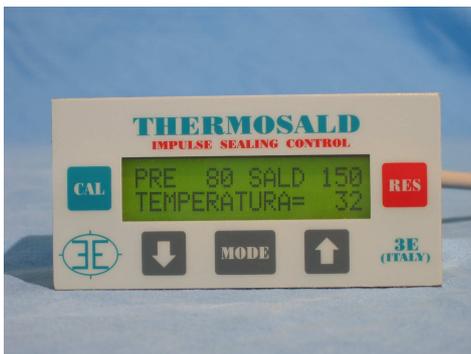
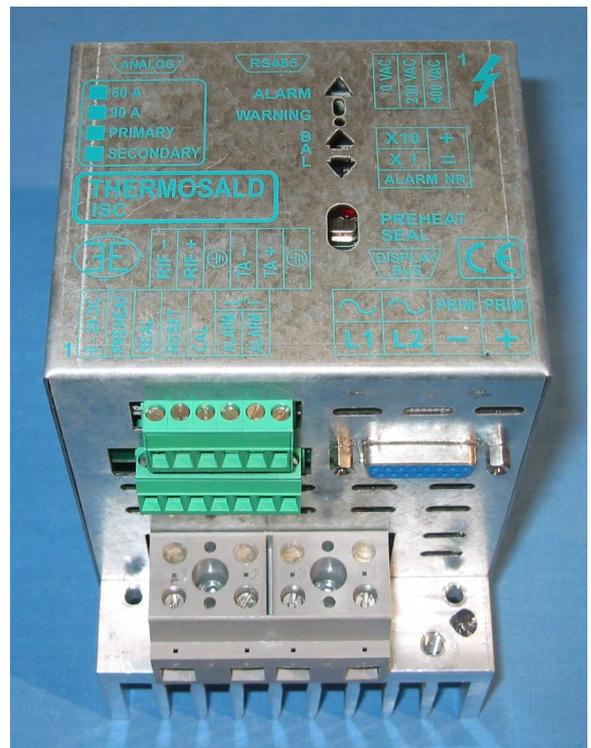


COPROCESSOR FOR IMPULSE SEALING

THERMOSALD ISC COPROCESSOR 3ES084



- INSTALLATION WITHOUT DIP SWITCH
- AUTOMATIC CALIBRATION
- ANALYSIS ON LINE OF BAND CHARACTERISTICS
- DIAGNOSTIC PANEL WITH 6 LANGUAGES



USE MANUAL

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1 - INTRODUCTION

THIS BOOK IS THE ONLY DOCUMENT SUPPLIED WITH OUR PRODUCT AND DESCRIBES THE FUNDAMENTAL FUNCTIONS, THE SAFETY PRECAUTION, THE INTRUCTIONS FOR INSTALLATION, START UP, MAINTENANCE AND DEMOLITION, THE CODE FOR ORDERING.

THIS MANUAL BOOK IS SUPPLIED WITH THE PRODUCT, MUST FOLLOW THE PRODUCT, MUST BE READ BEFORE USING THE PRODUCT DESCRIBED.

FOR ALL NOT SPECIFIED READ THE USE MANUAL OF THE THERMOREGULATOR THERMOSALD ISC, CODE 3ES080_V3.6_MDU_EN.

READ ALL THIS MANUAL BOOK BEFORE USING THE PRODUCT.

2 DESCRIPTION

2.1 - PRODUCT DESCRIPTION

- THERMOSALD ISC COPROCESSOR is an auxiliary device of the thermoregulator THERMOSALD ISC to increase the safety; it's possible set a temperature limit over which the machine must block; this limit must not be easy to change and must be changed only by well-trained personnel.

