of the power lead into the rear part of the terminal;

✔ insert the plug of the power lead into the correct mains outlet socket.

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

✋ WARNING ✋

Do not route the terminal connection cables alongside power cables as these could cause disturbances that interfere with the correct operation of the terminal. Only use the connection cable supplied with the terminal. If the cable supplied is too short, do not attach an extension lead but contact the Manufacturer.

3.2 Connection of the terminal to the platform scale

The terminal is normally supplied with a pre-wired cable for connection to the platform scale. The female connector on this cable should be plugged into the male 9-pin connector (JBIL) on the rear of the terminal (see point 4 *Figure 3.1 on page 1-23*).

✋ WARNING ✋

The cable screen should always be connected to the metal cap of the 9-pin connector. Do not route the scale connection cable alongside power cables.

3.2.1 Connection of analogue load cells

The diagram below shows the pinout for the JBIL connector for connection to scales with analogue load cells.

Key

NC = Reserved - do not connect

SIG + = Signal +

SIG - = Signal -

EX + = Excitation +

EX - = Excitation -

SENSE + = SENSE signal +

SENSE - = SENSE signal -

LEV X = Signal from level sensor

LEV Y = Signal from level sensor
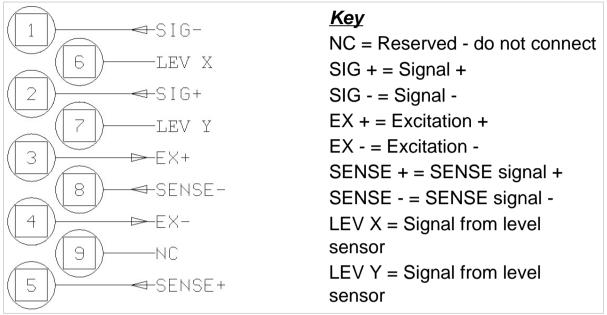
Figure 3.3 - Pinout for the JBIL connector for connection to scales with analogue load cells *(citi1208.gif)*

3.3 COM1 serial port connection

The terminal has an RS232 serial port (COM1) with a 9-pin female connector located on the rear panel (see point 2 *Figure 3.1 on page 1-23*); the diagram below shows the pin connections for this port.

Key

NC = Reserved - do not connect
RX232 = Data reception
TX232 = Data transmission
CTS232 = Clear to send
RTS232 = Request to send
GND = Signal ground
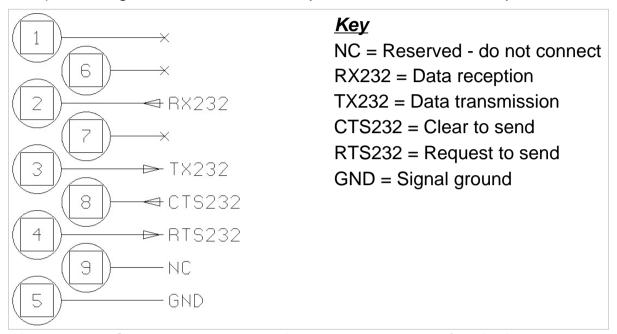
Figura 3.4 - COM1 standard serial port connector (9-pin female D-type) *(citi1219.gif)*

⚠CAUTION⚠

Vacant pins 1, 6 and 7 (Figure 3.4 on page 1-28) are reserved for connecting analogue inputs (only the D70B version, see par. 3.5 on page 1-34).

⚠ CAUTION ⚠

Operating limits stipulated by the standard RS232:

Maximum transmission distance = 15 m

Maximum line voltage = ± 12 Vdc

For connection to external devices, use a screened cable and connect the screen to the metal cap of the 9-pin connector.

3.4 COM2 serial port connection

The terminal has second serial port, which can be configured for RS232, RS422 or RS485 data transmission standards. The serial port (COM2) has a 9-pin female connector (see point 3 *Figure 3.1 on page 1-23*).

3.4.1 Connection of COM2 in RS232 configuration

For the connection of external devices, refer to the pinout diagram in *Figure 3.5 on page 1-30*:

Key

NC = Reserved - do not connect

RX232 = Data reception

TX232 = Data transmission

GND = Signal ground

Ri = Termination resistance inside terminal

NOTE: the free pins are reserved for RS422 - RS485 connection
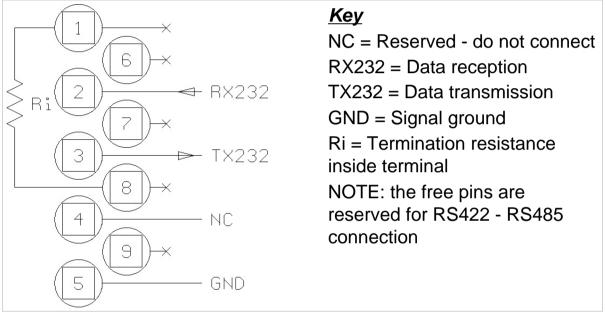
Figure 3.5 - COM2 serial port connector (9-pin female D-type)
(log0004.gif)

⚠CAUTION⚠

The RS232 operating limits are indicated in par. 3.3 on page 1-28.

