



Ramsey
MINI CK101
Integrator

Operating And Service Manual

MINI CK101
Part No.:

Ramsey MINI CK101 Integrator

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About this Manual

This manual provides the information you need to install, operate and maintaining of the *MINI CK101*.

Read this manual before working with the product. For personal and system safety, and for the best product performance, make sure you thoroughly understand the manual before installing or using this product.

Who Should Use this Manual

The *MINI CK101* manual is a learning resource and reference for anyone concerned with installing, operating, or maintaining *MINI CK101*.

Read this manual before working with the system. For personal and system safety, and for the best product performance, make sure you thoroughly understand the manual before installing, operating, or maintaining this machine.

Organization of the Manual

This manual is organized into five chapters and three Appendixes.

Chapter 1: Introduction to the MINI CK101 gives an overview of the device's capabilities, describes its functions, and lists its technical specifications.

Chapter 2: Installing the MINI CK101 provides information about installing the *MINI CK101* including procedures for mounting, wiring, and configuration of the instrument.

Chapter 3: MINI CK101 Operation provides an overview of the *MINI CK100* front panel, a description of how the menus operate, and information about setting up, calibrating, and operating the *MINI CK101*.

Chapter 4: MINI CK101 Maintenance provides an overview of standard maintenance associated with the *MINI CK101*.

Chapter 5: MINI CK101 Replacement Parts- provides a list of replacement parts for the *MINI CK100* and part ordering information.

Appendix A: MINI CK101 Digital Input/Output

Appendix B: MINI CK101 Optional Boards

Appendix C: MINI CK101 Drawings

Documentation Conventions

The following conventions are used in this manual to help easily identify certain types of information:

- *Italic* is used to introduce new terms and for emphasis.
- *Italic/blue* type is used for references to other sections of the manual and work as links on line and in pdf format.
- The names of setup, calibration displays, menu displays, and variables are shown in **FULL CAPITALS**.
- The names of keys on the front panel are shown in **BOLD CAPITALS**.

Safety Messages

Instructions in this manual may require special precautions to ensure the safety of the personnel performing the operations.

Please read the safety information before performing any operation preceded by this symbol.

There are two levels of safety messages: warnings and cautions. The distinction between the two is as follows:



General Precaution

Do not install, operate, or perform any maintenance procedures until you have read the safety precautions presented.



WARNING

FAILURE TO FOLLOW SAFE INSTALLATION AND SERVICING PROCEDURES COULD RESULT IN DEATH OR SERIOUS INJURY.

- MAKE SURE ONLY QUALIFIED PERSONNEL PERFORM INSTALLATION AND MAINTENANCE PROCEDURES IN ACCORDANCE WITH THE INSTRUCTIONS IN THIS MANUAL.
- ALLOW ONLY QUALIFIED ELECTRICIANS TO OPEN AND WORK IN THE ELECTRONICS CABINET, POWER SUPPLY CABINET, CONTROL CABINET, OR SWITCH BOX.
- COVERS OVER THE ELECTRONICS AND ROTATING PARTS MUST ALWAYS REMAIN IN PLACE DURING NORMAL OPERATION. REMOVE ONLY FOR MAINTENANCE, WITH THE MACHINE'S POWER OFF. REPLACE ALL COVERS BEFORE RESUMING OPERATION.
- DURING MAINTENANCE, A SAFETY TAG (NOT SUPPLIED BY THE FACOTRY) IS TO BE DISPLAYED IN THE ON/OFF SWITCH AREAS INSTRUCTING OTHERS NOT TO OPERATE THE UNIT (ANSI:B157.1).



WARNING

HIGH VOLTAGE THAT MAY BE PRESENT ON LEADS COULD CAUSE ELECTRICAL SHOCK.

- ALL SWITCHES MUST BE OFF WHEN CHECKING INPUT AC ELECTRICAL CONNECTIONS, REMOVING OR INSERTING PRINTED CIRCUIT BOARDS, OR ATTACHING VOLTMETERS TO THE SYSTEM.
- USE EXTREME CAUTION WHEN TESTING IN, ON, OR AROUND THE ELECTRONICS CABINET, PC BOARDS, OR MODULES. THERE ARE VOLTAGES 100 V OR 230 V IN THESE AREAS.



WARNING

USE ONLY THE PROCEDURES AND NEW PARTS SPECIFICALLY REFERENCED IN THIS MANUAL TO ENSURE SPECIFICATION PERFORMANCE AND CERTIFICATION COMPLIANCE. UNAUTHORIZED PROCEDURES OR PARTS CAN RENDER THE INSTRUMENT DANGEROUS TO LIFE, LIMB, OR PROPERTY.

**WARNING**

KEEP HANDS AND CLOTHING AWAY FROM ALL MOVING OR ROTATING PARTS.

**WARNING**

DO NOT PLACE OR STORE OBJECTS OF ANY KIND ON THE MACHINE.

**WARNING**

THIS MACHINE SHOULD NOT BE OPERATED AT MORE THAN THE PRODUCTION RATE STATED ON YOUR EQUIPMENT SPECIFICATION SHEET OR USED IN APPLICATIONS OTHER THAN THOSE STATED IN THE ORIGINAL ORDER.

Warranty

The seller agrees, represents, and warrants that the equipment delivered hereunder shall be free from defects in material and workmanship. Such warranty shall not apply to accessories, parts, or material purchased by the seller unless they are manufactured pursuant to seller's design, but shall apply to the workmanship incorporated in the installation of such items in the complete equipment. To the extent purchased parts or accessories are covered by the manufacturer's warranty, seller shall extend such warranty to buyer.

Seller's obligation under said warranty is conditioned upon the return of the defective equipment, transportation charges prepaid, to the seller's factory in Minneapolis, Minnesota, and the submission of reasonable proof to seller prior to return of the equipment that the defect is due to a matter embraced within seller's warranty hereunder. Any such defect in material and workmanship shall be presented to seller as soon as such alleged errors or defects are discovered by purchaser and seller is given opportunity to investigate and correct alleged errors or defects and in all cases, buyer must have notified seller thereof within one (1) year after delivery, or one (1) year after installation if the installation was accomplished by the seller.

Said warranty shall not apply if the equipment shall not have been operated and maintained in accordance with seller's written instructions applicable to such equipment, or if such equipment shall have been repaired or altered or modified without seller's approval; provided, however, that the foregoing limitation of warranty insofar as it relates to repairs, alterations, or modifications, shall not be applicable to routine preventive and corrective maintenance which normally occur in the operation of the equipment.

“EXCEPT FOR THOSE WARRANTIES SPECIFICALLY CONTAINED HEREIN, SELLER DISCLAIMS ANY AND ALL WARRANTIES WITH RESPECT TO THE EQUIPMENT DELIVERED HEREUNDER, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE. THE SOLE LIABILITY OF SELLER ARISING OUT OF THE WARRANTY CONTAINED HEREIN SHALL BE EXCLUSIVELY LIMITED TO BREACH OF THOSE WARRANTIES. THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF THE WARRANTIES SET OUT ABOVE SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT OF ANY DEFECTIVE ACCESSORY, PART OR MATERIAL WITH A SIMILAR ITEM FREE FROM DEFECT, AND THE CORRECTION OF ANY DEFECT IN WORKMANSHIP. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.”

Purchaser agrees to underwrite the cost of any labor required for replacement; including time, travel, and living expenses of *Thermo Ramsey Field Service* Engineer at closest factory base.

Disclaimer

Though the information provided herein is believed to be accurate, be advised that the information contained herein is *not* a guarantee for satisfactory results. Specifically, this information is neither a warranty nor guarantee, expressed or implied, regarding performance, merchantability, fitness, or any other matter with respect to the products, and recommendation for use of the product/process information in conflict with any patent. Please note that *Thermo Ramsey* reserves the right to change and/or improve the product design and specifications without notice.

Chapter 1

Introduction to the MINI CK101

This instruction manual contains information on the installation, operation, calibration, and maintenance of the *MINI CK101 Integrator*.

1.1 Unpacking and Inspection

The *MINI CK101* has been properly packaged for shipment and storage, when necessary.

Inspect all packages for damage before opening; sometimes the carrier may be responsible for shipping damage.

1.2 Storage

The *MINI CK101* can be safely stored, with cover, latches secured and hole plugs installed, between -40° to +158° F (-40° to +70° C). The units should be protected against moisture.

1.3 Application

The *MINI CK101* is a bus-based microcomputer driven instrument used for Belt Weighing Systems.

The Belt Weighing System includes the following principal components :

1. BELT SCALE WEIGHBRIDGE WITH LOAD CELL

The belt scale weighbridge and weight transducer (load cell) are installed on the conveyor frame with a minimum of structural modification to the frame. The weight of the material on the belt is transmitted by load cell to integrator.

The Belt Scale type and the load cell number are defined with reference to conveyor type and the accuracy system.

2. SPEED SENSOR

The speed sensor is a device used to detect the speed of belt conveyor. The speed sensor must be connected with a drum shaft which turns at true conveyor belt speed.

3. WEIGHT INTEGRATOR MINI CK101

The *MINI CK101 Integrator* is a micro-computer driven instrument used for deriving rate and quantity of flowing material from signals representing the weight of a segment (pounds/foot) of moving material and its velocity (feet/minute). By suitable processing of these two input signals the *MINI CK101* delivers visible and electrical output representing the rate of material movement and visible and electrical output representing total amount of material which has passed on belts scale.

1.4 MINI CK101 Functional Description

The *MINI CK101* is available with the following configuration hardware and software.

- Menu driven scroll entries on a four line display.
- Five LED status indicators.
- Automatic zero and span calibration.
- Auto zero Tracking.
- Several software options that may be turned on by keyboard entry or installing optional board.
- Optically coupled digital inputs and outputs.
- Relay Board – Mounted on the Field Version
(OPTIONAL) External for the Panel Version
- Alarms and failure detection.
- Ethernet Line
- (OPTIONAL) Communication : RS232C, RS485, Profibus
- (OPTIONAL) 20mA Current Loop passive.
- (OPTIONAL) Relay Board (External for panel version – mounted inside the instrument for field version).

Figure 1-1: *MINI CK101 (Panel Version)*



Figure 1-2: MINI CK101 (Field Version)



1.5 Configuration

The standard configuration of the *MINI CK101* includes the following:

- Single channel load cell input to a max of 6 load cells
- 1 programmable digital inputs
- 1 speed input (SPU)
- 1 programmable digital output
- 4 optically digital outputs (TTL) programmables for Panel Version
- 4 digital outputs (relay contact) programmables for Field Version
- 1 Ethernet Line
- 1 slot for insert one of the following optional board :
 1. Current Output Board (20mA Current Loop passive)
 2. Serial Communication Board
 3. Profibus-DP Board

1.6 Integrator General Description

The *MINI CK101* is designed for belt weighing systems..

The base functions are located on the instrument software. Function accessories are activated when the correspondent hardware are mounted , or after activation from keyboard by operator. Instrument parameters programming is executed from keyboard. A menu driven allows the operator to access all setup, test and calibration parameters.

Static weight indicator is designed to convert force signals from max 6 strain gauge load cells (350ohm).

The process variables displayed can be damped by a programmable factor.

The *Integrator* has built-in troubleshooting capabilities. A number of possible internal alarms are automatically detected and screen messages are displayed. The alarms can be acknowledged and by keyboard or remote digital input is possible to clear the alarms.

The alarms can be programmed and defined to be :

ALARM , SHUT DOWN process or NONE (ignored).

The front panel shows the led status (Alarm) illuminated .

Are available digital output for the following conditions:

- Cumulative Alarms
- Cumulative Shut Down

With the serial communication (optional) is possible by command to have a periodical and instantaneous printing format on printer of data system. Is available the clock function maintained by lithium battery.


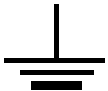



Are available three type of communications :

- *Ethernet Modbus TCP (Standard)* – The protocol allows a remote intelligent device to read and write data of the registers. During the communication activity, the *MINI CK100* will always act as slave, meaning it will respond to a request from a master device on the line, but will never attempt to send messages out.
- *Serial Communication (Optional)* – The protocol allows a remote intelligent device to read and write data of the registers. During the communication activity, the *MINI CK100* will always act as slave, meaning it will respond to a request from a master device on the line, but will never attempt to send messages out.
- *Profibus DP (Optional)* – The protocol allows a remote intelligent device to read and write data of the registers. During the communication activity, the *MINI CK100* will always act as slave, meaning it will respond to a request from a master device on the line, but will never attempt to send messages out.

1.7 Symbol Identification

Table 1-1 describes the symbols used in this manual.

Table 1-1: Symbol Identification

Symbol	Description
	ALTERNATING CURRENT
	EARTH (GROUND) TERMINAL
	PROTECTIVE CONDUCTOR TERMINAL
	CAUTION, RISK OF ELECTRIC SHOCK
	CAUTION (REFER TO ACCOMPANYING DOCUMENTS)

1.8 Technical Specifications

Enclosure

Panel Version

Dimensions: 96 x 96 x 124mm

Frontal Protection IP65 Enclosure IP00

Field Version

Dimensions: 300 x 250 x 160mm

Reinforced Fiberglass Housing Protection IP65

Environmental Conditions

Mounting

Should be mounted as close to the load cells as possible without being exposed to excessive heat or moisture

Temperature (Ambient)

Storage: -40° +70° C

Operating: -10° +50° C

Relative Humidity

Up to 95%, non-condensing

Pollution Degree

2

Altitude

Up to 2000mt.

Power Requirements

Nominal Voltage (VAC)

100/240 VAC

Nominal Frequency

50/60 Hz

Fusing

0.4 Amp SB Type C

Power Consumption

26 VA Max

Nominal Voltage (VDC) on Request

24 VDC

Fusing

0.4 Amp SB Type C

Power Consumption

26 VA Max

Maximum Non-Desstructive Input Voltage

From 100 to 230 VAC +10%

Over Voltage Category

Category II

DC Power Supply

Auxiliary Power Supply Output

Output Voltage: 24 VDC

Isolation: 500 Volt

Output ripple: 200 mV peak to peak typical

Output Current: 400 mA max. - Short Circuit Protection

Load Cell (Weight)

Load cell input circuits

Number: Up to six (6) 350-ohm load cells in parallel.
Cable distance 200 ft or less (3000 ft with sense)

Sensitivity: 0.5mV/V to 3.5 mV/V (keyboard selectable)

Input Impedance: 100 k-ohm minimum

Maximum Usable Signal: 114% of 3mV/V

Displayed A/D counts (3mV/V):112368

Isolation: Non-isolated

Max non-destructive input voltage: ± 6 V relative to ground

Load Cell Cable Shield: Connected to earth ground

Load Cell Excitation Power Supply

10 VDC $\pm 10\%$, 120 mA

Minimum load impedance (operating) 58 ohms

Output short circuit, 1.5 A maximum

Excitation - Sense Circuit

6 Wire System; cable distance over 200 ft. (not to exceed 3000 ft.).

Nominal input voltage: ± 5 VDC (10 volts)

Input impedance: 100 k-ohm minimum

Jumper selectable: Local or remote sense

Speed Sensor Input

Optically isolated

Power Supply +20V SPU internal

Frequency Range

Voltage / current speed sensor 0.25 to 2.0 KHz

Contact 0.25 to 30 Hz

Digital Input

(1) High Frequency Input Optocoupled (DC)

(1) Optocoupled

Internal Power Supply for dry contact input

Power Supply : +24V external

Cable Length : 2500m section. 1.5 mm² (150 Ohm max.)

Digital Output

Panel Version - (4) Digital Output (TTL) programmable 40mA used with positive or negative logic mounted on socket for easy replacement

Field Version – (4) Relay Contact programmable (Relay Contact NA on Relay Board) each contact can drive 240VAC – 48VDC 0,5A

(1) Output Optocoupled (interface with RELAY)

Interface with TTL, CMOS, RELAY

Technical Data : 24 VDC, 40mA DC max.

Current Output (Option)

1 Current Output (20mA Current Loop Passive)

Output range: User selectable 0 – 20 mA or 4-20 mA, representing 0 to 100% variable.

Resistive load: 800 ohm max. Loop

Capacitive load: No limit

Communication

Ethernet (Standard)

10 Base T

Seriale Interface (Optional)

Type: Conforms to RS-232C, RS-485; supports 2 and 4 wire multi-drop.

Interfacing: RS-485 supports 2-wire or 4-wire multi-drop networking;
RS 232 C provides support for modem.

Data rate: 110 to 19200, operator selectable from the keyboard.

Data Format: Asynchronous, bit-serial, selectable parity, data length, and stop bits.

Optical Isolation: 250 VRMS max.

Input Voltage: ±30 Vdc max. (RS-232C)
±15/-10 Vdc max. (RS-485)

Cable Length: 50 feet max. (RS-232C) - 4000 feet max (Rs-485)

Profibus DP (Optional)

Type: Profibus DP Slave (Siemens SPC3 Controller).

Optical Isolation: 250 VRMS max.

Input Voltage: +5VDC

Baud Rate: 9600 – 12 Mbps

Chapter 2

Installing the MINI CK101

This chapter describes the *Integrator* installation procedure, hardware configuration, and initial programming. Initial programming is a machine directed procedure prompting the operator to enter required conveyor and belt scale parameters. After all parameters have been entered, the *Integrator* performs an unassisted zero and span calibration.

2.1 Safety Precautions



CAUTION

DO NOT INSTALL, OPERATE, OR PERFORM ANY MAINTENANCE PROCEDURES UNTIL YOU HAVE READ THE SAFETY PRECAUTIONS THAT FOLLOW.



CAUTION

DO NOT CONNECT POWER TO THE ELECTRONICS OR TURN ON THE UNIT UNTIL YOU HAVE READ AND UNDERSTOOD THIS ENTIRE MANUAL. THE PRECAUTIONS AND PROCEDURES PRESENTED IN THIS MANUAL MUST BE FOLLOWED CAREFULLY IN ORDER TO PREVENT EQUIPMENT DAMAGE AND PROTECT THE OPERATOR.



WARNING

ALL SWITCHES (SUCH AS CONTROL OR POWER) MUST BE OFF WHEN CHECKING INPUT AC ELECTRICAL CONNECTIONS, REMOVING OR INSERTING PRINTED CIRCUIT BOARDS, OR ATTACHING VOLT METERS TO THE SYSTEM.

INCOMING VOLTAGES MUST BE CHECKED WITH A VOLTMETER BEFORE BEING CONNECTED TO THE ELECTRONICS.



WARNING

EXTREME CAUTION MUST BE USED IN TESTING IN, ON, OR AROUND THE ELECTRONICS, PC BOARDS, OR MODULES. THERE ARE VOLTAGES OF 100 V OR 230 V IN THESE AREAS. AVOID HIGH VOLTAGE AND STATIC ELECTRICITY AROUND THE PRINTED CIRCUIT BOARDS.



WARNING

MAINTENANCE PROCEDURES SHOULD BE PERFORMED ONLY BY QUALIFIED SERVICE PERSONNEL AND IN ACCORDANCE WITH PROCEDURES/INSTRUCTIONS GIVEN IN THIS MANUAL.



WARNING

DURING MAINTENANCE, A SAFETY TAG (NOT SUPPLIED BY THERMO RAMSEY) SHOULD BE DISPLAYED IN THE ON/OFF SWITCH AREAS AS A PRECAUTION INSTRUCTING OTHERS NOT TO OPERATE THE UNIT.



WARNING

ONLY QUALIFIED SERVICE TECHNICIANS SHOULD BE ALLOWED TO OPEN AND WORK IN THE ELECTRONICS, POWER SUPPLY, CONTROL, OR SWITCH BOXES.



WARNING

THIS EQUIPMENT SHOULD NOT BE OPERATED OR UTILIZED IN APPLICATIONS OTHER THAN THOSE STATED IN THE ORIGINAL ORDER.

