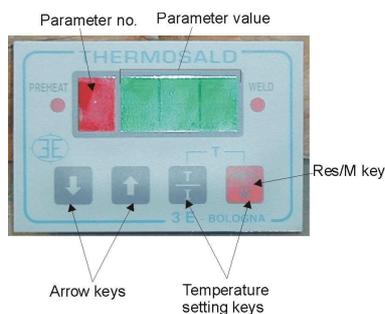


TEMPERATURE CONTROLLER FOR IMPULSE SEALING

THERMOSALD UPSCR AUTOMATIC CALIBRATION



- **MANUAL BALANCING** at first start up
- **AUTOMATIC BALANCING** at sealing band change
- **BURN IN** of sealing band
- **AUTOMATIC POWER FREQUENCY SWITCHING**
- **ENERGY CONTROL ON SEALING BAND**
- **485 SERIAL INTERFACE** to exchange data to supervisor

OPERATOR MANUAL Mod. UPSCR_N_V5 (M_V4)

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0 WARNINGS**0.1 SAFETY PRECAUTIONS**

- 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.
- Never turn on the temperature controller power circuit when the safety guards are open.
- Do not use the temperature controller for tasks other than those it is designed for i.e to control the temperature of bands or wires for industrial-grade sealing. Contact our engineering department for information regarding specific applications.
- Do not deliver electrical power to the temperature controller if the protective cover has been removed for special servicing on the electronic system.
- Operate the equipment by following the instructions contained herein.
- Employ qualified and well-trained personnel, familiar with the technology used to install the equipment and put it into service.
- Use bands or wires having an adequate positive temperature coefficient ($> 1 \times 10E-3$)
- When the machine is running under normal conditions, make sure the heat sink of the controller does not exceed 60°C . If this happens, increase heat sink ventilation or contact our engineering department.

0.2 COMPLIANCE WITH ELECTRO-MAGNETIC STANDARDS – CE KITE MARKS

Directives which apply :

- Low voltage electrical codes : 73/23 CEE - 93/68 CEE (in force since 01/01/97)
 - Electro-magnetic compatibility : 89/336 CEE - 92/31 CEE - 93/68 CEE (in force since 01/01/96)
 - Machine directive : 89/392 CEE - 91/368 CEE - 93/68 CEE (in force since 01/01/95)
- NOTE - this directive does not automatically apply to the electronic equipment; our controllers are designed to conform with the directive if installed correctly as described in this user's manual.

Electro-magnetic compliance tests :

Test conditions :

- Mains supply filter Mod. Siemens B84112-B-B60 (115 / 250 V - 6A - 50/60 Hz)
- Temperature controller connecting cable and standard panel 3ESD0035E (5 m)
- Input power cables (3 m long)
- Band output cables (10 m long)

Safety tests :

- The criteria indicated in the EN50082-2 directive have been followed: general standards regarding safety in industry.
- IEC 1000-4-2 (IEC 801-2/1991): STATIC ELECTRICITY DISCHARGE (ESD)
- IEC 1000-4-3 (CEI 801-3): RADIATED ELECTRO-MAGNETIC FIELD
- IEC 1000-4-4 (CEI 801-4): FAST TRANSIENT OSCILLATIONS (FAST TRANSIENT / BURST)
- ENV50141: MAINS PICKUP INTERFERENCE

Emissions tests :

- The criteria specified in the EN50081 -2 directive have been followed: general rules regarding emissions in industry
- EN55011 (CEI 110-6): LIMITS AND METHODS OF MEASURING RADIO INTERFERENCE PRODUCED BY INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT (ISM)

Compliance certificate :