2.2 OPERATING PRINCIPLES

- THERMOSALD ISC COPROCESSOR functions with the same principles as the THERMOSALD ISC, without using external additional probe and, in the same way, every main cycle read the voltage and current of the sealing band, calculate the resistance and the temperature, which is function of the resistance; this unit can set the maximum working temperature over which an alarm happens and the output contact of alarm open to block the machine and cut the emergency chain to shut down power. The temperature control is dynamic and repetitive; the value of temperature is relative with the value of calibrating temperature; therefore to have very high precisiuous absolute value of temperature it's necessary to calibrate with precisiuous temperature and to verify the real absolute work temperature.

2.3 ADVANTAGES

- THERMOSALD ISC COPROCESSOR can set a maximum temperature over which the plant must block; It's a redundant circuit that can increases the reliability of the control and can block if the main THERMOSALD ISC could break down.

2.4 APPLICATIONS

Packaging machines which must seal or cut rapidly and with great accuracy polyethylen films, polyprophilene films, single-component plastic films, multilayer plastic films in general, that must reach their melting temperature and a cool down immediately to avoid deformations: vertical form seal machines, orizzontal, srink, machine for shopper, etc., with the above characteristics and where it's necessary to increase the reliability of the control of temperature.

3 - PRECAUTIONS AND CERTIFICATION

3.1 SAFETY PRECAUTION

- Employ qualified and well trained personnel, familiar with the technology used, to install or maintenance the equipment, consulting use manual.
- Never use the equipment in explosive atmospheres or with explosive materials.
- Never use the equipment with flammable material without first taking the required safety precautions.
- Use the equipment only in industrial environment.
- Use bands or wires having an adequate positive temperature coefficient ($\geq 8 \times 10E-4$, 800ppm/K).
- For close tolerance of temperature use sealing bands supplied by 3E and control the range of the real working temperature of the sealing jaws, in static condition, at the maximum work temperature; control the temperature after a sealing band change.
- Attach the unit to the metal plate by 3 screws.
- Before connecting the main power grounding the thermoregulator by yellow-green cable connected to the predisposed screw, identified by yellow-green badge on the heat sink.
- Do not deliver electrical power to the temperature controller if the protective cover has been removed for special servicing on the electronic system.

3.2 - COMPLIANCE WITH ELECTRO-MAGNETIC STANDARDS – CE KITE MARKS

The product is compliance to the following mentioned CEE NORMES in accord to the following mentioned CEE DIRECTIVES:

Directive 89/336/EEC EMC and 92/31/ECC and 93/68/EEC
CEI EN 61000-6-2 – (02/2000) Electromagnetic compatibility - Generic immunity standard - industrial environment.
CEI EN 50081-2 – (06/1997) Electromagnetic compatibility – Generic emission standard - Part 2 - industrial environment.

Direttive 73/23/EEC LOW VOLTAGE and 93/68/EEC
CEI EN 60204-1 – Safety of machinery – Electrical equipment of machines - Part 1: General requirements
UNI EN1050

CE Mark confirm the unit is compliance to the above normes in the test conditions and with the original components approved from 3E s.r.l. (EMC Test Report n. 029-03-RP on 03/02/03)

4 INSTALLATION

4.1 – REQUISITE FOR INSTALLATION

- Before beginning the first installation, read carefully the **SAFETY PRECAUTIONS** of this manual.
- The installation of this unit must be done in accord to the requirements of the norme CEI - EN60204
- Employ qualified and well-trained personnel familiar with the technology used, to install and use the equipment.
- Operate the equipment by following the instructions contained in this **USE MANUAL**.
- **A not correct use of the unit can cause danger to the operator.**
- **The unit must be installed inside an electrical rack, protect against dust and water.**
- **The unit don't request special ventilation, but must be installed in an enough airy zone; when the machine will be at regime function, verify the heat-sink temperature isn't higher then 60°C, in this case increase ventilation.**
- **Install the magnetothermic protection to section the electric network as shown in the electrical draw recalculated for the real current.**
- **Install the output alarm contact of this COPROCESSOR in the safety emergency chain, in series with the output alarm contact of the main thermoregulator THERMOSALD ISC.**
- **The emergency button of the emergency safety chain must not be with self resetting and positioned in a place easy to get for operator and not dangerous.**
- **Note on the connections: it's suggested to develop the connection so to have for any thermoregulator only 1 electrical junction box near the sealing bar and wire twisted, to avoid that the cables of different units can interlace one-another and cause interferences of temperature.**

4.2 INSTALLATION

Switch off the electrical mains and verify to have no voltage inside the electrical rack.