3.4.2 Connection of COM2 in RS422 configuration

Key

NC = Reserved - do not connect

RX422 +/- = Data reception

TX422 +/- = Data transmission

TERMIN = Termination resistance to be connected to pin 6

Ri = Termination resistance inside terminal

NOTE: the free pins are reserved for RS232 connection
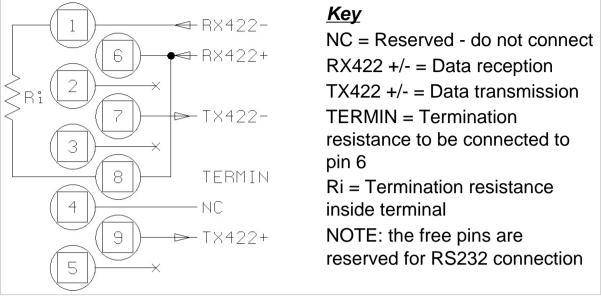
Figure 3.6 - Example of RS422 serial port connection *(log0005.gif)*

⚠CAUTION⚠

Operating limits stipulated by the standard RS422:

Maximum transmission distance = 1200 m
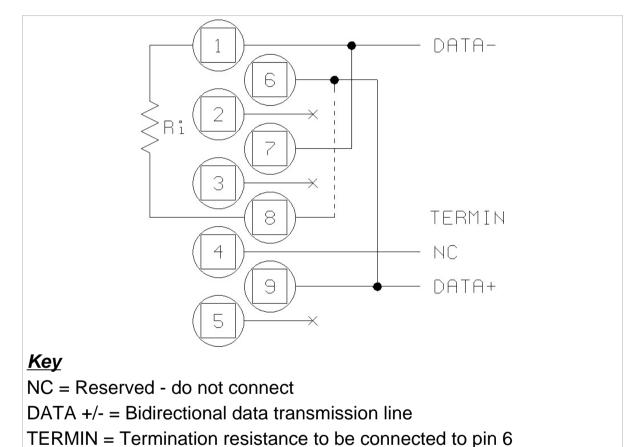
Maximum line voltage = +/- 7V

For connection to external devices, use a screened twisted pair cable and connect the screen to the metal cap of the 9-pin connector.

3.4.3 Connection of COM2 in RS485 configuration

If the COM2 serial port is configured for RS485 data transmission, you will need to:

✔ connect together pins 9 and 6 and pins 1 and 7 (*Figure 3.7 on page 1-32*)

✔ place a jumper across pin 6 and pin 8 to connect the termination resistance; this operation is to be carried out on the first and last terminals connected in the line.

Key

NC = Reserved - do not connect

DATA +/- = Bidirectional data transmission line

TERMIN = Termination resistance to be connected to pin 6

Ri = Termination resistance inside terminal

NOTE: the free pins are reserved for RS232 connection

Figure 3.7 - Pinout for RS485 serial port connection *(log0006.gif)*

⚠ CAUTION ⚠

Operating limits stipulated by the standard RS485:

Maximum transmission distance = 1200 m

Maximum line voltage = +/- 7V

For connection to external devices, use a screened twisted pair cable and connect the screen to the metal cap of the 9-pin connector.

Maximum number of terminals that may be connected = 16

3.5 Analogue output connection (D70B version only)

The connector COM1 located on the rear of the terminal (point 2 *Figure 3.2 on page 1-24*) provides an analogue output in the forms 0-10 V and 0(4)-20 mA galvanically separated; the connection pinout is given in the following table.

Pin n°	*Signal*
1	Output 0-10 V
6	Common
7	Output 0(4)-20 mA

⚠ CAUTION ⚠

Technical characteristics:

Resolution= 10000 points

Precision = 0.05 % FS

Minimum voltage output load = 100 kohm

Minimum current output load = 250 ohm

3.6 Programmable analogue output

This function is used for programming two voltage or current values and a reference weight:

✔ output voltage or current for a weight equal to zero;

✔ output voltage or current for a weight equal to the reference weight;

✔ reference weight.

The programmed values are permanently memorized even when the instrument is off.

For information about the parameters to set (AN.DATA), refer to *par. 5.9 on page 1-46*.

Refer to *par. 9.4 on page 1-69* for the remote controls associated with this function..

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

4.1 Display of weight and additional information

Key

1. Terminal display
2. Weighing symbols
3. Metrological keys
4. On/off key
5. Menu browsing keys

Figure 4.1 - Front of terminal _(citi1209.jpg)_

The indications concerning the operations carried out by the indicator are presented in the fullest possible form, while universally known symbols are used for the weighing data.

Here is a list of these symbols and their meanings:

◱◲   ***Weight stable symbol***

Indicates that the weight value displayed is stable and thus may be printed and/or transmitted.

→0←   ***Centre zero symbol***

Indicates that the weight on the scale is near to zero i.e. within -1/4 + 1/4 of a division.

T   ***Tare symbol***

Indicates that there is a tare symbol memorized by acquisition.

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

Indicates that the tare value acquired has been digitized via the keyboard.

B   ***Gross weight symbol***

NET   ***Net weight symbol***

When the indication is on, this means that the tare has been memorised by acquisition.

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

W1 W2 W3   ***Weighing range indication for multi-extension (ME) instruments***

kg, g, lb   ***Unit of measurement of the displayed weight***

If the indication flashes, this means that the weight is within the minimum weighing range.

4.2 Description of the keys

Refer to *Figure 4.1 on page 1-35*:

Zero-set weight

Press the key to set the weight to zero but only in the presence of the following conditions:

✔ the weight value must be within the -1% to +3% range of the weighing capacity for terminals where metric verification is obligatory and ± 50% of the capacity for other terminals;

✔ the weight must be stable;

✔ no tare must have been entered.

Enter/cancel tare

Press this key to acquire the weight on the platform as tare value but only in the presence of the following conditions:

✔ the weight must be stable;

✔ the weight value must be positive;

✔ the weight must not exceed the maximum capacity.

Press again to cancel the acquired tare.Il tasto di accensione o spegnimento

Tare display key

Press this key to display the set tare value.

Print and/or send

Press this key to print out the weighing data and/or transmit a string of data via the configured port in serial mode.

`2°F`	**Second function selecting key**
	Activates alternative functions when pressed in combination with the other keys.
`EN`	**Enter or confirm**
	Press this key to confirm the operation.
`①`	**On/Off key**
	Press this key to switch the terminal on and off.

✋ WARNING ✋

The functions of the keys may change during use of the terminal. Instructions about this will be given in the manual.