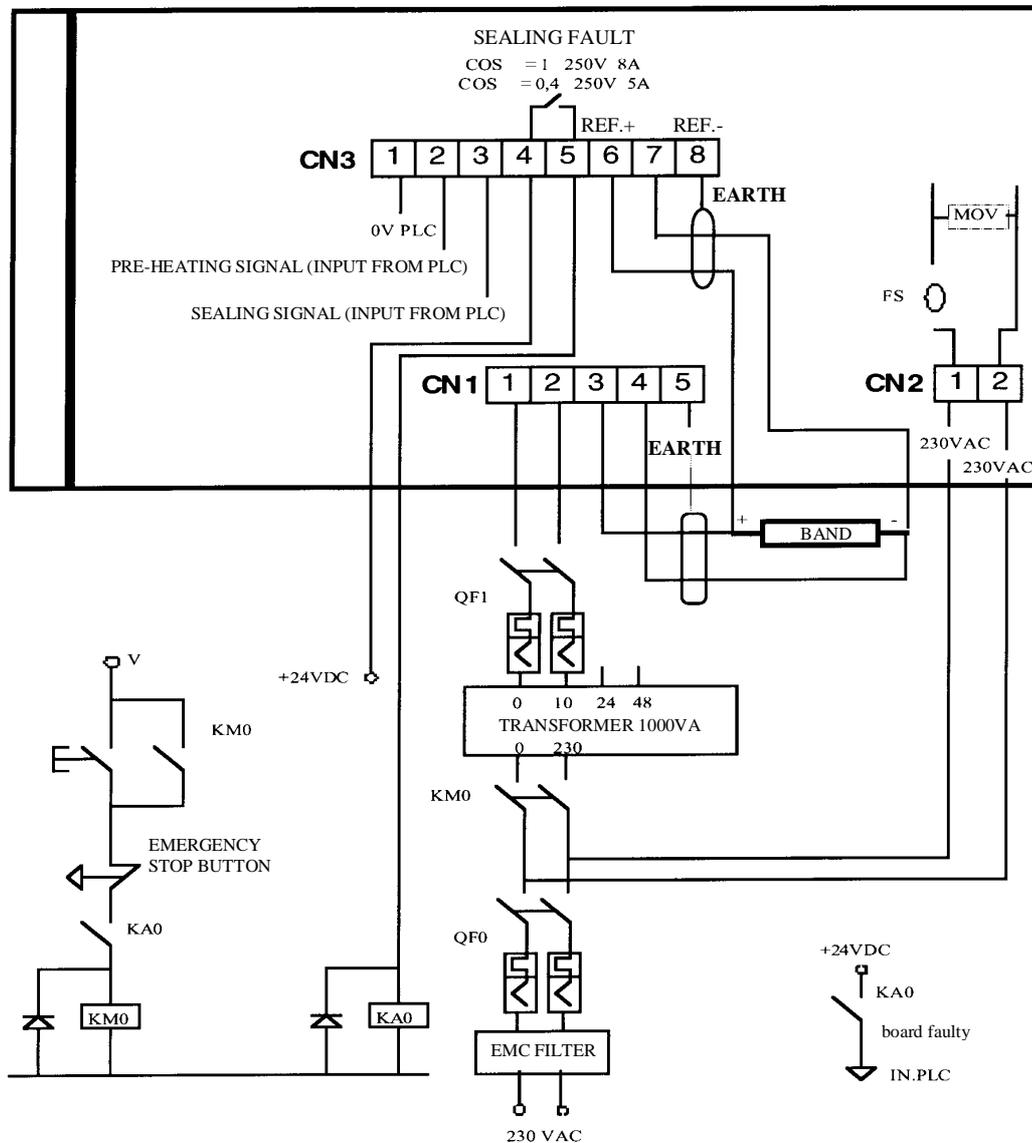
- The temperature controller passed the compliance tests and is considered a class B device.
- The manufacturer states that the temperature controller fully complies with current council directives as regards electro-magnetic compatibility, 89/336 CEE standards and following amendments
- The manufacturer states that the temperature controller fully complies with current low voltage electrical codes 73/23 CEE and subsequent amendments.

2 WIRING DIAGRAM AND DIMENSIONS

2.1 LIST OF CHANGE-OVER SIGNALS

CN1	POWER		
	(Power circuit supply synchronised with control circuit supply)		
PIN1	ALTERNATING CURRENT SUPPLY		(4 - 6 sq.mm)
PIN2	ALTERNATING CURRENT SUPPLY		(4 - 6 sq.mm)
PIN3	BAND +		(4 - 6 sq.mm)
PIN4	BAND -		(4 - 6 sq.mm)
PIN5	EARTH		(4 - 6 sq.mm)
CN2	CONTROL CIRCUIT SUPPLY		
	(Control circuit supply synchronised with power circuit supply)		
PIN 1	230 Vac (0.1A absorption, max)		(1sq.mm)
PIN 2	230 Vac (0.1A absorption, max)		(1sq.mm)
CN3	CONTROLS		
PIN1	COMMON 0 V PLC		(0,5 sq.mm)
PIN2	PRE-HEAT SIGNAL FROM PLC, 24V DC (12 mA absorption, max)		(0,5 sq.mm)
PIN3	SEALING SIGNAL FROM PLC, 24V DC (12 mA absorption, max)		(0,5 sq.mm)
PIN4	SEALING FAULT (CONTACT N.C.) $\cos\Phi = 1$ 250V 8A		(0,5 sq.mm)
PIN5	SEALING FAULT (CONTACT N.C.) $\cos\Phi = 0.4$ 250V 5A		(0,5 sq.mm)
PIN6	BAND REFERENCE +		(0,5 sq.mm)
PIN7	BAND REFERENCE -		(0,5 sq.mm)
PIN8	SIGNAL LEAD SCREEN (do not connect from the machine side)		(1 sq.mm)
CN4	DISPLAY CONSOLE		
PIN1	Supply, +5V	Screened	(0,25 sq.mm)
PIN2	Supply, 0 V	Screened	(0,25 sq.mm)
PIN3	Data	Screened	(0,25 sq.mm)
PIN4	Clock	Screened	(0,25 sq.mm)
PIN5	Key	Screened	(0,25 sq.mm)
PIN6	Key	Screened	(0,25 sq.mm)
PIN7	Key	Screened	(0,25 sq.mm)
PIN8	Key	Screened	(0,25 sq.mm)
CN5	RS485 SERIAL INTERFACE		
PIN1			
PIN2			
PIN3	Channel A-	Screened	(0,25 sq.mm)
PIN4			
PIN5			
PIN6			
PIN7			
PIN8	Channel B+	Screened	(0,25 sq.mm)