TO ADAPT PRODUCTION RATES OR APPLICATIONS, CONSULT *THERMO RAMSEY PRODUCTS CUSTOMER SERVICE* FOR RECOMMENDATIONS.



WARNING

ALL PANELS COVERING THE ELECTRONICS MUST BE IN PLACE AND TIGHT BEFORE WASH DOWN PROCEDURES. DAMAGE TO THE ELECTRONICS COULD RESULT FROM WATER, MOISTURE, OR CONTAMINATION IN THE ELECTRONICS HOUSING.

2.2 Incoming Power



CAUTION

VERIFY THAT THE INPUT VOLTAGE IS CORRECT WITH AN AC/DC VOLTMETER BEFORE YOU CONNECT IT TO THE *INSTRUMENT*.



CAUTION

EARTH GROUND MUST BE PROVIDED TO THE *INSTRUMENT*. DO NOT USE CONDUIT TO PROVIDE THIS GROUND.



CAUTION

A READILY ACCESSIBLE DISCONNECT DEVICE SHALL BE INCORPORATED IN THE FIELD WIRING. THIS DISCONNECT DEVICE SHOULD BE IN EASY REACH OF THE OPERATOR AND IT MUST BE MARKED AS THE DISCONNECTING DEVICE FOR THE EQUIPMENT.

2.2.1 Critical Wiring Condition

1. Ensure power is off at the mains
2. Do not route load cell and signal cables in the same conduit with power cables or any large source of electrical noise.
3. Earth ground all enclosures and conduits. A ground connection between all conduits is required.
4. Connect the shields *ONLY* where shown.
5. Check that all wires are tight in their connections.
6. Never use a “megger” to check the wiring.
7. A readily accessible disconnect device (Max 10A) shall be incorporated in the field wiring. This disconnect should be in easy reach of the operator and it must be marked as the disconnecting device for the equipment.
8. All conduits should enter the bottom of the enclosure. Do not run conduit through the top or sides of the enclosure.



2.3 Installation

The *MINI CK101* is available for mounting in a control panel or for field mounting.

2.3.1 Mounting

The mounting place must be carefully selected, avoiding places where there are vibrations, high temperature or humidity.

The *MINI CK101 (Panel Version)* is supplied for mounting on a covered front panel with any inclination compared to the horizontal position.

The *MINI CK101 (Field Version)* is supplied for mounting in open air. It is suggested a mounting in a protected position against rain about, in a place with strong vibrations, it is better to provide a mounting using non vibrating devices.

The instrument must be positioned with a suitable height in order to easily read the display and conveniently access to the key board.

Figure 2-1: MINI CK101 Overall Dimensions (Panel Version)

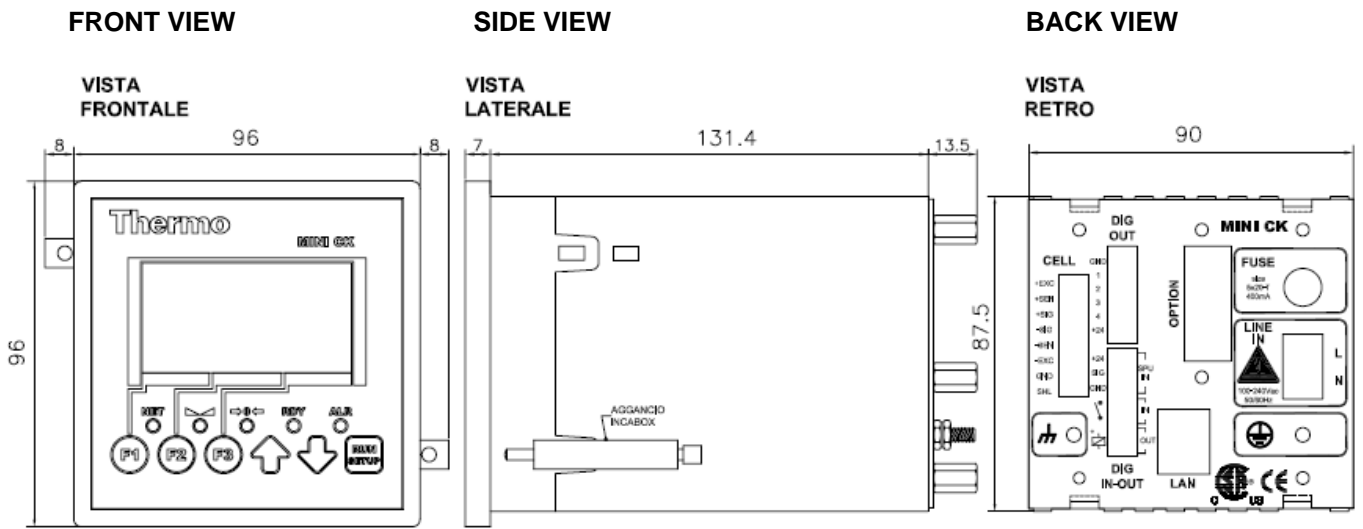
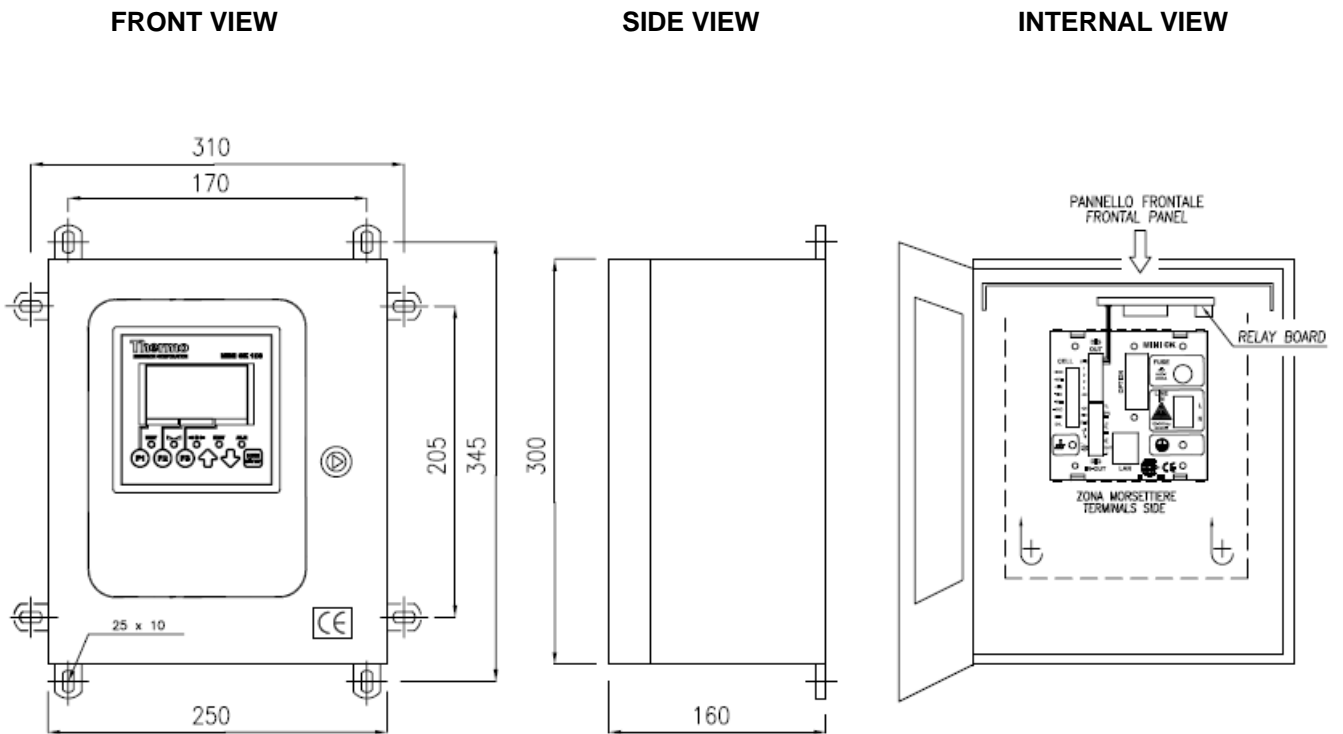


Figure 2-2: MINI CK101 Overall Dimensions (Field Version)



2.3.2 Connecting Incoming Power 100/240 VAC (+/-10%)

To connect incoming power use the following procedure.

- For input power use cable 14AWG
- Wire the safety ground terminal locate on the backside of the enclosure (Protection GND PE).
- Wire the HOT to terminal labelled of Terminal L on the Power Input Terminal.

Wire the NEUTRAL to the terminal labeled of Terminal N on the Power Input Terminal.

2.3.3 Connecting Incoming Power 24VDC (ON REQUEST)

To connect incoming power use the following procedure.

- For input power use cable 14AWG
- Wire the safety ground terminal locate on the backside of the enclosure (Protection GND PE).
- Wire the POSITIVE (+24VDC) to Terminal (+) on the Power Input Terminal.
- Wire the NEGATIVE (-24VDC) to Terminal (-) on the Power Input Terminal.

Chapter 3

MINI CK101 Operation

The *MINI CK101* is capable of accurate belt weighing system, provided it is installed, calibrated, operated, and maintained in complete accordance with the instructions contained in this manual.

3.1 Operator Interface

This section contains information on set up and operation of the *MINI CK101*. Operator interface is composed of keypad, status indicators (led) and display.

Figure 3-1: *MINI CK101* Front Panel



3.2 Front Panel

The *MINI CK101* Front Panel contains:

- 5 System Status Lights (Leds).
- LCD Graphic Display
- Keypad

3.2.1 System Status Lights (Leds)

The five red status indicators show the status of the *Mini CK101 Integrator* :

READY

Ready indication lighted if the scale is calibrated (zero and span calibration complete) and no SHUT DOWN conditions are active

ALARM

Alarm indication lighted if an alarm is pending, either the alarm is NEW or has been ACKNOLOWLEDGED.

SPAN CALIBRATION

Lighted when SPAN Calibration is running.

ZERO CALIBRATION

Lighted when AUTO ZERO is running. Does not flash when Auto Zero Track is auto zeroing.

RUN

Lighted when RUN phase.

3.2.2 Keypad

The keypad is comprised of pad touch keys consisting of the following

F1	Function Key 1
F2	Function Key 2
F3	Function Key 3
^	Scroll Up
v	Scroll Down
RUN / SETUP	Selection mode RUN / SETUP

On the interface scroll, the fourth display row is composed of three sections. Each section shows the action of the corresponding key.

Baud Rate > 9600 <		
<F1 Descr.>	<F2 Descr.>	<F3 Descr.>

The Scroll Keys (UP or DOWN) allow change the page displayed.

The RUN/SETUP Key allows selection of the menu modes. RUN is the operative mode with indication of variables and status scale. SETUP is the configuration and calibration mode of the instrument.

3.2.3 LCD Graphic Display

The display is composed of 4 rows (20 alphanumeric characters each row).
Two main modes displayed : RUN and SETUP. The following section describes the menus.

3.2.4 Contrast Display Adjust

It is possible to adjust the contrast display by the trimmer located :

- at the top on the right side on the internal edge of the display (for Panel version)
- on the right side internal of the Front Panel (for Field version)

3.3 Mode of Data Insert

Are available two mode for to insert data by keypad : SELECTION , DATA ENTRY

3.3.1 Selection

Allows to select the value from a list available. See the following example :

Division		
> 0,1 <		
CHOICE	ENTER	

CHOICE scroll the list of the value availables

ENTER allows the selection and the confirm of the value displayed.

The data into '> <' is the value active for the selection.

3.3.2 Data Entry

Is necessary for to insert a numerical value.

MAX RATE	500.00	KG
ENTER		

ENTER has a double function:

- Press the first time allows the start of the data entry procedure.
- Press the second time confirms the data entry and finish the procedure.

In the data entry procedure the number that must be modified is flashing. SCROLL UP / SCROLL DOWN keys allow to modify the value. The F2 and F3 keys (are activated from the first press of ENTER key) allow the scroll to former or following number.

MAX RATE	500.00	KG
ENTER	<	>

In the same mode is possible to insert of negative value.

OFFSET	+10.00	KG
ENTER	<	>

3.4 Menu Displays

The interface is a menu driver machine that allows the operator to access all setup, test and calibration parameters.

The following table shows the menu structure.

The functions highlighted are optional and are available only if the corresponding option hardware or software has been installed.

Mode	Menu	F1	F2	F3
SETUP				
	MAIN MENU 1	ZERO CAL	SPAN CAL	MAT'L CAL
	MAIN MENU 2	DISPLAY	SCALE DATA	CALIB DATA
	MAIN MENU 3	PROTECTION	DIAG	TEST
	MAIN MENU 4	I/O DEF	DEF. ALLARM	ETHERNET
	MAIN MENU 5	EXPANSION CARD-RS232	EXPANSION CARD- PROFIBUS	PRINT
	MAIN MENU 6	LOAD OUT BATCH	LINEAR	
RUN				
	SCREEN 1	MAT'L /PRINT	CALIBR.	ALARM
	SCREEN 2	MAT'L /PRINT	RESET	TOTALS
	SCREEN 3	ENTER	CLEAR/STOP	START

The following keys allow the scroll through the menus :

- Press **RUN/SETUP** key to change Mode
- Press **DOWN SCROLL** key to advance through the menus.
- Press **UP SCROLL** key to return to the previous item displayed.
- Press **F1 / F2 / F3** key to access sub-menus or to activate the function displayed.

If the *MINI CK101* is password protected, the appropriate password must be entered prior to making changes or performing routine calibration. Menus may be viewed without entering a password, but no entries are allowed unless the password is entered.

3.5 First Power On

When power is first applied to the *MINI CK101*, the system steps the operator through menus and options that bring the system to a weighing state. After the initial programming the instrument executes a simulate scale calibration then the system is ready for the weighing.

For to obtain a better accuracy is necessary a calibration with test weights

The data request are available on menu Display, Scale Data, Calibration Data.

3.6 Normal Power On

When the *MINI CK101* is powered on after initial programming, the RUN MENU 1 is displayed unless the hardware configuration has been changed.

3.7 Run Menu

When the Integrator is normally powered on after initial programming, the RUN (RUN MENU 1) is displayed. The RUN menu can always be accessed by pressing the **RUN/SETUP** key on the front panel.

3.7.1 Main Run Functions

The Run Menu consists of three operations, main **Run** menu, **Reset Total** and **Batch (Load Out)**. They can be scrolled using the scroll **UP** or **DOWN** keys.

3.7.1.1 Screen 1

The usual screen is the following:

	<u>0000000</u> t
<u>Z</u>	<u>0000000</u> t/h

The first line always displays the MASTER TOTAL, which is the number of tons totalized by the scale since installation. This number is factory preset and requires a factory password to reset.

The second line always displays the rate. A "Z" appears on the left side if the "Auto Zero Tracking" optional function is enabled in **MAIN MENU 2 (Calibration Data Scroll)** and the scale is unloaded. The "Z" is on steady during the first half test duration, while the *Integrator* is checking that the belt is unloaded. Then, during full test duration, the "Z" is flashing, indicating the *Integrator* is averaging the signal from the load cell to accurately re-zero the scale. The load must stay below the AZT max deviation set point during the cycle, otherwise auto zero is aborted.

The third line is by default blank, but can be programmed to show the belt speed, the belt loading or the date and time. The selection is made in the **MAIN MENU 2 (Display Scroll)**.

3.7.1.2 Screen 2

The screen 2 is the following :

	<u>000000</u> t
z	<u>0000.00</u> t/h
RESET	

The **RESET TOTAL MENU** is similar to the main **RUN MENU** except *Reset Total has replaced Master Total*. Press the **DOWN** scroll key for access.

When the **RESET** key is pressed, the following screen is displayed:

Do you wish to clear RESET TOTAL ?	
YES	NO

Press **YES** to clear the total, press **NO** to skip clearing.

3.7.1.3 Screen 3

The screen 3 display the LOAD OUT information (if the function is qualified).

BATCH	0	STOP
TOTAL	000.0	t
SETPT	0.0	t
ENTER	CLEAR	START

The first line always displays the batch number and the batch status;the second line display the batch total which is the number of tons totalized by the scale from the start command;the third line display the batch set point and the last line allows the operator to change set point, clear the batch number and start or stop the batch cycle. After the cycle is started, the **START** soft key is erased and the **CLEAR** key is replaced by **STOP** key. When **STOP** key is pressed to **STANDBY** the cycle , the **START** key is displayed again.

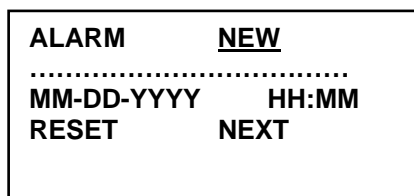
3.7.2 Material Calibration

The word **MAT'I** flashes in the left of the display screen after a material calibration if the static scale reference weight is not known. When the reference weight is known, press **MAT' L** to resume and complete the material calibration procedure.

3.7.3 Alarm Pending

The message **ALARM** displays in the right of the screen if an alarm is pending. The ALR LED also flashes.

The following menu displays after pressing **ALARM**.



The DATE and HOUR appear only if a serial card is plugged in the expansion slot.

However must be properly set the clock.

- **NEW** indicates an alarm that has not yet been acknowledged. When the operator presses **RESET** to clear the alarm, the alarm disappears *only* if the alarm condition no longer exists.
- **ACK** displays if the alarm is still pending
- **Next** is used to scroll between the pending alarms.

The string stands for one of the following alarm conditions

Table 3-1: Alarm Conditions

Clock Fail (only with serial card)	Low Rate
EEPROM Fail	Low Speed
High Load	Cold Start
High Rate	Calibrate Time (only with serial card)
High Speed	External Alarm
Warm Start	Batch Deviation
Power Down Calibrate	Speed sensor error
Overflow Totalizer	COMM Error
AZT Limited	PROFIBUS-DP Error
Math Error	Dinamic Data Lost
Load Cell Fail	Set Up Data Lost
Low Load	PROFIBUS Config. Changed

Refer to [Chapter 4](#) for more information.

3.8 Start-Stop General Purpose Key

When LOAD OUT function is enabled, and the cycle is stopped, the following general purpose key are displayed in the RUN MENU 3 :

ENTER
CLEAR
START

The first line always displays the batch number and the batch status;the second line display the batch total which is the number of tons totalized by the scale from the start command;.the third line display the batch set point and the last line allows the operator to change set point, clear the batch number and start or stop the batch cycle.

When LOAD OUT function is started , the general pourpuse CLEAR key is changed to STOP key in order to stop the LOAD OUT if necessary and the START key is erased..

When the STOP button is pressed one time the batch is suspended in STANDBY mode and START key is displayed again.

Remember that is necessary press two times the STOP button in order to abort the batch cycle

When batch cycle is aborted , the STOP key is again replaced by CLEAR key

3.9 Calibration

MAIN MENU 1 contains the **CALIBRATION** menu. **MENU 1** is selected by pressing **MENU** until **MAIN MENU 1** displays. Desired calibration scrolls are selected by pressing the soft keys directly below the desired scroll.

```
--  MAIN MENU 1  --  
Press MENU for more  
ZERO  SPAN  MAT'L  
CAL   CAL  CAL
```

3.9.1 Zero Calibration Scroll

The zeroing process is implemented as a machine directed procedure.

1. Press **ZERO CAL** at Main Menu 1

The following screen displays:

```
--  ZERO CAL  --  
Run belt empty, then  
press START  
START  EXIT  MANUAL
```

Press **EXIT** returns to Main Menu 1

Press **MANUAL** advances to Step 2

Press **RUN/SETUP** returns to Main Menu 1. Press **RUN/SETUP** again returns to **RUN**

The belt must be running until the zeroing procedure is completed requires at least on full revolution of the belt to be averaged.