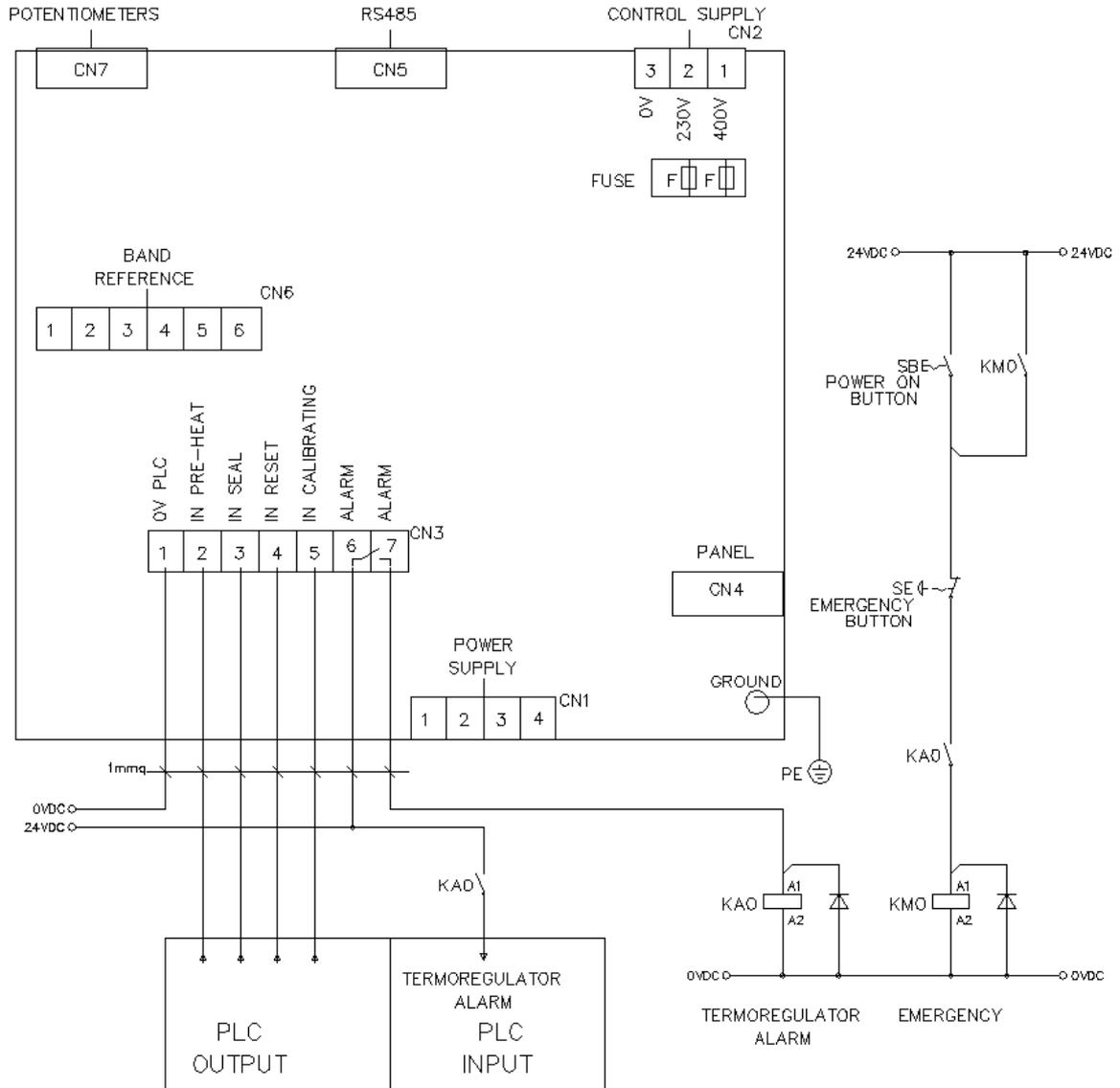
Lock the Coprocessor to the metal plan of the rack by 3 screws 4mm x 16mm

Connect the PE screw to ground by the earth cable with the section adequate to the power cable.