2.2 WIRING DIAGRAM



- NOTE

The power circuit supply (CN1/1 and CN1/2) MUST BE synchronised with the control circuit supply (CN2/1 and CN2/2).

CN1/5 should be connected to the EARTH ELECTRODE of the machine by using a yellow-green wire whose size should be \geq that of the power leads.

3 - INSTALLATION

• CHAMFERED SPECIAL ALLOY ELEMENTS RESISTANCES CHART

Band width (mm)	Band thickness (mm)	Specific resistance R0 Ω / mt
1.5	0.3	1.67
2	0.25	1.59
3	0.1	2.95
3	0.15	1.95
3	0.2	1.50
3	0.25	1.27
4	0.15	1.40
4	0.25	0.96
5	0.2	0.8
5	0.25	0.69
6	0.1	1.6
6	0.2	0.72
8	0.1	1.2
8	0.2	0.51

• T-SHAPE SPECIAL ALLOY ELEMENTS RESISTANCES CHART

Band width (mm)	Band thickness (mm)	Specific resistance R0 Ω / mt
2.8	0.3	0.9
4	0.3	0.6

• BEADED SPECIAL ALLOY ELEMENTS RESISTANCES CHART

Band width (mm)	Band thickness (mm)	Specific resistance R0 Ω / mt
4	0.15	1.4
4	0.25	0.9
6	0.15	0.99
6	0.25	0.6

• CONCAVE SPECIAL ALLOY ELEMENTS RESISTANCES CHART

Band width (mm)	Band thickness (mm)	Specific resistance R0 Ω / mt
2.8	0.3	0.9

4 – START UP

4.1 – START UP – START UP WITH GENERAL RESET

1 - The machine must be at ambient temperature.

2 - Pre-heat and seal remote controls must be off.

3 - Set dip switch SW+/SW- according to the rated voltage of the power transformer; see next CALCULATION TABLE and DIP SWITCH SW+ / SW- TABLE:

CALCULATION TABLE

Example:

Sealing band = 1 Ω - RATED I = 30 A,

TRASFORMER RATED VOLTAGE = 30 V

TRASFORMER MAXIMUM VOLTAGE = 30 V x 1.5 = 45 V

TRASFORMER SECONDARY VOLTAGE = Compresa fra 30V e 45V

DIP SWITCH SW+ e SW- = OFF OFF ON ON (See DIP SWITCH SW+ / SW- TABLE)

NOTE: SW+ e SW- set depend on

TRASFORMER RATED VOLTAGE = 30V (field 26V - 35 V)

(don't depend on TRASFORMER SECONDARY VOLTAGE)

DIP SWITCH SW+ / SW- TABLE

Dip 1	Dip 2	Dip3	Dip4	TRASFORMER RATED VOLTAGE	
ON	ON	ON	ON	05 - 07	(TO LIGHT GREEN LED)
OFF	ON	ON	ON	08 - 15	
ON	OFF	ON	ON	16 - 25	
OFF	OFF	ON	ON	26 - 35	
ON	ON	OFF	ON	36 - 42	
OFF	ON	OFF	ON	43 - 50	
ON	OFF	OFF	ON	51 - 57	binary system
OFF	OFF	OFF	ON	58 - 65	
ON	ON	ON	OFF	66 - 75	
OFF	ON	ON	OFF	76 - 82	
ON	OFF	ON	OFF	83 - 92	
OFF	OFF	ON	OFF	93 - 97	
ON	ON	OFF	OFF	97 - 100	
OFF	ON	OFF	OFF	-	
ON	OFF	OFF	OFF	-	
OFF	OFF	OFF	OFF	-	(TO LIGHT RED LED)

4 – Press the keys 1 + 4 (down + reset) and, at the same time, power on the thermoregulator



- 4 blocks appear on the display; the reset procedure begins; release keys down + reset (1 + 4).
- Thermoregulators leave our factory in reset state, then at power on 4 blocks always appear and reset procedure begins.
- Whenever an operator needs to repeat reset procedure, he can keep keys 1 + 4 (down + reset) pressed 6 + 8 seconds until on the display the 4 blocks appear and the reset procedure begins.