2. Press **START**, the next screen is shown :
 The following screen displays:

AUTO ZEROING	
Time remaining	<u>0000</u>
Rate:	<u>000.0</u> t/h
Tot	<u>00.0</u> t

During *Auto Zero*, resolution of the total is ten times higher than normal. The number of seconds in Line 2 is calculated based on the current speed and corresponds to the time remaining for completing the test.

If the belt is not running at the moment the test is started or it is stopped during the test, a message is displayed, indicating the procedure has been aborted.

<p>WARNING Belt stopped Calibration aborted.</p> <p>EXIT</p>
--

EXIT returns to **MAIN MENU 1**. When zero is reached, the system automatically displays the following screen.

AUTO ZERO COMPLETE		
Error	<u>±000.00%</u>	
Change zero?		
YES	NO	ADV

COMPLETE flashes

ADV changes from **ERROR %** to **ACCUMULATED WEIGHT**

🔑 **Hint:** The percentage of error is related to full-scale capacity.

NO returns to **MAIN MENU 1** without changing the zero number

YES changes the zero number and the next screen displays

ZERO # CHANGED		
New zero	<u>#00000</u>	
Old zero	<u>#00000</u>	
RUN	MENU	ADV

ADV changes from **OLD ZERO** to **RATE** to **TOTALIZED WEIGHT** and to **ERROR %**
MENU repeats *Auto Zero* calibration.

RUN/SET UP returns to the **MAIN MENU 1**

3.9.2 Manual Zero

The *Manual Zero* procedure shows the zero constant and allows direct entry if known. Press **ENTER** to confirm the new number.

```
--  MANUAL ZERO  --
Rate          000.0 t/h Password: Operator
Zero          #00000
ENTER  EXIT  ADV
```

Default: 40000
Min: 0
Max: 120000

- **ADV** displays *only* if *Auto Zero Tracking* is enabled. The AZT function accurately tracks the zero of the scale by calculating an additional zero constant. The portion of zero due to AZT is not incorporated in the zero constant, but is shown separately.

When **ADV** is pressed, the system scrolls between **Zero** and **AZT**:

```
--  MANUAL ZERO  --
AZT # ±000000
AZT % ±000000
ENTER  EXIT  ADV
```

When the **AZT** is displayed, the **ENTER** key incorporates the **AZT** number into the *Zero* constant so the displayed **AZT** number and percentage changes to zero.

3.9.3 Span Calibration Scroll

Three simulated load calibration options are available:

- *R-Cal*
- *Test Weights*
- *Test Chains*

Test weights or test chains require additional hardware and handling equipment.

The *Integrator* allows the operator to select which of the three methods is to be used for routine calibration. The selection is made in **MAIN MENU 2, CAL DATA SCROLL 1**.

```
--  CAL DATA 1  --
Calibration
> R-CAL <
```

Default: R-CAL
Selection: Test Weights, Test Chain

3.9.3.1 Auto Span

3.9.3.1.1 Calibration with R-Cal

Use the following steps to begin an *R-Cal Calibration*:

1. Press **SPAN CAL**

The following screen displays

<p>AUTO SPAN R CAL Run belt empty, then press START START EXIT MANUAL</p>
--

Pressing **EXIT** or **RUN/SETUP** returns the screen to **MAIN MENU 1**.

Press **START** to initiate *R-Cal* span calibration. There is not totalization for three seconds until the weight signal has stabilized.

3.9.3.1.2 Calibration with Chain Calibration

Use the following steps to begin a *Chain Calibration*:

1. Stop the conveyor belt
2. Apply chains on conveyor belt
3. Press **SPAN CAL**

The following screen displays:

<p>AUTO SPAN CHAIN Press START to begin chain calibration. START EXIT MANUAL</p>

Password: Operator

4. Press **START**

The following screen displays:

<p>AUTO SPAN CHAIN Apply chain, then press START START EXIT MANUAL</p>

Password: Operator

Pressing **EXIT** or **RUN/SETUP** returns the screen to **MAIN MENU 1**.

5. Press **START**

The following screen displays:

<p>AUTO SPAN CHAIN Run belt, then press START START EXIT</p>

6. Restart conveyor belt and insure chain placement is proper.
7. Press **START**
8. Continue to following section.

3.9.3.1.3 Calibration with Test Weights

Use the following steps to begin a *Test Weights Calibration*:

1. Stop the conveyor belt if necessary to apply test weights.
2. Press **SPAN CAL**

The following screen displays:

AUTO SPAN Weights
Press **START** to begin
weight calibration.
START EXIT MANUAL

Password: Operator

3. Press **START**

The following screen displays:

AUTO SPAN Weights
Apply weights, then
press **START**.
START EXIT MANUAL

Password: Operator

If **LOAD WTS** output was selected in the *I/O Definition Scroll*, test weights are automatically loaded after **START** is pressed. Wait for test weights to be loaded before proceeding. The following message displays:

AUTO SPAN Weights
Press **START** to load
test weights.
START EXIT

EXIT or **RUN/SETUP** returns the screen to **MAIN MENU 1**

4. Apply test weights
5. Press **START**

The following screen displays:

AUTO SPAN Weights
Run belt, then
press **START**.
START EXIT

Password: Operator

6. Restart the conveyor belt if it is not running
7. Press **START**
8. Continue to following section.

3.9.3.1.4 Span Calibration

Whichever method has been used to start automatic span calibration, after START is pressed, the following screen displays:

AUTO SPANNING	
Time remaining	0000
Rate	0000.0 Tph
Total	000000 Tons

During *Auto Span*, the resolution of the total is ten times higher than normal. The time remaining shown in *Line 2* is calculated upon the current speed and is based on the test duration.

If the belt is stopped during the test, a message is displayed indicating the procedure has been suspended.

No action is required from the operator; wait until the test is completed.

3.9.3.1.5 Material Factor

Use this step *only* if a material calibration is done before and the current simulated load method has no material factor installed.

Note: If a calibration with material **has not** been run before; a manual span entry **is** done; or this **is not** the first time the current simulated method is used, this section does not apply. Proceed to following section.

It is very important to understand when this procedure is executed; the system does not alter the span. The span is assumed correct because it was obtained from a test with material.

The system acquires the *Material Factor* for the current calibration method instead. This means the *Integrator* knows in the future how to use this method for correctly changing the system's span.

Use the following steps to incorporate the *Material Factor*. The following screen displays:

AUTO SPAN COMPLETE	
Error	<u>+/-00.00</u> %
Unfactored Calcon	
EXIT FACTOR REPEAT	

- Complete is flashing
- There are three keys to choose from **EXIT**, **REPEAT**, and **FACTOR**.

EXIT – If the operator chooses **EXIT**, the system acknowledges the Material Factor is not used. The system does not ask for a material factor any more for this calibration method until a manual span entry is performed. By pressing **EXIT**, the operator tells the system that material factor is not desired, but wants to use the test results for changing the span number. Proceed to *Section 3.93.1.6*.

REPEAT – If the operator chooses **REPEAT**, proceed to *Previous Section*.

FACTOR – If the operator chooses **FACTOR**, the following screen displays:

```

XXX Matl FACTOR
New factor: 000.00 %
Change factor?
YES      NO      ADV

```

XXX = R-Cal, WTS, or CHAINS

ADV – advances to *Old Factor* and again to *New Factor*.

NO – the Material Factor is set to 1.00

YES – the following screen displays

```

XXX Matl FACTOR
Old factor: 000.00 %
New factor: 000.00 %
RUN  MENU  REPEAT

```

XXX = R-Cal, WTS, or CHAINS

REPEAT – returns the operator to *Previous Section*

RUN – returns to the **RUN** menu main screen

MENU – returns to **MAIN MENU 1**

3.9.3.1.6 Recording New Span

The *Integrator* calculates the new span based on the result of the test performed with the simulated method.

```

AUTO SPAN COMPLETE
Error +/-00.00 %
Change span?
YES      NO      ADV

```

Complete is flashing

ADV – advances to *Accumulated Weight, Cal Con, Material Factor*, and back to *Error %*.

Note: If the *Material Factor* is **invalid** (never acquired before), it is not displayed.

- **YES** – if the operator selects **YES**, the following screen displays:

```

SPAN # CHANGED
Old span #: 00000
New span #: 00000
RUN  REPEAT  ADV

```

REPEAT – moves back and calibration restarts

ADV – changes from *Error %* to *Accumulated Weight, Calcon, Old Span*, and *Material Factor* (if not invalid).

RUN – The following screen displays

```

Remove chains (or weights)
before returning to
normal operation!!
RUN  Menu

```

RUN – returns to the **RUN** menu main screen

MENU – returns to **MAIN MENU 1**

NO – If the operator selects **NO**, the following screen displays:

SPAN UNCHANGED Old span #: <u>00000</u> New span #: <u>00000</u> RUN REPEAT ADV

REPEAT – moves back and calibration restarts

ADV – changes from *Error %* to *Accumulated Weight, Calcon, Old Span, and Material Factor* (if not invalid).

RUN – The following screen displays

Remove chains (or weights) before returning to normal operation!! RUN Menu

RUN – returns to the **RUN** menu main screen

MENU – returns to **MAIN MENU 1**

Note: The *Old Span* and *New Span* are equal because no change has been made to the span.

3.9.3.1.7 Ending an Auto Span Procedure with Chains or Test Weights

After **Auto Span** has been run using chains or test weights follow these steps:

1. Press **RUN**

The following screen displays

Remove chains (or weights) before returning to normal operation!! RUN Menu

2. Press **RUN**

Totalization resumes and the *Integrator* returns to the **RUN** menu.

3.9.3.1.8 Ending an Auto Span Procedure with R-Cal

After **Auto Span** has been running using R-Cal, follow these steps:

1. Press **RUN**
2. The **R-Cal** relay is de-energized and the display is locked for three seconds.
3. Press **RUN**

Totalization resumes and the *Integrator* returns to the **RUN** menu.

3.9.3.2 Manual Span

If the span constant is known, the *Manual Span* procedure allows the operator to make a direct change of span. Use the following steps to enter the span constant.

1. Press **MENU** until you are returned to **MAIN MENU 2**.

The following screen displays:

```
--  MAIN MENU 2  --
Press MENU for more
ZERO   SPAN   MAT'L
CAL    CAL   CAL
```

2. Select **SPAN CAL**

The following screen displays:

```
AUTO SPAN XXXX
Run belt empty, then
press START
START  EXIT  MANUAL
```

XXXX = R-Cal, Chains or Weights

3. Select **MANUAL**

The following screen displays:

```
Manual Span
Rate:    000.0 Tph
Span #   00000000
ENTER   EXIT   RUN
```

Default: 300000
Min: 222223
Max: 20000002

3.9.4 Material Span Calibration

Material span calibration is a machine directed procedure for calibrating the belt scale using actual material

Pre-weighted or post-weighted material, having been weighed to a known accuracy on a static scale, passes across the belt scale. This procedure automatically adjusts the *Integrator* span and factors all simulated load test *Calibration Constants (Cal Con)* if the operator prefers they be factored.

Use the following steps to perform a *Material Span Calibration*

```
--  MAIN MENU 1  --
Press MENU for more
ZERO   SPAN   MAT'L
CAL    CAL   CAL
```

1. At **MAIN MENU 2**, select **MAT' L CAL**
2. Press the **DOWN** arrow. The following screen displays:

<p>MAT'L CALIBRATION Run belt empty, then press start. START MENU</p>

Run the belt for *at least* one minute or one belt revolution before proceeding.

3. Press **START**
 The *Master Weight Totalizer* is disengaged. The following screen displays:

<p>Run quantity of material over scale CONTINUE</p>
--

4. Press **CONTINUE**
 The following screen displays:

<p>00000.0 Tons 0000.0 Tph Press DONE to end DONE ABORT</p>

During the *Material Calibration* procedure, the resolution of total tons counted is ten times higher than normal.

5. Wait until all material has passed over the scale, press **DONE**.
ABORT forces the program back to the top of the **MATL CAL** scroll.

At the end of the test, the system asks the operator whether the (actual) weight of material is already known.

<p>0000.00 Tons Ref. Weight known? YES NO</p>

NO – select no if the reference (*actual*) weight is not known for some time and the conveying systems need to be returned to run.

The **RUN** screen displays **MAT'L** flashes to remind the operator that the material test is incomplete.

Press **MAT' L** when the reference weight is known and the following screen displays:

<p><u>0000.00</u> Tons Enter reference weight <u>00.0</u> Tons ENTER ABORT</p>

YES – if the operator selected yes, the screen above displays.

1. Enter the actual material weight in the same weight units, as the *Integrator* is setup to use.

Example: Convert pounds to nearest hundredth (0.01) of a ton and enter the result if the *Integrator* is set up for tenths (0.1) of a ton increments. *Material Calibration* is running at 10 times normal.

2. Press **ENTER**

- ◆ **ABORT** – if abort is selected the information acquired during the test is lost and the system returns to **MAIN MENU 1**.

3.9.4.1 Updating the Span Constant

After the amount of material has been entered, the following screen displays:

MAT'L CAL. COMPLETE		
Error	<u>000.00</u>	%
change span?		
YES	NO	ADV

Complete flashes

YES – moves to the following screen

ADV changes from Error % to Actual Difference of Total

NO moves to the following screen:

MAT'L CALIBRATION	
Add reference	
weight to totals?	
YES	NO

YES – the reference weight is added to the totals and the *Integrator* returns to **MAIN MENU 1**

NO – returns to **MAIN MENU 1**

3.9.4.2 Acquiring the Material Factors

If yes was selected at the Updating the Span Constant screen, the following screen displays confirming the new span constant was installed.

SPAN # CHANGED		
New span #	<u>000000</u>	
Old span #	<u>000000</u>	
RUN	MENU	FACTOR

At this point, the scale is calibrated to the actual material test.

RUN – returns to the **RUN** main menu

MENU – returns to **MAIN MENU 1**

FACTOR – Of the three simulated load calibration methods, only the ones that have been already used are shown. It is not possible to calculate a material factor if a simulated test was not run before the material test. The following screen displays:

MAT'L CALIBRATION		
Automatic correction		
to Material Factors		
R-CAL	WTS	CHAIN

If none of the three was performed, **FACTOR** is not displayed.

If **R-CAL**, **WEIGHTS**, or **CHAINS** is pressed, the following screen displays:

XXXX MAT'L FACTOR		
New factor	<u>000.00</u>	%
Change factor?		
ADV	YES	NO

**XXXX = R-CAL,
WEIGHTS, or CHAINS**

Adv – ADVANCES TO THE OLD FACTOR AND AGAIN TO THE NEW FACTOR
No – SELECT **no** IF THE ACQUIRED MATERIAL FACTOR IS NOT DESIRED.

Yes – select **YES** if this specific simulated method of calibration has already been used and the related material factor will be recorded. This selection advances to the next scroll. The system is able to execute accurate calibrations in the future with this simulated method. The following screen displays:

XXXX MAT'L FACTOR		
Old factor	<u>000.00</u>	%
New factor	<u>000.00</u>	%
RUN	MENU	FACTOR

**XXXX = R-CAL,
WEIGHTS, or CHAINS**

FACTOR – repeats for all simulated tests previously run.

RUN or **MENU** – if **RUN** or **MENU** is selected, the following screen displays:

MAT'L CALIBRATION	
Add reference weight to totals	
YES	NO

YES – the amount of material used for the test is added to the master, reset, and operator's totals.

NO – the information is lost

Note: Moisture compensation is inhibited during material calibration. This is done to make the check of the totalized quantity easier. The static scale provides the weight of the material including moisture. The weight of the water is removed immediately before adding to total at the end of the procedure, so the Master, Reset, and Operator's totals are still correct.

3.10 Main Menu 2 – Setup and Configuration Menus

MAIN MENU 2 contains the **SETUP AND CONFIGURATION MENUS**. **MENU 2** is selected by pressing **MENU** until **MAIN MENU 2** displays. Desired **SETUP AND CONFIGURAITON** scrolls are selected by pressing the **SOFT** keys directly below the desired scroll. Scrolls for **MAIN MENU 2** consist of the following:

- *Display*
- *Scale Data*
- *Calibration Data*

3.11 Display

The Display menu contains system and *Integrator* parameters.

3.11.1 Measure Units

Measure units are displayed in English, Metric, or Mixed. Make your selection at this menu.

```
-- DISPLAY SCROLL 1 --  
Measure units  
>ENGLISH<  
CHOICE      ENTER
```

Default: ENGLISH

Choices: ENGLISH, METRIC, MIXED

English - all units in English

Metric - all units in Metric

Mixed – units may be a combination of English and Metric.

Note: If the Measure units are changed from English to Metric or Metric to English after the scale is calibrated, the span number changes but the calibration remains the same.

3.11.2 Totalization Units

```
-- DISPLAY SCROLL 2 --  
Totalization units  
>TONS<  
CHOICE      ENTER
```

Default: English = Tons

Choices: Tons, Ltons, Pounds

Default: Metric = tonnes

Choices: tonnes, kg

Default: Mixed = Tons

Choices: Tons, Ltons, kg, Pounds, Tonnes

3.11.3 Lenght Units

```
-- DISPLAY SCROLL 3 --  
Length units  
>Pounds<  
CHOICE      ENTER
```


Default: English/Mixed = Pounds
Metric = kg
Choices: Pounds, kg

3.11.4 Rate Units

The rate is displayed according to the units selected here.

```
-- DISPLAY SCROLL 4 --  
Rate units  
>TPH<  
CHOICE      ENTER
```

Password:
Service

ENTER – accepts the default units

Default: English = Tph
Choices: Tph, LTph, Lb/h, Percent %, Lb/mn, T/mn LT/mn

Default: Metric = kg/h
Choices: t/h, kg/h, kg/mn, t/mn, Percent %

Default: Mixed = Tph
Choices: Tph, LTph, Lb/h, Percent %, t/h, kg/h, kg/mn, t/mn, lb/mn, T/mn,
LT/mn

3.11.5 Load Cell Units

The units used for entering the load cell capacity are specified here. In this case, the use of English or Metric units is always allowed.

```
-- DISPLAY SCROLL 5 --  
Load cell Units  
>Pounds<  
CHOICE      ENTER
```

Default: English or Mixed = Lbs.
Metric = kilograms
Choices: Lbs, kg

3.11.6 Speed Units

The speed is displayed according to the units selected here.

```
-- DISPLAY SCROLL 6 --  
Speed Unit  
>m/s<  
CHOICE      ENTER
```

Default: m/s
Choices: m/s, m/min ,FPM

3.11.7 Language

The *Mini-CK 101* is a multi language instrument. Use the following Display Scroll to select a language.

```
-- DISPLAY SCROLL 7 --  
Language  
>USA<  
CHOICE      ENTER
```

Default: USA

Choices: USA, ESP (Spanish), ITA, FRA, GER,HOL

3.11.8 Time and Date (ONLY WITH SERIAL BOARD)

The user has to define the format for displaying and printing time and date .

```
-- DISPLAY SCROLL 8 --  
Time  
> am/pm <  
CHOICE      ENTER
```

Default: USA = am/pm

other languages = 24 h

Choices: am/pm, 24 h

```
-- DISPLAY SCROLL 9 --  
Date  
> MM-DD-YYYY <  
CHOICE      ENTER
```

Default: USA = MM-DD-YYYY

other languages = DD-MM-YYYY

Choices: DD-MM-YYYY, MM-DD-YYYY, YYYY-MM-DD

3.11.9 Line Three (3) of the Run Menu

The third line of the **RUN MENU** display can be set to display *Belt Loading, Speed, Date and Time*, or nothing. Use Display Scroll 9 to determine the third line display.

```
-- DISPLAY SCROLL 10 --  
Run display line 3  
> No Display <  
CHOICE      ENTER
```

Default: No display

Choices: No display, load, speed, date/time

3.11.10 Displayed Damping Factors

The process variable when displayed on the screen can be damped by a programmable factor to filter out variations that can be introduced by mechanical vibrations.