4.3 Switching the terminal on and off

⚠ DANGER ⚠

Before switching on the terminal, check:

✔ _that the voltage and frequency values correspond to those required by the terminal;_

✔ _the presence and integrity of the protective casings;_

✔ _the presence of warning and danger plates._

If this is not the case, contact the maintenance operator or our Service Centre.

✔ Press key ⬜ on the front of the terminal (see _Figure 4.1 on page 1-35_).

✔ Wait for the completion of the initial check (lamp-test) to ensure that all the display segments work properly.

✔ Press the key again to switch off the terminal.

✋ WARNING ✋

In the case of connection to a computer or to another remote unit, make sure that no data transmission is in progress before switching off the terminal. This prevents the data transmitted to the units connected to the terminal from being lost or wrong data from being acquired. Wait until the transmission has terminated and then transmit the next connection interruption to these units.

✋ WARNING ✋

The on or off key ⬚ *can be disabled during the installation phase. In this case, the customer must install an accessible disconnector.*

This function is used when the terminal is installed in places that are difficult to access (e.g. at a height of 3 m). In this case, the terminal remains permanently on and the disconnector must be used to switch it off.

4.3.1 Automatic switch-off

The terminal can be configured in the `AUTOMATIC SWITCH-OFF` mode to optimize power consumptions. If the stable weight condition remains for 5 minutes, the terminal switches off automatically.

A minute before switching off, the display begins to blink to inform the operator about the imminent switch-off.

✋ WARNING ✋

Automatic switch-off will not occur when the batteries are charging.

To enable this function, select value `YES` for the `OFF` parameter and follow the instructions given in *par. 5.9 on page 1-46*.

5. USE OF THE TERMINAL

5.1 General

Keys ⟦EN⟧, ⟦2°F⟧, ⟦🔩⟧ described in *par. 4.2 on page 1-37* allow the operator to browse in the menus, the submenus and parameters.
In particular

⟦EN⟧ is used to:

✔ access the displayed submenu or parameter;
✔ memorize the displayed parameter value;
✔ respond in an affirmative way to the questions posed by the terminal ("*store?*" "*sure?*").

⟦2°F⟧ is used to:

✔ move through the displayed submenus or parameters;
✔ move through the values of the displayed parameters;
✔ respond negatively to the questions posed by the terminal ("*store?*" "*sure?*").

⟦🔩⟧ is used to:

✔ return to the selected submenu from the parameter or relative value;
✔ quit the submenu display phase and return to normal terminal operation;
✔ edit the various programming parameters.

5.2 Entering numeric data (Editor)

Numeric values may be entered as follows:

✔ select the menu item for which you wish to enter the value. The currently selected value will appear on the display;

✔ press key ⬚ to zero the memorized value, then press key ⬚ to enter the new value. If you do not wish to zero the memorized value but just change some of the numbers, press ⬚ ;

✔ press ⬚ to enter the first digit. Subsequent pressure on this key will scroll numbers 0 to 9, with "-" and the decimal separator entered during the installation phase;

✔ press ⬚ to confirm the entered number;

✔ to enter other numbers, press ⬚ again;

✔ at the end of the operation press ⬚ to confirm the entered value;

✔ use key ⬚ to move amongst the various figures if the setting must be changed.

✋ WARNING ✋

During the data entry operations, press the keys not more than 4 seconds after each otherwise the weighing terminal will quit the entry procedure and return to weight display.

5.3 Weight reset

If the display gives a value differing from zero when the platform is

unloaded, press key [→0←] to reset. Resetting only occurs in the presence
of the conditions specified in *par. 4.2 on page 1-37*.

5.4 Tare entry by acquisition

Place the weight you wish to acquire as tare weight on the platform and

press [↔⇩] . The operation will only take place in the presence of the
conditions indicated in *par. 4.2 on page 1-37*.

The word **NET** will light up on the display. When a further load is added
to the scale, the displayed weight value increases and represents the
net weight value.

On MD terminals, the weight indication will continue using the lower field
division.

On ME terminals, the net weight is displayed with the division of the field
to which it belongs.

5.5 Tare entry via the keyboard

A tare value can be entered by means of the following procedure:

✔ press key [🔧] ;

✔ press key [↔⬆] to begin editing the first tare digit; press this key again to scroll numbers 0 to 9, with "-" and the decimal separator entered during the installation phase;

✔ press [🔧] to confirm the entered value;

✔ to select other numbers, press [↔⬆] again;

✔ press key [EN] at the end of the operation to confirm the entered tare value;

✔ use key [→0←] to move to the various digits if the entered value must be edited.

Once the operation has terminated, the weight will be reset and the **NET** and **PT** indications will light up on the display.

The tare value will be automatically rounded off to the scale division of the scale. The net weight indication for MD terminals uses the division of the field to which the net weight value sets while for ME terminals, the net weight value will be the one relative to the field to which the gross weight belongs.

For MD terminals, the maximum value of the preset tare will be limited to the maximum capacity of the first weighing extension (value shown on the data plate with the metrological specifications of the instrument).

5.6 Tare display

Press key ⬚ to display any tare set.

5.7 Tare deletion

Press ⬚ to delete a tare from the terminal and then return to the gross weight display.

5.8 Weighing data print-out/transmission

Press key ⬚ to print-out the weighing data and/or transmit a string of data via the configured port in serial mode.

5.9 Special Scale settings

Certain operating configurations can be varied to adapt the instrument to the operator's particular requirements.