4 - Release the keys 1+4 (down+reset)

5 – Display = “ P H A S ”

On the display appears “ P H A S ” to mean that logic and power supplies phase control is in progress (if logic and power supplies are not on the same phase, “ F 0 8 3 “ fault signal is sent).

5 – Wait

6 – Display = “ V O L T ”

On the display appears “ V O L T ” to mean that TRASFORMER SECONDARY VOLTAGE control is in progress (this voltage must be between TRASFORMER RATED VOLTAGE and TRASFORMER MAXIMUM VOLTAGE).

6 – Wait

4 – Display = “ V 0 . 5 0 ” -> “ V 1 . 1 0 ” - USE FACTOR

On the display appears “ V ” followed by a number that informs if thermoregulator is well used or not: the right value are included in the range V 0.6 – V 1.0; absolute maximum rating V 1.3.

V 1.0 means active current 45A (for model 30A), 90A (for model 60A), 135A (for model 90A)

7 – Wait

8 – Display = “ V D I P ” blinking

On the display blinks “ V D I P ” to remember that SW+ / SW- dip switch must be set (see CALCULATION TABLE and DIP SWITCH SW+ / SW- TABLE).

8 - Press the RESET key

**9 – Display = “ T 0 2 0 ” = 20 DEGREES – Set gripper jaws temperature or wait
 (“ T 0 3 0 ” = 30 DEGREES from software release V4.9)**

On the display appears the ambient (grripper jaws) temperature set on the thermoregulator.

In applications where a great precision of temperature is necessary, it is possible change this parameter and set it with the actual gripper jaws temperature, simply pressing keys DOWN / UP.

9 - Wait

**10 – Display = “ _ B A L ” / “Temperature” – START UP COLD BALANCING BY TRIMMER
(TO TOUCH AND ROTATE ONLY IN THE COURSE OF FIRST START UP)**



NOT BALANCED SYSTEM

- On the display appears alternatively “ B A L ” and “temperature value not balanced ” to remember that green/red led balancing need to do (Note: a red bar down before “ B A L “ means unbalance towards down; a red bar up before “ B A L “ means unbalance towards up; the wording “ T - - - “ means temperature overflow toward down).
- rotate balancing trimmer clockwise to light green led, rotate anticlockwise to light red led; update of green/red led is 1 time in a second, so to calibrate fine it is necessary to rotate balancing trimmer and wait up to one second to wait update condition.
- When green and red leds are light both, the thermoregulator is balanced; we advise to read temperature value on the display and rotate trimmer until having 20 degree, if 20 degree is the temperature of the gripper jaws: in any case the thermoregulator will do next an automatic perfect balancing.

BALANCED SYSTEM

- On the display appears fixed “ B 0 2 0 “, if 20 degree is temperature of the gripper jaws;
- When green and red leds are light both, the thermoregulator is balanced; we advise to read temperature value on the display and rotate trimmer until having 20 degree, if 20 degree is the temperature of the gripper jaws: in any case the thermoregulator will do next an automatic perfect balancing.

**10 – Press the key RESET (ON DISPLAY DISAPPEAR THE “ B “ OF “ B 0 2 0 “ AFTER SOME SECONDS)
(From software release V4.9 it is possible press also the keys DOWN + UP)**

11 – Keep the key RESET pressed for 3 seconds to start the AUTOMATIC BURN-IN CYCLE



On the display appears “ H100” , to inform that the first heating at 100 degree is in progress; next the writing H160, H100, H160, H100, H160, H100 will appear to inform that cycles of heating and cooling at 160 and 100 degrees are in progress. At the end the thermoregulator will be ready to work.
Burn in cycle can be stopped before end pressing key reset.

THE MACHINE IS READY TO WORK.