To tune a damping filter, enter the number of seconds corresponding to the desired time constant.

Example: 10 seconds is entered for a damping factor. Following a step change, the process variable reaches 60% of the final value in 10 seconds. This damping factor only affects the display, not the current output variable, which has a separate damping factor.

```
-- DISPLAY SCROLL 11 --  
Damping Display RATE  
Damping = 2 sec  
ENTER
```

Password:
Operator

Default: 2 sec
Min: 0 sec
Max: 400 sec

Damping Display Load

Display Scroll 11 is only visible if the **Run** display line 3 is set to **Load**.

```
-- DISPLAY SCROLL 12 --  
Damping Display LOAD  
Damping = 2 sec  
ENTER
```

Default: 2 sec
Min: 0 sec
Max: 400 sec

Damping Display Speed

Display Scroll 12 is only visible if the **Run** display line 3 is set to **speed**.

```
-- DISPLAY SCROLL 13 --  
Damping Display SPEED  
Damping = 2 sec  
ENTER
```

Default: 2 sec
Min: 0 sec
Max: 400 sec

3.11.11 Screen Saver

The MiniCK is supplied with a Screen Saver feature implemented in order to increase the life of display. As DEFAULT after about 5 minutes of inactivity on the Keyboard the backlight of the LCD display is turned off. With this menu it is possible to disable this feature.

```
-- DISPLAY SCROLL 14 --  
Screen Saver  
> Yes <  
CHOICE      ENTER
```

Password:
Operator

Default: Yes
Choices: Yes, No

3.12 Scale Data Scroll

3.12.1 Max. Scale Capacity

Scale capacity is the maximum rate at which the scale is allowed to work. This entry also defines the default number of decimal places used for displaying rate.

```
-- SC DATA SCROLL 1 --  
Max. scale capacity  
500.0    TPH  
ENTER
```

Default: 500.0
Min: 1
Max: 200000

3.12.2 Scale Divisions

When the **SCALE CAPACITY** is entered, the number of decimal places is also defined. For example, the user enters 500.0; this sets the **SCALE DIVISIONS** parameter to 0.1.

At the **SCALE DIVISIONS** menu, the displayed **SCALE DIVISION** corresponds to the just entered **SCALE CAPACITY**. The user can change the pre-set **SCALE DIVISIONS** by pressing **CHOICES**.

```
-- SC DATA SCROLL 2 --  
Scale divisions  
>0.1<  
CHOICE    ENTER
```

Default: 0.1
Choices: 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 0.01, 0.02, 0.05, 0.001, 0.002, 0.005

Make your choice and press **ENTER** to save the choice.

3.12.3 Selecting the Weighbridge Model (Belt scale code)

By entering the code number of your *Thermo Fisher* scale, the *Integrator* automatically calculates parameters of the system such as number of load cells and number of weigh idlers. (Refer for further information regarding specific weighbridges.)

This menu items is also used for internal calibration calculations. The default model number is 1, which corresponds to belt scale model 10-20-1.

```
-- SC DATA SCROLL 3 --  
Belt scale code #  
>1<  
ENTER          DETAIL
```

Default: 1
Min: 0
Max: 500

Press **ENTER** to accept the displayed selection (refer [Appendix B, Thermo Electron Weighbridge Physical Parameters.](#)).

Note: If the default is used, the scrolls from 3A to 3J are not displayed.

Press **DETAIL** if you want to force the following scrolls to be displayed even if the default was chosen.

- 3A – 30

Enter **0** if you want to define the weighbridge not using the database. This should only be done for special weighbridges that are not part of the standard set of *Thermo Fisher* scales.

Entering **0** forces the following menus to be displayed:

3.12.4 Detailing the Mechanical Parameters of the Frame

These menus only display if **OTHER** or **DETAIL** was selected in the [Section](#).

Pivot to Load Cell Distance (Parameter LA)

The distance from the pivot to load cell should be measured to within 0.032 inch (1/32”) (1mm). Using the numeric keys enter the distance recorded in the [Section](#) and press **ENTER**.

For weighbridges, which *do not* have a pivot, enter zero (**0**).

```
-- SC DATA SCROLL 3A --
Pivot to load cell
distance: _____ IN
ENTER
```

English/Mixed	Metric
Default: 32 in	Default: 1000 mm
Min: 0.00 in	Min: 0 mm
Max: 150.00 in	Max: 3800 mm

Number of Weigh Idlers (Parameter LB1)

The number of weigh idlers affixed to the scale weighbridge. Use the numeric keys to enter the number of weigh idlers and documented in the [Section](#), press **ENTER**.

```
-- SC DATA SCROLL 3B --
# of weigh idlers
_____
ENTER
```

Default:	1
Min:	1
Max:	6

Pivot to First Weigh Idler Distance (Parameter LB1)

Measure the distance between the pivot centerline and first weigh idler centerline. Use the numeric keys to enter the distance 0.032 inch (1/32") (1mm).

For weighbridges without a pivot, enter zero (0). Press **ENTER**

```
-- SC DATA SCROLL 3C --  
Pivot to first idler  
distance      _____ In  
ENTER
```

English/Mixed	Metric
Default: 24 in	Default: 800 mm
Min: 0.00 in	Min: 0 mm
Max: 100.00 in	Max: 2500 mm

If the number of weigh idlers entered in Scroll 3B is more than one, the following screens are displayed. Measure the distance between the pivot centerline and the first weigh idler grease fitting. Enter the distance (within 0.032 inch or 1 mm). For weighbridges, which do not have a pivot, enter zero.

Only if # of weigh idlers ≥ 2

```
-- SC DATA SCROLL 3D --  
Pivot to 2nd idler  
distance      000.00 In  
ENTER
```

Password:
Service

English/Mixed	Metric
Default: 0.00 in	Default: 800 mm
Min: 0.00 in	Min: 0 mm
Max: 100.00 in	Max: 2500 mm

Only if # of weigh idlers ≥ 3

```
-- SC DATA SCROLL 3E --  
Pivot to 3rd idler  
distance      000.00 In  
ENTER
```

Password:
Service

English/Mixed	Metric
Default: 0.00 in	Default: 800 mm
Min: 0.00 in	Min: 0 mm
Max: 100.00 in	Max: 2500 mm

Only if # of weigh idlers ≥ 4

```
-- SC DATA SCROLL 3F --  
Pivot to 4th idler  
distance      000.00 In  
ENTER
```

Password:
Service

English/Mixed	Metric
Default: 0.00 in	Default: 800 mm
Min: 0.00 in	Min: 0 mm
Max: 100.00 in	Max: 2500 mm

Only if # of weigh idlers \geq 5

```
-- SC DATA SCROLL 3G -  
Pivot to 5th idler  
distance      000.00 In  
ENTER
```

Password:
Service

English/Mixed
Default: 0.00 in
Min: 0.00 in
Max: 100.00 in

Metric
Default: 800 mm
Min: 0 mm
Max: 2500 mm

Only if # of weigh idlers = 6

```
-- SC DATA SCROLL 3H --  
Pivot to 6th idler  
distance      000.00 In  
ENTER
```

Password:
Service

English/Mixed
Default: 0.00 in
Min: 0.00 in
Max: 100.00 in

Metric
Default: 800 mm
Min: 0 mm
Max: 2500 mm

Enter each distance with the numeric keys and press **ENTER**.

Pivot to Test-Weight Height (Parameter LE)

For weighbridges, which do not have a pivot, enter zero. 3I, L, M, and N *only* apply if test weights are provided.

```
-- SC DATA SCROLL 3I --  
Pivot to test-weight  
height        000.00 In  
ENTER         +/-
```

Password:
Service

English/Mixed
Default: 0.00 in
Min: -20.00 in
Max: +20.00 in

Metric
Default: 0.0 mm
Min: -500.0 mm
Max: +500.0 mm

Pivot to Test-Weight Length (Parameter LC)

For weighbridges, which do not have a pivot, enter zero.

```
-- SC DATA SCROLL 3L --  
Pivot to test-weight  
length        000.00 In  
ENTER
```

Password:
Service

English/Mixed
Default: 24.00 in
Min: 0.00 in
Max: 200.00 in

Metric
Default: 0 mm
Min: 0 mm
Max: 500.0 mm

Pivot to Carriage Height (Parameter LF)

For weighbridges, which do not have a pivot, enter zero.

```
-- SC DATA SCROLL 3M --  
Pivot to carriage  
height      000.00 In  
ENTER
```

Password:
Service

English/Mixed
Default: 6.50 in
Min: 0.00 in
Max: 10.00 in

Metric
Default: 0 mm
Min: 0 mm
Max: 250 mm

Carry Roll to Carriage Height (Parameter LG)

For weighbridges, which do not have a pivot, enter zero.

```
-- SC DATA SCROLL 3N --  
Roll to carriage  
height      000.00 In  
ENTER      +/-
```

Password:
Service

English/Mixed
Default: 6.50 in
Min: 0.00 in
Max: 20.00 in

Metric
Default: 0 mm
Min: 0 mm
Max: 250 mm

Number of Load Cells for the Weighbridge

```
-- SC DATA SCROLL 3O --  
# of load cells  
0  
ENTER
```

Password:
Service

Default: 1
Min: 1
Max: 6

3.12.5 Defining Dimensional Parameters of the Application

3.12.5.1 Idler Spacing in Scale Area

For better accuracy, average the distance between the idlers across the scale on both sides. Measure to within 0.032 inch or 1 mm with the numeric keys and press **ENTER**.

```
-- SC DATA SCROLL 4 --  
Idler spacing  
36.00 In  
ENTER
```

Password:
Service

English/Mixed
Default: 36.00 in
Min: 2.00 in
Max: 120.00 in

Metric
Default: 1000 mm
Min: 50 mm
Max: 2500 mm

3.12.5.2 Angle of Inclination

Enter the angle of inclination. If an inclination meter is connected to the scale, after this preliminary set up has been completed, enable the automatic angle detection in **I/O DEFINITION (MENU 4)** and calibrate the angle meter.

```
-- SC DATA SCROLL 5 --  
Conveyor's angle  
0 0 Degrees  
ENTER +/-
```

Password:
Service

Default: 0.0
Min: -25.00°
Max: +25.00°

3.12.6 Defining the Load Cell(s)

3.12.6.1 Load Cell Capacity

Enter the load cell capacity as it appears on the label placed on the load cell.

```
-- SC DATA SCROLL 6 --  
Load cell capacity  
250 Lbs  
ENTER
```

Password:
Service

English/Mixed
Default: 250.0 Lbs
Min: 1 Lbs
Max: 15000 Lbs

Metric
Default: 100 kg
Min: 1 kg
Max: 5000 kg

3.12.6.2 Load Cell Sensitivity

The sensitivity was entered when the belt scale code was entered. If other (0) was selected, enter the load cell sensitivity in mV/V as marked on the label of the load cell. Thermo Electron load cells are normally 2.000 or 3.000 mV/V.

```
-- SC DATA SCROLL 7 --  
Load cell sens.  
3.00 mV/V  
ENTER
```

Password:
Service

Default: 3.0 mV/V
Min: 0.500 mV/V
Max: 3.500 mV/V

3.12.6.3 Load Cell Resistance

Load cell resistance is entered on this screen. The resistance for the load cell has been recorded on the *System Data Sheet* in the front of your belt scale manual. (It is also stamped on the load cell cable.) Enter the ohms for the load cell. The number of scrolls depends on the number of load cells specified in scroll 30.

```
-- SC DATA SCROLL 8X --  
Load cell #N res  
3.00 Ohms  
ENTER
```

Password:
Service

X = A, B, C, D, E, or F
n = 1, 2, 3, 4, 5, or 6

Default: 350 Ohms
Min: 10 Ohms
Max: 2000 Ohms

Note: One screen displays for each load cell

3.12.6.4 Defining the Speed Input

The speed input screen allows the operator to select the single speed sensor input (default value) or a simulated value using an internal timer.

Simulation allows operation without a speed sensor. When simulated speed is selected, a conveyor running input is required (refer to the field wiring diagram).

Note: If speed is selected as the third line display in the **RUN** screen, the line will be blank in **RUN** mode when simulated speed is selected.

```
-- SC DATA SCROLL 9 --  
Speed signal  
>input<  
CHOICE            ENTER
```

Default: INPUT
Choices: INPUT , SIMULATED

3.12.6.5 Setting Dead Band

The dead band is a percentage of the scale capacity (rate) in which the rate is ignored (if any) and a zero rate is forced. In addition, Totalization is frozen when rate is below dead band.

```
-- SC DATA SCROLL 10 --  
Zero dead-Band Range  
0 %  
ENTER
```

Password:
Service

Default: 0%
Min: 0%
Max: 5%

3.13 Calibration Data Scroll

The CAL DATA scroll allows the operator to enter or set parameters, which relate to the calibration of the scale.

3.13.1 Defining the Calibration Mode

Select the method of simulated automatic calibration. The selected method is the only one displayed in the calibration section of **MENU 1**.

```
-- CAL DATA SCROLL 1 --  
Calibration mode:  
< R-CAL <  
CHOICE ENTER
```

Password:
Service

Default: R-CAL
Choice: R-CAL, CHAIN, WEIGHTS

3.13.1.1 Defining the R-Cal Parameters

This section *only* applies if **R-Cal** mode was selected as the preferred method. Enter the resistance in Ohms of the **R-cal** resistor installed in your *Integrator*. Default value installed is 165000 Ohms. See the *Data Sheet* in front of this manual for exact resistance.

```
-- CAL DATA SCROLL 2 --  
R-CAL select  
Res 165000 ohms  
ENTER
```

Password:
Service

Default: 165000 Ohms
Min: 10 Ohms
Max: 1000000 Ohms

The system calculates the *CALCON* (*Calibration Constant*) based on the mechanical and electrical parameters entered in **SCALE DATA**. This menu is for reference *only*.

```
-- CAL DATA SCROLL 3 --  
R-CAL constant  
00.00  
MENU RUN
```

3.13.1.2 Defining the Chains Parameters

This section *only* applies if **CHAINS** mode was selected as the preferred method. Enter the weight per foot or meter of the chains used for calibration.

<p>-- CAL DATA SCROLL 4 -- Chain select. Weight <u>00.00</u> Kg/m ENTER</p>	<p>Password: Service</p>
---	------------------------------

English/Mixed	Metric
Default: 0.000 Lbs/Ft	Default: 0.000 kg/m
Min: 0.000 Lbs/Ft	Min: 0.000 kg/m
Max: 1000.000 Lbs/FT	Max: 3000 kg/m

The system calculates the *CALCON* based on the mechanical and electrical parameters entered in **SCALE DATA**. This menu is for reference *only*.

<p>-- CAL DATA SCROLL 5 -- CHAIN CAL constant <u>00.00</u> t MENU RUN</p>

3.13.1.3 Detailing the Test Weight Parameters

This section *only* applies if **TEST WEIGHTS** mode was selected as the preferred method. Enter the weight of the test weights used for calibration.

<p>-- CAL DATA SCROLL 6 -- Test weight <u>0.000</u> kg ENTER</p>	<p>Password: Service</p>
--	------------------------------

English/Mixed	Metric
Default: 0.000 Lbs/Ft	Default: 0.000 kg/m
Min: 0.000 Lbs/Ft	Min: 0.000 kg/m
Max: Load cell size x no of load cells	Max: 3000 kg/m

The system calculates the *CALCON* (Calibration Constant) based on the mechanical and electrical parameters entered in the **SCALE DATA**. This menu is for reference only.

<p>-- CAL DATA SCROLL 7 -- WEIGHT CAL constant <u>00.00</u> MENU RUN</p>
--

3.13.2 Entering Calibration Interval (Only with OPTION Serial Board)

The system can be programmed to prompt the operator when the next calibration is due. If this option is not desired, confirm the default 0 days interval, otherwise enter the number of days. The calibration date displayed in Scroll 9 is automatically updated whenever a calibration is performed. If a non-zero value is entered, an alarm appears after the time is elapsed. The alarm can only be cleared after a calibration check is executed.

<pre>-- CAL DATA SCROLL 8 -- CALIBRATION interval <u>365</u> Days ENTER</pre>	Password: Operator
---	------------------------------

Default: 0 Days
Min: 0 Days
Max: 365 Days

The scroll displays the date of the last calibration and the expected date of the next one, based on the entry in the previous screen.

<pre>-- CAL DATA SCROLL 9-- Calibration date Last: MM-DD-YYYY ENTER: MM-DD-YYYY</pre>

3.13.3 Entering Material Factors

The material factor is a number in percent, which is used to correct the CALCON to the real value. Entering 0 makes the material factor INVALID.

<pre>-- CAL DATA SCROLL 10-- Material FACTOR R-Cal INVALID ENTER ± NEXT</pre>

Default: 0 %
Min: -99.99%
Max: +99.99%

NEXT scrolls between material factors of R-Cal, Weights, and Chains “INVALID” displays if they have not been measured

3.13.4 Defining the Calibration Test Duration

Zero and Span calibrations are more accurate if executed on an entire belt revolution or multiple of it. Press **ACQUIRE** (the recommended selection) or **MANUAL** (skip to Section **Errore. L'origine riferimento non è stata trovata.****Errore. L'origine riferimento non è stata trovata.**0.)

```
-- CAL DATA SCROLL 11--
Establish test
duration
ACQ           MANUAL
```

ACQuire is the recommended selection.

3.13.4.1 Acquiring the Test Duration

When selecting **FULL**, use a 100-foot tape to measure the belt length to the nearest 0.1-foot. Reference a fixed point (an idler) on the conveyor when counting belt revolutions. See Section for the recorded conveyor belt length.

The **PARTIAL** (belt length measurement) selection enables the operator to acquire test duration without the entire belt length measurement.

Note: This option should only be used when belt length exceeds 1000 feet.

```
ACQUIRE TEST DUR
Choose belt length
measurement method.
FULL           PARTIAL
```

FULL is the recommended selection.

3.13.4.2 Full Test Duration Acquisition

If **FULL** is pressed, the operator is asked to enter the length of one belt revolution. Enter the length recorded in Section . Measure belt length to the nearest 0.1 feet.

```
Enter length of one
belt revolution.
Length   1000.0 Ft.
ENTER   ABORT
```

Password:
Service

English/Mixed	Metric
Default: 1000.0 Ft	Default: 200.0 m
Min: 1.0 Ft	Min: 0.5 m
Max: 10000 Ft	Max: 3000 m

After the length of the belt has been entered, the system automatically moves to the following screen, which prompts the operator to press **START** when the mark passes the reference point. Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

Note: The belt must be running at the maximum speed before executing this function. If not, the prescaler will be improperly calculated.

Start belt. Pres
START when 1st mark
passes reference.
START ABORT

Note: If a clip detector is installed and clip detector mode is set to 'AUTO' in I/O DEFINITION SCROLL skip to [Section](#).

When **START** is pressed, the system automatically moves to the next instructional screen. The operator presses **COUNT** each time the mark passes the reference point until minimum test load conditions are met (refer to the belt scale installation manual for minimum test level requirements). When the last revolution passes the mark, the operator must press **COUNT** followed by pressing **DONE**.

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

Press **COUNT** each
Time a mark passes.
0000 secs 000 revs
COUNT **ABORT**

ABORT returns the screen to **CAL DATA SCROLL 11**.

When test duration is finished, the new values for length of belt and time are displayed. Press **CONTINUE**

TEST DURATION
Length = 0000.0 Ft
Time = 000 SEC
CONTINUE

3.13.5 Auto Count Belt Revolutions

If a clip detector is installed and clip detector mode in I/O Definition is set to "AUTO", the system automatically counts belt revolutions without the need for pressing the **COUNT** key. The two screens for Acquiring Test Duration are displayed as follows:

Start belt. Wait
until 1st mark
passes reference
ABORT

When the mark passes, the system automatically moves to the next instructional screen. The system counts each time a mark passes the reference point until the operator presses the **DONE** key.