Connect the supply cable, voltage and current cable, comand cable to the main thermoregulator THERMOSALD ISC.

Close the rack.

4.3 - ELECTRIC CONNECTION DRAW (LOOK AT THE DRAW OF THERMOSALD ISC FOR THE ANALOG SIGNALS RIF. + , RIF. - , TA+ , TA-)



4.4 LIST OF CHANGE-OVER SIGNALS

CN2 CONTROL CIRCUIT SUPPLY TERMINAL BLOCK

PIN 1	400 Vac (0.1A absorption, max)	(1sq.mm)
PIN 2	230 Vac (0.1A absorption, max)	(1sq.mm)
PIN 3	0 Vac (0.1A absorption, max)	(1sq.mm)

NOTE 1: control circuit supply with the same phase as main THERMOSALD ISC

CN3 CONTROLS TERMINAL BLOCK

PIN1	COMMON 0 V PLC (24V DC)	(1 sq.mm)
PIN2	IN PRE-HEAT SIGNAL FROM PLC, 24V DC (0V DC) (12 mA absorption, max)	(1 sq.mm)
PIN3	IN SEALING SIGNAL FROM PLC, 24V DC (0V DC) (12 mA absorption, max)	(1 sq.mm)
PIN4	IN RESET SIGNAL FROM PLC, 24V DC (0V DC) (12 mA absorption, max)	(1 sq.mm)
PIN5	IN CALIBRATING SIGNAL FROM PLC, 24V DC (0V DC) (12 mA absorption, max)	(1 sq.mm)
PIN6	OUT SEALING FAULT (CONTACT N.C.) $\cos\Phi = 1$ 250V 8A	(1 sq.mm)
PIN7	OUT SEALING FAULT (CONTACT N.C.) $\cos\Phi = 0.4$ 250V 5A	(1 sq.mm)

CN4 DISPLAY PANEL CONNECTOR (15 PIN FEMALE)

PIN1	+5Vcc	Screened	(0,25mmq)
PIN2	0 V	Screened	(0,25mmq)
PIN3	SPI-SDO	Screened	(0,25mmq)
PIN4	SPI-SCK	Screened	(0,25mmq)
PIN5	SPI-SDI	Screened	(0,25mmq)
PIN6			
PIN7			
PIN8			
PIN9	SPI-SS	Screened	(0,25mmq)
PIN10	RESERVED	Screened	(0,25mmq)
PIN11	RESERVED	Screened	(0,25mmq)
PIN12	RESERVED	Screened	(0,25mmq)
PIN13			
PIN14			
PIN15			

NOTE 1: The cable termoregulator-panel must be screened, pin to pin connected - Max Mt 15.

CN6 REFERENCE TERMINAL BLOCK

PIN1	SEALING BAND REFERENCE REF-	(0,5mmq)
PIN2	SEALING BAND REFERENCE REF+	(0,5mmq)
PIN3	SCREEN REFERENCE CABLE REF 0 (Don't connect on machine side)	(1mmq)
PIN4	REFERENCE TA-	(0,5mmq)
PIN5	REFERENCE TA+	(0,5mmq)
PIN6	SCREEN TA CABLE TA0 (Don't connect on machine side)	(1mmq)

NOTE 1: Twist cables or better use cable TWINAX IBM (Ns. cod. 3esd0066)

5 START UP

5.1 – ELECTRICAL INSTALLATION CONTROL

- 1 – verify if low-voltage model for transformer voltage up to 10 Volts,
if standard model for transformer voltage from 11V to 99 V,
if high-voltage model for transformer voltage from 100V to 140V
- 2 – verify the installation has been manufactured well done.
- 3 – for any other information don't hesitate to contact our technical office.