The following parameters can be edited by pressing [2°F] :

ISTCHG (only valid for the D70A version)	**YES**
	Charges the batteries in the terminal for the first time
	NO
	Eliminates the programmed charge function
BATV (if the external battery is selected)	Displays the voltage measured at the input of the terminal
CHAT (Displays the charging time for 1 second)	Visualizza per 1 secondo il tempo di carica
LIGHT	**HIGH**
	The display operates with the maximum light intensity
	LOW
	The display operates at the minimum light intensity
	TIMER
	The display operates at maximum intensity for 10 seconds if: ✔ any key is pressed; ✔ the weight indication is subjected to a variation of at least 4 divisions.

AUTOFF	**NO**
	The AUTOMATIC SWITCH-OFF function is not activated
	YES
	The AUTOMATIC SWITCH-OFF function is activated
PIECES	Enables the piece counter function
AN.DATA	Function that allows two voltage or current values and a reference weight to be programmed. To enable the function, select **REFWGT** in the **U.ANALO** menu in **NOVRAM**.
	CURR-0/VOLT-0
	Current value zero/voltage value zero
	CURR.RF/VOLT.RF
	Reference current value/Reference voltage value
	REF.WGT
	Reference weight

✋ WARNING ✋

The TIMER *function can be used to optimize battery consumption which will be greater when the display operates at maximum light intensity (version D70A only).*

5.10 EPC operating mode

When it is configured for the piece counter operating mode (see *par. 5.9 on page 1-46*), the terminal also provides the following functions:

✔ display of the number of pieces, average unitary weight (called AUW from now on) and weight;

✔ display of the number of pieces, average unitary weight (called AUW from now on) and weight;

✔ automatic calculation of the number of pieces.

5.10.1 AUW acquisition

The average unitary weight is a fundamental data item since it allows the pieces to be calculated correctly. It is therefore very important to take care when it is acquired as the more accurate it is, the more precise will piece counting be.

The average unitary weight can be entered in two ways:

✔ it can be acquired from the scale by sampling a defined number of pieces;

✔ it can be transmitted via serial link by a computer, using the remote controls (consult *par. 9.4 on page 1-69*).

If the AUW is acquired, proceed in the following way:

✔ press ⟦EN⟧ : the display will show the number of samples and the first weight for calculating the AUW will be acquired at the same time;

press the ⟦EN⟧ key again to display the number of samples that can be selected from a fixed table. Select the number of samples that will be successively loaded.

✔ The terminal waits 10 seconds before loading or unloading the pieces to or from the scale;

✔ the terminal checks the stability of the weight and calculates the AUW. The message WAIT appears during the phase when the stability of the weight is checked, which terminates by calculating the average unitary weight. Samples can be loaded and unloaded on and from the scale during the time waited for the stable weight condition.

✔ Press ⟦2°F⟧ to display the average unitary weight calculated. If the unit of measurement selected is kg and the AUW is less than 1 kg, the AUW value will be displayed in g. The AUW is always positive.

✔ if the weight fails to stabilize, the *WAIT* message will remain on the

display and the operator can quit the procedure by pressing ⟦2°F⟧. The previous AUW will remain (if already calculated).

The AUW resets whenever the terminal is switched off.

The calculated AUW is retained in the memory if the operator switches from the PIECES mode to the WEIGHT mode.

5.10.2 Special PIECE COUNTER settings

n.nnnnn	AUW displayed with relative unit of measurement
WEIGHT	Return to the Scale mode
FSTCHA (only valid for the D70A version)	**YES**
	Charges the batteries in the terminal for the first time
	NO
	Eliminates the programmed charge function
BATV (if the external battery is selected)	Displays the voltage measured at the input of the terminal
CHAT (if the internal batteries are being charged)	Displays the charging time for 1 second
ILLUM	**HIGH**
	The display operates with the maximum light intensity
	LOW
	The display operates with the minimum light intensity
	TEMPOR
	The display operates with the maximum light intensity for 10 seconds if: ✔ any key is pressed; ✔ the weight indication is subjected to a variation of at least 4 divisions.

TURNOFF	NO
	The SELF-TURN OFF function is not activated
	YES
	The self-turn off function is activated

6. OPTIONS

6.1 Internal battery connection option (version D70A only)

Optional batteries can be installed to allow the terminal to operate without the electricity main. The terminal will operate for about 16 (indicative) hours if connected to a scale with one single load cell and if the display is used at low lighting intensity. This autonomy becomes less if more load cells are used or if the high lighting intensity remains permanently on. The batteries are charged by the terminal as soon as the electricity main is connected again.

Battery recharging takes about 8 hours if the batteries are very low. The `PWRSUP` indication appears whilst the batteries are being recharged. To insert the batteries, comply with the instructions on the label in the terminal's battery compartment (point 5 of *Figure 3.1 on page 1-23*).

The battery option includes the supply of 6 rechargeable Nickel Metal Hydrate batteries (Ni-MH) AA and a standard adapter.

✋ WARNING ✋

The `NOPWR` message will appear if the terminal is powered in the battery operating mode.

✋ WARNING ✋

The instrument can also operate with non-rechargeable AA alkaline batteries.

Do not connect the standard adapter when alkaline batteries have been installed as this could damage the instrument.

6.1.1 Recharging the internal batteries

The battery charge is shown by the message _BATT_ . If _BATT_ flashes during the battery operating mode (alternating with the measured weight value), this means that the batteries are low. If the _BATT_ indication remains permanently on, this means that the terminal will switch off within 10 seconds.

In this condition, interrupt any weighing operations and charge the batteries, otherwise the terminal will automatically switch off to prevent the batteries from being damaged.

_____ ✋ **WARNING** ✋ _____

The adapter for battery charging must be connected with the terminal on and during the charging phase, the terminal must not be switched off.

Proceed with a First charge if the batteries are exhausted.

If, during the charging phase, key [2°F] is pressed, _ISTCHG_ is not displayed but _TCHG_ which indicates that the charging status is in

progress. If key [EN] is pressed again, the terminal displays the remaining charging time. At the end of the terminal charging procedure,

press [2°F] to display the message _ISTCHG_ .