Press **DONE** when
ready.
0000 secs 000 revs
ABORT **DONE**

3.13.6 Partial Test Duration Acquisition

If **PARTIAL** is pressed, the operator is asked to enter the length between two marks on the belt.

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

Enter length between
two marks on belt.
Length 200.0 Ft.
ENTER ABORT

English/Mixed	Metric
Default: 200.0 Ft	Default: 50.0 m
Min: 1.0 Ft	Min: 0.5 m
Max: 1000.0 Ft	Max: 3000.0 m

After the length of the belt has been entered, the system automatically moves to the following screen, which prompts the operator to press **START** when the mark passes the reference point.

NOTE: The belt must be running at the maximum speed before executing this function. If not, the prescaler is improperly calculated.

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

Start belt. Press
START when 1st mark
passes reference.
START ABORT

When **START** is pressed, the system automatically moves to the next instructional screen. The operator presses **COUNT** each time a mark passes the reference point until both marks have passed. Then press **DONE**.

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

Press COUNT each
time a mark passes.
00000 secs 000 revs
COUNT ABORT DONE

Note: The **COUNT** key is not displayed if the clip detector option is in Auto mode.

When test duration is finished, the new values for length of belt and time are displayed. Press **CONTINUES**.

TEST DURATION
Length = 0000.0 Ft
Time = 000 sec
EXIT

3.13.7 Manual Entry of Test Duration

This procedure allows direct entry of parameters that would otherwise be generated by the acquire Test Duration modes. This menu is generally used when the operator cannot see the belt while standing at the front panel.

If **MANUAL** is pressed, the system prompts the operator to run the belt at its maximum speed. Press **CONTINUE**

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

Start Belt. Press
CONTINUE when belt
is at maximum speed.
ABORT CONTINUE

Password: Service

The operator is prompted to enter the length of one belt revolution.

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

ENTER length of one
belt revolution.
Length 000.00 Ft
ENTER ABORT

Password: Operator

English/Mixed	Metric
Default: 100.0 Ft	Default: 200.0 m
Min: 1.0 Ft	Min: 1.0 m
Max: 10000.0 Ft	Max: 10000.0 m

The number of belt revolutions to be timed is than entered.

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

ENTER the number of
belt revolutions to
be timed 1 revs
ENTER ABORT

Default: 1
Min: 1
Max: 100

The next entry is the time per revolution.

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

ENTER the time for
revolutions to pass
reference 000 sec
ENTER ABORT

Default: 30 sec
Min: 1 sec
Max: 16200 sec

When **ENTER** is pressed, the system times the belt travel according to the above entered parameters.

Pressing **ABORT** returns the screen to **CAL DATA SCROLL 11**.

```
Timing belt travel
000 sec

ABORT
```

When test duration test is finished, the new values for length of belt and time are displayed. Press **CONTINUE**

3.13.8 Defining Auto Zero Tracking

A periodic auto zero procedure can be automatically executed by the system if the Auto Zero Tracking option is set to YES. If YES is selected, Auto Zero Tracking is enabled anytime the belt is running at a flow rate less than the range setting selected below.

```
-- CAL DATA SCROLL 12--
Auto zero tracking
> Yes <
CHOICE ENTER
```

Password: Operator

Default: NO
Selections: YES, NO

The following scrolls are only visible if Auto Zero Tracking is enabled.

Define the range of action of the AZT with reference to the scale capacity (rate). A flow rate greater than the range setting deactivates AZT.

```
--CAL DATA SCROLL 12A-
Auto zero tracking
Range ±4.0 %
ENTER
```

Password: Operator

Default: ± 4 %
Min: ± 0 %
Max: ± 10 %

Define the maximum amount of zero error (with reference to the scale capacity) that AZT can automatically compensate.

```
--CAL DATA SCROLL 12B-
Auto zero tracking
Max Dev ±4.0 %
ENTER
```

Password: Service

Default: ± 4 %
Min: ± 0 %
Max: ± 10 %

3.13.9 Entering the Speed Capacity

The user can **ENTER** the maximum speed capacity or **ACQ**uire it. To acquire the speed, run the belt at maximum speed and then press the **ACQ** key.

```
--CAL DATA SCROLL 13-  
Max speed capacity  
200.0 Fpm  
ENTER      ACQ
```

Password: Service

English/Mixed	Metric
Default: 200.0 Fpm	Default: 1.0 m/s
Min: 1.0 Fpm	Min: 0.1 m/s
Max: 2000.0 Fpm	Max: 10 m/s

The maximum speed capacity is used to scale the current output when used to monitor the speed, and to allow entering the speed alarms in %.

3.13.10 Defining the Number of Calibrations

This screen allows the operator to specify the number of calibrations to be defined. If a number higher than 1 is entered, the digital inputs for calibration selection can be defined.

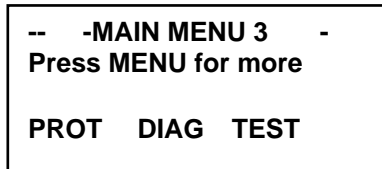
```
--CAL DATA SCROLL 14-  
Number of calib.  
1  
ENTER
```

Password: Service

Default:	1
Min:	1
Max:	2

3.14 Main Menu 3

MAIN MENU 3 is used for protecting and un-protecting the system using passwords, and to perform diagnostic and test functions. The diagnostic functions can only be operated after removing all password protection, and should only be used by experienced technical personnel. Most test functions are not password protected.



The **PROTECTION** menu (Selection **PROT**) only becomes visible after passwords have been defined (see the **DIAGNOSTICS** Menu).

3.14.1 Changing Protection Level

The *Mini-CK101* has three protection levels to which specific passwords are related.

Tab. 3-2: Password Protection Levels

Protection	Password	Status
NONE	SERVICE	The system is completely unprotected; all data can be read or changed.
LIMITED	OPERATOR	Operator functions and data are unprotected. All setup and calibration data are protected except zero calibrate.
PROTECTED		The system is totally protected, process data can be read, no change allowed.

A **SERVICE** password is required to access the **NONE** level. An **OPERATOR** or a **SERVICE** password is required to access the **LIMITED** level.

Use the **NONE** key to access the **NONE** protection level. If the current level is not already **NONE**, the **SERVICE** password is required.

Use the **LTD** key to access the limited protection level. If the system is in level **NONE**, change is immediate. If it is in **PROT** level, the **SERVICE** or **OPERATOR** password is required. Use the **PROT** key to access the protected level. No password is required.



Default: NONE
Selections: NONE, LIMITED, PROTECTED
Password: from NONE to LTD or PROT: not required
 from LTD to PROT: not required
 from LTD to NONE: SERVICE
 from PROT to NONE: SERVICE
 from PROT to LTD: OPERATOR or SERVICE

Pressing the soft key gives entry to desired level. Going from a low level to a higher level forces the password entry.

3.14.1.1 Online Procedure for Changing Protection Level

The protection level can be temporarily changed by entering a password "on the fly" during normal operation. When the operator tries to enter a variable or select a function, which is password protected, and the password is installed, the following screen is displayed.

```
- SYSTEM PROTECTED
PLEASE ENTER
PASSWORD _____
ENTER
```

The operator can enter either the OPERATOR or the SERVICE passwords. However, if the operator enters the OPERATOR password and the variable or function requires the SERVICE password instead, the access is denied and the following screen is displayed.

```
- SYSTEM PROTECTED -
PLEASE ENTER SERVICE
PASSWORD _____
ENTER
```

If the operator fails to enter the correct password, the following screen displays.

```
- SYSTEM PROTECTED
-
INVALID PASSWORD
ACCESS DENIED
```

Pressing **RETURN** returns the program to the previous function. If the operator enters the correct password, the previous screen appears and access is allowed.

When the protection level is changed using the on line procedure, the system automatically returns to protected status if no keyboard entries are made within 60 seconds.

3.15 Diagnostics

3.15.1 A/D Raw Data

Diagnostic Scroll 1 shows the raw data from the A/D converter of the *Integrator* (A/D gross) and the net value after the zero constant has been subtracted. The range of the A/D converter is from 0 to 131070 numbers.

```
-DIAGNOSTIC SCROLL 1-

A/D gross 00000
A/D net 0000
```

3.15.2 Readout Load Cell mV

The system displays the mV output of the load cell. The reading must be positive and must increase when the load increases.

```
-DIAGNOSTIC SCROLL 2-
Weight on load cell
0.000 mV
CALIB
```

Password:Service

If **CALIB** is pressed, the next two scrolls are displayed and can be used to fine-tune the readout of mV/V.

```
-DIAGNOST. SCROLL 2A
Loadcell output zero
000000 A/D counts
ENTER
```

Password: Service

Default: 4096
Min: 0
Max: 10000

```
-DIAGNOST. SCROLL 2B
Loadcell output span
000000
ENTER
```

Password: Service

Default: 3400
Min: 0
Max: 30000

3.15.3 Change Prescaler

The prescaler is a number, which is used to divide the incoming frequency of the speed sensor(s) to achieve a usable input frequency of approximately 30 Hz. The prescaler is automatically calculated and should never be altered by the user. However, a direct entry has been made possible for quick replacement of the *Integrator*.

```
-DIAGNOST. SCROLL 3-
Prescale 00000
00000.0 pls/min
ENTER CALIB
```

Password: Service

Default: 10
Min: 1
Max: 100

If **CALIB** is pressed, the following screens appear.

```
-DIAGNOST. SCROLL 3A
Test duration total
pulses 000000
ENTER
```

Password: Service

Default: 900
Min: 1
Max: 100000

```
-DIAGNOST. SCROLL 3B
Test duration total
length 00000.0 ft
ENTER
```

Password: Service

English/Mixed	Metric
Default: 200 feet	Default: 200 m
Min: 1 foot	Min: 1 m
Max: 100000 feet	Max: 100000 m

3.15.4 Change Passwords

Change the password by entering a new one. The user can enter up to eight characters (numeric keys entries). The entered numbers are not echoed on the screen. Pressing just the ENTER key removes the password.

```
-DIAGNOST. SCROLL 4-
ENTER SERVICE
PASSWORD *****
ENTER
```

Password : Service

Default: No password

After the password has been entered, the system asks for confirmation. This prevents losing access control due to a typing mistake while entering passwords.

```
-DIAGNOST. SCROLL 4-
REENTER SERVICE
PASSWORD *****
ENTER
```

If the password entered the second time matches the first, the following message confirms the entry.

```
-DIAGNOST. SCROLL 4-
NEW PASSWORD
ACQUIRED
RETURN
```

If the two passwords do not match, the system does not accept the new password.

```
-DIAGNOST. SCROLL 4-
INVALID PASSWORD

RETURN
```



```
-DIAGNOST. SCROLL 5-  
ENTER OPERATOR  
PASSWORD *****  
ENTER
```

Password :Operator

Default: No password

The OPERATOR password is double checked similarly to the service one.

It is strongly suggested to write down the password and preserve a copy in a safe place. If the password is forgotten, refer to Section 4.3.7 to remove a forgotten password.

3.15.5 Display Software Version

The software version is displayed for reference only.

```
-DIAGNOST. SCROLL 6-  
Software version  
86 . XX . XX . XX
```

3.15.6 Display RedBoot Version

The RedBoot version is displayed.

```
-DIAGNOST. SCROLL 7-  
RedBoot version:  
X.X
```

3.15.7 Display Cpld Version

The Cpld version is displayed.

```
-DIAGNOST. SCROLL 8-  
Ver. CPLD CPU : 0xc5  
Ver. CPLD LCD : 0xd1
```

3.15.8 Setup Date and Time (Only with OPTION Serial Board)

The user can set the current date and time. A battery operated clock calendar then maintains time and date even if power is removed. Day, Month, and Year are entered in sequence.

```
-DIAGNOST. SCROLL 9-  
Date: DD-MM-YYYY  
DAY: DD  
ENTER
```

Default: 00-00-0000

Min: 01-01-0000

Max: 31-12-2096

Time is entered in a similar way. The AM/PM key is used when time is in the English mode. See **DISPLAY SCROLL 7 IN MAIN MENU 2.**

-DIAGNOST. SCROLL 10-	
Time:	HH:MM
HOURS:	HH
ENTER	AM/PM

	24-hour	am/pm
Default:	00.00	01.00
Min:	00.00	01.00
Max:	23:59	12:59

3.15.9 Check Hardware Configuration

The system automatically recognizes when expansion boards is installed. The following scroll is used to show the configuration.

The following screen is displayed when optional plugin board is installed on expansion slot.

-DIAGNOST. SCROLL 11-	
Board Type slot	
COMUNICATION 232/485	

List of Optional Expansion Plugin Board Types

- | | |
|-----------------|--|
| - Communication | Optional Output Board
Serial communication (RS232, RS485) |
| - Analog I/O | Optional Output Board
- #1 Analog Current outputs |
| - Profibus DP | Optional Output Board
Profibus communication. |

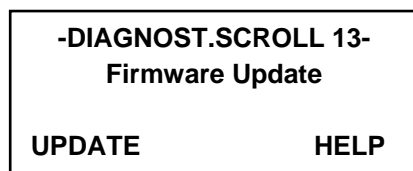
3.15.10 Force Cold Start

This scroll is used to force a cold start of the instrument in the event the software becomes corrupted. Factory default constants will be installed when the instrument restarts; all field entry data will be replaced.

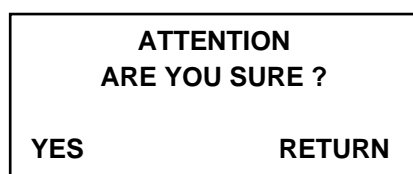
-DIAGNOST.SCROLL 12-	
Force cold start	
ENTER	

3.15.11 Firmware Update

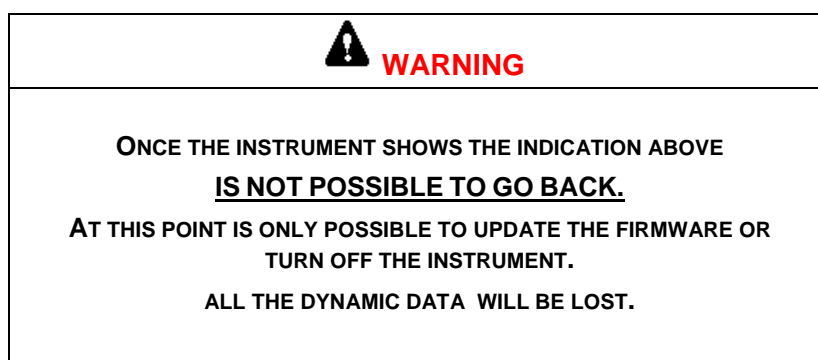
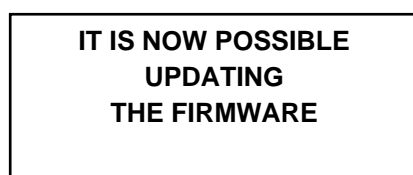
This NEW scroll has been introduced to allow an easy future update of the firmware. Since this function must be used in combination with an external software, it must be used very carefully and only by the maintenance people or Thermo Fisher field engineer. The Help button gives a quick explanation how to use this function.



Pressing UPDATE the following Scroll appears:



Pressing RETURN is possible to go back with the operation and exit from the function. Pressing YES the following Scroll appears:



3.15.12 Lamp Test

Press **START** to begin a Lamp Test of the *Integrator*. All LED's and digits of the display blink for a number of seconds.

```
- TEST SCROLL 1 -  
LAMP TEST  
  
START
```

3.15.13 Test Digital Inputs

The next screen is used to check the digital input circuitry. The display shows a 1 if the specific input is closed, 0 if open.

```
- TEST SCROLL 3 -  
Digital Input test  
-----00
```

The instrument have to handle logical input besides phisycal inputs. These one has to be separated from phisycal.

3.15.14 Test Digital Outputs

This test shows the status of each digital output (phisycal) and allows the operator to force the output for testing purposes. The output, when forced, stays on until the **CLEAR** soft key is pressed or the Run Menu is entered. If an output is forced and the scroll key is used for reaching some other menu, the output stays in the forced status until **RUN** is pressed. This allows the operator to check inputs while outputs are still in the forced status.

```
- TEST SCROLL 4 -  
Dig output test  
output # 1 : ON/OFF  
ENTER      ON/OFF
```

Password: Service

To force an output, enter the desired number . Then use the **ON/OFF** key to force it to the **ON** or **OFF** status. After the output has been forced, the **CLEAR** soft key appears in the middle position.

The same management has to be done with logical outputs.

```
⚠ WARNING  
FORCING THE DIGITAL OUTPUTS MAY CAUSE  
MACHINERY TO START. AFTER THE USER TRIES  
TO FOURCE AN OUTPUT, THE FOLLOWING  
MESSAGE DISPLAYS.
```

```
WARNING  
EQUIPMENT MAY START  
CONTINUE  ABORT
```

 WARNING
IF THE USER PRESSES CONTINUE, BE AWARE THE ACTION MAY CAUSE DAMAGE OR INJURY. IF THE USER PRESSES ABORT, THE SYSTEM RETURNS TO THE PREVIOUS SCROLL.

3.15.15 Virtual Inputs Test

- TEST SCROLL 5 - Virtual Inputs 1 00000000 ADV
--

Password: Service

The virtual inputs are used to compensate for the limited number of physical inputs available. Is possible to use a virtual input rather than a physical not available to enable a function. They can be used with all types of communication.(PROFIBUS, SERIAL, ETHERNET).

3.15.16 Virtual Outputs

- TEST SCROLL 6 - Virtual Outputs 1 00000000 ADV

Password: Service

The virtual outputs are used to compensate for the limited number of physical outputs available. Is possible to use a virtual output rather than a physical not available to enable a function. If the release date is not set up is enabled output virtual. "If the release date is not set up is enabled output virtual

3.15.17 Current Output Test

This menu shows the value of current output in relation to the process variable configured in the menu I / O capacity : rate, linear weight and speed.

- TEST SCROLL 7 - Current Output #1 4.00 mA ENTER CLEAR

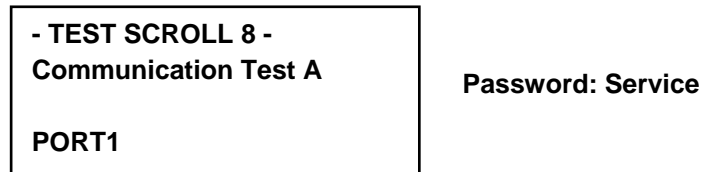
Password: Service

It is possible by the ENTER key to force the output to a desired value.

In this case you'll see a new function key (CLEAR) that will bring out the real value of the associated variable.

3.15.18 Test communication A

The following screen allows checking the installed serial lines (option).

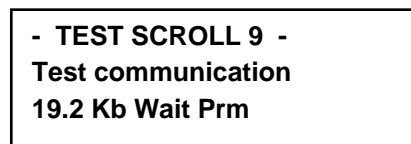


By pressing the PORT1 soft key, the test is initiated. A test pattern is sent out on the TX output and read on the RX input. If the test fails, the message “Test Failed” is shown ; otherwise, the message “Test Passed” is displayed.

3.15.19 Test Profibus

The baud rate is automatically detected by the Mini-CK 101 and is displayed in Main Menu 3, TEST Scroll. Press the MENU key repeatedly until Main Menu 3 appears.

Press the TEST key and scroll down.



The baud rate and status are dynamically displayed. The status \can be:

WAIT PRM The Mini-CK 101 is waiting for the PARAMETER message.

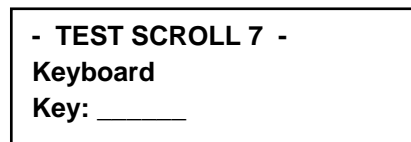
WAIT CFG The Mini-CK 101 is waiting for the CONFIGURATION message.