NOTE: After the BURN IN cycle, sealing bands modify a little its electric characteristic, but are stable. If pay attention can observe that temperature of sealing bands is some degree lower then before burn_in cycle. Do not modify temperature by rotating balancing trimmer (used only in the course of first start up, after a master reset) or pressing the up/down keys to do an automating balancing (used only after a change of the sealing band)

NOTE: It's possible to do the machine more hot increasing HOT FACTOR value, parameter 5; From software release V4.9 it's possible to change it pressing the keys DOWN+T/I for 3 seconds, parameter nr. 5 appears, change the value by key DOWN or UP, wait 6 seconds to return to main menu.
(As previous software release, it's possible to change this parameter entering in the SETTING DATA or HOT CALIBRATION DATA, pressing key UP+RESET 6 seconds, see ANNEX C)

4.2 – SETTING THE PRE-HEATING AND/OR SEALING TEMPERATURES

1 – Press the keys 3+4 (T/I+RESET) for 3 seconds

The PREHEAT led on the panel start flashing and indicate the set pre-heating temperature.

2 – Press the keys UP or DOWN to change the temperature of pre-heating.

3 – Press the key RESET to switch to the temperature of sealing changing.

The WELDING led on the panel start flashing and indicate the set sealing temperature.

4 – Press the keys UP or DOWN to change the temperature of sealing.

5 – Wait 3 seconds to leave temperature setting.

4.3 – WRITING DOWN THE START UP DATA CARD

Write down the START UP DATA CARD – PAG. 1, ANNEX G

If any machine or setting data is modified, write down also START UP DATA CARD – PAG. 2.

That above lets to record start up data in the documentation of the machine; it will be useful for future verify and for starting up of the next machines, so it will be easier to do and all machine will be equal.

4.4 - SPECIAL FUNCTION ENERGY CONTROL

- **CAN BE PERFORMED ON ALL MACHINES HANDLING SLIGHTLY FLAMMABLE MATERIAL; THIS INCREASE REDUNDANCY AND AUTO-CONTROL THEREBY MAKING THE SYSTEM SAFER TOO (BEFORE GOING ON, GET IN TOUCH WITH OUR TECHNICAL OFFICE FOR INSTRUCTIONS)**

1 - Enter the machine data

F = 1 to Enable the control for the pre-heating procedure

F = 2 to Enable the control for the heat-sealing procedure

F = 3 to Enable the control for the pre-heating + heat-sealing procedure

2 - Pre-heat for 10 seconds

The thermoregulator acquire the power supplied in pre-heating.

3 – Start the machine running with the bags loaded

The thermoregulator acquire the power supplied in sealing.

When acquisition phase is finished, if thermoregulator detects a power on the bag out of tolerance stop in emergency.

In the case of slightly flammable materials, the machine builder must pay much attention to applications and take right solutions for safety.

NOTE – Each time the pre-heating and sealing temperature or some machine data are changed, an automatic data acquisition needs to be performed.

4.5 - SPECIAL FUNCTION 485 SERIAL INTERFACE AND FIELD BUS (IN PROGRESS)

4.6 – UP-DATE OLD MACHINES

- **WOULD YOU LIKE TO UPDATE OLD MACHINES WITH NEW SOFTWARE RELEASE?**

For this procedure do not hesitate to contact our technical office. From Thermosald Hardware M it is possible update machine without lose any performance; for older units needs pay attention to. This operation is easy enough, but must be done only by skilled workers with experience. After update a careful test need to be done. We don't take any responsibility on ourself for damage to people or animals or things, if operations are done without our direct control.

Procedure to change the eeprom:

Disconnect and detach completely the thermoregulator from electrical panel, to can work on a tool table, with the power connector on the left and the 2 connectors + fuse on the right. Unscrew the 4 screws on the bottom heat sink and the 6 self-tapping screws on the carter; pay much attention to the internal flat, and take off the carter enlarging lightly lateral panel to unlock the connectors; disconnect internal flat and take off completely the carter.

Inside You can see 3 boards: on the central board, with the components mounted towards inside, the eeprom on socket (28 pin) You can see. Pay attention not to stretch some pins, pay attention to the polarity of the eeprom; with a right tool pickup the old eeprom and mount the updated eeprom (pin 1 and reference mark towards inside like as the other chips).

To close You must: connect the flat, pay much attention to mount the carter enlarging lightly lateral panel and rotating the carter on the side of the flat; close the lateral panel; screw lightly the 4 screws on the bottom heat sink; screw tight the 6 self-tapping screws on the carter; screw now tight the 4 screws on the bottom heat sink.

Mount and connect the thermoregulator.