✋ **WARNING** ✋

✔ *The terminal will switch off during battery charging of a terminal where automatic switch-off is selected and if there is no power supplied for longer than 5 minutes.*

✔ *When the terminal is switched on again, charging will start from the point in which it was interrupted.*

✔ *Charging can only take place when the terminal is on.*

✋ **WARNING** ✋

To correctly use the batteries, it is advisable to charge them only when they have completely discharged. The batteries must be charged at temperatures ranging between +10° and +40° C.

✋ **WARNING** ✋

Charge the batteries every two months even if they are not used for a long time.

Long self-discharge of the batteries may cause acid to leak and consequent damage to the terminal.

6.1.2 First internal battery charge

This must be done when new batteries are installed, if the batteries are very low or if the terminal has not been used for a long time.

To restore this function, connect the battery charging adapter to the terminal, connect the adapter to the mains and switch the terminal on; select *YES* in the *ISTCHG* menu.

✋ WARNING ✋

While charging, the terminal must not be switched off.

Charging is complete when the indication on the display goes out.

6.2 External battery connection (both D70A and D70B)

A 12V external battery can be connected with a "jack" connector (point 1 of *Figure 3.1 on page 1-23* and point 1 of *Figure 3.2 on page 1-24*).

7. ERROR MESSAGES

Problem	Cause	Remedy
9999999	The scale is overloaded	Reduce the weight to a value below the maximum scale capacity.
The terminal remains off	Poor battery autonomy	Carry out a "battery charging" operation. Change the batteries if the fault persists.
Poor battery autonomy (D70A only)	Incomplete charge	Perform a "first charging" operation. Change the batteries if the fault persists.
NO MAINS (D70A only)	The adapter was not connected during the first charging operation.	Replace the standard adapter with the one supplied with the batteries.
⌐‾ ‾	Weight cannot be reset	Unload the scale plate and attempt to power the terminal again.
‾ ‾	Weight instable	Eliminate the cause for weight instability and attempt to power the terminal again.
P_ _ _ _ _ (piece counter mode only)	AUW not calculated	Carry out the AUW calculation procedure (see *par. 5.10.2 on page 1-50*).

8. ERROR MESSAGE CODING

Only one code is displayed with the errors. To delete it, reset the terminal.

Problem	Cause	Remedy
-01- Converter failure	Scale connector disconnected or broken	Switch the terminal off and make sure that the connector is correctly connected. If necessary, disconnect it, re-connect it and then power the terminal again.
	Conversion board failure	Contact the Service Centre.
-02- EEPROM error	Voltage drop during an incorrect operation	Reset the instrument. If the error persists, contact the Service Centre for possible replacement of the CPU board.
-04- RAM checksum error -05- EPROM checksum error	CPU board fault	Reset the instrument. If the error persists, contact the Customer Service for possible replacement of the CPU board.

9. PROGRAMMING OF SERIAL LINE COMMUNICATION

9.1 Symbols used

The following conventions are used to denote the characters used in serial line communication.

✔ Normal characters are indicated with their usual symbols.

✔ Control characters appear in brackets and are written in uppercase.
  For example:
  <CR> indicates the carriage return character.
  <SP> indicates the space character.

✔ Where necessary, the hexadecimal value of the character is given in numbers and uppercase letters.
  For example: <CR>(0DH) o $(24H).

✔ Variables are written in lower case between brackets.
  For example:
  <um>= unit of measurement.
  This may assume the following values:
  kg = kilogrammes
  <SP>g = grammes
  lb = pounds
  <SP>t = tonnes

✔ Numeric fields are indicated with n and y, and may include initial spaces, a decimal point and a minus sign.

9.2 Strings

The terminal is equipped with two serial outputs with RS232 (via COM1) and RS232/422/485 (via COM2) output standards.

9.2.1 Cb (or Bilanciai) string

The transmitted weight is net.

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

The following protocols are available: Cyclic (see *par. 9.3.2 on page 1-68*) and ACK-NAK (see *par. 9.3.1 on page 1-68*).

Serialization:
1 bit di start
7 datum bits
EVEN parity
2 stop bits
speed 4800 baud

There is a 300 ms ± 10% pause between the end of one string and the beginning of the next.

9.2.2 ESTESA string

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

Serialization:
1 start bit
7 datum bits
parity EVEN
2 stop bits
speed 4800 baud

Characters <s1>, <s2>, <s3>, <s4> are ASCII characters that must be interpreted as hexadecimal values. Each character represents 4 bits of different significance; for example, the incoming ASCII character "A" must be interpreted as the hexadecimal digit "A";

1	0	1	0
bit3	bit2	bit1	bit0

When a bit assumes the value "1" the corresponding signal is "true"; the meaning of the signals is as follows:

<s1>	bit 0	minimum weight signal
	bit 1	tare locked signal
	bit 2	tare preset (1)/self-weighed (0) entered signal
	bit 3	centre zero signal
<s2>	bit 0	LSB weighing extension signal (ME only)
	bit 1	weight stable signal
	bit 2	overload signal
	bit 3	MSB weighing extension signal (ME only)
<s3>	bit 0	tare entered signal
	bit 1	tare locked cancelled signal (ME only)
	bit 2	weight not valid
	bit 3	printing in progress
<s4>	bit 0	type approved instrument
	bit 1	converter fault
	bit 2	scale configuration parameter error
	bit 3	not utilised

The following protocols are available: Cyclic (see *par. 9.3.2 on page 1-68*), ACK-NAK (see *par. 9.3.1 on page 1-68*), Remote commands (see *par. 9.4 on page 1-69*).

There is a 300 ms ± 10% pause between the end of one string and the beginning of the next.

9.2.3 Print string

The remote commands and cyclic transmissions are disabled in this mode.

Press key to transmit the tare and net weight.