DATA EXC The Mini-CK 101 is in the DATA EXCHANGE phaseThe configuration and parameterization have been completed successfully.

If the baud rate displayed value changes continuously, it means there are problems on the line or the CPU is off.

Press RUN to return to the RUN menu or MENU for more menus.

3.15.20 Test Keyboard



Press the **RUN** key twice to exit. All other keys, including **MENU**, are displayed but not executed.

3.16 Main Menu 4

The following section defines the input output (I/O) and alarms.

```
- MENU 4 -  
Press MENU for more  
I/O ALARM NET  
DEFINE DEFINE
```

3.16.1 I/O Definition

The input output section of the system is fully configurable. All inputs and outputs are conventionally numbered and can be assigned to physical input and output terminals depending on the needs. The following section explains how to configure I/O. However, the standard configuration as provided by the factory is normally satisfactory.

3.16.1.1 Define Current Outputs (Only with OPTION Output Current Board)

The following menus are shown for configuring the current output(s) if board is installed on expansion board.. Use the **CHOICE** key to change the variable and the **ENTER** key to confirm. The NEXT key allows the operator to set up to four (4) current outputs if installed.

```
- I/O DEF SCROLL 1 -  
Current Output define  
> Rate <  
CHOICES ENTER
```

Password: Service

Default: RATE,

Selections: RATE, LOAD, SPEED If the selection of the previous screen is not **OFF**, the operator can set up the range, delay and damping of the current output. The range is selectable between the standard 0 to 20 mA and 4 to 20 mA both in direct and reverse mode. Select 0-20 or

4-20 if an increase in current is desired for any increase of the variable. Select 20-0 or 20-4 if a decrease of current is desired for any increase of the variable.

```
- I/O DEF SCROLL 1A-  
Current out range  
> 4-20 mA <  
CHOICES ENTER
```

Password: Service

Default: 4-20 mA,

Selections: 0-20 mA, 4-20 mA, 20-0 mA, 20-4 Ma

Each current output can be delayed. This is typically needed in blending systems, to correct transport time differences. The delay can be set either in time or in length of belt travel. Belt travel is suggested for variable speed applications. Use the **T/L** soft key to switch between time and length.

```
I/O DEF SCROLL 1B-  
Current out delay  
0 sec  
ENTER T/L
```

Password: Service

Default: 0 sec

If TIME:

Min: 0 sec

Max: 300 sec

If LENGTH:

English **Min:** 0 Ft

Max: 10000 Ft

Metric **Min:** 0 M

Max: 300 M

A damping factor can also be selected for each current channel. The damping factor is the time for the output to stabilize after a step change. This damping only affects the current output, not the displayed variable, which has a separate damping factor, selectable in Main Menu 2, Display.

```
- I/O DEF SCROLL 1C-  
Current out damping  
4 sec  
ENTER
```

Password: Operator

Default: 4 sec

Min: 0 sec

Max: 400 sec

UP and **DOWN** arrows move between range, delay and damping.

3.16.1.2 Define Digital Inputs

Digital inputs can be programmed. The following screen shows one logical function per time, and allows the user to assign it to a physical input. The **NEXT** key scrolls between the logical functions. The **NC/NO/R** key selects:

- Normally Open (NO): Input normally OPEN (not active when disconnected)
- Normally Closed (NC): Input normally CLOSE (active when disconnected)
- Remote (R): status of Input comes from remote communication (Ethernet, Serial or Profibus); for more details please refer to the specific communication manual.

To program a function, scroll with **NEXT** until the function is displayed, then enter the physical input number and confirm with **ENTER**; finally scroll with **NC/NO/R** until the desired mode is displayed. By assigning a function to 0, the function is disabled.

<p style="text-align: center;">- I/O DEF SCROLL 4 - Dig. Input def. Ext Alarm 0 NC ENTER NC/NO/R NEXT</p>	<p>Password: Service</p>
---	---------------------------------

The following table shows the available logical selections that can be assigned to any available physical input.

Logical selections should not be reassigned after the physical inputs have been wired.

Tab.3 -3: Available Logical Selections

Selections:	Default:	
External alarm	0 - NO	0 = function disabled
Print	0 - NO	(Only with serial card if set to printer)
Belt Running (Conveyor run)	0 - NO	
Reset Totals	0 - NO	
Reset Alarms	0 - NO	
Auto Zero	0 - NO	(Only if AZT enabled)
Clip Detector	0 - NO	
Batch Start	0 - NO	(Only if batch is enabled)
Batch Stop	0 - NO	(Only if batch is enabled)
Batch Standby	0 - NO	(Only if batch is enabled)

Tab.3-1: Mother Board Inputs

PHYSICAL INPUT NUMBER	ASSIGNED FUNCTION	
1	BELT SPEED INPUT	
2	Input 1	

3.16.1.3 Define Digital Outputs

Digital outputs can be programmed. The following screen shows one logical function per time, and allows the user to assign it to a physical output. The **NEXT** key scrolls between the logical functions. The **NC/NO** key selects the Normally Open (NO) or Normally Closed (NC) status of the output. Normally Open means the output is not energized in normal conditions. To program a function, scroll with **NEXT** until the function is displayed, then enter the number of the physical output and confirm with **ENTER**; finally scroll with **NC/NO** until the desired mode is displayed. By assigning a function to 0, the function is disabled.

- I/O DEF SCROLL 5 -
Dig. Output def.
Alarm: 0 NC
ENTER NC/NO NEXT

Password: Service

The following table shows the available logical selections that can be assigned to any available physical output. Typical field wiring drawings and customer specific field wiring drawings show Ready defaulted to #1 NC, Alarm defaulted to #2 NC and Totalizer (remote counter) defaulted to #3 NO. Default selections can be reassigned to any physical output if desired.

Logical selections should not be reassigned after the physical outputs have been wired.

 **CAUTION**

LOGICAL SELECTIONS RETURN TO THE DEFAULT IF THE INTEGRATOR IS COLD STARTED.

Tab.3 -2: Available Logical Assignment

Selections	Default	
Alarms	0 - NC	
Shut down	0 - NO	
Ready	0 - NO	
High Load	0 - NO	(Only if Load Alarm enabled)
Low Load	0 - NO	(Only if Load Alarm enabled)
High Rate	0 - NO	(Only if Rate Alarm enabled)
Low Rate	0 - NO	(Only if Rate Alarm enabled)
High Speed	0 - NO	(Only if Speed Alarm enabled)
Low Speed	0 - NO	(Only if Speed Alarm enabled)
Totalizer	0 - NO	
Batch Preset	0 - NO	(Only if Load Out enabled)
Batch end	0 - NO	(Only if Load Out enabled)
Print	0 - NO	(Only with serial card if set to printer)
Dev. alarms	0 - NO	
Out of range	0 - NO	

3.16.1.4 Define Remote Totalizer Output

If the TOTALIZER output function is assigned to an output, the following screens allow the user to set up related parameters. Set the divider according to the maximum rate the scale will run. The divider is entered in Totalization units (T.U.). The pulse frequency generated in normal conditions should not exceed 10 Hz. Higher frequencies are possible, however they do not improve accuracy.

```
- I/O DEF SCROLL 6 -  
Remote counter div.  
1  
ENTER
```

Password: Service

Default: 1
Min: 0.01
Max: 100

Enter the pulse width in seconds of the Totalizer. A higher pulse width limits the maximum frequency. The default 0.1 sec is recommended for frequencies lower than 5 Hz.

```
- I/O DEF SCROLL 7 -  
Remote counter pulse  
width 0.100 sec  
ENTER
```

Password: Service

Default: 0.1 sec
Min: 0.005 sec
Max: 1 sec

3.16.1.5 Clip Detector Option

The clip detector option reduces flow rate errors on light loaded belts caused by conveyor belt weight variances. Turning on Auto Zero Tracking in the Cal Data Scroll enables the clip detector. The clip detector is normally a proximity switch that senses a metal target attached to the belt. In manual mode, the clip detector freezes the flow rate when the clip is detected and maintains it frozen for the programmed length. Totalization is not affected. In automatic, the *Integrator* automatically detects tare variations and compensates for them.

If the clip detector is assigned to one digital I/O input, the following screens appear.

```
- I/O DEF SCROLL 8-  
Clip detector mode  
MANUAL  
CHOICE ENTER
```

Password: Service

Default: MANUAL
Choices: MANUAL, AUTO

In the MANUAL mode, the user must enter the length of belt, which is affected, by the belt splice. The system freezes the belt loading when the clip is detected and maintains it frozen until the specified belt length has passed.

```

- I/O DEF SCROLL 8A-
Clip detect length
00.00 ft
ENTER

```

Password: Service

English/Mixed	Metric		
Default: 1.0 Ft	Default:	0.30 m	
Min: 0.5 Ft	Min:	0.10 m	
Max: 10 Ft	Max:	3.00 m	

If the AUTO mode is selected, the system automatically detects belt weight variations and compensates for them. The Auto Zero Tracking then stores in memory a table of tare values, which are used to compensate the tare variations point by point. In addition, when the Acquire Test Duration is run in the ACQ FULL mode, the COUNT key is not displayed because the system automatically counts the clip detector pulses. (For proper operation, there can only be one clip used for the entire belt length.)

3.16.2 Alarms Definition

The alarms of the Mini-CK 101 can be programmed. Process alarms such as low and high rate can be set to the desired range. In addition, all alarms can be defined to be:

- **ALARM**-When an alarm occurs, the front panel ALARM status indicator illuminates. An ALARM message flashes in the lower, right hand RUN display. Pressing ALARM displays the alarm.
- Pressing RESET clears the alarm message if the alarm parameter has cleared. If the alarm parameter has not cleared, the message "ACK" appears when RESET is pressed. When the alarm parameter clears, the alarm indication clears.

Pressing RUN at any time returns the operator to the RUN menu.

Alarms can be automatically printed if the print option is enabled.

- **SHUT DOWN**The alarm handler operates as above except the READY status indicator goes off and the SHUTDOWN physical output changes state at the same time as the ALARM status indicator comes on.

In the I/O definition scroll, alarm and ready can be assigned to N/C or N/O physical outputs. The output activates and deactivates at the same time as the front panel status indicators.

- **NONE** Alarm is deactivated.

3.16.2.1 Define Rate Alarm

Use the **CHOICE** key to turn on or off the rate alarm. Confirm with **ENTER**.

```

- ALARM SCROLL 1 -
Rate alarm
>SI<
CHOICE ENTER

```

Password: Operator

Default: NO
Selections: YES, NO

If the selection in the previous screen was YES, enter the low and high set points for the alarm. Also, enter the desired delay time before the alarm is monitored. The UNITS key allows the user to specify the set points in engineering units. The % key selects set points in percent. The SET/DLY switches between the set point and the delay time.

```

- ALARM SCROLL 1A -
Low rate set
10 %      105 sec
ENTER SET/DELAY UNITS/%
    
```

Password: Operator

Default: 10% 10 sec
Min: 0 % 0 sec
Max: 105 % 90 sec

```

- ALARM SCROLL 1B -
High rate set
100 %     10 sec
ENTER SET/DELAY UNITS/%
    
```

Password: Operator

Default: 10 % 10 sec
Min: 0 % 0 sec
Max: 150 % 90 sec

3.16.2.2 Define Load Alarm

Use the CHOICE key to turn on or off the belt loading alarm. Confirm with ENTER.

```

- ALARM SCROLL 2 -
Load Alarm
> NO <
CHOICE ENTER
    
```

Password: Operator

If the selection in the previous screen was YES, enter the low and high set points for the alarm. Also, enter the desired delay time before the alarm is monitored. The UNITS key allows the user to specify the set points in engineering units, the % key selects percent. The SET/DLY switches between the set point and the delay time.

```

- ALARM SCROLL 2A -
Low load set
10 %      10 sec
ENTER SET/DELAY UNITS/%
    
```

Password: Operator

Default: 10% 10 sec
Min: 0 % 0 sec
Max: 105 % 90 sec

- ALARM SCROLL 2B -
High load set
100 % 10 sec
ENTER SET/DELAY UNITS/%

Password: Operator

Default: 100% 10 sec
Min: 0 % 0 sec
Max: 200 % 90 sec

3.16.2.3 Define Speed Alarm

Use the CHOICE key to turn on or off the belt speed alarm. Confirm with ENTER.

- ALARM SCROLL 3 -
Speed Alarm
> NO <
CHOICE ENTER

Password: Operator

Default: NO
Selections: YES, NO

If the selection in the previous screen was YES, enter the low and high set points for the alarm. Also, enter the desired delay time before the alarm is monitored. The UNITS key allows the user to specify the set points in engineering units, the % key selects percent. The SET/DLY switches between the set point and the delay time.

- ALARM SCROLL 3A -
Low speed set
10 % 10 sec
ENTER SET/DELAY UNITS/%

Password: Operator

Default: 10% 10 sec
Min: 0 % 0 sec
Max: 105 % 90 sec

- ALARM SCROLL 3B -
High speed set
100 % 10 sec
ENTER SET/DELAY UNITS/%

Password: Operator

Default: 100% 10 sec
Min: 0 % 0 sec
Max: 150 % 90 sec

3.16.2.4 Setup Alarm Modes

The following message is displayed for three seconds.

- ALARM SCROLL 5
- ALARM DEFINITION -
Use NEXT key or
enter alarm number

After three seconds, the **ALARM** screen is displayed. The user can use the CHOICE soft key to select the desired mode between ALARM (just a warning message), SHUT DOWN (Warning plus fault output) and NONE (no action). Confirm with ENTER soft key. Use the NEXT key to scroll between alarms, or enter the alarm number.

3.16.2.5 Alarms List

1. Clock Fail (only if serial card is plugged in)

The system has detected a failure on the clock calendar circuit.

Go to the DIAGNOSTICS screen and re-enter the date and time.

Check the battery

Replace the motherboard.

2. Load Cell Fail

The system has detected an error on the load cell signal.

Check the load cell connections.

Check the load cell(s).

3. RAM Fail

The system has detected an error on the *RAM (Random Access Memory)* checksum during the internal periodic test. The *RAM* is used to store variables and set up data.

Replace the motherboard.

4. ROM Fail

The system has detected a failure on the *ROM (Read Only Memory) checksum* during the internal periodic test. The *ROM* is used to store the program.

Replace the mother board

5. Speed Sensor Error

The system has detected a failure on the speed input.

6. High Load

The belt load has been detected to be higher than the maximum belt loading entered in the **ALARM SET UP** menu.

7. Low Load

The belt load has been detected to be lower than the minimum belt loading entered in the **ALARM SET UP** men.

8. High Rate

The rate has been detected to be higher than the maximum rate entered in the **ALARM SET UP** menu.

9. Low Rate

The rate has been detected to be lower than the minimum rate entered in the **ALARM SET UP** menu.

10. High Speed

The speed has been detected to be higher than the maximum rate entered in the **ALARM SET UP** menu.

11. Low Speed

The speed has been detected to be lower than the minimum speed entered in the **ALARM SET UP** menu.

12. Warm Start

The system has detected a power loss condition, or power was removed for an undefined period.

13. Cold Start

The system has detected the loss of the set up data after power was removed. The instrument needs to be setup and calibrated.

Replace the motherboard

Note: The message COLD START never appears on the screen. This is because a Cold Start forces a start up procedure to be executed, and the alarm itself is cleared after the set up is completed. However, the alarm LED and the digital output will be showing an alarm during the initial set up procedure

14. P.D. Calibrate

When the system is powered off while a calibration sequence is in progress, the scale may not be properly calibrated.

Check calibration

15. Calib Time (Only if serial card is plugged in)

If a calibration check time is entered and the time expires, this alarm occurs. The purpose is to remind the operator that the calibration has not been checked for a considerably long period.

Check Calibration

16. Ext. Alarm

Digital inputs can be programmed to detect external alarm conditions such as emergency switches, max level switches or other. This alarm is associated to the external alarm

Check External alarm

17. Overflow Tot.

This message indicates the output pulse generator for the remote mechanical totalizer has reached an overflow condition. The rate may be too high or the pulse divider has been set to small.

Check the rate.

Check and eventually increase the pulse divider.

This message is also displayed if the *Master Total* rolls over.

18. AZT Limit

The Auto Zero Tracking function has reached the maximum limit of tare that is allowed to be automatically cleared. The scale may be dirty or misaligned.

Check and clean the scale.

Perform an Auto Zero.

19. Batch Deviat.

This alarm is *only* visible if the optional *Load Out* board is installed. It is generated when a batch is run and the error detected at the end of the batch is higher than specified.

Check the parameters of the load out.

Adjust the preset value.

20. Math Error

A divide by zero or overflow error is encountered during internal calculations. This message indicates some abnormal dimensional parameter is entered in setup.

Check setup data.

21. Printer Error.

This message is displayed if the system has data to print and the printer is disconnected or the paper feed is empty.

22. Communication Error

This message is *only* displayed if the Communication board (option) is installed.

Indicates a time out or handshake error is detected during a data transfer on the COMM line.

Check the COMM line connections

Check the COMM line setup data

23. Profibus-DP COMM Error

This messages in *only* displayed if the expansion Profibus board (option) is installed. The following two conditions activate the alarm.

The *Siemens SPC3 Controller* installed on the *Profibus* interface board does not recognize any successful data transfer within the watchdog timer interval.

The received data contains errors (value overlaps limits, register number does not exist, group number does not exist).

24. Dinamic data lost.

This messages in *only* displayed if the there was a problem during shutdown of the instrument.

25. Profibus configuration changed.

This messages in *only* displayed if the expansion Profibus board (option) is installed.

This message appears only after you have changed the size of the buffer read and write.

- ◆ Restart the instrument.

26. Set up data lost.

This message appears only after switching off the instrument without first saving the setup data. The setup data are stored in the EEPROM when you go menu, SETUP to the RUN ."

3.16.3 Network

An **IP address** is a number that uniquely identifies a device connected to a network.

IP addresses can be assigned locally to make a LAN (Local Area Network).

More precisely, the IP address is assigned to a network adapter.

- ETHERNET 1 -
Address IP

____.____.____.____

ENTER

Default: 169.254.1.3

The subnet mask is the method used to define the range of membership of a host in an IP network in order to reduce network traffic and facilitate the search for a specific IP address thereof.

The subnet mask allows the network device to search for the recipient in of a range well-defined without having to use a router to act as a gateway to another network.

- ETHERNET 2 -
Subnet mask

____.____.____.____

ENTER

Default: 255.255.255.0

The **gateway** is a router or other routing device that connects a LAN usually to the internet. When a host requires connection to an IP address outside the local network, the request is turned automatically to a gateway in charge.

When there is not a specially configured for application this automatically switches to the default gateway.

The parameter "Gateway Address" is typical of the TCP/IP and is an important indication that allows the routing of data packets on the Internet.

Each machine (PC or otherwise) connected to the Internet must have a default gateway reference in its settings if you must have the ability to send data on the Net.