Before power on, set DIP SWITCH in the bottom way:

SW+ / SW-	NO CHANGE
SW1	1=ON 2=ON 3=ON 4=ON (ALL = ON)
IREAD	1=ON 2=OFF 3=ON 4=ON (IREAD/2 = OFF)

DO THE START UP WITH GENERAL RESET PROCEDURE – SEE CHAPTER 4.1

5 – MAINTENANCE

5.1 – CHANGING THE SEALING BANDS WITH MACHINE COLD (i.e. gripper jaws at ambient temperature)

- **HAVE YOU TO CHANGE THE SEALING BANDS WITH THE MACHINE AT AMBIENT TEMPERATURE, BECAUSE OF A PROGRAMMED MAINTENANCE?**

Pre-heat and seal comands are off; the machine is at ambient temperature; The sealing bands have little differences in measure; for optimum accuracy it is possible to do an automatic cold balance to compensate the differences; it is possible doing a burn-in cycle after, to become stable electric characteristics.

1 – Switch off power, release pre-heat and seal commands, let the gripper jaws getting cold down.

2 – Install the new sealing bands, switch on power.

3 – Keep the keys 1 + 2 (DOWN + UP) pressed for 6 seconds to make the AUTOMATIC COLD BALANCING



- On the display appears “ B A L “
- Release the key 1 + 2 (DOWN + UP)

4 - Display = “ T 0 2 0 ” = 20 DEGREES – Set gripper jaws temperature or wait
(“ T 0 3 0 ” = 30 DEGREES from software release V4.9)

On the display appears the ambient (gripper jaws) temperature set on the thermoregulator.

In applications where a great precision of temperature is necessary, it is possible change this parameter and set it with the actual gripper jaws temperature, simply pressing keys DOWN / UP.

5 – Keep the key RESET pressed for 3 seconds to start the AUTOMATIC BURN-IN CYCLE



On the display appears “ H100” , to inform that the first heating at 100 degree is in progress; next the writing H160, H100, H160, H100 will appear to inform that cycles of heating and colding at 160 and 100 degrees are in progress. At the end the termoregulator will be ready to work.
Burn in cycle can be stopped before end pressing key reset.

THE MACHINE IS READY TO WORK.

NOTE: After the BURN IN cycle, sealing bands modify a little its electric characteristic, but are stable. If pay attention can observe that temperature of sealing bands is some degree lower then before burn_in cycle. Do not modify temperature by rotating balancing trimmer (used only in the course of first start up, after a master reset) or pressing the up/down keys to do an automating balancing (used only after a change of the sealing band)

**5.2 – CHANGING THE SEALING BANDS WITH MACHINE HOT
(i.e. gripper jaws cooling down , but hot too because of inertia)**

- **HAVE YOU TO CHANGE THE SEALING BANDS WITH THE MACHINE HOT, WITH THE PRODUCTION IN PROGRESS, WITHOUT WAITING THAT GRIPPER JAWS TEMPERATURE FALLS DOWN AT AMBIENT TEMPERATURE?**

A sealing bands change, with the machine hot, with the production in progress, is less accurate then a change with the machine cold, in a programmed maintenance, because the automatic cold balancing must not be done (an automatic cold balance is done to compensate the differences in measure of the sealing bands).

If the application needs a very high precision, it is possible doing a quick change of the all gripper jaws with sealing bands, and go on with the preceding procedure of CHANGING THE SEALING BANDS WITH MACHINE COLD(see par. 5.1). Another less expensive way to work, but easier to make a mistake, is to set the parameter of ambient temperature at the gripper jaws temperature and doing an automatic cold balancing (do not exitate to contact our technical office)

1 – Switch off power, release pre-heat and seal commands, let the gripper jaws cooling down.

2 - Install the new sealing bands, switch on power.

- If the machine is hot, must not do the automatic cold balancing.

3 – Keep the key RESET pressed for 3 seconds to start the AUTOMATIC BURN-IN CYCLE.

- Verify if burn-in is necessary in the specific application, looking at the quality of first sealing.



On the display appears “ H100” , to inform that the first heating at 100 degree is in progress; next the writing H160, H100, H160, H100, H160, H100 will appear to inform that cycles of heating and colding at 160 and 100 degrees are in progress. At the end the termoregulator will be ready to work.

Burn in cycle can be stopped before end pressing key reset.

THE MACHINE IS READY TO WORK.