If the weight is instable, the terminal waits for the stable weight condition for 10 seconds, then the operation is annulled.

9.2.4 Cma

Reserved string. Do not use. Further information is supplied with the job order.

9.2.5 EPC string (EPCSTR)

1st char.	$(24H)	string start char.
2nd-10th char.		net weight with sign and decimal point (if present)
11th char.	<SP>(20H)	space
12th-20th char.		tare with sign and decimal point (if present)
21st char.	<SP>(20H)	space
22nd-23rd char.	<um>	unit of measurement
24th char.	<SP>(20H)	space
25th char.	<s1>	scale status
26th char.	<s2>	scale status
27th char.	<s3>	scale status
28th char.	<s4>	scale status
29th char.	<SP>(20H)	space
30th-36th char.		AUW with decimal separator if required
37th char.	<SP>(20H)	space
38th-39th char.	<um>	unit of measurement
40th char.	<SP>(20H)	space
41st-45th char.		number of pieces
46th char.	<CR>(0DH)	
47th char.	<LF>(0AH)	

Serialization:

1 start bit

7 datum bits

parity EVEN
2 stop bits
speed 4800 baud

Characters <s1>, <s2>, <s3>, <s4> are ASCII characters that must be interpreted as hexadecimal values. Each character represents 4 bits of different significance; for example, the incoming ASCII character "A" must be interpreted as the hexadecimal digit "A";

1	0	1	0
bit3	bit2	bit1	bit0

When a bit assumes the value "1" the corresponding signal is "true"; the meaning of the signals is as follows:

<s1>	bit 0	minimum weight signal
	bit 1	tare locked signal
	bit 2	tare preset (1)/self-weighed (0) entered signal
	bit 3	centre zero signal
<s2>	bit 0	LSB weighing extension signal (ME only)
	bit 1	weight stable signal
	bit 2	overload signal
	bit 3	MSB weighing extension signal (ME only)
<s3>	bit 0	tare entered signal
	bit 1	tare locked cancelled signal (ME only)
	bit 2	weight not valid
	bit 3	printing in progress
<s4>	bit 0	type approved instrument
	bit 1	converter fault
	bit 2	scale configuration parameter error
	bit 3	not utilised

The following protocols are available: Cyclic (see *par. 9.3.2 on page 1-68*), ACK-NAK (see *par. 9.3.1 on page 1-68*), Remote commands (see *par. 9.4 on page 1-69*).

There is a 300 ms ± 10% pause between the end of one string and the beginning of the next.

9.3 Protocols for serial strings

9.3.1 ACK-NAK protocol

The string is only sent on request of the user via the request

transmission key ⬛. After transmission of the weight, the terminal behaves as follows:

✔ if it receives the "ACK" character (06H) , it awaits a new transmission request;

✔ if it receives the "NAK" character (15H), it sends the string again because the previous transmission was not completed successfully;

✔ if it receives three "NAK" characters in succession, the terminal displays the "NO ACK" message (transmission error).

9.3.2 Cyclic protocol

The selected string (see *par. 9.2 on page 1-62*) is transmitted cyclically at a rate of 3 times per second.

9.3.3 On Request protocol

The selected string is transmitted by pressing key ⬛ or by waiting for remote controls from an external computer.

9.4 Remote commands protocol

There are a number of serial line commands with which various operations can be accomplished from a remote device (PC, PLC etc.).

Make the connection to either COM1 or COM2 with a standard RS232 serial cable that complies with the Manufacturer's specifications and use a transmission and reception program that complies with the terminal's communication protocol.

Terminal connection to the serial port of a Personal Computer is shown in the following table:

COM1/ COM2 D70 - 9-pin female	COM1 PC - 9-pin male
RX 2	3 TX
TX 3	2 RX
GND 5	5 GND

Standard RS232C-24V standard crossed serial cable with three wires for connecting to the COM1/COM2 serial port of terminal D70

✋ WARNING ✋

The remote commands are only activated if the ESTESA value was set for the TYPE parameter when the instrument was configured.

✋ WARNING ✋

Remote commands are not executed if cyclic serial transmission is in progress; in this case cyclic transmission must be suspended with the command "EX<CR>" before giving any other remote commands.

9.4.1 Reply to an incorrect command

??<CR><LF>

This reply string is sent:

✔ if the command syntax is incorrect;

✔ if the command cannot be executed.

9.4.2 Reply to a correct command

In the case of the command being accepted, if the command requests the transmission of information, the reply will consist of transmission of the requested data item; in other cases the reply will consist of the following string:

OK<CR><LF>

9.4.3 Suspension of cyclic transmission

This command is not available with the RS485 protocol in which transmission is on request only

EX<CR>

9.4.4 Resumption of cyclic transmission

This command is not available with the RS485 protocol in which transmission is on request only

SX<CR>

9.4.5 Request for gross weight

XB<CR>

The terminal responds with the following string:

n<SP><um><SP>B<CR><LF>

9.4.6 Request for net weight

XN<CR>

The terminal responds with the following string:

n<SP><um><SP>NT<CR><LF>

9.4.7 Request transmission of tare

XT<CR>

The terminal responds with the following string:

n<SP><um><SP>TE<CR><LF>

if the tare has been entered manually;

n<SP><um><SP>TR<CR><LF>

if the tare has been acquired.