- ETHERNET 3 -
Gateway address

____.____.____.____

ENTER

Default: 169.254.1.3

The **MAC address** (in English MAC address , where MAC stands for Media Access Control) , also called physical address ethernet or LAN address, is a 48 bit code (6 byte) uniquely assigned to each ethernet card produced in the world.
It represents a name for a particular network device: for example, two network cards on two different computers will have two different names and therefore different MAC addresses.

```
- ETHERNET 4 -  
Mac address  
_: : _: : _: : _: : _: :  
  
ENTER
```

Default: Network card dependant

The selection variables can indicate which flow value , loading the tape, the speed must be used in communications. The selection possibles are: data unfiltered , filtered data, the displayed data.

```
- ETHERNET 5 -  
Variables Selection  
>No dumped<  
  
SCELTA ENTER
```

Default: no dumped
Selection : no dumped, dumped, displayed

It is commonly known that a 16-bit integer occupies two bytes of memory. However , there is no standard order in which computers and means of managing these two bytes stored in memory or transmit them. The computers that use a storage method can not transmit data integer to devices that use another method of storage without first exchanging any pair of bytes.

```
- ETHERNET 6 -  
Swap Integer data  
>No swap<  
  
CHOICE ENTER
```

Default: No swap
Selection : No swap, swap bytes

The same philosophy used for the reversal of the integers must also apply to the real values remembering that these are composed of 4 bytes and then the possible combinations are maggiori. Per this, in addition to the pair of bytes is possible to exchange also the pairs of words.

```
- ETHERNET 7 -  
Swap Float Data  
>No swap<  
  
CHOICE  ENTER
```

Default: No swap

Selection : No swap, swap bytes, swap words, swap bytes + words

For long integers is valid the description for real values as they also consist of 4 bytes.

```
- ETHERNET 8 -  
Swap Long Integer  
>No Swap<  
  
CHOICE  ENTER
```

Default: No swap

Selection : No swap, swap bytes, swap words, swap bytes + words

3.17 MAIN MENU 5

Main Menu 5 is dedicated to the serial option. **COMM** is used to set up the serial line and **PRINT** is used for setting up the printer output. These options does not appear unless an optional COMMUNICATION card is installed.

3.17.1 Communication Scroll (Future) (Only with Option Serial Board)

The *Mini-CK 101* has one serial channel, which can be configured using jumpers as an RS232 or an RS485 channel. The serial channel can be used for printing or for a serial communication with an intelligent device such as a PLC or a PC. .

The following screens define the communication parameters :

```
COMM A SCROLL  
Baud Rate  
> 9600 <  
CHOICE  ENTER
```

Password: Service

Default: 9600

Selections: 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200

- COMM. A SCROLL 2 -
Set parity
> No parity <
CHOICE ENTER

Password: Service

Default: NO PARITY
Selections: EVEN PARITY, ODD PARITY, NO PARITY

- COMM. A SCROLL 3 -
Stop bits
> 1 stop bit <
CHOICE ENTER

Password: Service

Default: 1 STOP BIT
Selections: 1 STOP BIT, 2 STOP BITS

- COMM. A SCROLL 4 -
Wordlength
> 8 bits <
CHOICE ENTER

Password: Service

Default: 8 BITS
Selections: 7 BITS, 8 BITS

One only protocol is implemented in the system. Possible selections is:

- *MODBUS* - A proprietary protocol of AEG. Multi Drop, Master Slave.
- *PRINTER* - Not a protocol, selects printer output.

-COMM. A SCROLL 5 -
Protocol
> MODBUS <
CHOICE ENTER

Password: Service

Default: MODBUS
Selections: MODBUS, PRINTER

If the selected protocol is not PRINTER, the following screens define the CTS signal management :

-COMM. A SCROLL 6 -
Clear to send
> disabled <
CHOICE ENTER

Password: Service

Default: DISABLED
Selections: DISABLED, ENABLED

If the selected protocol is not PRINTER, the following screens define the ADDRESS of the device in the multi drop line, and the access permission from the remote supervisor. If NONE is selected, the supervisor has full access to the device. If LIMITED is selected; there is supervisor only access to those variables. If PROTECTED is selected, the unit is write protected.

```

-COMM. A SCROLL 7 -
Address
 1
ENTER

```

Password: Service

Default: 1
Min: 1
Max: 255

```

-COMM. A SCROLL 8 -
Access prot.
> None <
CHOICE ENTER

```

Password: Service

Default: NONE
Selections: NONE, LIMITED, PROTECTED

This parameters allows the software to delay response message

```

-COMM. A SCROLL 9 -
Half duplex delay
0 mSec
ENTER

```

Password: Service

Default: 0 mSec
Min: 0 mSec
Max: 50 mSec

3.17.2 Profibus (Only with Option Profibus Board)

If a PROFIBUS card is installed on expansion board the MENU 5 display a menu entry for for PROFIBUS communication .:

The following screens define the communication parameters :

```

- PROFIBUS SCROLL 1 -
Address
1
ENTER

```

Password: SERVICE

Default: 1
Min: 1
Max: 126

Defines the address of the Mini-CK101 in the PROFIBUS net.

In the next two scrolls, the operator can define independently the read and write buffer dimensions. This feature is very useful since it allows reducing the address space to the minimum need. The dimension should be entered in number of words. This number includes the header of the telegram taking four words (see Table 3-1), so the minimum is five words.

```
- PROFIBUS SCROLL 2 -  
  Read buffer dim.  
    48 words  
ENTER
```

Password: SERVICE

Default: 48

Min: 5

Max: 48

Type in the number of words and press ENTER. The following screen appears.

```
- PROFIBUS SCROLL 3 -  
  Write buffer dim.  
    48 words  
ENTER
```

Password: SERVICE

Default: 48

Min: 5

Max: 48

Type in the number of words and press ENTER. Press RUN to return to the RUN menu or MENU for more menus.

3.17.3 Print (Only with Option Serial Board)

The *Mini-CK101* has a fully programmable printer format. The following section explains how to program it according to the specific needs.

1. Define Handshaking

The system can be configured to operate without a handshake (NONE), or using the Clear to Send signal (CTS) or the XON-XOFF sequence. Refer to the printer instruction manual to define which selection is required. The selection NONE is only used for testing purposes. It is not recommended for normal use. If NONE is selected, the system is not able to recognize if the printer is on line or not, or if the paper is empty.

The most commonly used protocol is the CTS, which is a signal generated by the printer to indicate whether it is ready to receive data or not.

```
-PRINTER SCROLL 1 -  
Handshaking  
> None <  
CHOICE ENTER
```

Password: Service

Default: NONE

Selections: NONE, CTS, XON-XOFF

Different printers use different end of line patterns. Select the one you need for your printer.

-PRINTER SCROLL 2 - End of line > <u>CR</u> < CHOICE ENTER
--

Password: Service

Default: CR
Selections: CR, LF, CR+LF

Some printers cannot accept characters while they are printing. In some cases, the handshake is not well controlled by the printer, so a delay at end of line is helpful.

-PRINTER SCROLL 3 - Delay end of line <u>0</u> sec ENTER
--

Password: Service

Default: 0 sec
Min: 0 sec
Max: 5 sec

A form feed character can be sent to the printer after each report to force the printer to eject the paper. If NO is selected, a normal END OF LINE character(s) is printed at the end of the report.

PRINTER SCROLL 4 - Form Feed > <u>NO</u> < CHOICE ENTER

Password: Service

Default: NO
Selections: NO, YES

3.17.4 Periodical Printing

If you want to generate periodical printing, enter the number of minutes, hours, or days in the following screen. Entering 0 prevents periodical printing. Use the INTV key to switch from minutes to hours and to days.

-PRINTER SCROLL 5 - Print interval <u>0</u> min ENTER INTV
--

Password: Operator

Default: 0 min
Min: 0 min, 0 hour, 0 days
Max: 59 min, 23 hour, 365 days

The system can print at specific times during the day. Enter the time you want to obtain the printing. Use the NEXT key to scroll between the print times (maximum 4). The ON/OFF key enables or disables the displayed print time.


```

-PRINTER SCROLL 6 -
Print time # 1
time HH:MM
ENTER ON/OFF NEXT

```

Password: Operator

	If 24 hours	If am/pm
Default:	OFF	OFF
Min:	00:00	01:00
Max:	23:59	12:59

3.17.5 Define Print Format

By selecting YES in the following screen, the system is instructed to print one line each time a new alarm condition occurs. The alarm is printed as follows:

```

xx-xx-xxxx yy:yyz
kkkkkkkkkkkkkkkkkkkk

```

Where:

xx-xx-xxxx Day, Month, Year, printed according to the local format as defined in Main Menu 2 - Display Scroll, Section 4.2 of this Appendix.

yy:yyz Hour, Minutes, am/pm printed according to the local format as defined in Main Menu 2 - Display Scroll, Section 4.3 of this Appendix.

kkkkkkkkkkkkkkkkkkkk Alarm message, same message appearing on the screen

For example:

01-22-1998 8:14a

Clock Fail

```

- PRINTER SCROLL 7 -
Print alarms
> No <
CHOICE ENTER

```

Password: Operator

Default: NO
Selections: YES, NO

There are three ways for defining the printing format. The first two are predefined formats, which are as follows:

Predefined Print Format 1

DEFAULT 1

TOTALS REPORT

DATE: 01-22-1998

TIME: 8:12a

MASTER TOTAL: 0.00 Tons

RESET TOTAL: 0.00 Tons

OPERATOR TOTAL: 0.00 Tons

RATE: 0.00 Tph

Predefined Print Format 2

DEFAULT 2

DATE: 01-22-1998

TIME: 8:12a

MASTER START TOTAL: 0.00 Tons

MASTER STOP TOTAL: 0.00 Tons

QUANTITY: 0.00 Tons

The format "DEFAULT 2" is pre-selected when the weights and measures choice is NTEP.

The third way is to define your own format using the printer setup screens listed.

Select DEFAULT if you want the predefined format. Select USER DEFINED if you want to set up your own format.

<p>- PRINTER SCROLL 8 - Total report format > <u>Default 1</u> < CHOICE ENTER</p>	<p>Password: Service</p>
---	---------------------------------

Default: DEFAULT 1 unless Weights and Measures option is selected, then DEFAULT 2.

Selections: DEFAULT 1, DEFAULT 2, USER DEFINED

If your selection is USER DEFINED, the following screens are displayed.

First, define the number of strings that you want to add to your report. You can enter a number from 1 to 3. Strings can be used to add the company name as well as other information that you want to include in the print format.

```
- PRINTER SCROLL 9A-  
Number of strings  
3  
ENTER
```

Password: Operator

Default: 1
Min: 0
Max: 3

If you specified a number of strings larger than zero, you can now enter the strings. Use the alphanumeric keypad, pressing the numeric key corresponding to the letter that you want to type. Every time you press a new key, the cursor moves to the right one place. If you need to use two times the same key (example for double letters), move the cursor right using the arrow keys (left and right soft keys).

```
- PRINTER SCROLL 9B -  
Contents string #1  
XXXXXXXXXXXXXXXXXXXX  
< ENTER >
```

Password: Operator

Default: xxxxxxxxxxxxxxxxxxxx

Once you have defined the string, specify where the string has to be placed on the printed report. The coordinate is given in the following way:

```
0000000000111111111122222222223...  
0123456789012345678901234567890...  
+-----> Y  
00|This line printed first  
01|This line printed second      ^  
02|                               | DIRECTION OF  
03|                               | PAPER  
04|  
05|  
06|  
. v  
. X
```

Use the X-pos and Y-pos keys to enter the X and Y coordinates. Confirm with ENTER. By specifying 0,0, the string is not printed.

- PRINTER SCROLL 9C -
Position string #1
X = 0, Y = 0
ENTER X\Y-pos

Password: Operator

	X	Y
Default:	1,	1
Min:	0,	1
Max:	24,	80

If you specified more strings, enter the relevant data using the same procedure.

- PRINTER SCROLL 9D -
Contents string #2
XXXXXXXXXXXXXXXXXXXX
< ENTER >

Password: Operator

Default: XXXXXXXXXXXXXXXXXXXXXXX

- PRINTER SCROLL 9E -
Position string #2
X = 0, Y = 0
ENTER X\Y-pos

Password: Operator

	X	Y
Default:	2,	1
Min:	0,	1
Max:	24,	80

- PRINTER SCROLL 9F -
Contents string #3
XXXXXXXXXXXXXXXXXXXX
< ENTER >

Password: Operator

Default: XXXXXXXXXXXXXXXXXXXXXXX

- PRINTER SCROLL 9G -
Position string #3
X = 0, Y = 0
ENTER X\Y-pos

Password: Operator

	X	Y
Default:	3,	1
Min:	0,	1
Max:	24,	80

```

- PRINTER SCROLL 9H -
Position oper. total
X: 0 Y: 0
ENTER   X-Pos   Y-Pos

```

Password: Operator

	X	Y
Default:	4	1
Min:	0	1
Max:	24	80

In a similar way, you can position the following variables in the print format:

The Reset Total:

```

- PRINTER SCROLL 9I -
Position reset total
X: 0 Y: 0
ENTER X-Pos Y-Pos

```

Password: Operator

	X	Y
Default:	5	1
Min:	0	1
Max:	24	80

The Master Total:

```

- PRINTER SCROLL 9J -
Position master total
X: 0 Y: 0
ENTER X-Pos Y-Pos

```

Password: Operator

	X	Y
Default:	6	1
Min:	0	1
Max:	24	80

The Current Date:

```

- PRINTER SCROLL 9K -
Position date
X = 0, Y = 0
ENTER X-Pos Y-Pos

```

Password: Operator

	X	Y
Default:	7,	1
Min:	0,	1
Max:	24,	80

The Current Time:

- PRINTER SCROLL 9L-
Position time
X = 0, Y = 0
ENTER X-Pos Y-Pos

Password: Operator

X **Y**
Default: 8, 1
Min: 0, 1
Max: 24, 80

The Instantaneous Value of Rate:

- PRINTER SCROLL 9M-
Position rate
X = 0, Y = 0
ENTER X-Pos Y-pos

Password: Operator

X **Y**
Default: 9, 1
Min: 0, 1
Max: 24, 80

The Average Rate Since the Last Print:

The average rate is calculated only on the periods of time in which rate has been higher than 5% of capacity.

- PRINTER SCROLL 9N-
Position avg. rate
X = 0, Y = 0
ENTER X-Pos Y-Pos

Password: Operator

X **Y**
Default: 9, 1
Min: 0, 1
Max: 24, 80

The Running Time Since the Last Print:

The running time is the time in which rate has been higher than 5%.

- PRINTER SCROLL 9P-
Position running tm
X = 0, Y = 0
ENTER X-Pos Y-Pos

Password: Operator

X **Y**
Default: 0, 1
Min: 0, 1
Max: 24, 80

If the optional load out board is installed, the batch quantity and the batch total can also be printed.

3.17.6 The PRINT Key

The PRINT general purpose key enables the printer to print data.

The following screen is displayed:

```
- PRINTER SCROLL -  
Com          no data  
Start print  TOTALS  
PRINT
```

Password: Not required

The second line gives the status of the printer:

NO DATA Indicates the printer is idle, no data are being sent to the printer.

IS RUNNING The system is sending data to the printer.

The third line indicates what kind of data is printed if the PRINT key is pressed. The UP and DOWN keys select between:

TOTALS Print totals.

BATCH Only if load out option is active, print load out information.

SETUP Print the setup data of the instrument.

Print starts after the PRINT key is pressed.

Here are some examples of data that can be printed:

Print TOTALS

TOTALS REPORT

DATE: 01-22-2003

TIME: 8:12a

MASTER TOTAL: 0.00 Tons

RESET TOTAL: 0.00 Tons

OPERATOR TOTAL: 0.00 Tons

RATE: 0.00 Tph

Print BATCH:

BATCH REPORT

DATE: 01-22-2003

TIME: 8:12a

BATCH NR: 0

SET PT: 0.00 Tons

TOTAL: 0.00 Tons

Print ALARM:

01-22-2003 8:14a

Clock fail

Print SETUP:

INSTRUMENT SETUP

The system prints out all data and setups.

3.18 MAIN MENU 6 LOAD OUT (BATCH) SCROLL

Main Menu 6 is dedicated to the LOAD OUT function. The MAIN MENU6 / LOAD OUT submenu look like this.

```

-- LOAD OUT --
LOAD OUT
>Yes<
CHOICE ENTER

```

This menu allows to enable LOAD OUT function

1. The PRESET WEIGHT is the amount of material batched at low rate near to the end of the batch:

```

-- LOAD OUT SCROLL 1 --
Preset weight
      00.0 t
ENTER

```

Password : operator

```

Default : 0
Min      : 0
Max      : 10000

```

2. The PRE-ACT CORRECTION is the amount of material which flows on the belt scale after the batch has been turned off. Select the method you want to use :

```

-- LOAD OUT SCROLL 2 --
Pre-act correction
>MANUAL<
CHOICE ENTER

```

Default : MANUAL

Selections : MANUAL, AUTO, AUTO LEARN

If the selection in the previous screen was manual, the following screen is displayed; the operator can directly enter the PRE-ACT weight :


```
-- LOAD OUT SCROLL 2A -  
-  
Pre-act value  
0.0 t  
ENTER
```

Password : operator

Default : 0
Min : 0
Max : 10000

If the PRE-ACT correction is set to AUTO the following screen is visible. The operator must enter the maximum correction that the system is allowed to perform to the cutoff value.

```
-- LOAD OUT SCROLL 2B --  
Pre-act range  
0.0 t  
ENTER
```

Password : operator

If the PRE-ACT correction mode is set to AUTO LEARN the following screen allows the operator to enter the length of belt travel between the scale and the feeding point :

```
-- LOAD OUT SCROLL 2C --  
Pre-act length  
0.000 m  
ENTER
```

Password : operator

ENGLISH or MIXED :

Default : 0 Ft
Min : 0 Ft
Max : 300 Ft

METRIC :

Default : 0 m
Min : 0 m
Max : 100 m

3. Enter START DELAY. After the start command has been given , the system waits the start delay activating the batch command

```
-- LOAD OUT SCROLL 3 --
Start delay
      5 sec
ENTER
```

Password : operator

Default : 5 sec
Min : 0 sec
Max : 600 sec

4. Enter the COASTING TIME .After the batch command has been turned off at end of batch , the system waits the coasting time before freezing the batch total and printing the batch data.

```
-- LOAD OUT SCROLL 4 --
Coasting time
      5 sec
ENTER
```

Password : operator

Default : 5 sec
Min : 0 sec
Max : 600 sec

5. Enter the batch deviation alarm.At the end of the batch , the system checks the error.If error is larger than the batch deviation entered here, an alarm is generated.

```
-- LOAD OUT SCROLL 5 --
Batch deviation
alarm      0 %
ENTER
```

Password : operator

Default : 0 %
Min : 0 %
Max : 100 %

6. Enable printing batch data.If an optional serial communication board is installed.and it is configured as PRINT selection the operator can turn on the print batch function by selecting YES in the following screen :

```
-- LOAD OUT SCROLL 7 --
Print batch
>YES<
CHOICE ENTER
```

Password : operator

Default : NO
Selections : YES,NO

7. If an optional serial communication board is installed, if .it is configured as PRINT selection and the “total report format” selection (MAIN MENU 5 / PRINTER SCROLL 8) is set to “user defined” the following selection are possibles :

```

-- LOAD OUT SCROLL 8 --
Position batch num.
X = 4                Y = 1
ENTER  X-pos      Y-pos

```

Password : operator

Default : 4,1
 Min : 0,1
 Max : 24,80

```

-- LOAD OUT SCROLL 9 --
Position batch quant.
X = 5                Y = 1
ENTER  X-pos      Y-pos

```

```

-- LOAD OUT SCROLL 10 --
Position batch total
X = 6                Y = 1
ENTER  X-pos      Y-pos

```

- ◆ Notes :
- ◆ hour and time has to be displayed when serial card is plugged in
- ◆ The RUNNING STATE is enabled by RUNNING DIGITAL INPUT if it is configures else it is enabled by virtual input else by pulses
 The alarm is set only with RUNNING input
- ◆ The numbers of calibration is 2.It is possible do the calibration with only one input: state “0” enable CALIB 1 , state “1” enable CALIB 2
- ◆ Linearization don’t appears on menu but it is active

3.19 MENU 6 LINEARIZATION

The function linearization can be enabled through the following menu:

```
-          LINEARIZ. 1          -  
Linearization  
> Yes <  
CHOICE          ENTER
```

Password: Service

Default: NO
Selection: NO, YES

On the next page you can put the first weight value linear and the first correction value. (factor):"

You can enter all five loads and five correction values.

```
-          LINEARIZ. # 1          -  
Load          0.0 Kg/m  
Factor        1.000000  
ENTER ACQ FACT/WEIGHT
```

Password: Service

Factor :

Default: 1.000
Min: 0
Max: 1.500

Load :

Default: 0.0 Kg/m
Min: 0.0
Max: MAX LOAD

Chapter 4

MINI CK101 Maintenance

The maintenance information in this manual should meet your service needs. If problems occur requiring technical assistance, please call Tel. 02 -9595141.