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

NOTA – Press the key **RESET / MODE** to reset every alarm

WARNINGS CAUSES REMEDIES

- | | |
|--|--|
| UDIP | A GENERAL RESET PROCEDURE HAS BEEN PERFORMED
Set or Verify the DIP SWITCH SW+/SW- and press the key RESET/MODE |
| FBAL | A GENERAL RESET PROCEDURE HAS BEEN PERFORMED
Make cold balancing of led green/red by trimmer and press the key RESET/MODE |
| FCAL | EQUIPMENT NOT CALIBRATED
Make hot automatic calibration (only previous software up to release 4.0) |
| Fo5o | ENTER THE HEATING FACTOR
Keep keys 2+4 (UP+Reset/Mode) Pressed for 6 seconds and set parameter 5 (heat factor)
(only previous software up to release 4.0) |
| F21/F22/F23/F25/F26 RS485 INTERFACE ERRORS
please wait autoreset and try again | |
| F33 | NO CURRENT TO THE BAND
Verify power on the trasformer, Verify Voltage on CN1/1-CN1/2 connector, Verify breaking of power cables, Verify breaking of bands. |
| F34 | VERIFY DIP SWITCH AND PRESS RESET KEY
Verify DIP and Press RESET/MODE key |
| F35 | DO A BALANCE BY TRIMMER BALANCING
Only at start up after a master reset, it's necessary to do a trimmer balancing and an electronic balancing |
| F36 | DO AN ELECTRONIC BALANCE BY PRESS DOWN+UP KEY
At start up after a master reset and a trimmer balancing, it's necessary to do an electronic balancing |
| F38 | THE MACHINE IS WAITING A COOLING DOWN DURING A CALIBRATION PROCEDURE
Wait please |
| F39 | THE MACHINE IS WAITING A COOLING DOWN DURING AN ENERGY ANQUISITION
Wait please (only previous software up to release 4.0) |

FAULTS	CAUSES REMEDIES
---------------	----------------------------------

- | | |
|------------|--|
| F41 | ENERGY FAULT BY PRE-HEAT CURRENT CONTROL
Verify bands in the machine, repeat energy acquisition |
| F42 | ENERGY FAULT BY PRE-HEAT PHASE CONTROL
Verify bands in the machine, repeat energy acquisition |
| F43 | ENERGY FAULT BY PRE-HEAT CURRENT CONTROL NOT ACQUIRED
Do energy acquisition |
| F44 | ENERGY FAULT BY PRE-HEAT PHASE CONTROL NOT ACQUIRED
Do energy acquisition |
| F51 | ENERGY FAULT BY SEALING CURRENT CONTROL
Verify bands in the machine, repeat energy acquisition |
| F52 | ENERGY FAULT BY SEALING PHASE CONTROL
Verify bands in the machine, repeat energy acquisition |
| F55 | ENERGY FAULT BY CONTINUOS SEALING CURRENT CONTROL
Verify bands in the machine, repeat energy acquisition |
| F56 | ENERGY FAULT BY CONTINUOS SEALING PHASE CONTROL |

- Verify bands in the machine, repeat energy acquisition
- F61** **AUTOMATIC COLD CALIBRATION OVERFLOW TO LOW**
Verify bands characteristic, repeat operation, if problem persists contact our technical office.
- F62** **AUTOMATIC COLD CALIBRATION OVERFLOW TO HIGH**
Verify bands characteristic, leave the machine cooling, repeat operation, if the problem persists do not exitate to contact our technical office.
- F63** **MAINS SUPPLY FREQUENCY OUT OF RANGE**
Wait mains supply frequency to stabilize, press key RESET/MODE; if the problem persist set parameter DATI DI SETTING / BAR CODE 3 = 0.
- F69** **CURRENT TO GROUND**
Verify bands into machine that touch probably ground.
NOTE: the thermoregulator is connected to ground, to verify with an instrument the band problem, it is necessary disconnect before bands cables from connector CN1/3-CN1/4 and connector CN3/6-CN3/7.
- F76** **IREAD TOO HIGH**
Current circuit saturation.
Verify bands in machine not perfectly isolated.
Verify voltage on secondary of power trasformer.
Contact our technical office.
- F77** **50/60 HZ FREQUENCY CHANGE DETECTED**
Verify at power on a change in the mains supply frequency 50/60 Hz.
After a master reset or at start up the thermoregulator has recognise 60 Hz mains supply frequency.
Press key RESET/MODE
- F78** **EQUIPMENT NOT CALIBRATED**
Make an automatic calibration
(only previous software up to release 4.0)
- F081** **CHECK-SUM FAULT – HARDWARE FAILURE**
Checked data in the eeprom wrong, pay much attention please.
Press key RESET/MODE, verify MACHINE DATA, SETTING DATA, PRE-HEAT AND SEAL TEMPERATURE SET, do not exitate to contact our technical office.
- F082** **LOGIC SUPPLY(CN2) AND POWER SUPPLY(CN1) HAVE DIFFERENT PHASES**
Verify that the supplies have the same phase or out of phase 180 degree.
- F083** **REFERENCE CABLE OR POWER CABLE WRONG TURNED**
Verify connections of reference and power cables:
CN3/6 corresponding to CN1/3
CN3/7 corresponding to CN1/4
- F084** **POWER TRASFORMER VOLTAGE TOO HIGH**
Verify calculation of power trasformer, Verify setting of DIP SWITCH SW+ SW-
- F085** **SEALING TIME HIGHER THAN MACHINE SET DATA 7.XXX**
Verify sealing time set into the PLC, increase MACCHINE DATA 7.XXX
- F086** **MAINS SUPPLY VOLTAGE DECREASED BY MORE THEN 10%**
Fault do not stop machine and disappear after 10 seconds, Verify mains supply voltage because floating.
- F087** **MAINS SUPPLY VOLTAGE DECREASED BY MORE THEN 10% DURING SEALING**
Fault do not stop machine and disappear after 10 seconds, Verify main supply voltage because floating.
- F088** **NO SIGNAL FROM BAND**
Verify the band into machine because probably not perfectly isolated.
Fault Hardware on the analog input.
Do not exitate to contact our technical office.
- F089** **BAND BROKEN IF THE BANDS ARE PARALLEL CONNECTED**
Verify the bands in parallel.
If the problem persist, repeat Burn-in procedure, only few seconds to permit starting of procedure, and press RESET/MODE to interrupt procedure.
- F090** **SHORT CIRCUIT BETWEEN THE BANDS OR BETWEEN A BAND AND GROUND IN THE CASE OF HIGH CURRENT**