9.4.8 Request transmission of scale status

XZ<CR>

The terminal responds with the following string:

<s1><s2><s3><s4><CR><LF>

characters s1, s2, s3 and s4 are ASCII characters which must be interpreted as hexadecimal values. Each character represents 4 bits of different significance; for example, the incoming ASCII character "A" must be interpreted as the hexadecimal digit "A";

1	0	1	0
bit3	bit2	bit1	bit0

When a bit assumes the value "1" the corresponding signal is "true"; the meaning of the signals is as follows:

<s1>	bit 0	minimum weight signal
	bit 1	tare locked signal
	bit 2	tare preset (1)/self-weighed (0) entered signal
	bit 3	centre zero signal
<s2>	bit 0	LSB weighing extension signal (ME only)
	bit 1	weight stable signal
	bit 2	overload signal
	bit 3	MSB weighing extension signal (ME only)
<s3>	bit 0	tare entered signal
	bit 1	tare locked cancelled signal (ME only)
	bit 2	weight not valid
	bit 3	printing in progress
<s4>	bit 0	type approved instrument
	bit 1	converter fault
	bit 2	scale configuration parameter error
	bit 3	not utilised

9.4.9 Request transmission of scale status (version EV2001)

XS<CR>   (XSb<CR>)

In the case of a positive reply, the terminal responds with the following string:

<s1><s2><CR><LF>

The characters s1 and s2 are ASCII characters that must be interpreted as hexadecimal values.

The bits indicate the scale status as follows.

<s1>	bit 0	in range
	bit 1	weight stable
	bit 2	centre zero
	bit 3	displayed net weight
<s2>	bit 0	not utilised
	bit 1	not utilised
	bit 2	not utilised
	bit 3	print request: the print key has been pressed or input n° 3 is activated.

9.4.10 Scale zeroing

AZ<CR>

9.4.11 Tare acquisition

AT<CR>

9.4.12 Tare entering

nAT<CR>

The command AT must be preceded by a weight expressed in a maximum of 7 characters comprising the decimal point, if present.

9.4.13 Cancellation of an entered tare

CT<CR>

This command cancels any tare value in the memory.

9.4.14 Request for transmission of the general data table

ND<CR>

When this command is transmitted, the terminal responds with a sequence of strings terminating with <CR><LF>, each containing the number of the data item and its description. An example of a table with the data controlled is given below:

1 Auw
2 Pieces
3 Volt-0 / Curr-0
4 Volt.rf / Curr.rf
5 Wgt.ref

9.4.15 Request for general data item indicated with "n"

XIn<CR>

This command can be used to read the current value of any of the general data items (if you are in the corresponding mode).

9.4.16 Request for entry of the "y" value in the general data item indicated with "n"

yXIn<CR>

where "y" is the value to be ascribed to general data item "n". The value set must obviously be compatible with the format of the data item.

Entry of values for certain general data items (e.g. pieces) is not allowed.

9.4.17 Request for transmission of the net weight and the scale status

Xn<CR>   (Xnb<CR>)

N.B.: the command sent is comprised of an uppercase X and lowercase n (not to be confused with generic significance assigned to the lowercase n described in *par. 9.1 on page 1-61*).

In the case of a positive reply, the terminal responds with the following string:

n<SP><um><SP><s1><s2><s3><s4><CR><LF>

Characters s1, s2, s3 and s4 are status characters the meaning of which is explained in *par. 9.4.8 on page 1-71* while n is a numeric field of 9 characters.

9.4.18 Request division value

Xe<CR>

The terminal responds with the string:

e= n<SP><um><CR><LF>

9.4.19 Request for net weight in high resolution

YN<CR>   (YNb<CR>)

The reply string is:

n<SP>y<SP><um><SP><s1><s2><s3><s4><CR><LF>

n= net weight (numeric field of 9 characters)

y= net weight in high resolution (numeric field of 10 characters)

s1,s2,s3,s4=see STATUS in extended string (_par. 9.2.2 on page 1-63_).

9.4.20 Request for maximum capacity value

XM<CR>   (XMb<CR>)

The reply string is:

Max= n<SP><um><CR><LF>

where n is a numeric field of 9 characters.

9.4.21 Lock keypad

LK<CR>

Only the keypad is locked.

9.4.22 Unlock keypad

UK<CR>

The keypad is unlocked.

9.4.23 Remote commands with addressing

If the RS485 communication interface has been selected, the number of the instrument interrogated must be added to the remote commands described in *par. 9.4 on page 1-69*.

The system comprises one Master terminal (e.g. a PC) and a number of Slave terminals (e.g. weighing terminals).

Each weighing terminal is identified by a unique "terminal number".

In this way you can create a network of weighing terminals that can be interrogated by the Master terminal.

The syntax of the remote commands has to be modified by the addition of the two characters of the terminal number.

For example, the gross weight transmission command XB <CR> becomes XB 01 <CR> to indicate that the request from the Master terminal is addressed to the terminal number 01.

10. PERSONALIZATION

10.1 Foreword

_____ ✋ **WARNING** ✋ _____

Personalization procedures are strictly reserved for specialised personnel only.

However, the user is permitted to modify certain of the terminal operating parameters.

We recommend that extreme care is taken when modifying these parameters to prevent possible malfunctions caused by incorrect settings.

The only parameters that may be modified are those directly related to the program installed on the terminal.

_____

10.2 Accessing the parameter configuration function

To access non-metrological parameters only:

✔ press ⎡EN⎤ on switching on the terminal. Keep depressed until the `SETUP` item appears.

_____ ✋ **WARNING** ✋ _____

If the parameter configuration function is accessed by means of key ⎡EN⎤ *when the instrument is powered, you will only be able to personalize the non-metrological parameters. However, you will also be able to display (but not edit) the metrological parameters entered during the installation phase.*

_____

10.3 Description of the menus and submenus

When the instrument is powered, the menu accessed by pressing the

$\boxed{\text{EN}}$ key is the *NOVRAM* menu which is divided into groups of parameters called submenus.

To move around the submenus, the parameters and the relative values, use the keys whose functions are explained in *par. 5.1 on page 1-41*.

10.4 NOVRAM menu

There are the following submenus in the *NOVRAM* menu:

D.BILAN - *D.CAMP* - *D.PERS* - *COM1* - *COM2* - *U.ANALO* - *TERM*.