5.2 – START UP

- 1 – switch on the unit, only the control.
- 2 – the machine must be at ambient temperature.
- 3 – the commands pre-heat and seal must be off
- 4 – switch on the power to the unit
- 5 – do before the calibrating of the main thermoregulator THERMOSALD ISC e next the calibrating of the COPROCESSOR (for the first calibrating press the key CAL on the multilanguage panel for 3 seconds as shown with the below Figure 3 (the 4 led on the unit lamp during calibrating).

NOTE: for the following calibrating press in sequences the keys CAL+MODE+CAL on the multilanguage panel as shown with the below Figure 1+2+3:



Figura 1

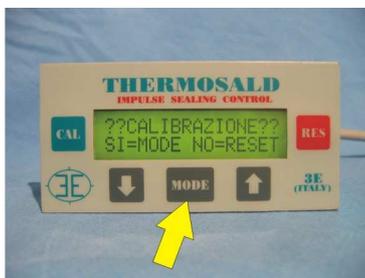


Figura 2



Figura 3

NOTE: the calibrating can be done also keeping the external CALIBRATION button pressed for 3 seconds and wait (the four LEDS on the system go on flashing as long as the the instrument is being calibrated).

6 – At the end of calibrating the machine is ready to function: set the maximum working and acceptable temperature (press in sequence the keys MODE+MODE to enter in the sub-menu ALLARM TEMPERATURE and set the right value)

Punto 7 – To go back to the main menu press always the key RES and follows the instructions.

NOTE - MASTER RESET (this operation must be allowed by the machine builder or an authorised office)

mode1 - Press together on the multilanguage panel the keys DOWN ARROW+UP ARROW for 6 seconds.

mode2 – Switch on together external comands RESET+CALIBRATE for 6 seconds

The 4 leds on the unit light on for 3 seconds



6 MAINTENANCE

6.1 - MAINTENANCE

The control of temperature is precise and repetitive, but the temperature can slowly drift along the time for a little modify of the molecular structure of the sealing bands consequently of the high work temperature; control the temperature of the jaws every pre-defined numbers of cycles (i.e. 100000 cycles) and program the change of the sealing bands so to block the slow drift of temperature.

7 SPECIFICATIONS

7.1 SPECIFICATIONS

LOGIC CIRCUIT SUPPLY (CN2)	230Vac-400Vac +/- 10% (0.1 A absorption)
MAINS FREQUENCY	50 - 60 Hz (automatic changing)
DIGITAL CONTROLS	24 VDC (12 mA max. absorption)
OUTPUT SEALING FAULT CONTACT	250 V 4A
ACCURACY	≅ +/- 1 °C
ALARM TEMPERATURE	can be set from display console, 0 - 300 °C
AMBIENT TEMPERATURE	0° C +50° C
LEVEL OF BOARD PROTECTION	IP00
LEVEL OF DISPLAY CONSOLE PROTECTION	IP54
POWER ASSEMBLY WEIGHT	1,6 Kg
PANEL WEIGHT	0.2 Kg
PANEL-POWER ASSEMBLY EXTENSION WEIGHT	0.2 Kg

8 DATI ORDINAZIONE

8.1 - DETAILS FOR ORDER FORM

MODEL:	- DESCRIPTION	CODE
THERMOSALD ISC	- Coprocessor	3ES084V3AD1
COPROCESSORE		
PANNEL	- Digital Panel multilanguage	3ES085V3AC1
CABLE	- Cavo di collegamento pannello-coprocessore	3ES080A001
TA	- Trasformatore amperometrico	3ES080A002
LOWVOLT	- Option voltage <10V	3ES084Z=LOVL
HIVOLT	- Option voltage >100V	3ES084Z=HIVL
- MANUALS:		
ITALIAN USE MANUAL		3ES084V3A_MDU_IT
ENGLISH USE MANUAL		3ES084V3A_MDU_EN
FRENCH USE MANUAL		3ES084V3A_MDU_FR
GERMAN USE MANUAL		3ES084V3A_MDU_DE
SPANISH USE MANUAL		3ES084V3A_MDU_SP