Thermo Ramsey has a repair center located at Rodano (MI) Tel. 02 -9595141. Contact our Repair Representative for assistance. To expedite your service request, please have your machine model and serial number available.

4.1 Frequent Checkpoints

As a preventative measure, check to ensure all wires, plugs, and integrated circuits are tight in their connectors. Also, keep the enclosure door tightly closed to prevent dirt infiltration.

More often than not, a quick visual inspection leads to the source of trouble. If a problem develops, check the following before proceeding to more specific troubleshooting procedures:

- Check Power
 1. Check the Line Voltage Selector Switches are set to the correct line voltage
 2. Check the fuse
 3. Check that the power switch is ON and that power is supplied to the unit.
- Check Connections
 4. Check that all terminations are secure.

4.2 Troubleshooting

This unit has built-in troubleshooting capabilities. A number of possible problems are automatically detected and screen messages are displayed. Also, refer to the *Diagnostics Test Scrolls* in **MAIN MENU 3**.

4.3 Cold Start

It may be necessary to cold start the *MINI CK101* in the event memory becomes corrupted. In the event of a cold start, you have the option of installing the factory default constants or simply returning the instrument to its previous running state.

The cold start can be forced through the menu **DIAGNOSITCS SCROLL** (see **Errore. L'origine riferimento non è stata trovata.**)

When the following screen displays, all field entry data has been replaced by the factory default constants.

<p>-- MEMORY ERASED -- Choose the language key to continue to SPA USA</p>
--

Select the language and follow the initial setup procedures.

4.4 Load Cell Excitation and Signal Voltage

1. Measure excitation voltage across terminal 21 negative and 20 positive in the scale junction box. This should be 10 VDC \pm 5%.
2. If the excitation voltage is incorrect then measure the excitation voltage in the *MINI CK101* across terminal 6 negative and the 1 positive. This should be 10 VDC \pm 5%.
3. Measure DC millivolt signal voltage across terminal 22 positive and 23 negative in the scale junction box. This should be within 0-30 millivolts DC (3 mV/V load cell).
4. Measure DC millivolt signal voltage across terminal 3 positive and 4 negative in the *MINI CK101*. This should be the same as Step 3 above.
5. The millivolt output is in direct relation to weight applied. As weight is increased, output should increase.

4.5 Lithium Battery Replacement

The *MINI CK101* volatile memory backup battery can be replaced without any special tools.



Replace only with same or equivalent type recommended by Thermo Ramsey. Dispose of used battery according to manufactures instruction on battery or return to Thermo Ramsey.

1. Turn the *MINI CK101* power off at the mains.
2. Remove the battery from its compression socket.
3. Observe the polarity markings on the battery socket base before inserting the new battery.
4. Insert battery
5. Restore power to the *MINI CK100*.
6. Re-enter date and time on instrument set up.

4.6 Disposal of Hazardous Waste

Disposal of Lithium batteries and soldered print circuit boards should be in accordance with your local Hazardous Waste Policy.

As an alternative, you may return product supplied by Thermo Ramsey, freight prepaid for disposal. Contact Repair Department for a Return Authorization Number before shipping any product for disposal.

4.7 Cleaning Instructions

The front panel can be wiped clean with a damp cloth, and if necessary, a mild detergent (never use abrasive cleaners, especially on the display window). As a preventative measure, check all wires, plugs, and integrated circuits are tight in their connectors. Keep the enclosure door tightly closed to prevent dirt infiltration.

Chapter 5

MINI CK101 Replacement Parts

This section gives information on how to order replaceable parts for *MINI CK101*.

5.1 Order Informations

For faster service when ordering parts, fax or telephone Products Parts Department. Thermo Ramsey. Your regional field service representative will also be happy to assist you with parts orders, but his normal scheduling time may delay shipment of your parts order.

The recommended procedure for order parts is as follows:

1. Determine the broken or faulty part(s).
2. Locate the part(s) in the parts list given.
3. Find the part number(s) for the item(s) needed and determine the quantity you require.
4. Fax or telephone Products Parts Department Thermo Ramsey.
5. With your order, list the following information:
 - ◆ Machine model and serial number
 - ◆ Purchase order number
 - ◆ Date required
 - ◆ Method of shipment preferred
 - ◆ List of parts, including part number, description and quantity

Your parts order will be handled as expeditiously as possible.

5.2 Parts List

Table 5-1: Parts List

Equipment	PART NUMBER
ENCLOSURE ONLY (FIELD VERSION)	CK10XF-CASSA
KEY BOARD PANEL VERSION	CK100KBD
KEY BOARD FIELD VERSION	CK100KBDF
INPUT CELL BOARD	CK100LCINSCH
POWER SUPPLY UNIT 100-230VAC	CK100PSU240AC
POWER SUPPLY UNIT 24VDC	CK100PSU24DC
Fuse 0,4Amp SB Type C	-
RELAY BOARD (For FIELD VERSION)	CK100RELESCH
PROFIBUS BOARD (OPTION)	CK100PROFSCH
COMM BOARD RS232/485 (OPTION)	CK100COMSCH
CURRENT LOOP BOARD (OPTION)	CK100IOUTSCH

Appendix A

MINI CK101 Digital Input / Output

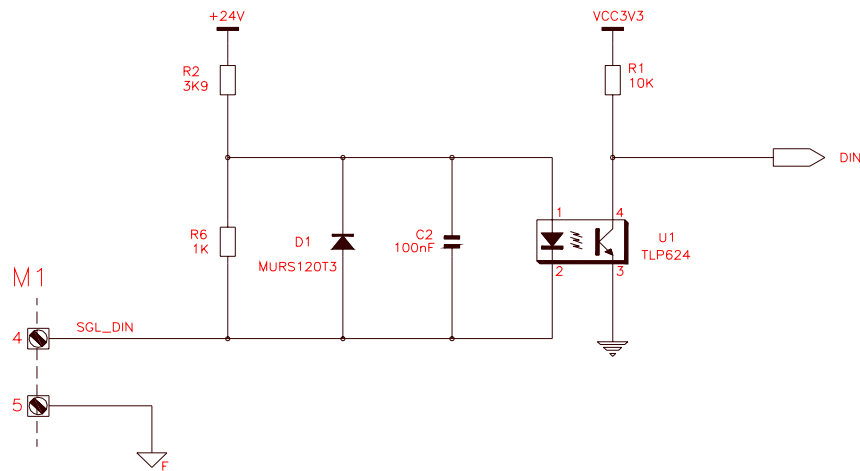
The *MINI CK101* has provision for up to 2 programmable digital inputs and 5 programmable digital outputs. Standard I/O includes one speed input, one programmable inputs and five programmable outputs.

A.1 Mother Board Digital I/O

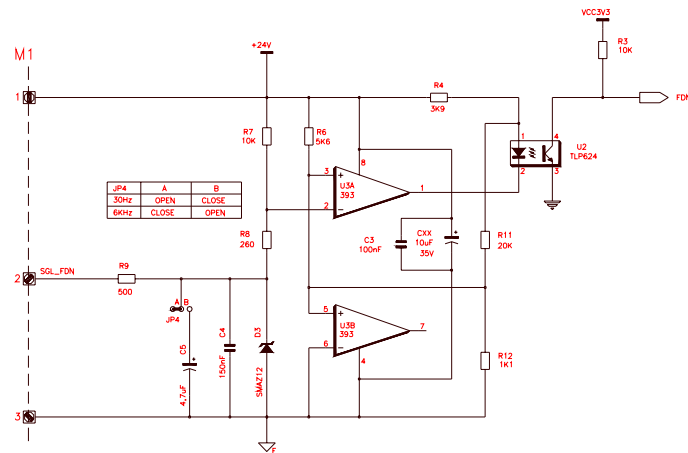
A.1.1 Digital Inputs

- (1) Programmable digital (DC) inputs (1) Speed input
- Optically isolated
 - Powered by internal 24 VDC supply, 400 mA
 - Cable Length: 150 ohm maximum (2500m with 1.5mmq)

Appendix Figure A-1: General Purpose Digital Inputs



Appendix Figure A-2: State Speed Input



A.1.2 Digital Outputs

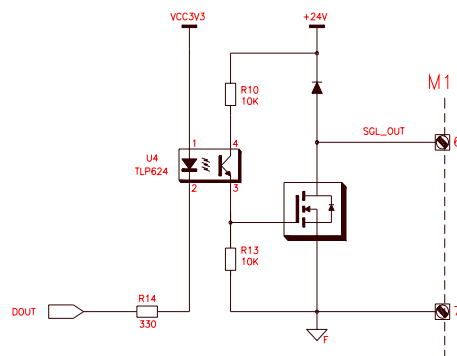
Appendix Figure A-3: Digital Outputs

N°1 Digital output programmable, and N°4 output programmables as following :

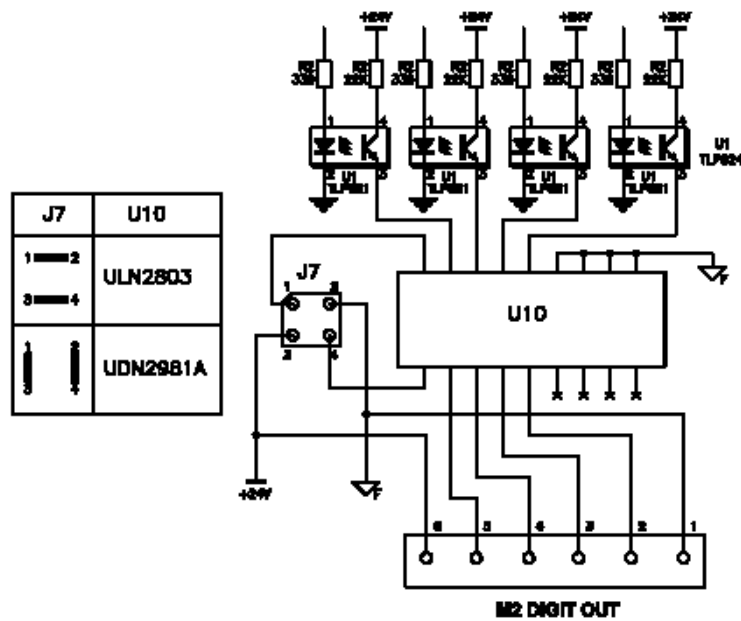
Panel Version – (4) TTL Powered by internal 24 VDC supply, 400 mA

Cable Length: 150 ohm maximum (2500m with 1.5mmq)

Field Version – (4) Relay Contact (on Relay Board) 240VAC-48VDC 0,5A



Appendix Figure A-4: State Output TTL



For the digital outputs is used (default) an open collector integrate UNL2803 that is mounted on socket for an easy operation of replacement. The UNL2803 can be replacement with an open emitter integrate UDN2981A. In this case is necessary to execute the jumpers indicated on the Figure a-4.

Appendix B

MINI CK101 Optional Boards

B.1 Analog Out Board

The analog I/O board is available in the configuration described below.

Type A: Current Output Board is a user definable 0-24/4-20 or 20-4/20-0 mA output for the following functions :

Net Weight, Gross Weight, Tare, Peak

Optically isolated

Isolated power source

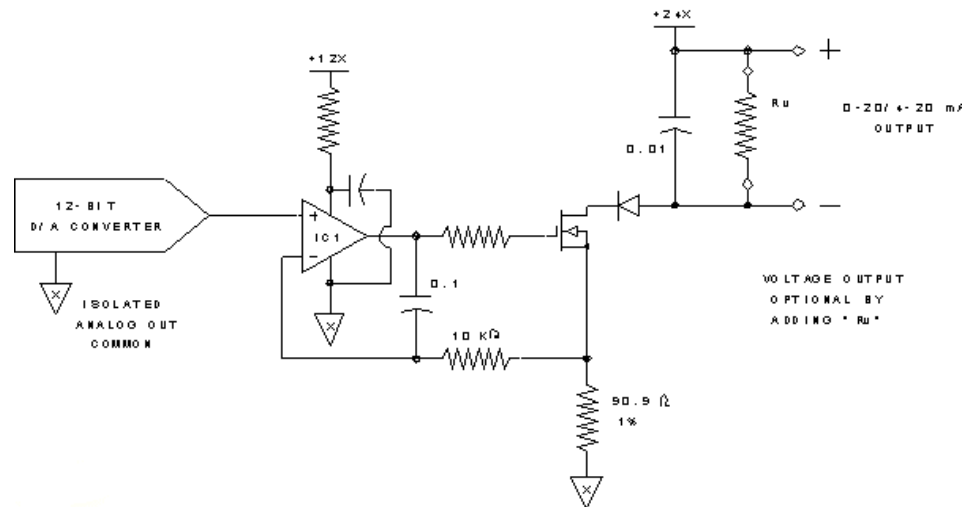
Voltage output by adding an internal dropping resistor

Output range: User selectable 0-20mA or 4-20 mA, representing 0 to 100% variable.

Resistive load: 800 ohms max.

Capacitive load: No limit

Appendix Figure B-1: State Current Output



B.2 Profibus Board

Refer to *Profibus-DP manual*, if this option is installed..

B.3 Comm RS232/485 Board

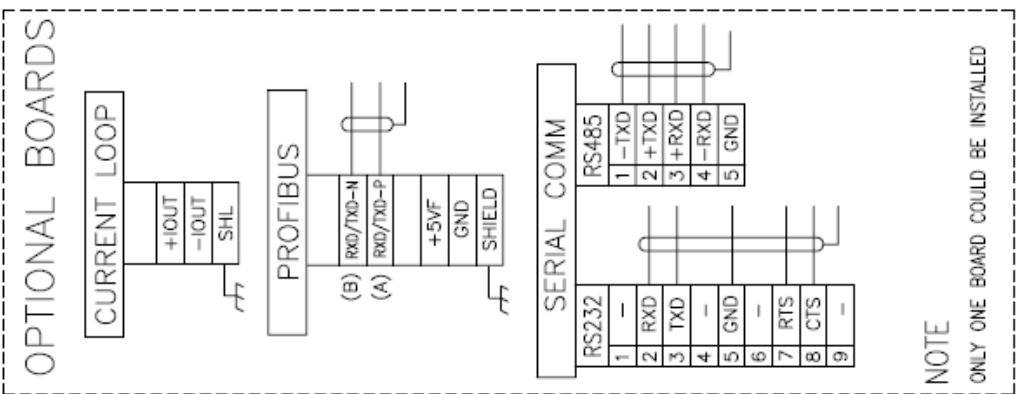
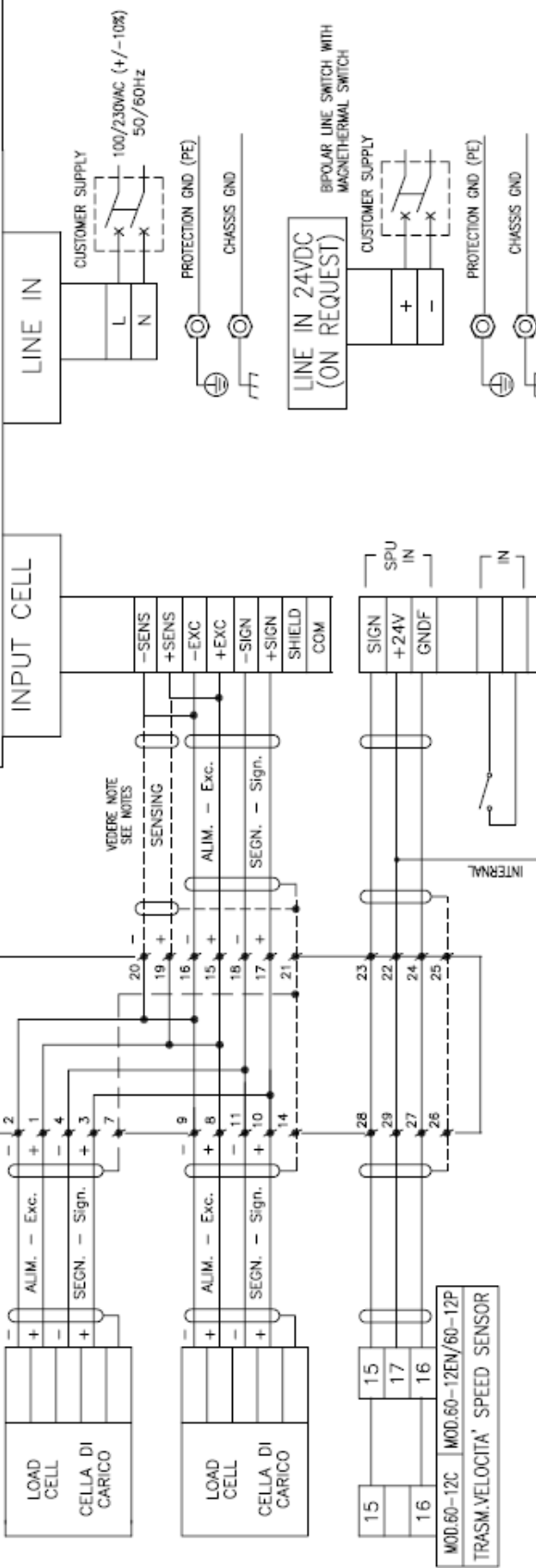
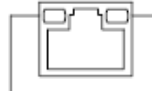
Refer to *Serial Communication manual*, if this option is installed..

Appendix C

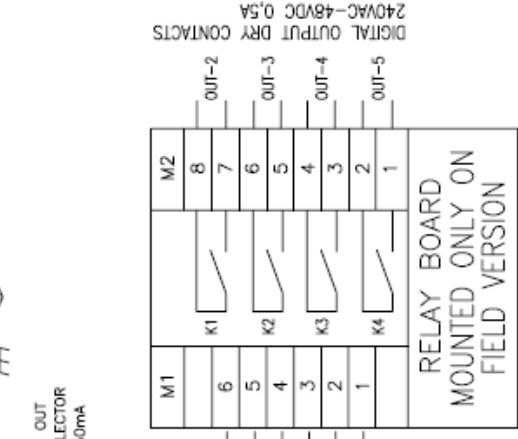
Drawings

➤ *Wiring Diagram CK-0000101-E001D*

INTEGRATORE DI PESO WEIGHT INTEGRATOR MINI CK101



NOTE
ONLY ONE BOARD COULD BE INSTALLED



DIG IN-OUT BOARD

- NOTES
- DO NOT ALTER THE LENGTH OF LOAD CELLS CABLE
 - CONNECT SHILD ONLY WHERE INDICATED
 - DO NOT RUN WIRES SIGNAL WITH AS POWER LINES
 - USE CABLE 2x1.5mm² + shield FOR SENSING CONNECTION NECESSARY FOR DISTANCES HIGHER THAN 60m BETWEEN LOAD CELLS AND INTEGRATOR
 - CONNECT TERMINALS +SENS WITH +EXC AND -SENS WITH -EXC WHEN IS NOT USED SENSING

REV. A	DESCRIZIONE / DESCRIPTION ISSUED	DATA / DATE 11-12-2008	COMP / BY D.C.	VISTO / CHECK	FILE N° CK-0000101-E0010	CLIENTE / CUSTOMER	TITOLO / TITLE
SCHEMA INTERCONN. MORSETTIERE TERMINAL WIRING MINI CK101							Thermo SCIENTIFIC Thermo Ramsey Italia S.r.l. - Strada Rivoltana Km6/7 Rodeno (MI) DISEGNO N° / DRAWING N° CK-0000101-E0010 001
PANNELLO CONTINUA CONT'D ON							