Only the *D.PERS*, *COM1*, *COM2* and *U.ANALO* submenus are described in this section of the manual (see *par. 10.4.1 on page 1-81*, *par. 10.4.2 on page 1-84* and *par. 10.4.3 on page 1-86*).

10.4.1 D.PERS submenu to personalize the instrument

NCSTAB	**3, 6, 10, 20**
	Number of calibrations with stable weight. This parameter has two functions: ✔ if the digital filter is disconnected, it indicates the number of consecutive conversions which are made to check the weight stability. "Conversions" means several equal consecutive readings before the display is updated. ✔ if the digital filter is connected, it indicates the data updating speed on the display. Remember that a higher filter capacity corresponds to a slower updating speed.
FILTRD	**NO, 8, 16, 32, 64, 128, FIRH YES, FIRH NO, FIRL YES, FIRL NO**
	Allows a digital filter to be introduced or not. It actually enables the possible introduction of a software processing for filtering the output values from the signal analogue-to-digital conversion. A higher number stands for usually greater filtering. The F.I.R. filters eliminate noise at high (F.I.R. High) or low (F.I.R. Low) frequency. FIRF YES and FIRL Yes also activate a filter based on the average.

F.ACCE	Defines the terminal operating mode on switch-on.
	AUTOZ
	The terminal executes autozero when switched on. The terminal sets the weight to zero when powered, following the instructions taken from the *CAMPAZ* parameter (See metrological parameter Personalization Chapter in the installation manual).
	ZERCAM
	When switched on, the terminal executes the calibrated zero, i.e. the instrument shows the value of the weight on the scale in relation to the value of the zero programmed during calibration.
TBLOC	Defines the management mode of the tare at the time the scale is unloaded.
	YES
	Any set or acquired tare values remain stored even when the scale is empty and the gross weight = 0.
	NO
	Any set or acquired tare values are automatically deleted when the instrument returns to zero, i.e. gross weight = 0.
SEPDEC	**DOT, COMMA**
	Selects the dot or comma as decimal separator of the weight in the serial string.
LINIMES	**ITAL, ENGL, FRAN, DEUT, ESPA, PORT**
	Selects the language in which the terminal operates.

BAT.EST	**NO**
	Establishes whether the terminal is powered by a 220V electricity main with adapter or by internal batteries (those housed in the ABS case). The terminal recognises which of the two sources is activated. Consult *chap. 6. on page 1-53* for the specifications, connections and charging operations.
	YES
	The terminal is powered by external batteries connected to the powering connector. Consult *chap. 6. on page 1-53* for the specifications, connections and charging operations. If the external battery is selected, the terminal will not handle the charging and discharging operations but will only measure the input voltage.
N.STRUM	This parameter defines the number of the instrument if interrogations with the RS485 protocol are required.
N.PIECES	**1, 5, 10, 15, 20, 50**
	Number of pieces that can be set. Defines the first value displayed in the AUW calculation procedure (*par. 5.10.1 on page 1-48*).

✋ WARNING ✋

If the NCSTAB and FILTRD parameters are precisely programmed, you can obtain a fast but poorly stable instrument, a stable but slower instrument or a compromise between the two situations.

10.4.2 COM1 / COM2 sub-menu

This sub-menu contains parameters concerning the COM1 / COM2 serial ports.

BAUD	**600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200**
	This parameter defines the baud rate, i.e. the transmission/reception speed with which the data leave or enter the COM1 / COM2 serial ports.
FORMAT	Defines the format of the string data.
	✔ **7 E 1:** 7 datum bits, parity even, 1 stop bit ✔ **7 E 2:** 7 datum bits, parity even, 2 stop bits ✔ **7 O 1:** 7 datum bits, parity odd, 1 stop bit ✔ **8 N 1:** 8 datum bits, no parity, 1 stop bit ✔ **8 N 2:** 8 datum bits, no parity, 2 stop bits ✔ **8 E 1:** 8 datum bits, parity even, 1 stop bit ✔ **8 O 1:** 8 datum bits, parity odd, 1 stop bit
TYPE	**ESTESA**
	See _par. 9.2.2 on page 1-63_.
	CB
	See _par. 9.2.1 on page 1-62_.
	PRINT
	See _par. 9.2.3 on page 1-65_.
	CMA
	See _par. 9.2.4 on page 1-65_.
	EPCSTR
	See _par. 9.2.5 on page 1-66_.

	NO
	No protocol enabled on the COM1 / COM2 serial ports.
TEMP	This parameter defines the timing for transmission of the string selected by the previous parameter.
	RICH
	Indicates that the string (CB and ESTESA) is only transmitted when is pressed. Moreover, if ESTESA is selected, the remote commands for interrogation are activated.
	CONT
	Indicates that the string (CB or ESTESA) is sent cyclically about 3 times a second. If the string is ESTESA, the cyclic transmission can be stopped by a suitable remote command.
	ACKNAK
	This parameter is only significant with the CB type string. The string is only transmitted when is pressed. After string transmission, the terminal waits max. 3 seconds for acceptance of the ACK or NAK character.
INTRF (only COM2 sub-menu)	**RS232, RS422, RS485**
	Defines the hardware interface used to transmit the string.

10.4.3 U.ANALO sub-menu (D70B version only)

This sub-menu contains parameters concerning the analogue output.

TYPE	Volt
	The output is the voltage type with a 0 - 10 V range
	0-20
	The output is the current type with a 0 - 20 V range
	4-20
	The output is the current type with a 4 - 20 mA range
DATA ITEM	**GROSS**
	The output is proportional to the gross weight
	NET
	The output is proportional to the net weight
	REFWGT
	The output is calculated according to the reference parameters (consult AN.DATA menu, *par. 5.9 on page 1-46*) and the gross weight.

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