ANNEX D – FAULT AND WARNINGS LIST (CAUSES – REMEDIES)

NOTE - To reset every alarm give external reset command or press reset button RES on the panel

**NOTE – when an alarm happens, on the thermoregulator the led red of alarm light; it's possible to know the number of alarm reading the multilanguage panel or reading the number of lightening of led red and green:
ALARM NUMBER = NR. IMPULSES OF LED GREEN x 10 + NR.IMPULSES LED RED**

WARNING - ALARM CAUSES

Remedies

- ALARM A TERMOREGULATOR OFF AND DISPLAY OFF**
Verify power, Logic supply fault, call the supplying builder.
- ALARM B TERMOREGULATOR WITH LED OFF AND DISPLAY ON**
Circuit of synchronisme fault, call the supplying builder.
- ALARM C TERMOREGULATOR WITH LED ON AND DISPLAY ON AND INDICATION
"3E SRL + THERMOSALD"**
Verify cable connection display
- F06 EEPROM FLASH WRITE**
Switch off and switch on the equipment and call the supplier
- F07 A/D CONVERTER**
Switch off and switch on the equipment and call the supplier
- F08 INTERNAL TRASMISSION I2C-X**
Switch off and switch on the equipment
- F09 INTERNAL TRASMISSION I2C-EEPR**
Switch off and switch on the equipment and verify parameters
- F19 RS485 MASTER - CHECKSUM ERROR**
Verify checksum selection on the Master or Slave
- F20 RS485 SLAVE - CHECKSUM ERROR**
Verify checksum selection on the Master or Slave
- F21 RS485 SLAVE - OE ERROR-OVERRUN**
Following data arrived before reading the previous
- F22 RS485 SLAVE - FE ERROR-FRAME ERROR**
Data stop bit not arrived
- F23 RS485 MASTER – NO ANSWER FROM SLAVE**
After a Master calling no answer received from the slave
- F24 RS485 SLAVE – TOO DATA REQUESTED FROM MASTER OR WRONG ADDRESS**
Master has requested to the slave too many data or a wrong address
- F25 RS485 SLAVE – BUFFER FULL**
Slave Buffer is full because of too many data trasmitted or too frequently trasmitted
- F26 RS485 MASTER - OE ERROR-OVERRUN**
Following data arrived before reading the previous
- F27 RS485 MASTER - FE ERROR-FRAME ERROR**
Data stop bit not arrived
- F28 RS485 MASTER - TOO DATA REQUESTED FROM SLAVE OR WRONG ADDRESS**
Slave has requested to the master too many data or a wrong address
- F29 RS485 MASTER - BUFFER FULL**
Master Buffer is full because of too many data trasmitted from the slave
- F33 NO MAIN VOLTAGE ON CONTROL OR
CONTROL VOLTAGE INVERTED**
Verify main supply
- F34 DON'T USE**
- F35 CALIBRATION REQUEST**