- Verify bands, Verify power connectios between thermoregulator and bands.
- F091** **FAULT I²T**
Verify currents.
- F092** **POWER PART FAILURE**
Hardware problems, press key RESET/MODE, if the problem persists do not exitate to contact our technical office.
- F093** **BAND BROKEN DURING A SEAL**
Verify power on the trasformer, Verify Voltage on CN1/1-CN1/2 connector, Verify breaking of power cables, Verify breaking of bands.
- F094** **REFERENCE SIGNAL CABLE FROM BAND IS INTERRUPTED**
Verify the connections of reference signal cable from band (CN3/6 - CN3/7)
- F095** **MAINS SUPPLY SYNCRONISM DOES NOT MATCH MACHINE REQUIREMENTES**
Internal hardware problem, do not exitate to contact our technical office.
- F096** **V-I TOO HIGH**
Voltage circuit saturation.
Verify trimmer BALANCING
Verify DIP SWITCH SW1 (only previous software up to release 4.0)
- F097** **PARTIAL SHORT-CIRCUIT BETWEEN THE BANDS**
Verify bands into machine, probably not perfectly isolated.
If the problem persist, repeat Burn-in procedure, only few seconds to permit starting of procedure, and press RESET/MODE to interrupt procedure.
To reduce the problem increase MACHINE DATA 8.XXX (PARTIAL SHORT CIRCUIT)
- F098** **NO CURRENT DELIVERED DURING CALIBRATION**
Verify power on the trasformer, Verify Voltage on CN1/1-CN1/2 connector, Verify breaking of power cables, Verify breaking of bands.
- F099** **FAULT EEPROM**
Do not exitate to contact our technical office.

ANNEX G – START UP CARD – PAG. 1

COMMERCIAL NOTE

MODEL OF MACHINE:

CUSTOMER:

BAND POSITION:

KIND OF FILM TO SEAL:

THICKNESS OF FILM TO SEAL:

APPLICATION NOTE

Band material = _____
Band form profile = _____
Width of the band = _____ [mm]
Thickness of the band = _____ [mm]
Length overall = _____ [mm]
Copper/Silver ends = _____ [2 x mm]
Copper/Silver in the centre = _____ [mm]
Teflon coat in the centre = _____ [mm]
Type of connections (Parallel/Serial) = _____ [P/S]

TECNICAL NOTE

RESISTANCE OF THE SEALING = _____ [Ω]
RATED CURRENT OF THE THERMOSALD = _____ [30/60/90 A]
SECONDARY VOLTAGE OF THE TRANSFORMER = _____ [V]
MODEL OF THE THERMOSALD = _____ [UPSCR_M_V4_.....]

DIP SWITCH TABLE

SW +					SW-				
1	2	3	4		1	2	3	4	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OFF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OFF

USE FACTOR = _____

PRE-HEAT TEMPERATURE = _____ [$^{\circ}\text{C}$]
SEALING TEMPERATURE = _____ [$^{\circ}\text{C}$]
SEALING TIME (SET INTO THE PLC) = _____ [Sec.]