- Used in distance control RS485
- F36 CALIBRATING IN PROGRESS**
Used in distance control RS485 to know when calibrating end.
- F38 THE MACHINE IS WAITING A COOLING DOWN DURING A CALIBRATION PROCEDURE**
Wait please
- F46 NO CURRENT SIGNAL**
Verify sealing band connection,TA connection
- F47 TA SIGNAL WRONG TURNED**
TurnTA connection
- F51 WIPER-I**
Switch off and switch on the thermoregulator; if problem persist call the supplying
- F52 WIPER-V**
Switch off and switch on the thermoregulator; if problem persist call the supplying
- F53 WIPER-VGROSS**
Switch off and switch on the thermoregulator; if problem persist call the supplying
- F54 WIPER-VFINE**
Switch off and switch on the thermoregulator; if problem persist call the supplying
- F60 RESET WITH CALIBRATING IN PROCESS**
Repeat the calibrating
- F61 BALANCE UNSUCCESSFULL**
Repeat the calibrating
- F62 BALANCE V UNSUCCESSFULL**
Repeat the calibrating
- F63 BALANCE VGROSS UNSUCCESSFULL**
Repeat the calibrating
- F64 BALANCE VFINE UNSUCCESSFULL**
Repeat the calibrating
- F65 BALANCE UNSUCCESSFULL**
Repeat the calibrating
- F66 MAIN PHASE SYNCHRONISM**
Reset the thermoregulator if problem persist call the supplying
- F67 TEMPERATURE HIGHER OF SET LIMIT(LIMIT 1)**
Verify the sealing temperature; if the problem continue contact the supplier
- F68 TEMPERATURE HIGHER OF SET LIMIT+10°C (LIMIT 2)**
Verify the sealing temperature; if the problem continue contact the supplier
- F71 FAULT HARDWARE -15V INTERNAL**
Reset the thermoregulator; if problem persist call the supplying
- F72 FAULT HARDWARE +15V INTERNAL**
Reset the thermoregulator; if problem persist call the supplying
- F73 FAULT HARDWARE +5V INTERNAL REFERENCE**
Reset the thermoregulator; if problem persist call the supplying
- F76 IREAD TOO HIGH**
Verify if short circuit on the seals
- F78 THERMOREGULATOR NOT CALIBRATED**
Do a calibrating
- F79 FAULT OF EMERGENCY CIRCUIT**
Verify contactor power, verify emergency chain
- F081 FAULT HARDWARE - CHECK-SUM**
Data in the eeprom wrong, pay much attention please
Press button RES, verify TEMPERATURE, SETTING, MACHINE, DATA;
call the builder
- F083 REFERENCE CABLE WRONG TURNED**
Turn reference cable: (CN1/3 WITH CN6/1 - CN1/4 WITH CN6/2)
- F085 SEALING TIME HIGHER THEN MACHINE DATA "SEALING TIME"**
Increase machine data sealing time (If 0 the controll is off).

- F089** **BAND BROKEN IF THE BANDS ARE PARALLEL CONNECTED**
Verify the bands.
- F090** **SHORT CIRCUIT BETWEEN THE BANDS OR BETWEEN A BAND AND GROUND IN THE CASE OF HIGH CURRENT**
Verify bands, verify power connection between thermoregulator and bands
- F093** **BAND BROKEN DURING A SEAL**
Verify power on the transformer, Verify voltage on CN/1 CN/2 connector, verify breaking of power cables, verify breaking of bands.
- F094** **REFERENCE SIGNAL CABLE FROM BANDS IS INTERRUPTED**
Verify the connection of reference signal cable from band (CN6/1 - CN6/2)
- F095** **MAIN SUPPLY SYNCRONISM DOES NOT MUCH MACHINE REQUIREMENTS**
Internal hardware problem, call the supplying builder
- F096** **FAULT V-I TOO HIGH**
Saturation of the voltage circuit, verify connection, probable break of one seal, if seals in parallel.
- F097** **PARTIAL SHORT CIRCUIT BETWEEN THE BANDS**
Verify bands into machine probably not perfectly isolated.
If the problem persist repeat burn-in procedure or do calibrating.
To reduce the problems increase machine data partial short circuit
- F099** **FAULT GENERIC**
call the builder

ANNEX E – DIMENSIONS

PANEL BORING (DIGITAL PANEL 96x48 – BACK DIMENSION 86x40.5)



TOP VIEW COPROCESSOR AND HOLES FOR PANEL MOUNTING

